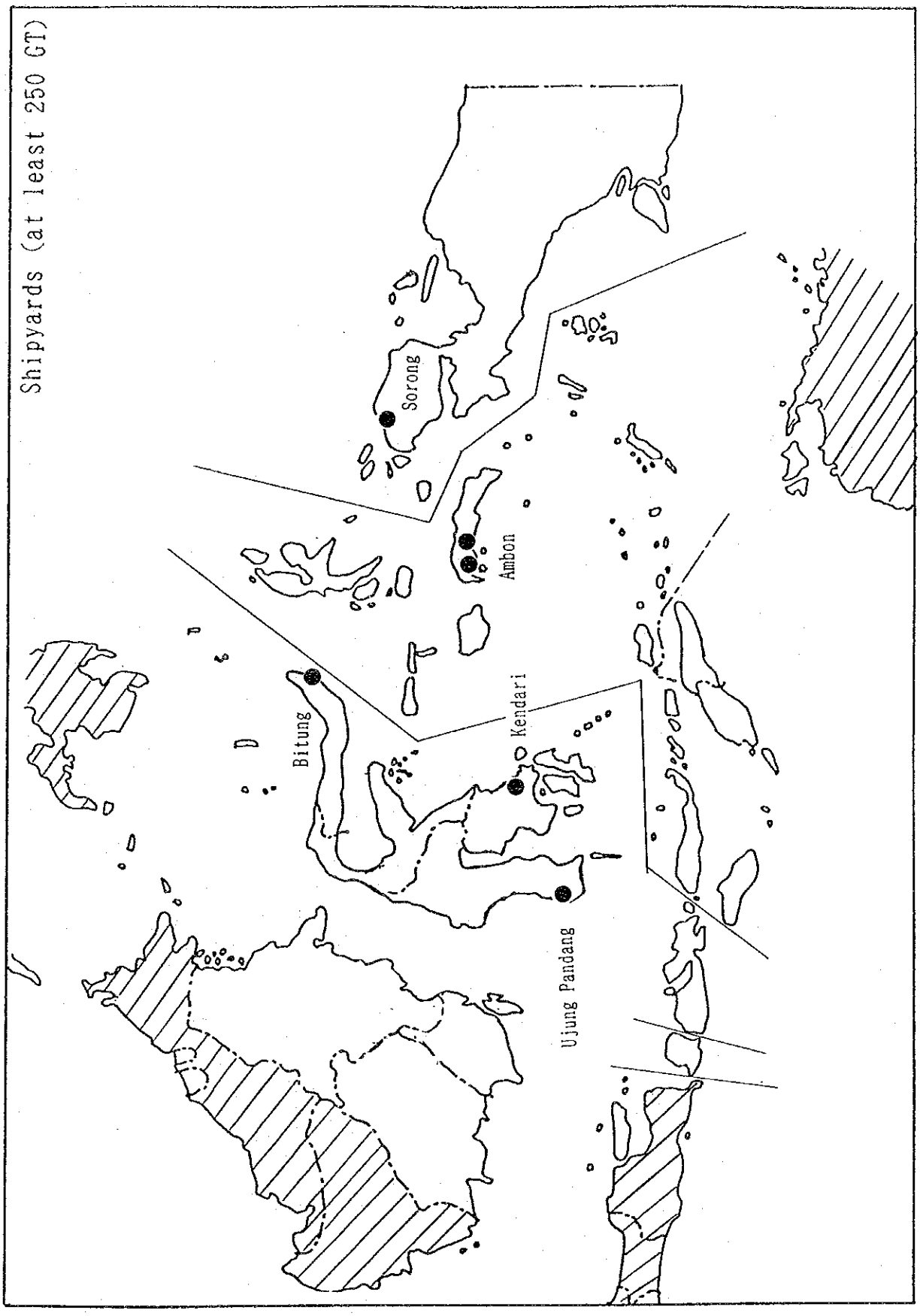
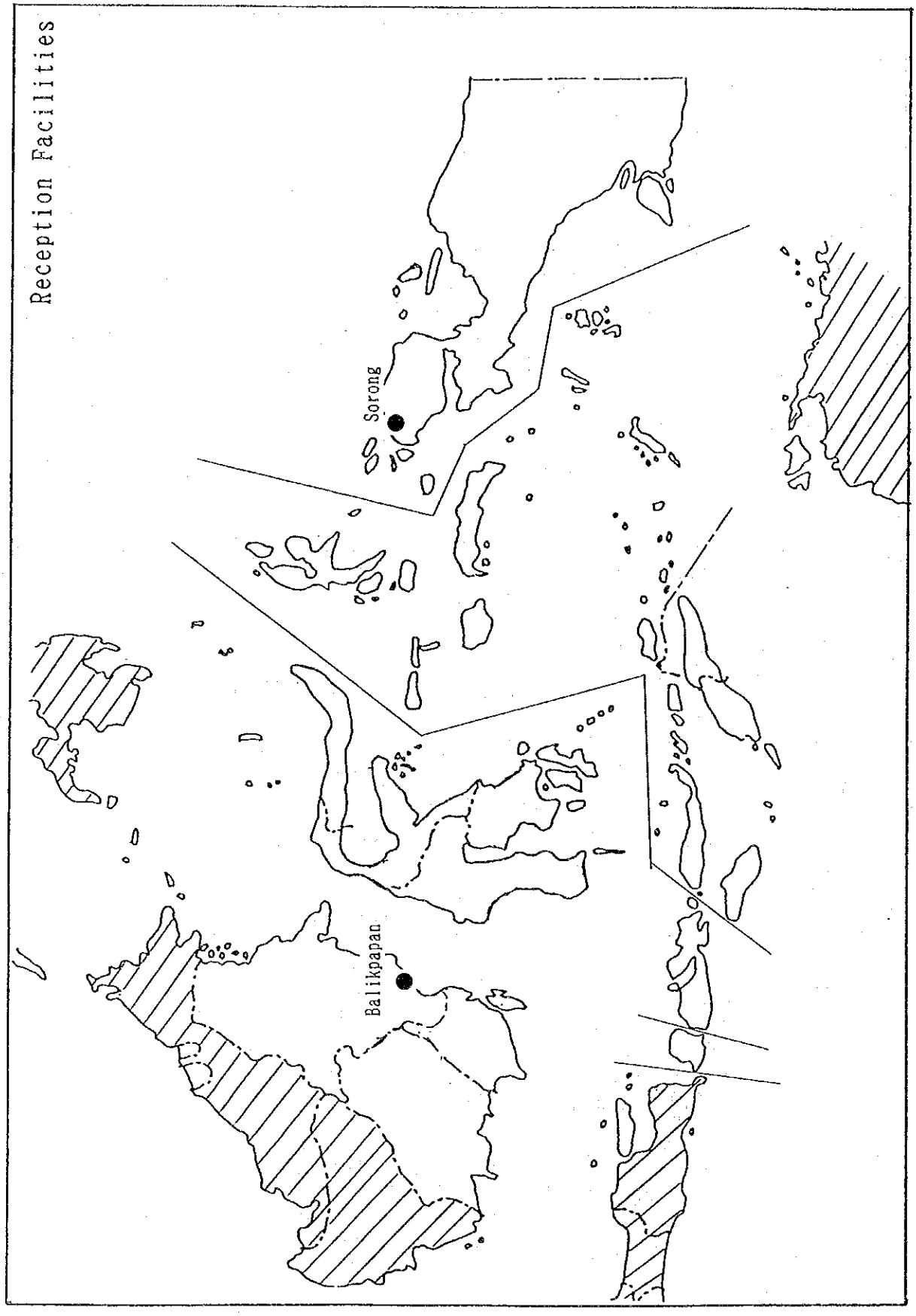
Appendix 4-3 Location of Shipyards



Appendix 4-4 Location of Reception Facilities



Appendix 4-5 Reference for Ship Inspection

(1) Kanwil location

Provinces		Location
XV	Kalimantan Tengah	Patangkaraya
XVI	Kalimantan Selatan	Banjarmasin
XVII	Kalimantan Timur	Samarinda
XVIII	Sulawesi Utara	Manado
XIX	Sulawesi Tengah	Palu
XX	Sulawesi Tenggara	Kendari
XXI	Sulawesi Selatan	Ujungpandang
XXII	Bali	Denpasar
XXIII	Nusa Tenggara Barat	Mataram
XXIV	Nusa Tenggara Timur	Kupang
XXV	Maluku	Ambon
XXVI	Irian Jaya	Jayapura
XXVII	Timor Timur	Dili

(2) List of international conventions ratified by Indonesia

No.	International convention	Date of entry into force	Presidential decree
1.	SOLAS. 1960 International Convention for the Safety of Life at Sea, 1960.	26 May 1965	No. 203/1966 16 Sept.1966
2.	COLREG. 1960 Convention on the International Regulations for the Preventing Collisions at Sea, 1960.	1 September 1965	No. 107/1968 24 March 1968
3.	L.L. 1966 International Convention on Load Lines, 1966	21 July 1968	No. 47/1976 2 Nov. 1976
4.	S.T.P. 1971 Special Trade Passenger Ships Agreement, 1971.	2 January 1974	No. 73/1972 21 Dec. 1972
5.	C.L.C. 1969 International Convention on Civil Liability for Oil Pollution Damage, 1969.	19 June 1975	No. 18/1978 1 July 1978
6.	Space S.T.P. 1973 Protocol on Space requirements for Special Trade Passenger Ships 1973.	2 June 1977	No. 43/1979 18 Sept. 1979
7.	COLREG. 1972 Convention on the International Regulations for Preventing Collisions at Sea, 1972	15 July 1977	No. 50/1979 11 Oct 1979.

No.	International convention	Date of entry into force	Presidential decree
8.	C.S.C. 1972 International Convention for Safe Containers, 1972	6 Sept. 1977	No. 33/1989 17 July 1989.
9.	FUND. 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971.	16 October 1978	No. 19/1978 1 July 1978.
10.	INMARSAT. 1976 The Convention on the International Maritime Satellite Organization, 1976.	16 July 1979	No. 14/1986 21 April 1986
11.	SOLAS. 1974 International Convention for the Safety of Life at Sea, 1974	25 May 1980	No. 65/1980 13 Dec. 1980
12.	SOLAS PROTOCOL. 1978 Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974.	1 May 1981	No. 21/1988 29 June 1988
13.	TONNAGE. 1969 Intenational Convention on Tonnage Measurement of Ships, 1969.	18 July 1982	No. 5/1989 25 Jan. 1989
14.	UNCLOS. 1982 United Nations Convention on the Law of the Sea, 1982.	Belum	No. 17/1985 31 Dec. 1985
15.	MARPOL. 73/78 International Convention for the Prevention of Pollution from Ships, 1973 and the Protocol 1978 relating thereto	2 October 1983	No. 46/1986 9 Sept. 1986
16.	S.T.C.W. 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978	28 April 1984	No. 60/1986 4 Dec. 1986

(3) Issuance of certificates (April 1992 to March 1993) and inspection period

1. Sertipikat Pertama di Pusat
(initial certificates issued by SeaCom)

a.	Sertipikat Kesempurnaan: (seaworthiness)	280	Kapal (ships)
b.	Sertipikat Garis Muat D.N.: (load line, by government, when operating only in the Indonesian limited waters)	11	"
c.	Sertipikat Penpangkutan : Minyak Bumi (oil carrier)	2	"
d.	Sertipikat SOLAS 1974 SEC: (safety equipment)	30	"
e.	Sertipikat SOLAS 1974 SEC: (safety construction)	30	"
f.	Sertipikat Radio telegrapi :	2	"
g.	Sertipikat Radio teleponi :	3	"
h.	Sertipikat Pembebasan : (exemption)	9	"
i.	Sertipikat Radio Non SOLAS:	4	"
	Jumlah (total)	371	"

2. Sertipikat Pembaharuan di Pusat
(renewal issued by SeaCom when in question at local offices or abroad)
(annual)

a.	Sertipikat Kesempurnaan	: 129	Kapal (ships)
b.	Sertipikat Pengangkutan Minyak Bumi	: 3	"
c.	Sertipikat Solas 1974 SEC	: 51	"
d.	Sertipikat Solas 1974 SCC	: 51	"
e.	Sertipikat Radio Telegrapi	: 89	"
f.	Sertipikat Radio Teleponi	: 103	"
g.	Sertipikat Fitnees	: 19	"
h.	Sertipikat Radio Non Solas	: 42	"
	Jumlah (total)	: 487	Kapal (ships)

3. Sertipikat Pembaharuan dan Perpanjangan di Daerah (renewal by branch office)

a. Sertipikat Kesempurnaan	:	1,569 Kapal
b. Sertipikat Solas 1974 SEC	:	240 "
c. Sertipikat Solas 1974 SCC	:	240 "
d. Sertipikat Pengangkutan Minyak Bumi	:	88 "
e. Sertipikat Pembebasan	:	50 "
f. Sertipikat Penumpang	:	10 "
Jumlah (total)	:	2,197 Kapal (ships)

4. Validity and inspection

Certificate validity		1 year
Periodical inspection (inspection interval)		every year
Bottom survey	(age less than 12 years)	every 2 years
"	(age 12 years and above)	" (for 1st class)
"	(age 12 years and above)	every 1.5 years (for 2nd class)

Note: 1st class = NS* MNS*

2nd class = NS MNS

(4) Shipping data

Foreign ships operation in Indonesian waters (for 1992)

(cargo/tanker/fishing vessel)	392 (ships)
(tug boat)	483 (ships)
(barge)	1,299 (ships)

(5) Budgetary data (a year) - Indonesia

Printing (certificate, document)	150,000,000Rp.
Printing (rules, regulations)	100,000,000
Training (ship inspectors)	240,000,000

(6) Summary of Double class list between BKI and foreign classification societies

BKI-ABS	143		BKI-KRS	1	
BKI-BV	5		BKI-LR	48	
BKI-DNV	8		BKI-NK	37	1992-09-01
BKI-GL	15				

(7) Indonesian ships classed by BKI (for 1992)

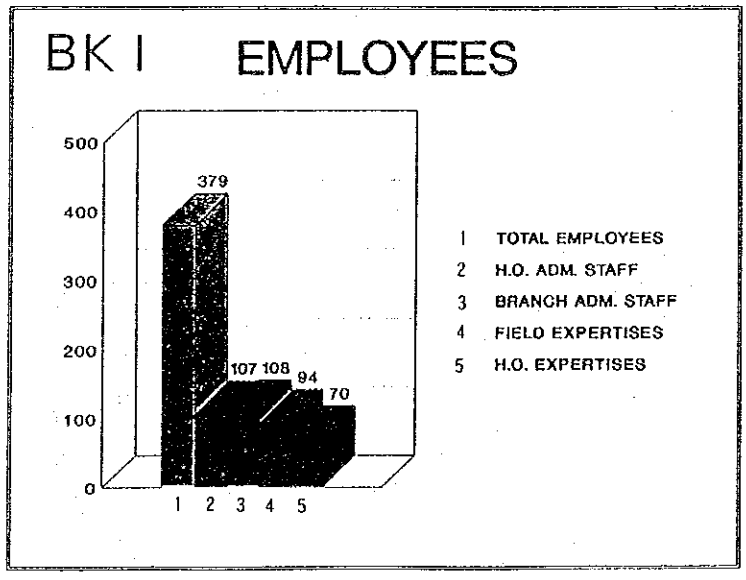
3890 (ships)

(8) Certification Data

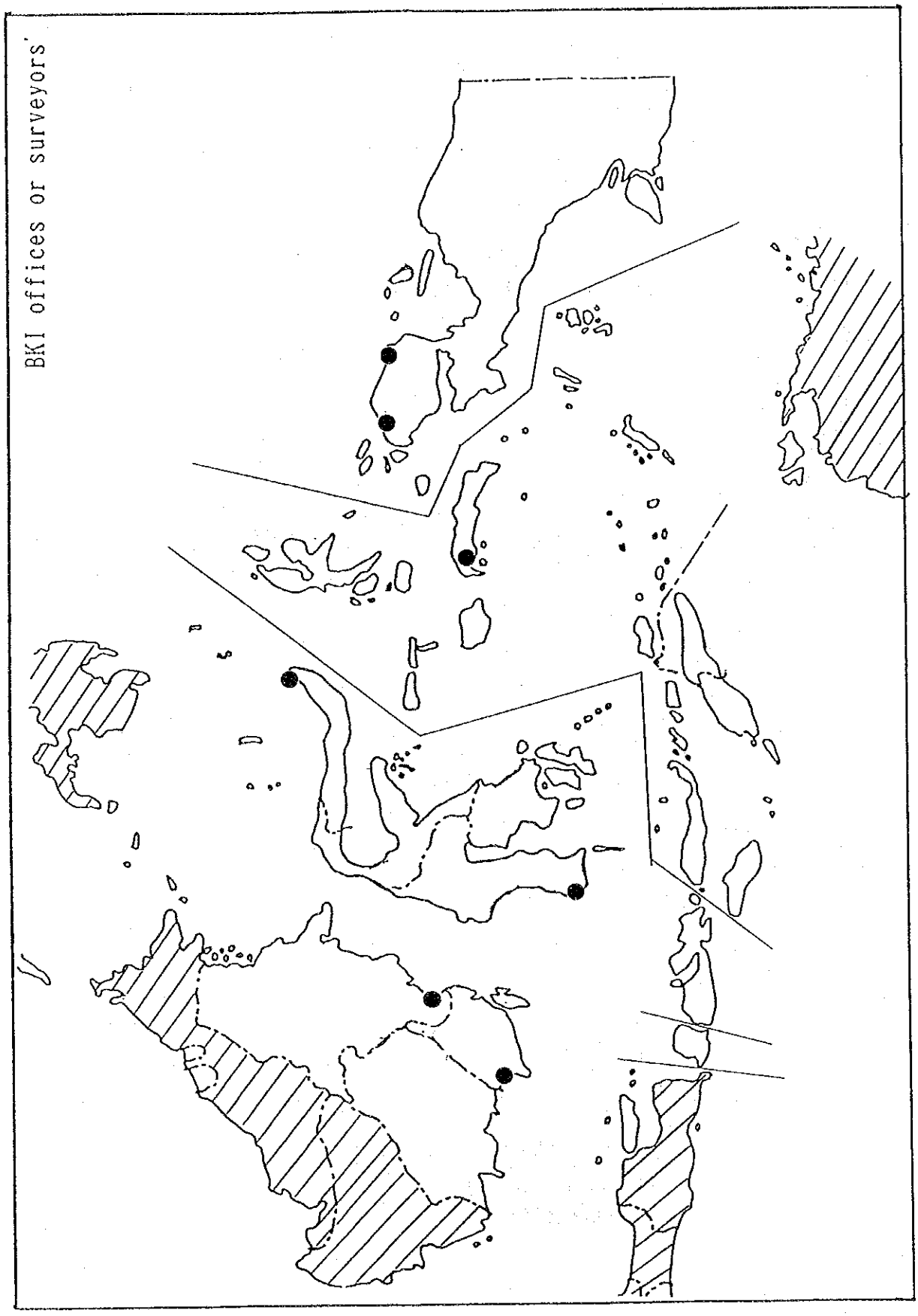
seaworthiness certificate

a. Head office = 409 ships
b. Region office = 1,569 ships (including Eastern Indonesia)
c. Special for Eastern Indonesia 240 ships
   - Nusa Tenggara Timur = 5 ships
     (East Nusa Tenggara)
   - Sulawesi Selatan = 40 ships
     (South Sulawesi)
   - Sulawesi Tenggara = 13 ships
     (South East Sulawesi)
   - Sulawesi Utara = 18 ships
     (North Sulawesi)
   - Maluku = 106 ships
   - Irian = 58 ships

(9) BKI Employees



(10) BKI offices or surveyors'



Appendix 4-6

Example of documents required for design examination of a newbuilding.

1. specifications of the ship

2. drawings to show structure and arrangement of (1) hull, (2) machinery, (3) sails, (4) drainage system, (5) steering engine, (6) mooring equipment, (7) anchoring equipment, (8) lifesaving appliances, (9) fire-fighting equipment, (10) accommodation facilities, (11) sanitary equipment, (12) navigational installations, (13) loading and storage system of dangerous goods and other special cargoes, (14) cargo handling gear, (15) electrical appliances, (16) other items laid down by the Minister

3. drawings (for the outside of frames of a steel ship and the outside of shell plate of a wooden ship) shown in the following when applying for inspection on load lines (exclusive of timber load line and subdivision load line)

(1) lines

(2) curves to show total displacement for each draft up to the topmost flush deck and the displacement for each centimeter

4. drawings to show the structure and arrangement of the gears required to load deck-loaded timber cargo (only for ships subjected to timber load line inspection)

5. documents shown in the following (for ships subjected to sub-division load line inspection)

(1) curves to show the heights between centre of buoyancy for each draft up to margin line and metacenter (longitudinal and transverse)

(2) curves to show the distance from center of flotation to mid-ship for each draft up to margin line

(3) curves to show the area of each transverse cross section up to margin line

(4) calculation table on permissible length

(5) curves to show permissible length

(6) curves regarding areas of each square station for each draft up to margin line, and the height from the base line to the center of gravity of the areas

(7) calculation table of damage stability

(8) arrangement of crossflooding installations

documents shown in the following for ships subjected to damage stability test (except ships of the above)

(1) calculation table of damage stability

(2) arrangement of crossflooding installations

documents shown in the following for ships subjected to stability test

(1) curves on deadweight, etc. (hydrostatic curves)

(2) curves on stability (cross curves of stability)

(3) curves on angle of flooding

(4) calculation table on designed weight and centre of gravity

strength calculation document (including lines of force) for ships subjected to cargo handling gear inspection

6. documents on submarine equipment, as necessary

7. documents on elevators, as necessary

8. documents on incinerators, as necessary

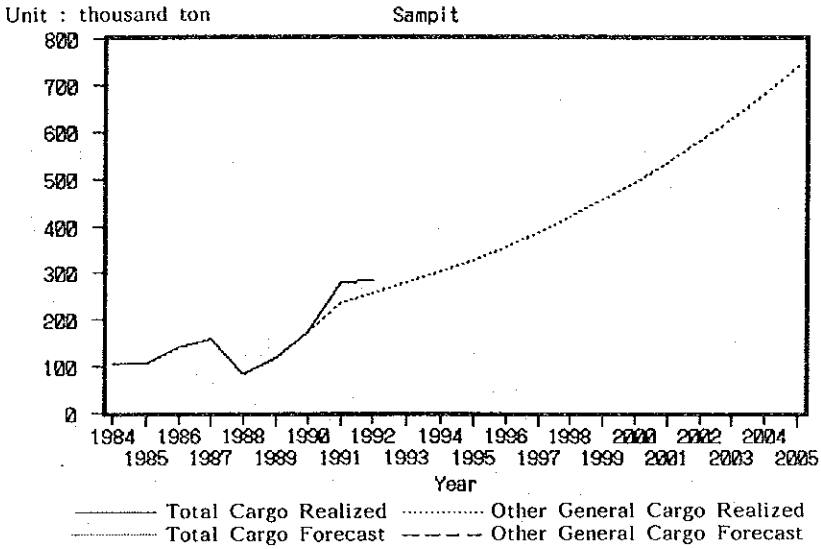
9. documents on container installations as necessary

Appendix 5-1 Reference for Demand Forecast by Over Middle Class Port

1 Sampit

Unit : ton

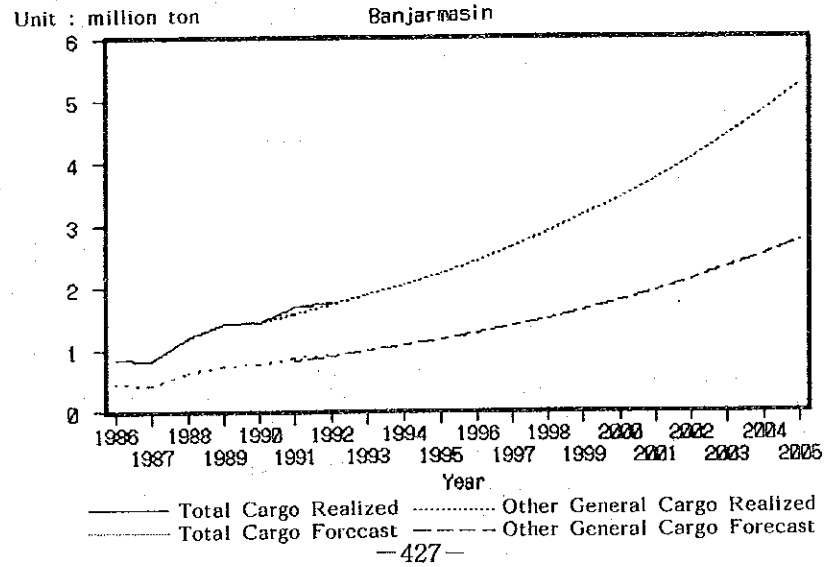
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo									
Unitized									
Roll									
Solid Bulk									
Liquid Bulk									
Bag Cargo									
Drum									
Container									
Total	105,840	107,624	143,060	160,381	83,176	118,811	175,475	280,130	284,610



2 Banjarmasin

Unit : ton

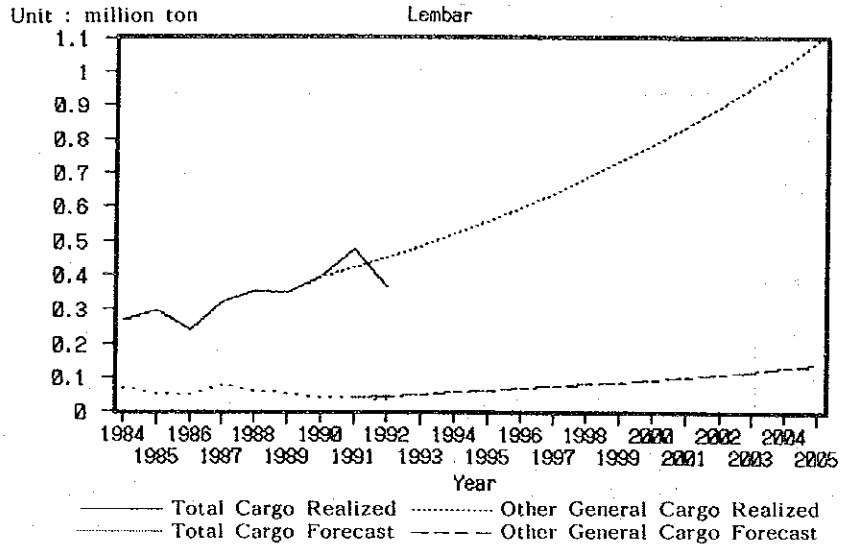
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo			433,733	427,482	599,902	692,488	719,876	821,180	799,651
Unitized			187	184	265	318	323	374	392
Roll									
Solid Bulk			186,539	183,851	264,434	317,599	322,637	372,970	391,393
Liquid Bulk			31,565	31,110	44,746	53,743	54,595	63,112	66,230
Bag Cargo			165,666	163,279	234,845	282,062	286,535	331,237	347,598
Drum			19,200	18,923	27,218	32,690	33,208	38,389	40,285
Container					14,949	45,980	30,305	46,035	110,400
Total			836,891	824,830	1,186,359	1,424,880	1,447,479	1,673,297	1,755,949



3 Lember

Unit : ton

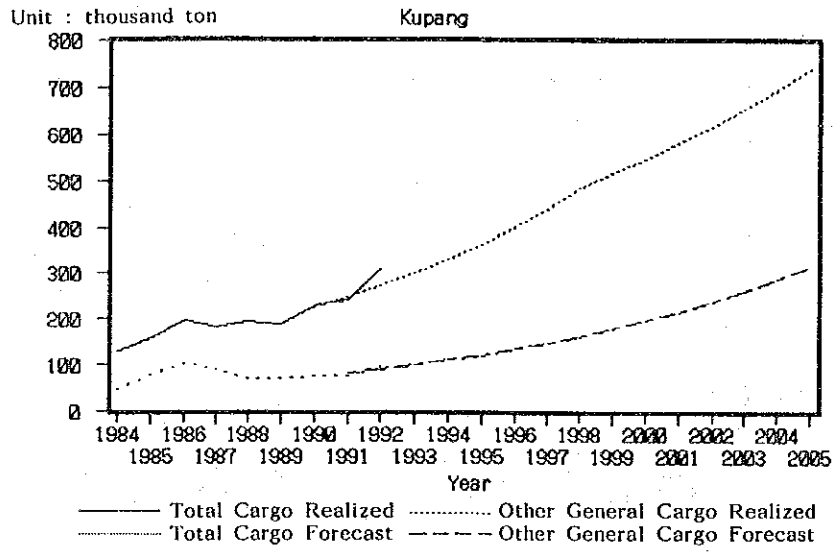
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	69,718	51,914	47,021	75,484	60,429	52,803	38,966	40,763	35,777
Unitized			-						
Roll									
Solid Bulk	19,739	28,758	23,805	53,780	60,962	124,804	129,133	197,983	91,592
Liquid Bulk									
Bag Cargo	172,238	207,465	166,613	190,968	229,906	167,417	222,003	223,972	230,595
Drum	4,991	6,994	3,129	364	2,067	5,368	3,933	10,906	8,948
Container									
Total	266,686	295,131	240,568	320,596	353,364	350,392	394,035	473,624	366,912



4 Kupang

Unit : ton

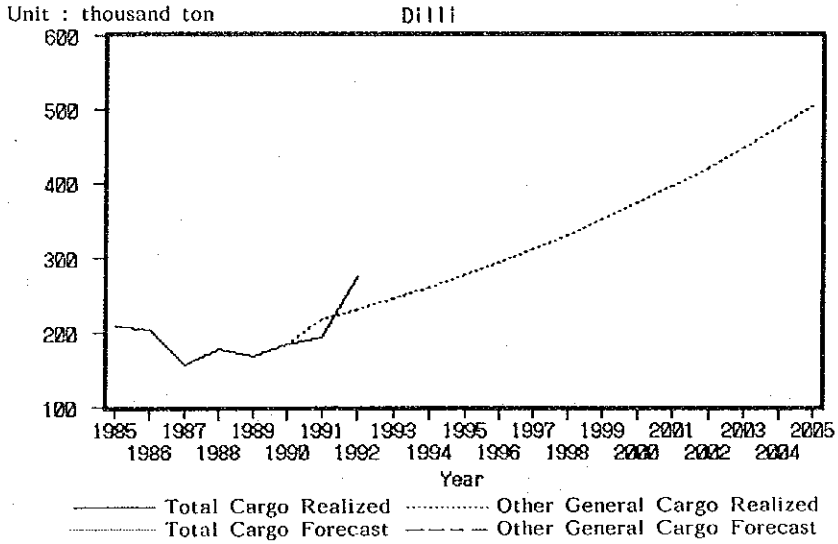
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	47,442	79,319	102,794	90,754	70,816	71,996	74,213	72,886	95,460
Unitized									
Roll									
Solid Bulk	6,815	12,700	29,945	10,000	39,412	25,376	45,152	60,482	76,787
Liquid Bulk					188				
Bag Cargo	62,890	57,943	64,594	77,580	79,857	78,858	96,610	99,473	121,834
Drum	12,390	9,800		4,452	4,371	11,635	9,323	7,350	13,095
Container							3,960	2,629	1,320
Total	129,537	159,762	197,333	182,786	194,644	187,865	229,258	242,820	308,496



5 Dilli

Unit : ton

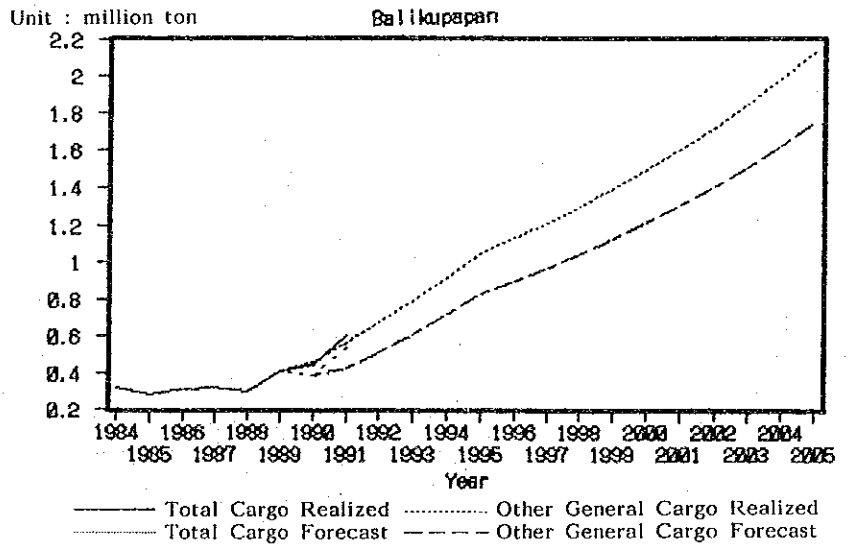
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo									
Unitized									
Roll									
Solid Bulk									
Liquid Bulk									
Bag Cargo									
Drum									
Container									
Total		208,453	203,862	156,533	177,535	168,549	184,129	193,326	274,674



6 Balikupapan

Unit : ton

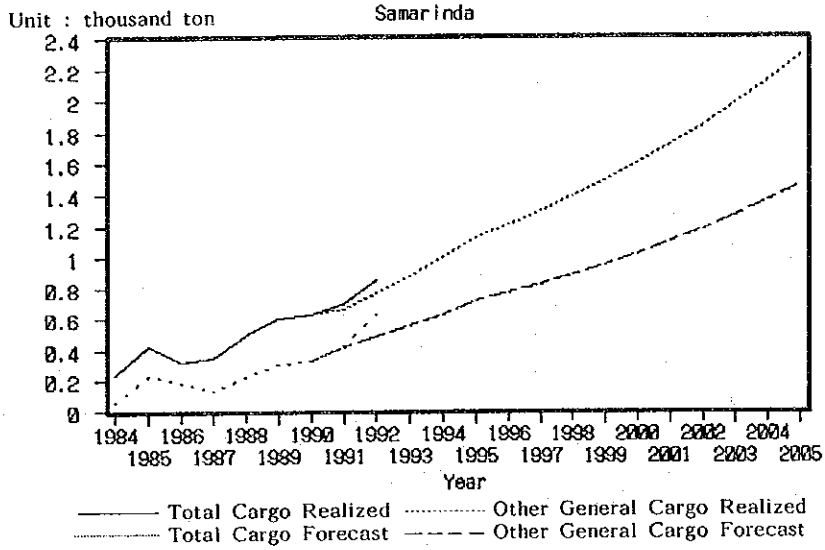
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	312,980	271,727	305,878	315,283	295,249	402,781	315,432	457,450	1,423,703
Unitized							55,060	64,164	115,448
Roll							3,879	2,763	
Solid Bulk									203,495
Liquid Bulk									
Bag Cargo							47,266	46,009	131,302
Drum							16,496	16,905	
Container	6,416	8,346	2,876	5,968	1,671	3,547	6,785	9,990	2,756
Total	319,396	280,073	308,754	321,251	296,920	406,328	444,918	597,281	1,876,704



7 Samarinda

Unit : ton

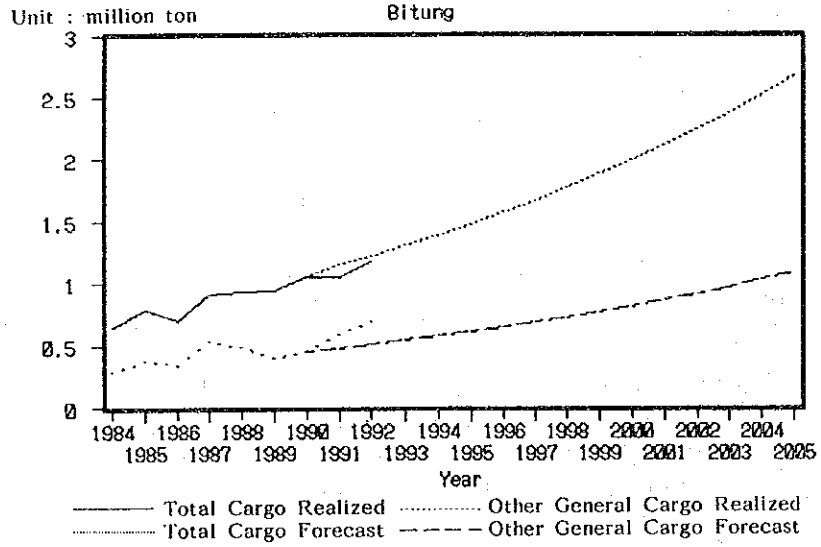
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	23,610	194,249	155,882	93,256	164,982	244,211	269,600	371,818	531,091
Unitized	35,224	37,237	26,303	40,859	54,400	58,712	59,114	53,780	55,727
Roll									
Solid Bulk									
Liquid Bulk									
Bag Cargo	165,594	175,058	123,645	192,084	255,743	276,014	277,902	253,253	220,954
Drum	13,499	14,267	10,077	15,655	20,843	22,495	22,249	20,780	
Container									45,534
Total	237,927	420,811	315,907	341,854	495,968	601,432	628,865	699,631	853,306



8 Bitung

Unit : ton

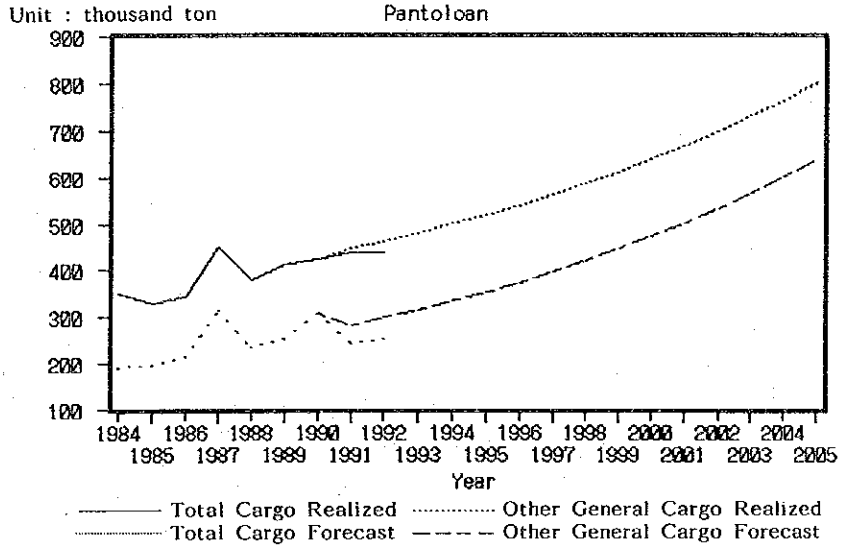
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	255,966	351,436	321,540	486,861	413,849	303,358	354,601	462,340	547,527
Unitized	24,651	12,954	14,001	24,133	28,400	40,737	47,590	55,498	64,968
Roll	683	724	822	629	4,194	6,259	4,313	3,680	
Solid Bulk	38,933	101,594	79,886	83,146	60,426	65,073	89,625	85,836	69,209
Liquid Bulk	8,830	29,082			29,540	89,683	146,740		52,215
Bag Cargo	289,939	259,450	254,999	285,366	356,580	364,216	338,852	352,464	372,649
Drum	14,835	15,182	18,856	5,116	4,283	22,987	21,211	24,052	
Container	8,850	10,149	11,130	21,294	35,916	47,668	48,186	67,590	70,226
Total	642,687	780,571	701,234	906,545	933,188	940,001	1,051,118	1,051,460	1,176,794



9 Pantoloan

Unit : ton

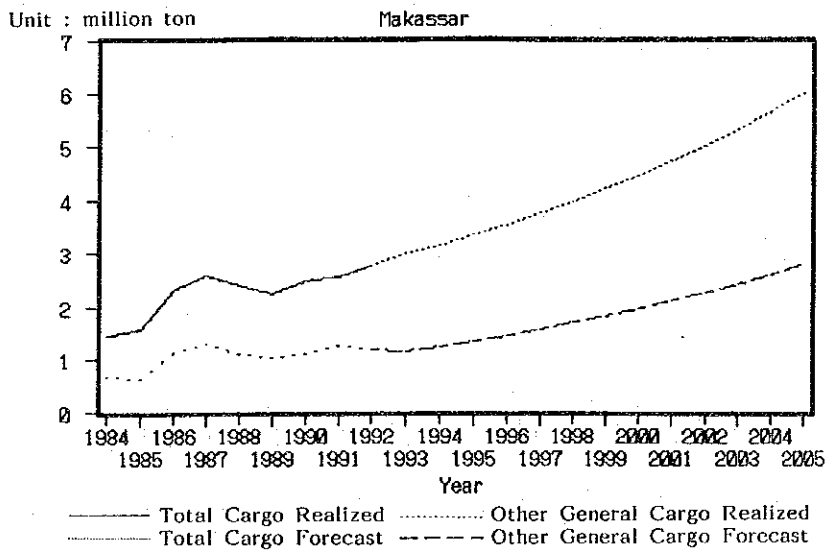
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	182,082	187,276	206,043	299,972	222,626	244,923	287,285	224,306	235,002
Unitized	10,359	9,411	8,959	14,223	12,911	7,719	23,256	20,846	18,636
Roll									
Solid Bulk									
Liquid Bulk								4,172	3,792
Bag Cargo	155,491	132,496	129,742	135,335	140,321	149,937	105,053	189,706	183,327
Drum	2,392	1,908	1,421	2,540	4,168	9,733	7,721		
Container									
Total	350,324	331,091	346,165	452,070	380,026	412,312	423,315	439,030	440,757



10 Uj.Pandang

Unit : ton

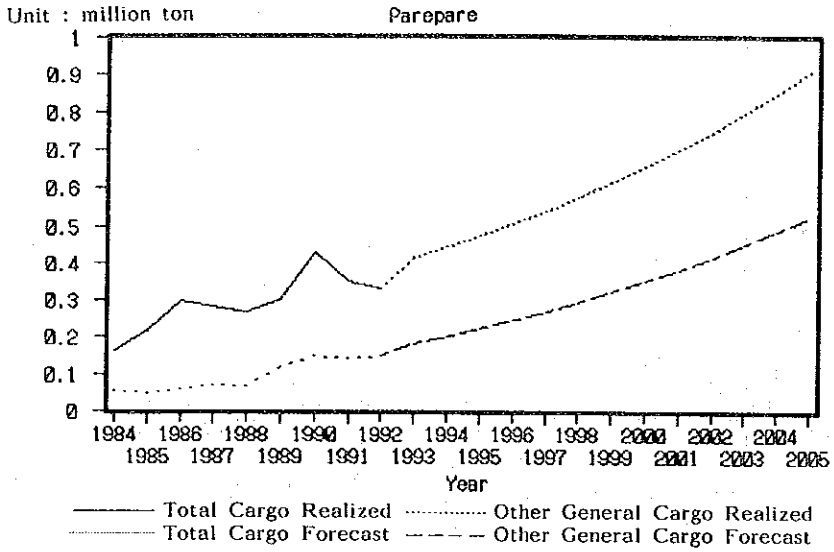
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	611,878	554,351	962,578	1,097,400	1,009,303	925,653	957,136	906,064	934,275
Unitized	33,662	89,892	147,927	152,538	59,965	32,463	55,245	152,671	
Roll	33,021	10,574	20,628	26,072	17,921	14,501	18,676	6,571	
Solid Bulk	334,797	473,965	624,582	682,880	476,358	382,778	349,318	347,077	495,119
Liquid Bulk		3,789	11,939	19,900	69,949	56,509	52,763	32,880	84,021
Bag Cargo	376,319	369,991	484,419	582,469	716,639	582,081	729,752	893,320	852,883
Drum	50,576	69,914	62,232	25,491	30,826	190,511	234,007	24,609	154,614
Container	4,364	2,001	4,158	6,001	17,628	64,276	70,366	190,821	248,674
Total	1,444,617	1,574,477	2,318,463	2,592,751	2,398,589	2,248,772	2,467,263	2,554,013	2,769,586



11 Pare-Pare

Unit : ton

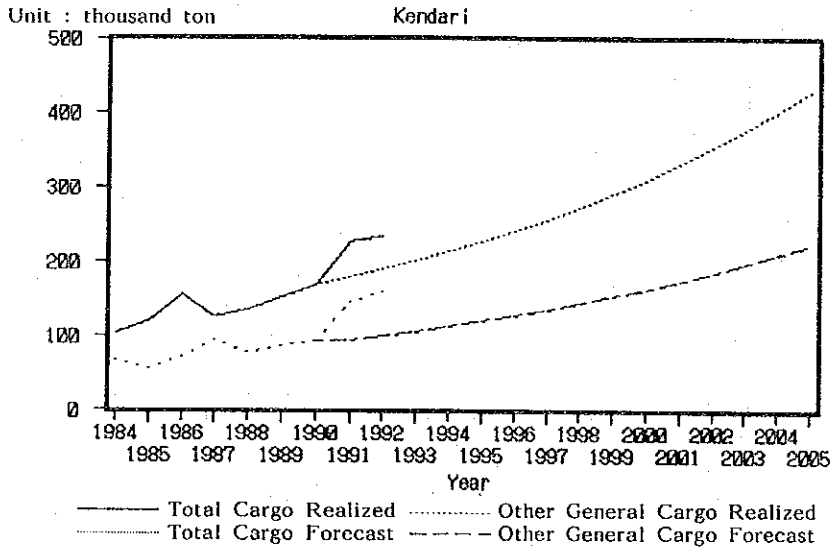
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	24,695	21,690	18,583	25,785	28,095	50,180	82,416	80,220	74,627
Unitized	30,955	24,733	39,299	45,975	37,600	68,591	65,022	60,318	73,410
Roll									
Solid Bulk	13,000	9,250		3,500					
Liquid Bulk	2,957	2,374			25,487			11,271	11,464
Bag Cargo	92,344	159,710	235,529	203,383	168,370	170,729	276,050	191,558	168,003
Drum			2,778	2,666	4,638	9,224	5,054	5,000	
Container									
Total	163,951	217,757	296,189	281,309	264,390	298,724	428,542	348,367	327,504



12 Kendari

Unit : ton

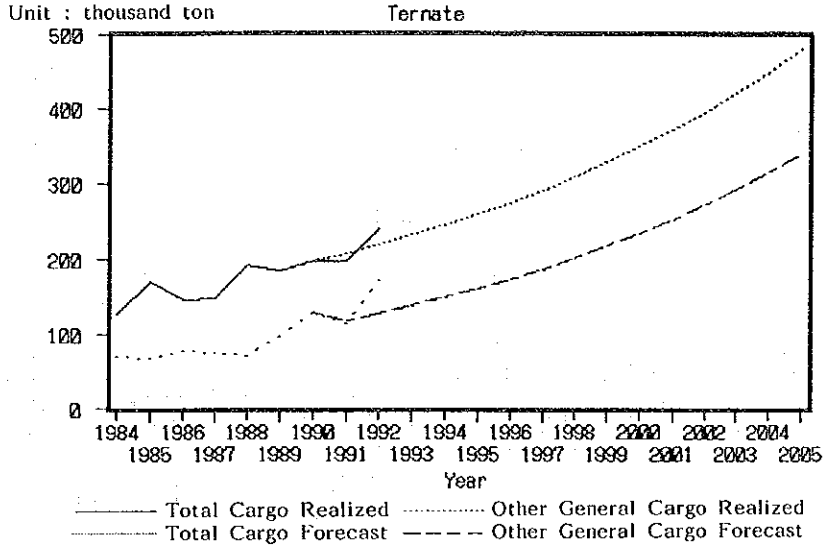
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	66,051	54,444	71,636	94,129	76,703	86,977	92,758	146,214	159,121
Unitized									
Roll									
Solid Bulk	2,742	12,400	18,480				7,000	9,391	9,250
Liquid Bulk								583	
Bag Cargo	35,005	52,272	65,763	32,182	52,842	62,097	64,784	69,407	66,260
Drum		45			5,247	2,928	4,071	1,161	
Container									
Total	103,798	119,161	155,879	126,311	134,792	152,002	168,613	226,756	234,631



13 Ternate

Unit : ton

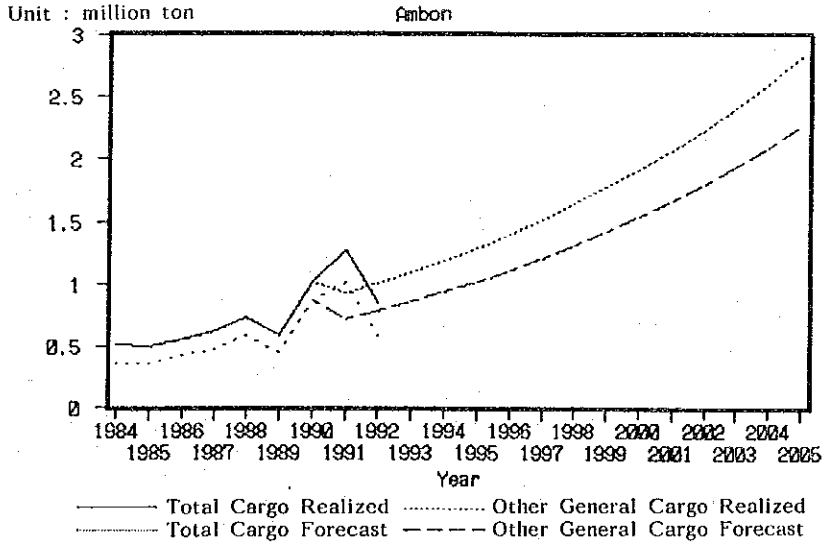
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	70,743	68,057	78,145	76,337	72,312	97,639	128,360	113,971	171,981
Unitized									
Roll									
Solid Bulk									
Liquid Bulk	49,125	66,331	53,582	29,532	57,369	62,941	66,990	83,194	67,044
Bag Cargo	6,180	29,837	11,846	37,339	53,768	23,645	2,134		
Drum	2,114	5,614	2,489	4,812	8,303	1,080			
Container							144	506	218
Total	128,162	169,839	146,062	148,020	191,752	185,305	197,628	197,671	239,243



14 Ambon

Unit : ton

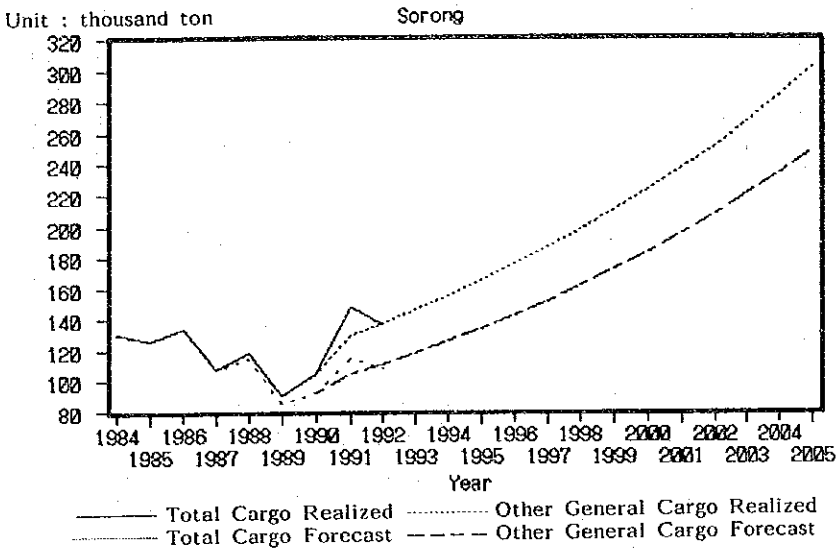
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	168,000	149,000	143,000	157,000	159,000	151,000	243,000	571,000	576,000
Unitized	185,000	204,000	278,000	321,000	429,000	288,000	622,000	442,000	
Roll									
Solid Bulk									
Liquid Bulk									
Bag Cargo	146,000	131,000	129,000	134,000	136,000	147,000	133,000	210,000	275,000
Drum	7,000	9,000	4,000	6,000	5,000	3,000	10,000	49,000	
Container							5,000	4,000	6,000
Total	506,000	493,000	554,000	618,000	729,000	589,000	1,013,000	1,276,000	857,000



15 Sorong

Unit : ton

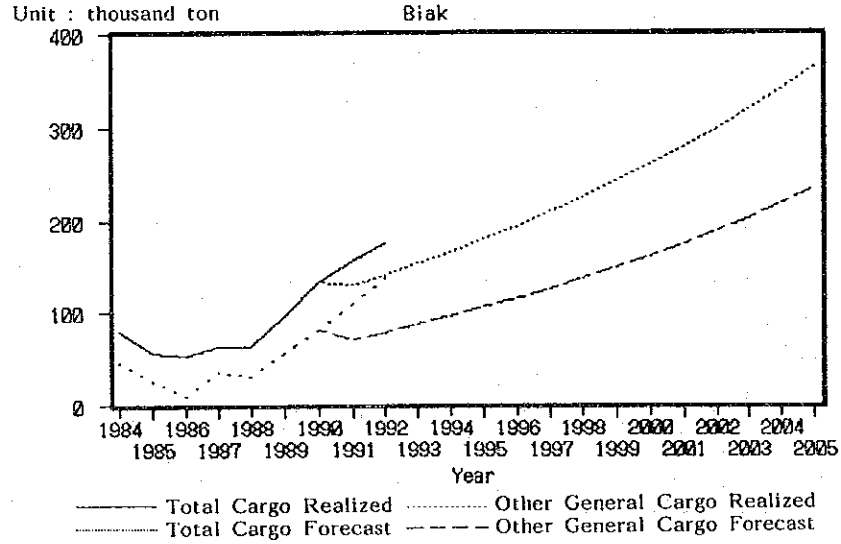
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	130,716	126,059	134,307	107,548	108,232	82,524	88,184	110,034	102,400
Unitized					5,497	1,942	2,858	1,934	1,003
Roll					27		38		
Solid Bulk					72		5,852	24,671	28,556
Liquid Bulk	263,359	264,380	95,261						
Bag Cargo									
Drum					3,226	5,233	6,330	9,214	
Container				327	644	962	1,195	2,646	4,701
Total	394,075	390,439	229,568	107,875	117,698	90,661	104,457	148,499	138,660



16 Biak

Unit : ton

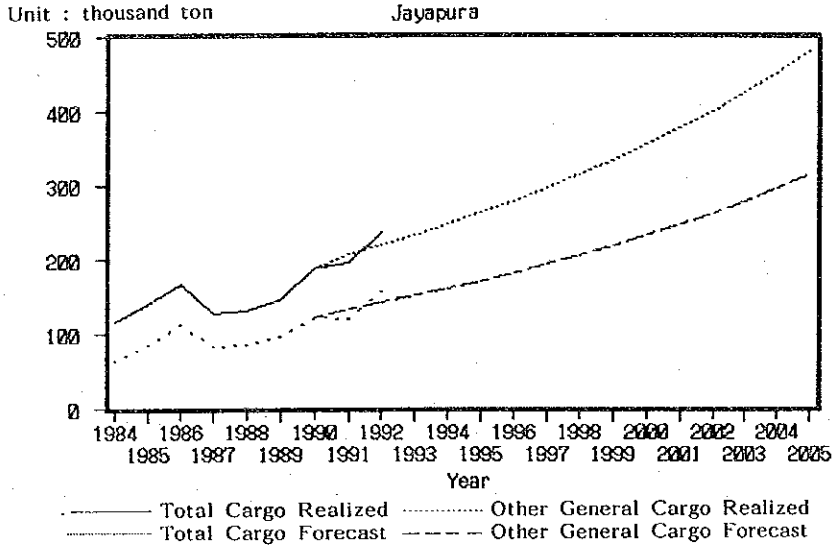
	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	40,895	20,881	1,213	27,647	26,786	47,854	67,788	87,745	122,141
Unitized	3,606	2,636	7,850	5,561	2,883	2,540	2,668	4,208	5,902
Roll	629	745	515	675	496	676	216	1,021	
Solid Bulk	11,798	8,630	17,930	11,119	23,925	20,167	22,812	14,309	7,129
Liquid Bulk									
Bag Cargo	17,908	18,831	12,103	13,799	6,730	17,425	21,605	25,600	31,106
Drum	5,135	3,751	13,245	2,813	2,349	1,422	7,103	7,255	
Container		600	230	1,207	802	5,200	10,114	15,686	9,671
Total	79,971	56,074	53,086	62,821	63,971	95,284	132,304	155,824	175,949



17 Jayapura

Unit : ton

	1984	1985	1986	1987	1988	1989	1990	1991	1992
General cargo	65,139	84,079	113,029	82,805	85,684	95,265	122,420	117,534	157,746
Unitized								1,814	
Roll									
Solid Bulk		6,050							4,603
Liquid Bulk							1,376		
Bag Cargo	44,818	44,279	47,071	38,764	39,168	44,840	55,514	68,732	74,190
Drum	5,572	5,621	6,409	5,160	5,222	5,978	8,068	7,947	
Container							55	10	2
Total	115,529	140,029	166,509	126,729	130,074	146,083	187,433	196,037	236,541



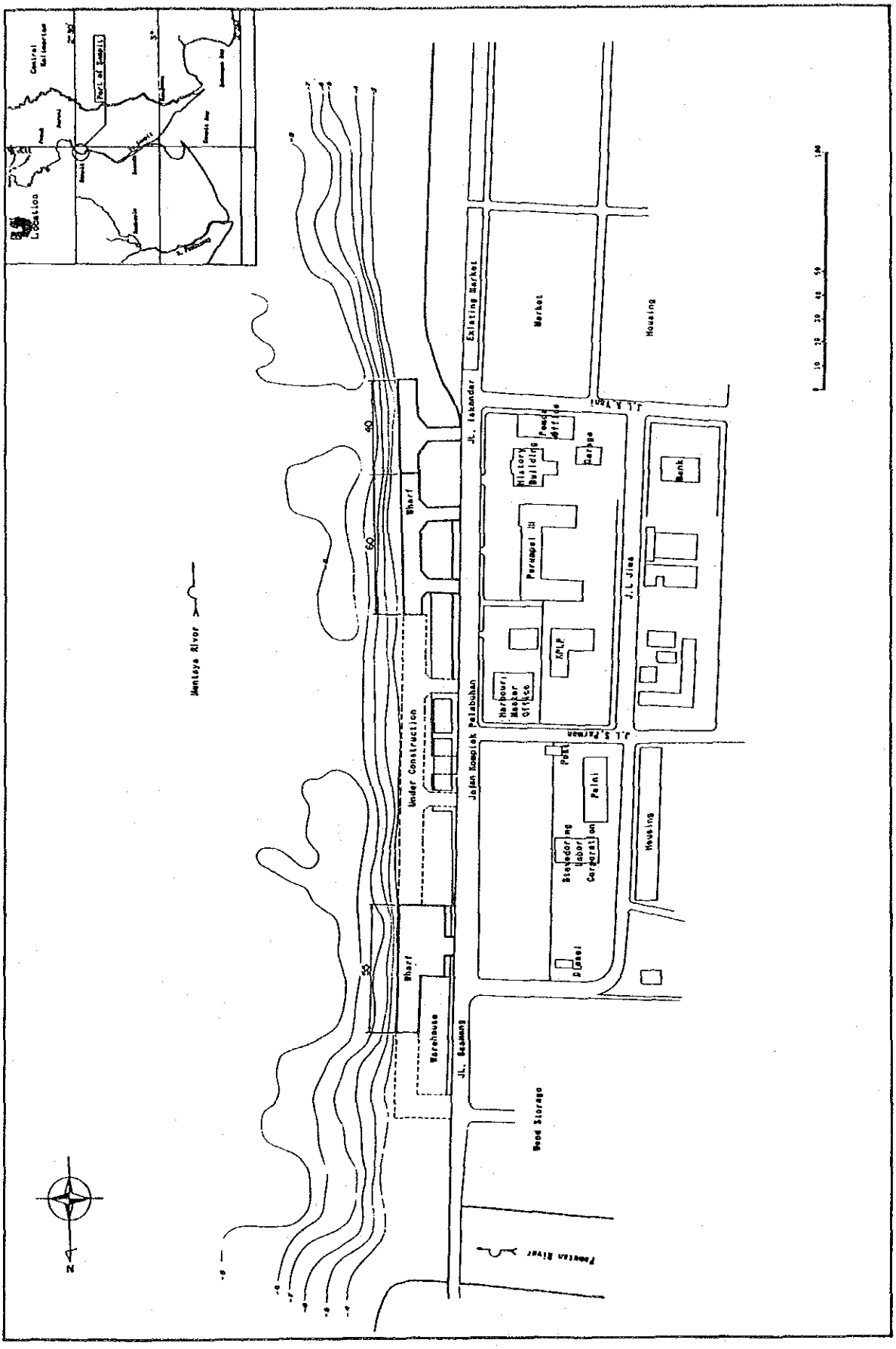
Unit : person

No.	Province	Port	1984	1985	1986	1987	1988	1989	1990	1991	1992
1	C. Kalimantan	Sampit	15,830	19,903	21,251	20,547	12,267	11,735	13,475	29,508	54,660
2	S. Kalimantan	Banjarmasin	57,909	65,871	54,043	107,203	129,289	147,021	158,845	193,048	246,180
3	W.N.T	Lember	2,053	2,170	5,698	70,562	66,634	34,500	28,711	47,421	40,745
4	E.N.T	Kupang	25,195	24,606	31,420	49,029	55,651	66,037	55,595	63,177	53,253
5	E. Timor	Dilli				703	840	14,315	24,849	21,066	55,215
6	E. Kalimantan	Balikpapan	110,250	122,337	122,314	137,738	135,883	225,376	224,202	299,939	458,170
7	E. Kalimantan	Samarinda	30,534	20,696	15,633	35,416	58,282	62,672	50,571	59,125	75,133
8	N. Sulawesi	Bitung	79,009	120,788	140,808	145,447	161,786	177,978	175,103	184,535	198,209
9	C. Sulawesi	Pantoloan	71,094	103,259	138,294	145,350	143,221	153,299	176,374	212,248	285,704
10	S. Sulawesi	Uj. Pandang	277,455	326,735	411,307	400,853	422,641	605,553	674,183	700,347	732,552
11	S. Sulawesi	Pare-Pare	62,272	86,583	69,675	84,508	118,150	89,486	148,076	158,381	198,894
12	SE. Sulawesi	Kendari	93,609	89,217	88,656	75,834	95,980	111,883	186,079	219,941	265,580
13	Maluku	Ternate	35,150	59,006	52,901	60,237	70,964	102,010	169,740	258,770	613,414
14	Maluku	Ambon	102,834	132,717	153,897	162,278	168,208	248,199	303,733	361,868	385,285
15	Irian Jaya	Sorong	25,057	87,831	99,573	106,141	123,527	131,209	142,583	144,843	168,813
16	Irian Jaya	Biak	8,127	8,094	7,368	10,429	12,642	14,900	14,119	27,273	37,213
17	Irian Jaya	Jayapura	22,491	60,576	79,345	74,037	84,730	82,377	85,873	92,043	102,748

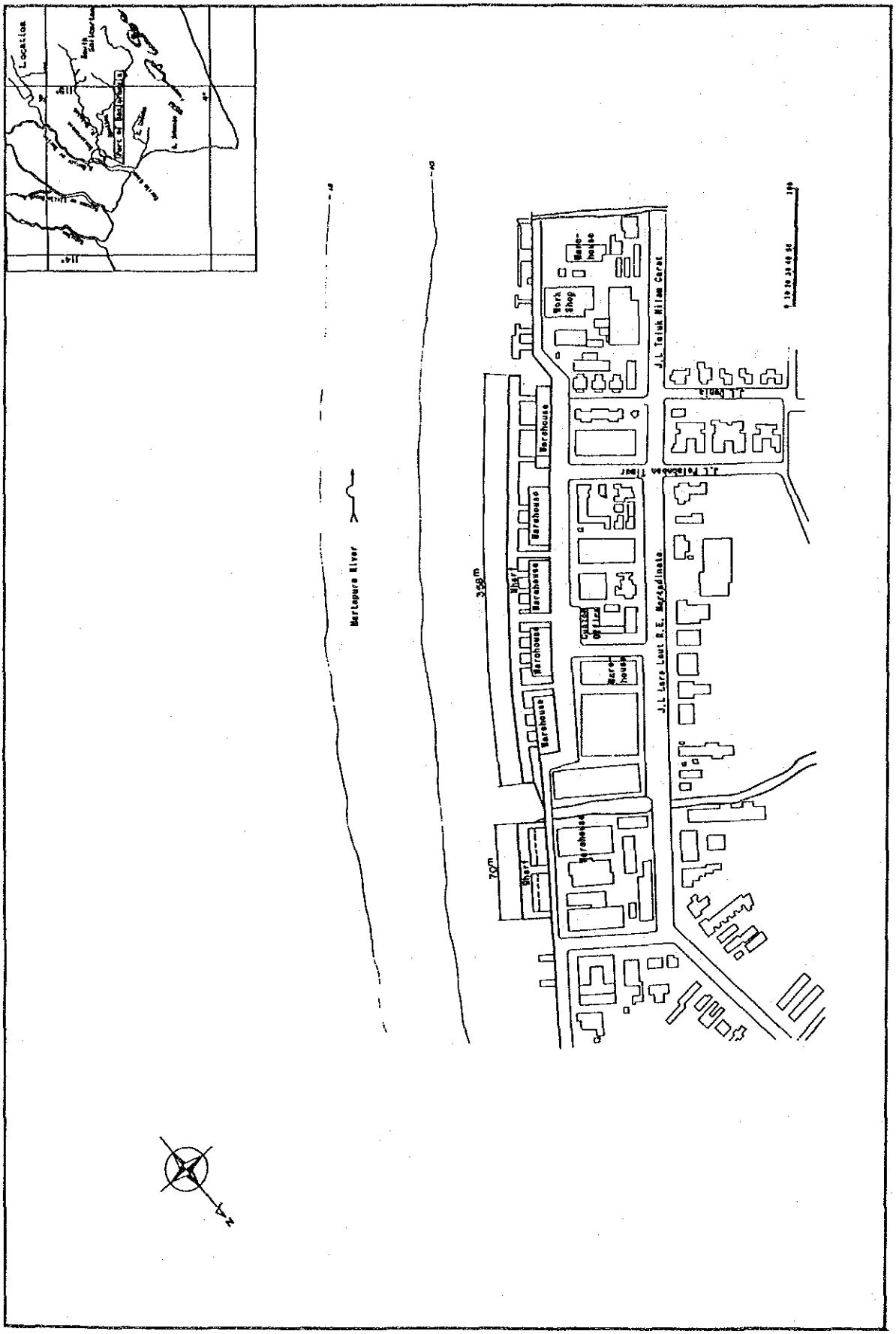
Source : PERSERO III,IV

Appendix 5-3 Figures of Over Middle Class Ports

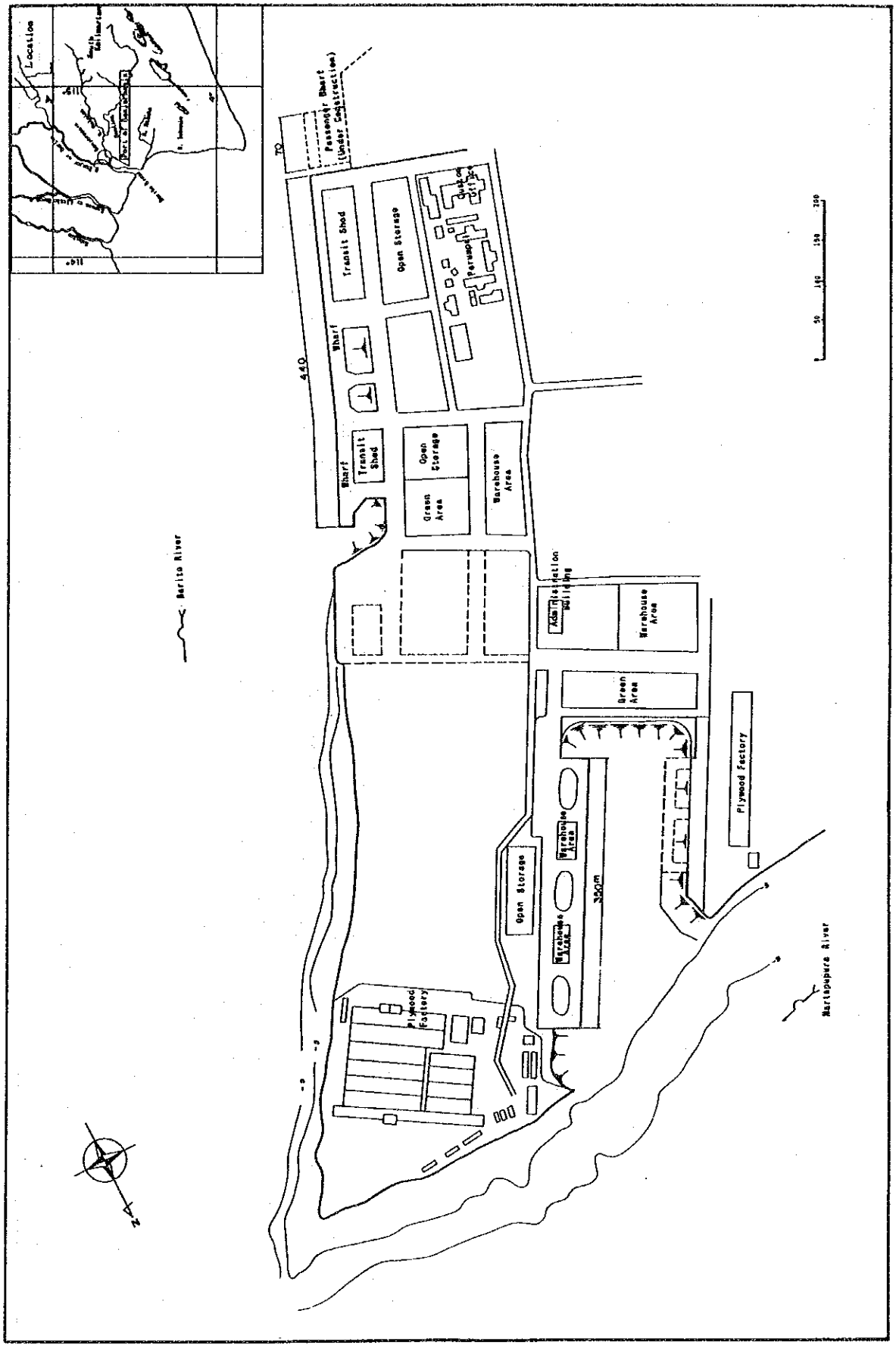
Port of Sampit



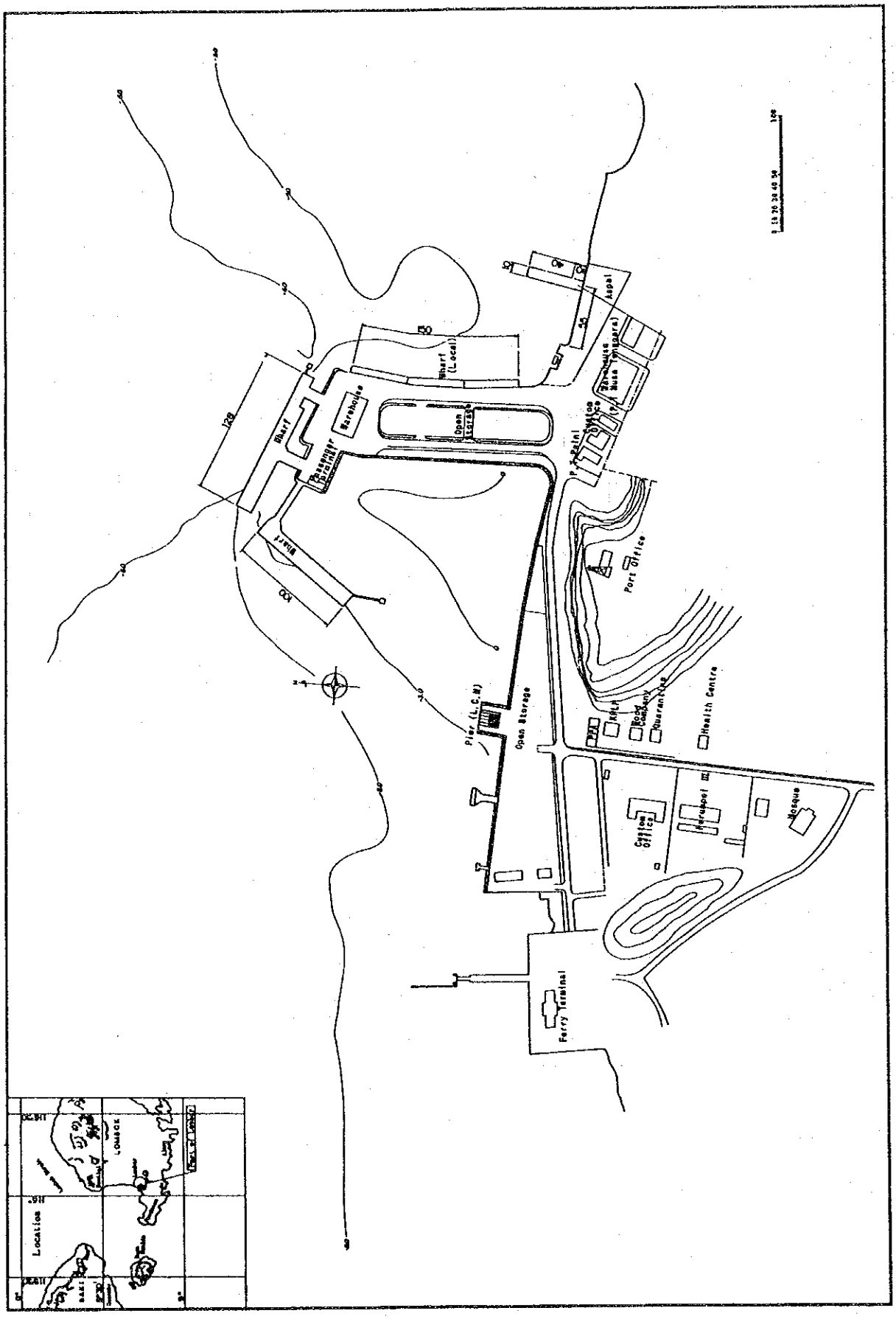
Port of Banjarmasin (Martapura)



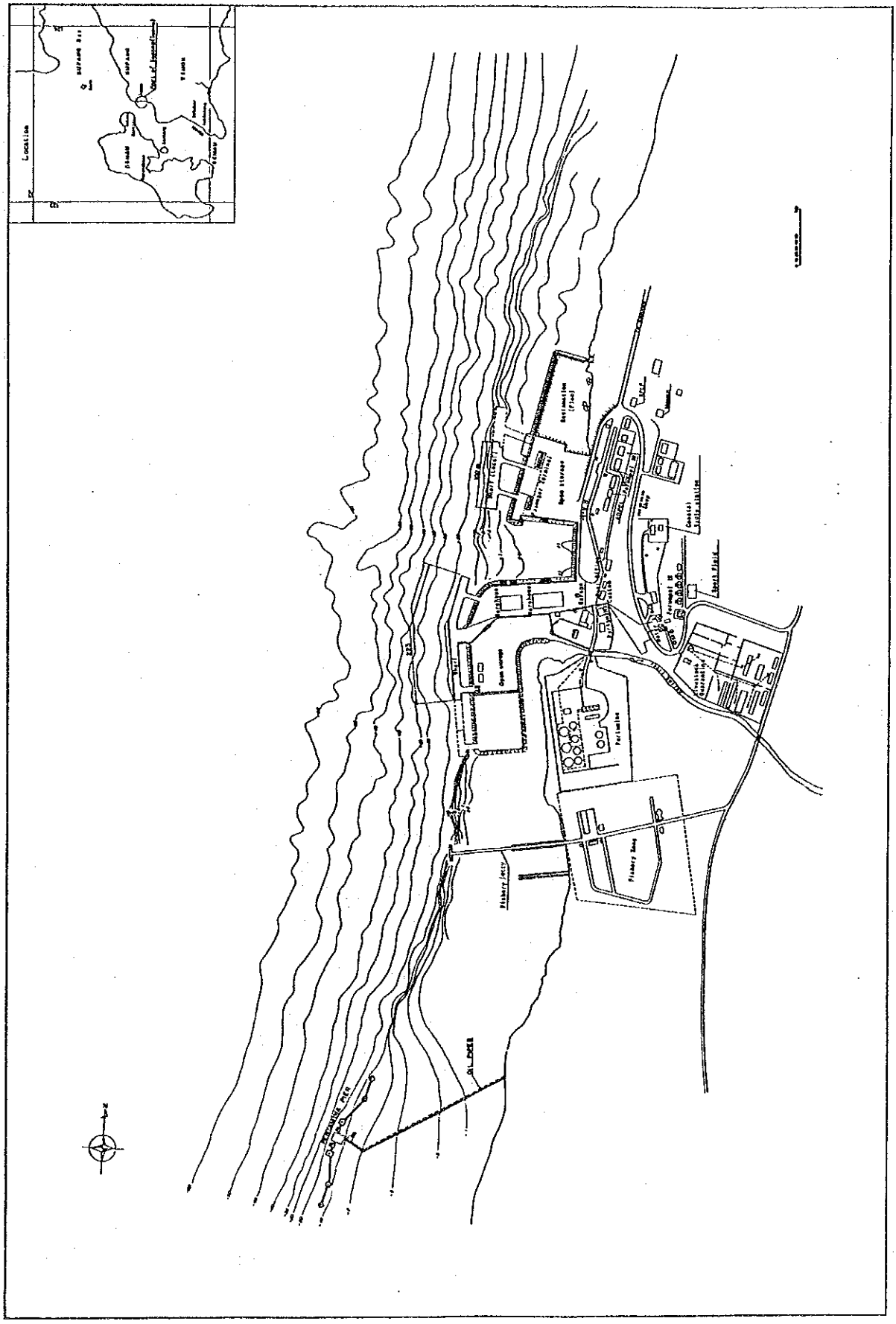
Port of Banjarmasin (Trisakti)



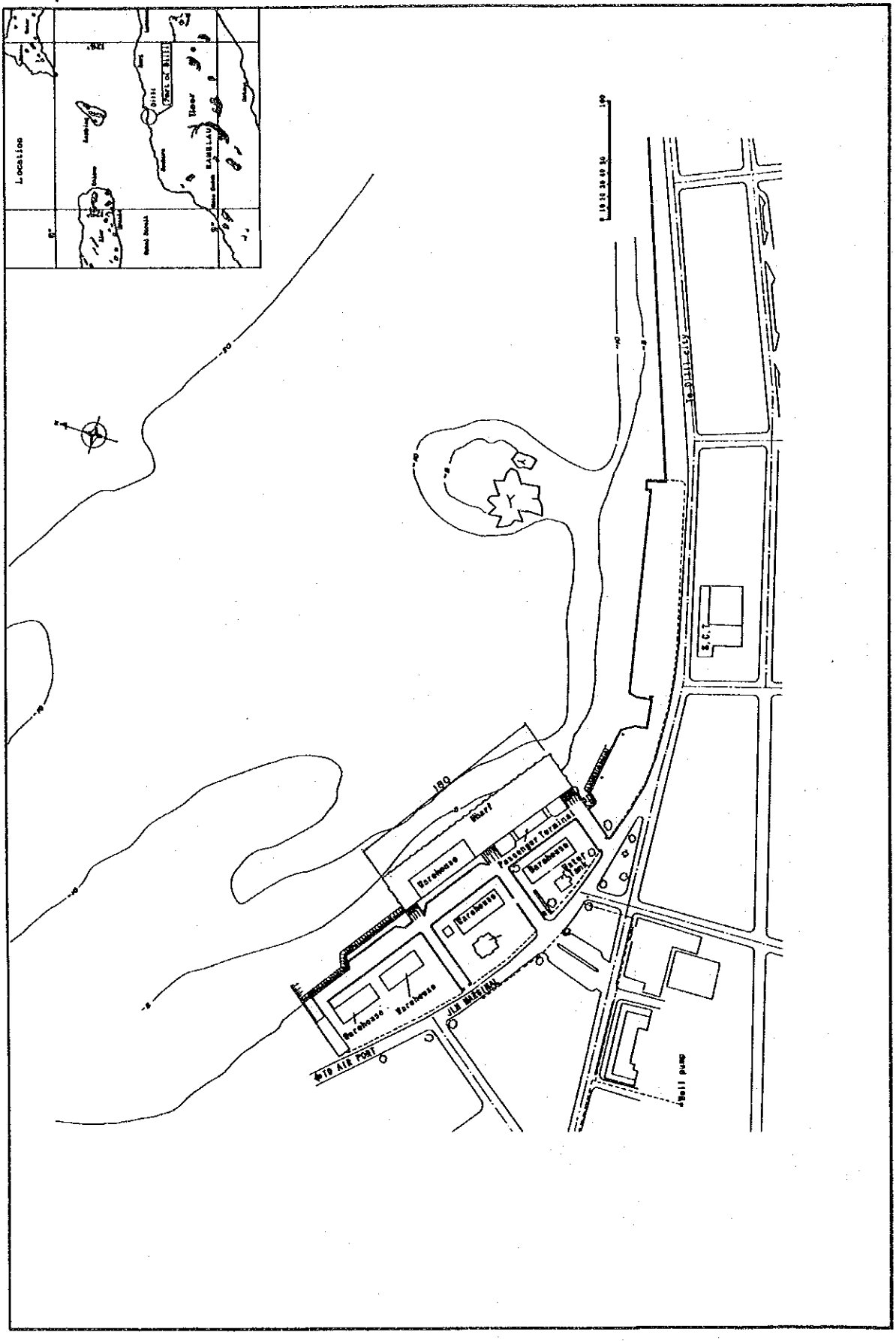
Port of Lembar



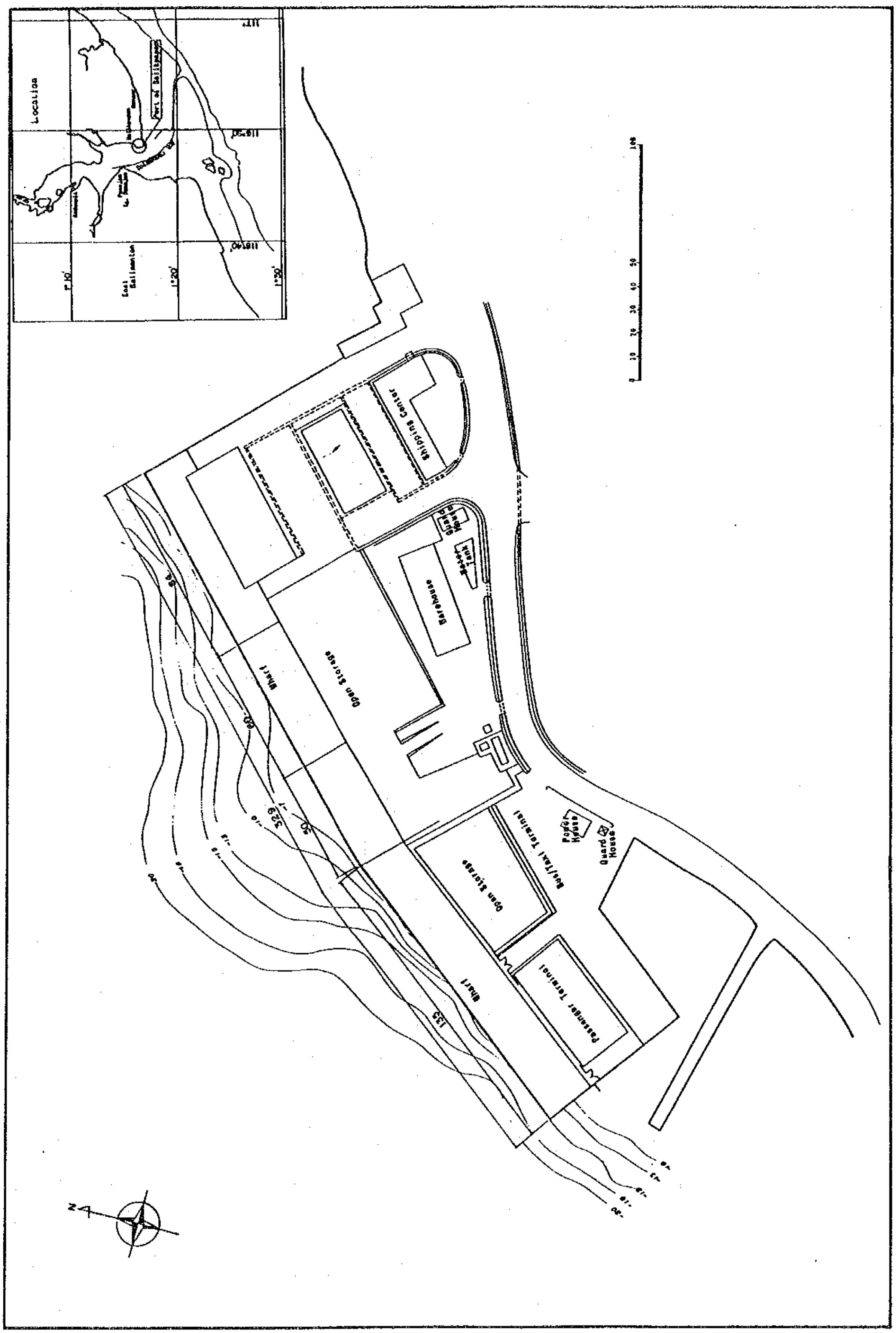
Port of Kupang



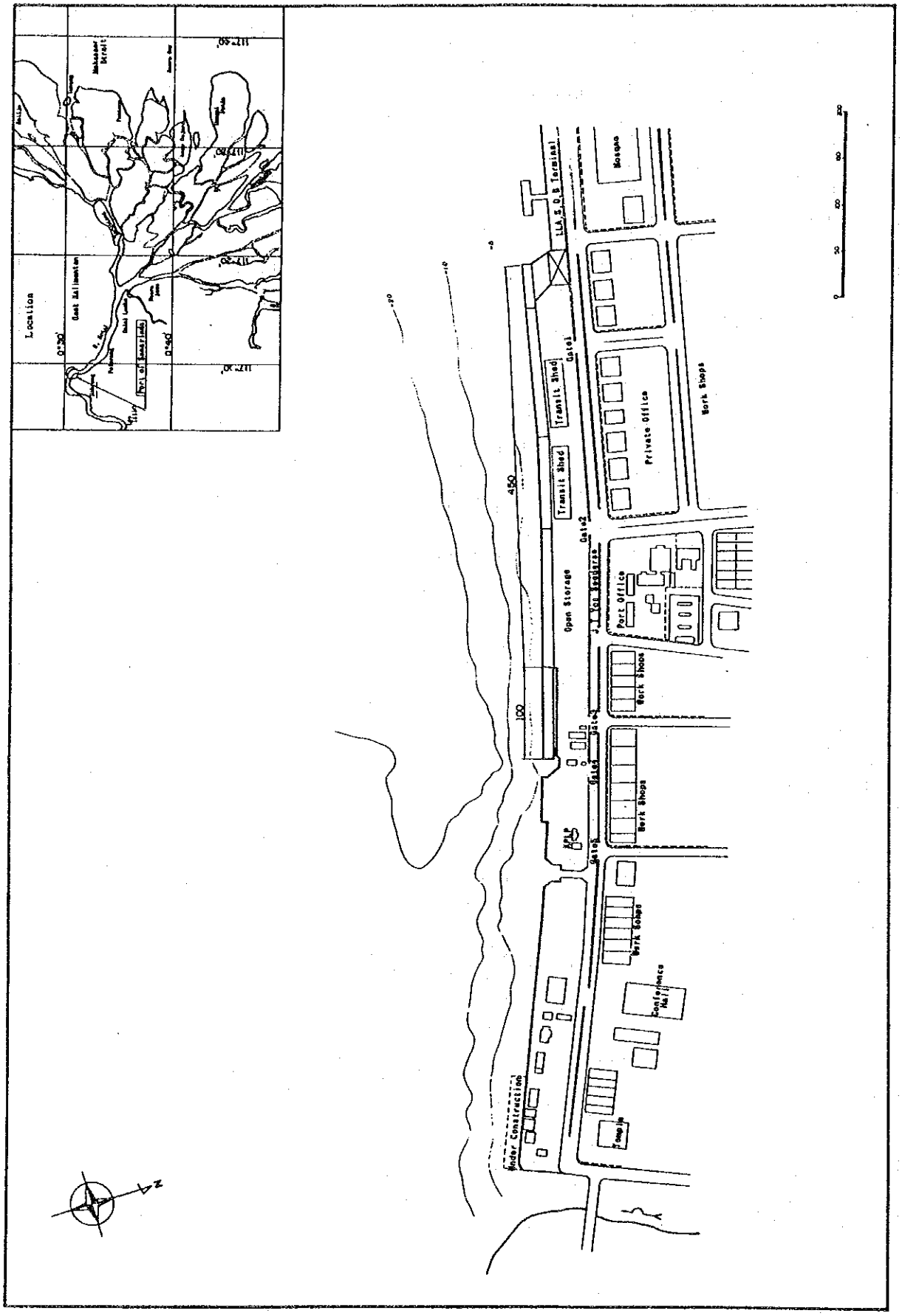
Port of Dilli



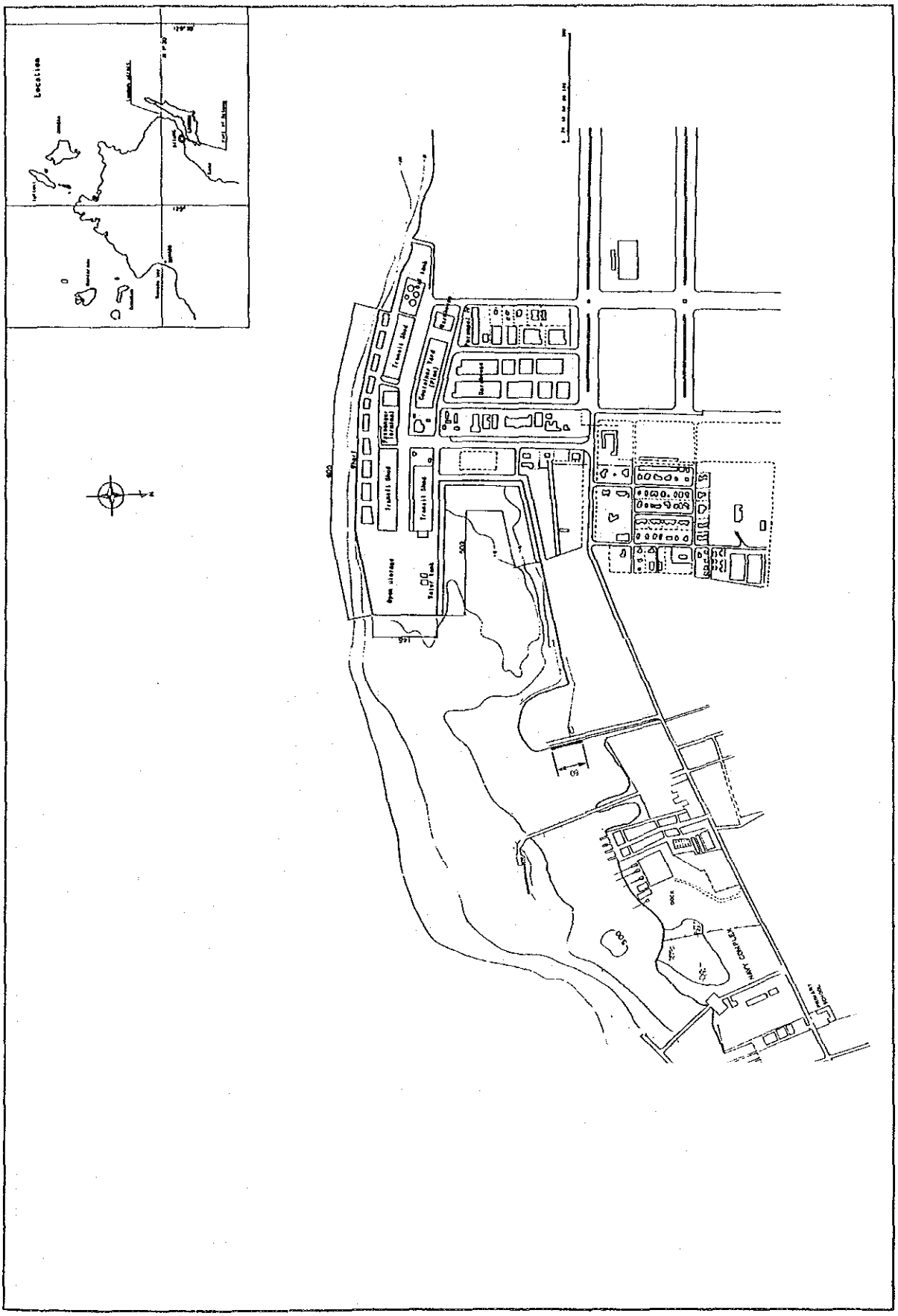
Port of Balikpanan



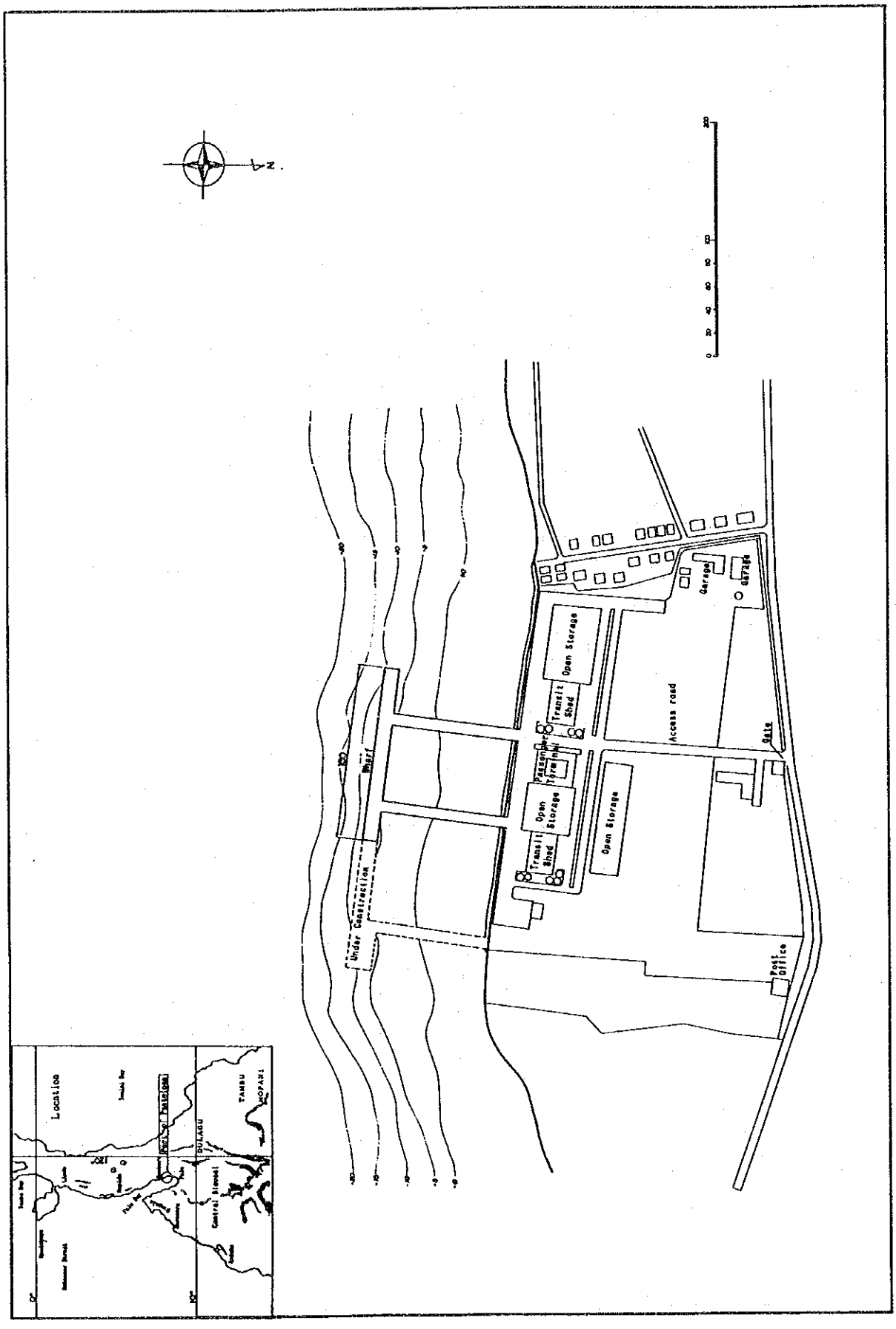
Port of Samarinda



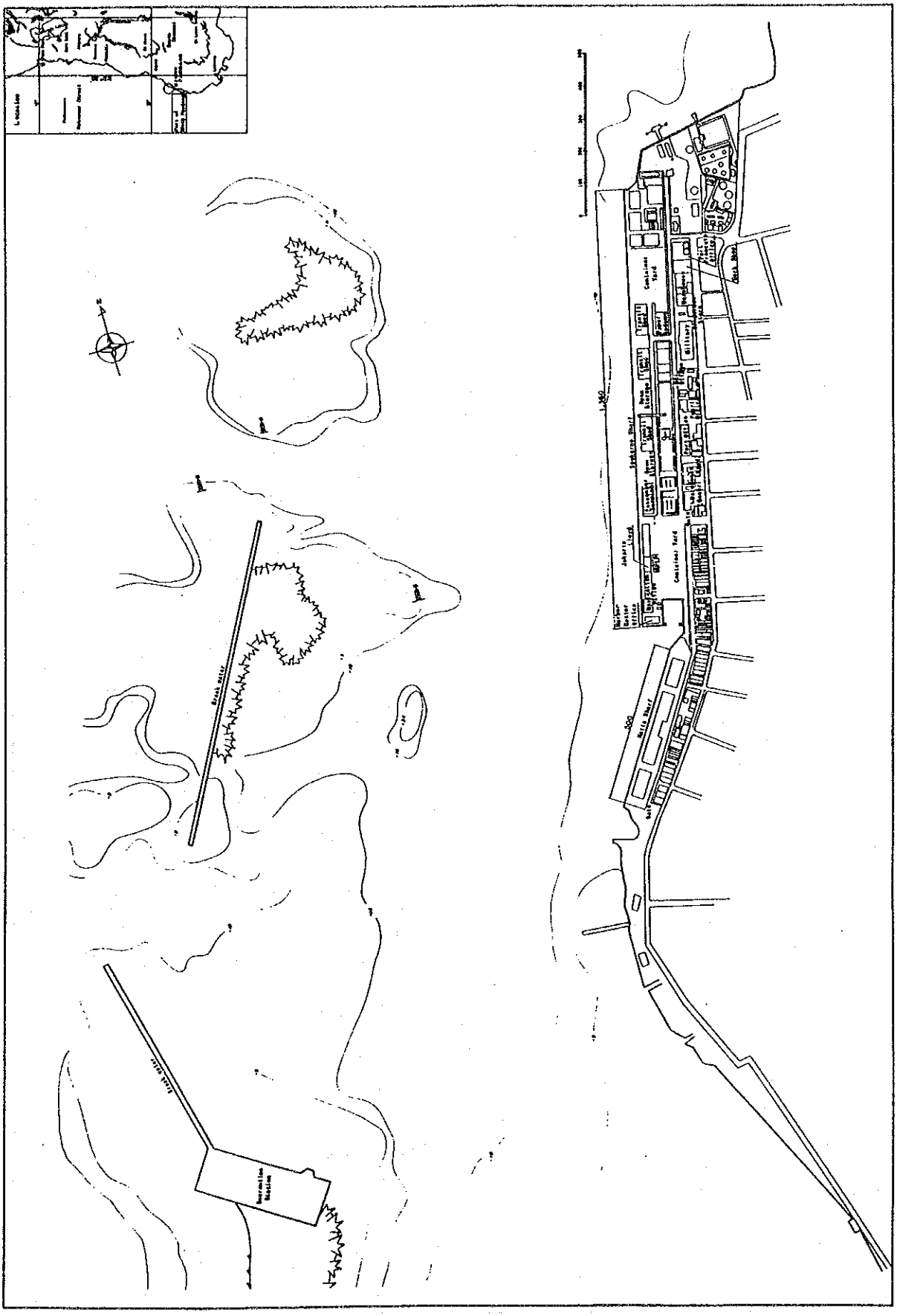
Port of Bitung



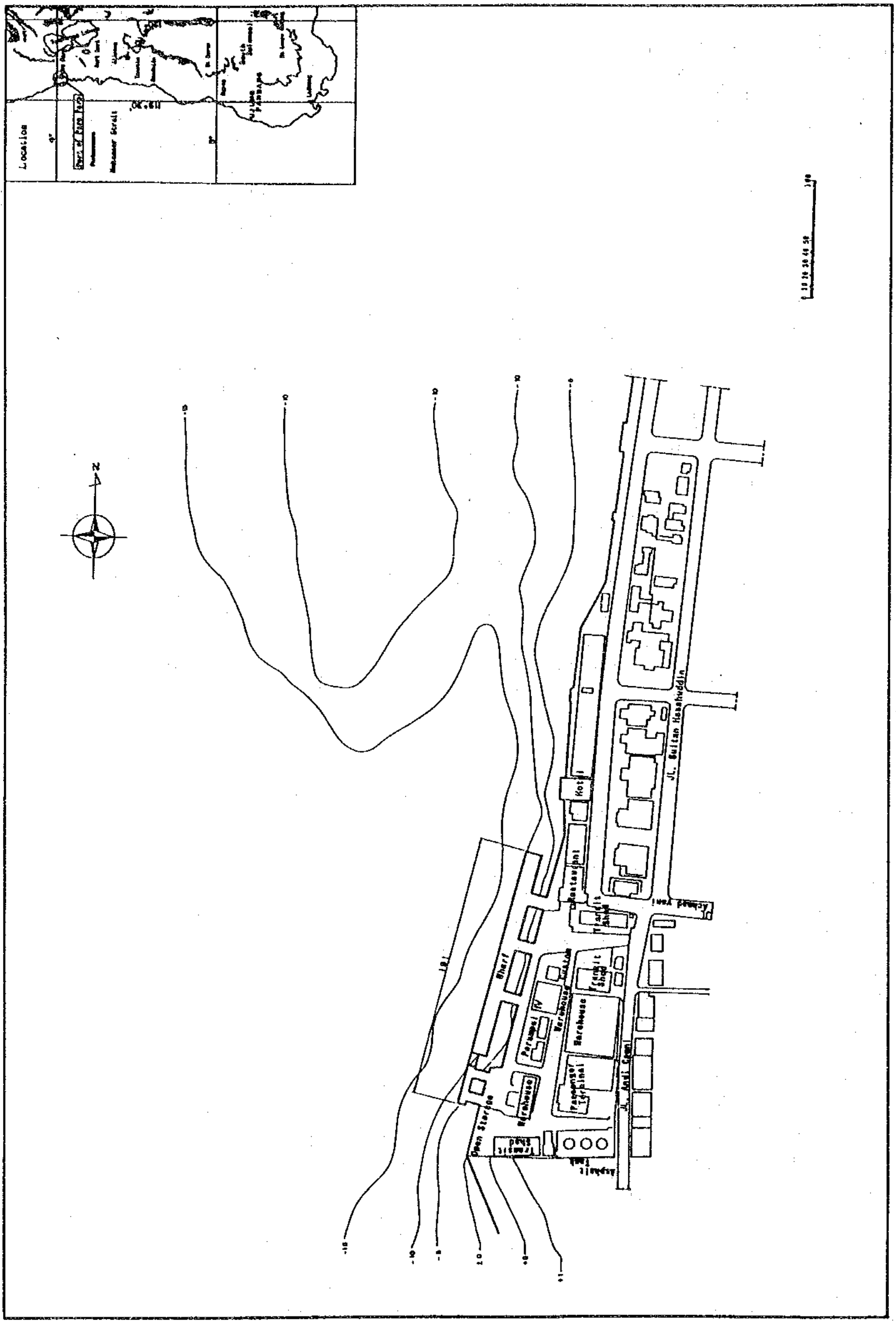
Port of Pantoloan



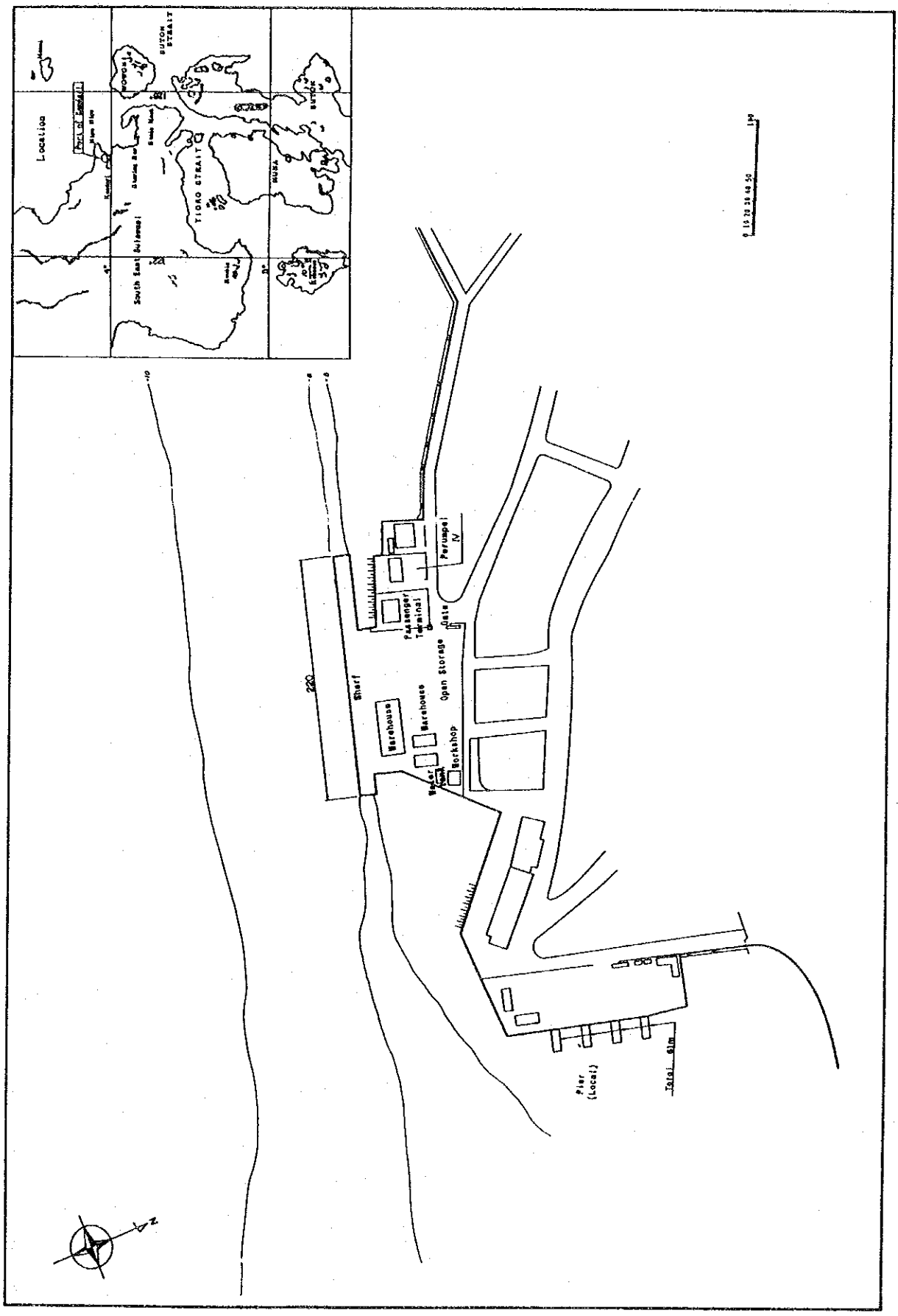
Port of Ujung Pandang



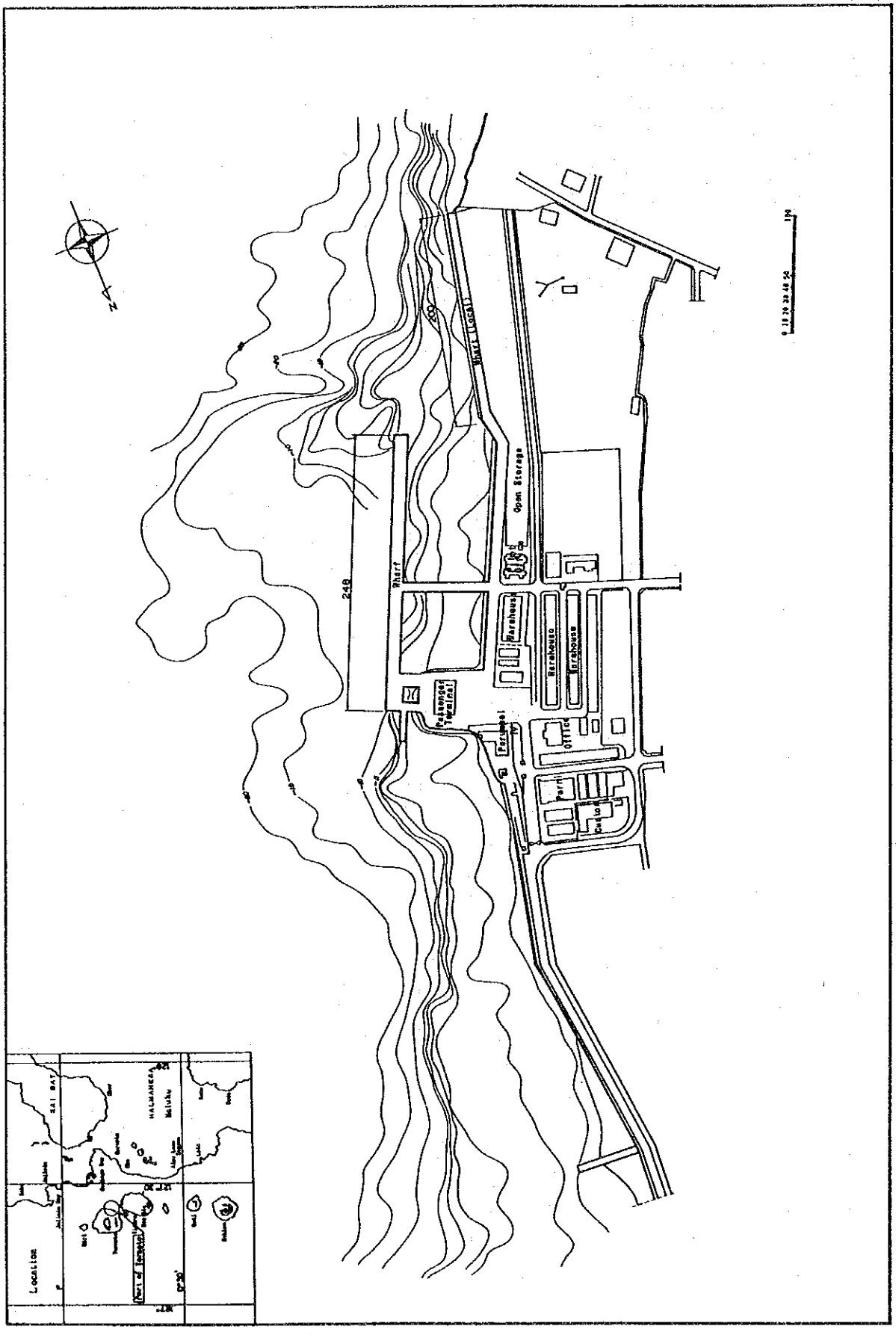
Port of Pare-pare



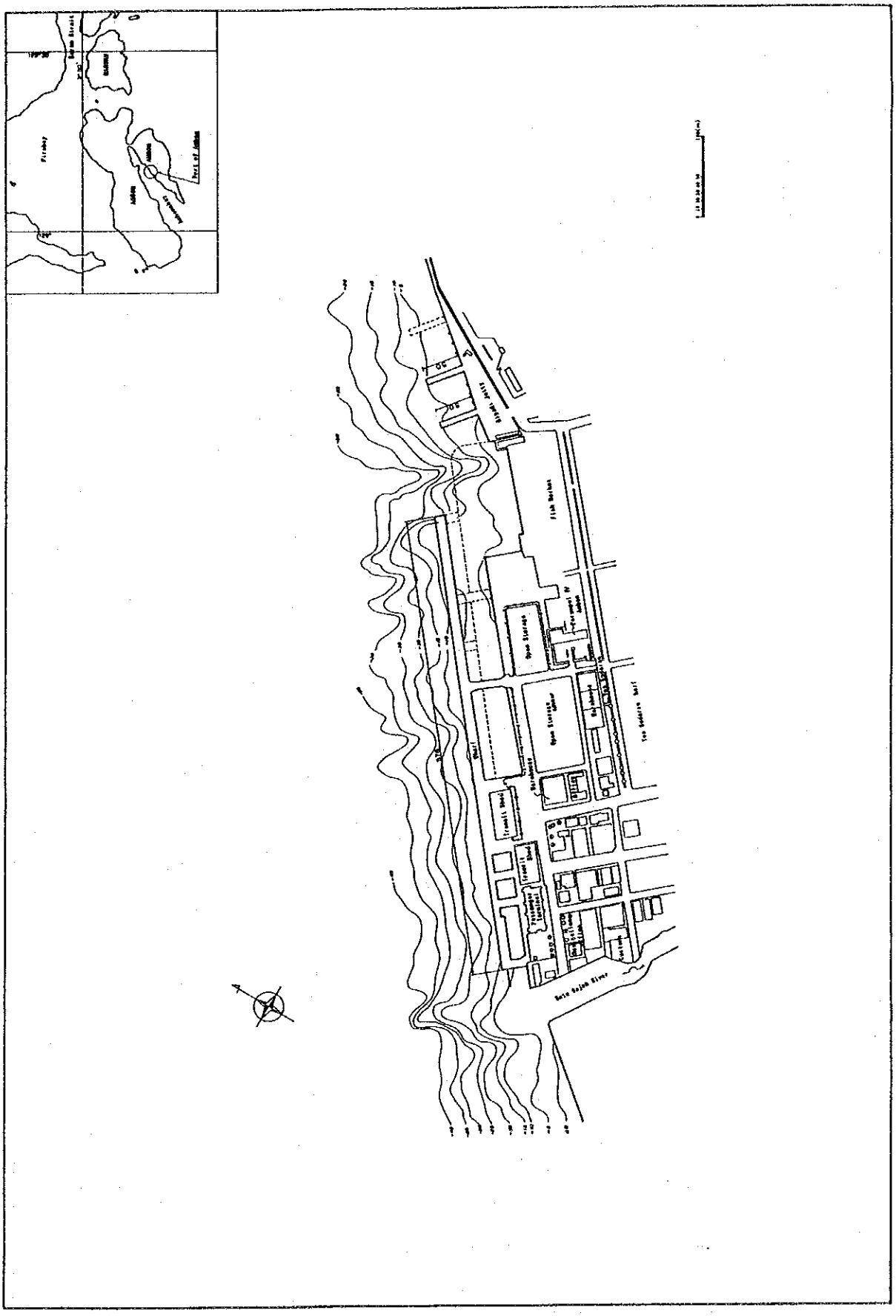
Port of Kendari



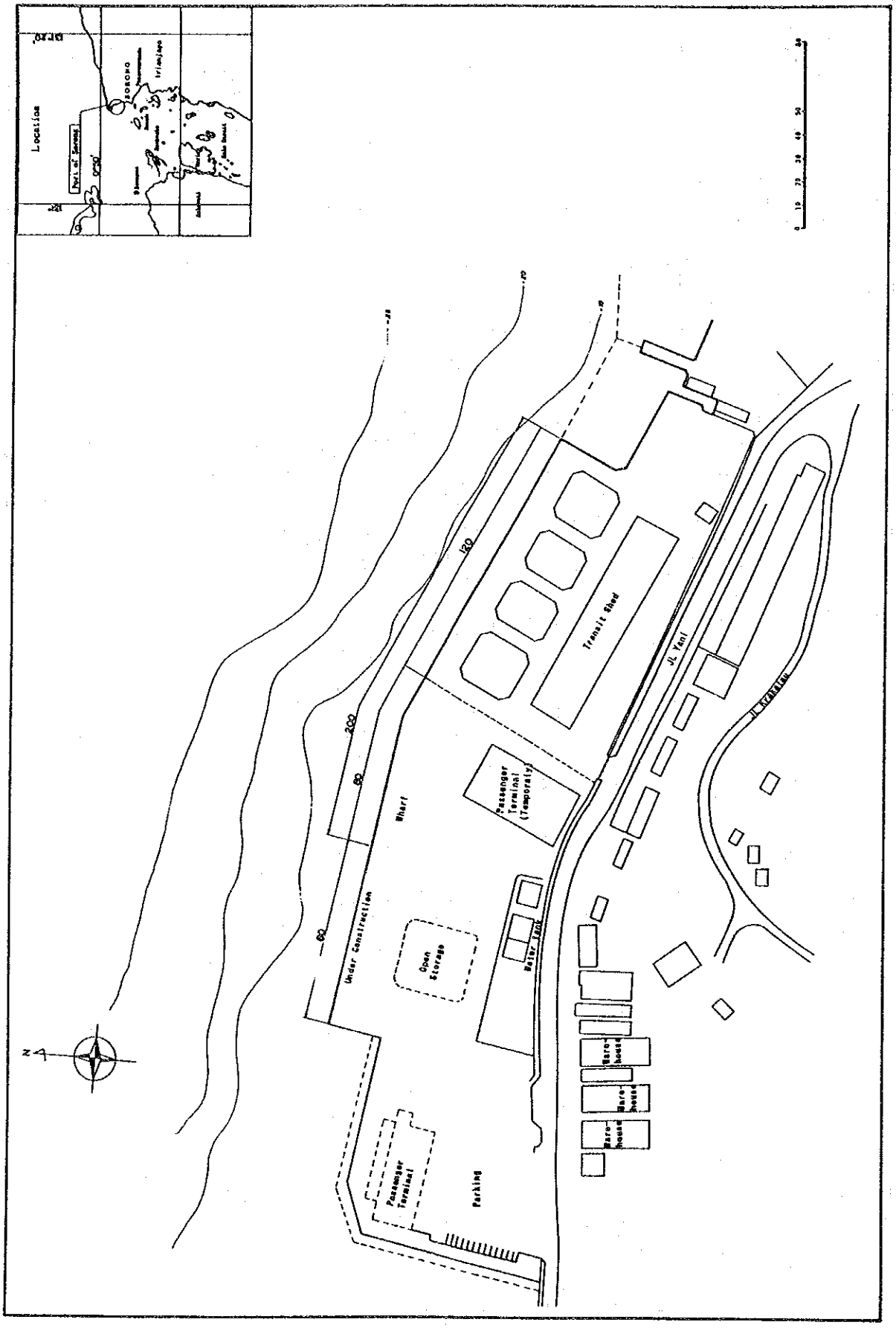
Port of Ternate



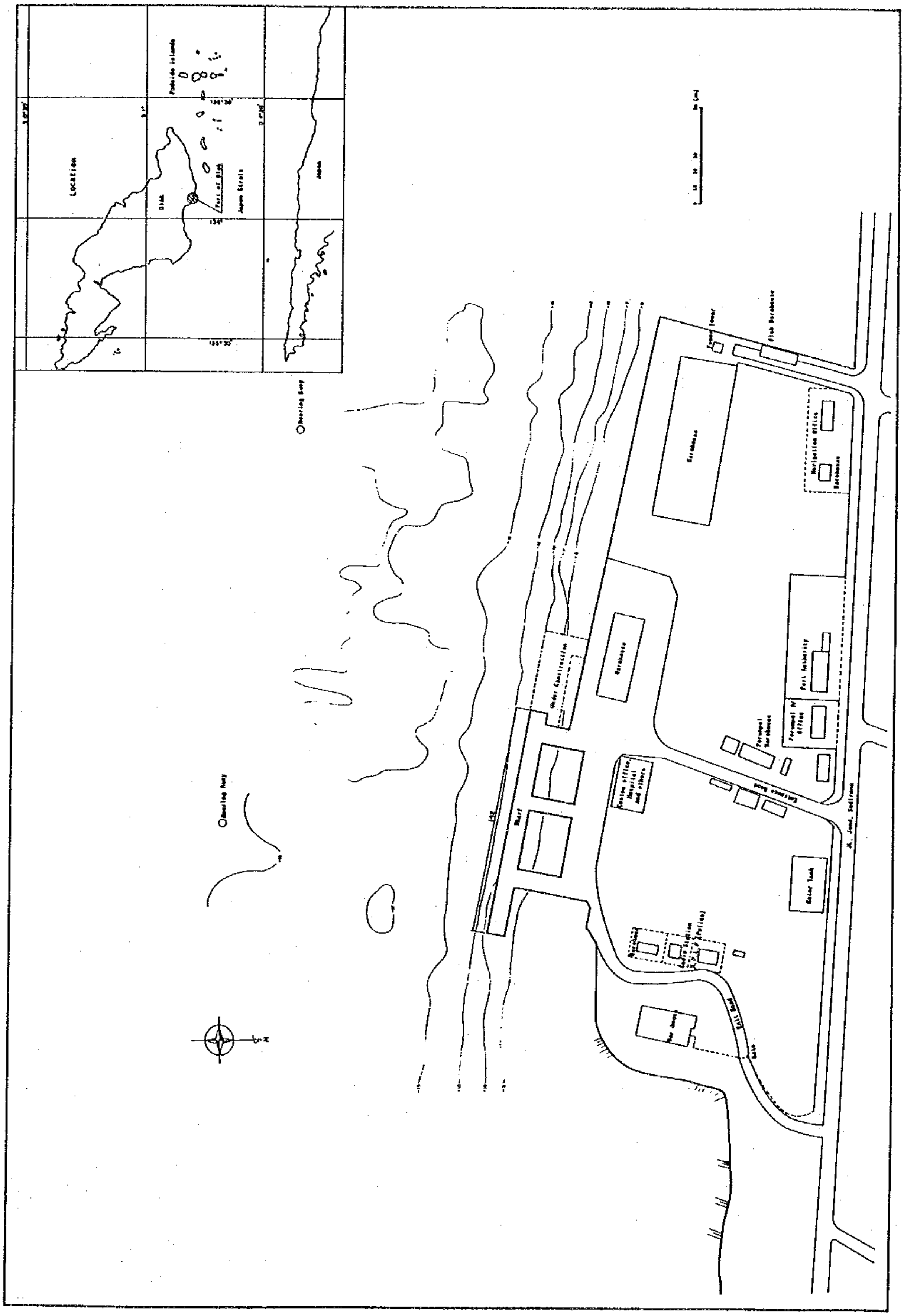
Port of Ambon



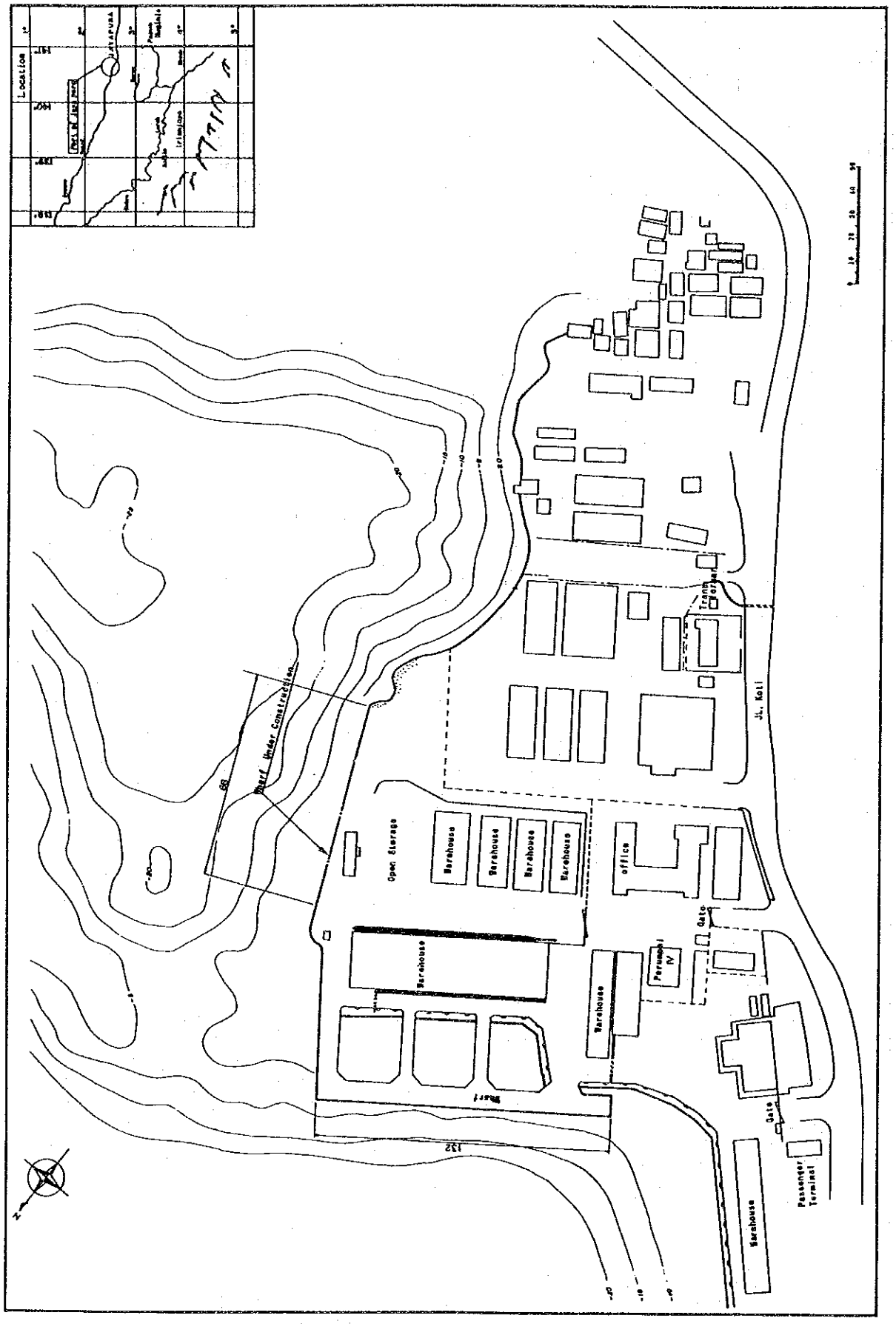
Port of Sorong



Port of Biak


Location
Port of Biak
Japen Strait
Mooring Buoy
Warehouse
Under Construction
Wharf
Port Authority
Water Tank

Port of Jayapura



Appendix 5-4 Initial Environmental Examination at Over Middle Class Ports

Result of Initial Environmental Examination (IEE)

[Port of Sanpit]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)			o	
	2)Offensive odours		o		
	3)Decrease of Aquatic/Marine Fauna and Flora			o	
	4)Pollution of Marine products		o		
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution			o	
	2)Impact to Terrestrial Ecosysten		o		
1.5 Employment	1)Influx of different cultures		o		
	2)Changes in Econonic activity		o		
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)		o		
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife	o			
	6)Changes to Landscape		o		
	7)Changes in Residential areas	o			
	8)Disappearance of Fishing grounds	o			
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)			o	
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)			o	
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jans, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Banjarmasin]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)				o
	2)Offensive odours			o	
	3)Decrease of Aquatic/Marine Fauna and Flora				o
	4)Pollution of Marine products			o	
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms			o	
	2)Changes to Ground water		o		
	3)Disappearance of Terrestrial Ecosystem		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution				o
	2)Impact to Terrestrial Ecosystem		o		
1.5 Employment	1)Influx of different cultures			o	
	2)Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)			o	
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current			o	
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape				o
	7)Changes in Residential areas			o	
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current			o	
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora			o	
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution			o	
	2)Water Pollution (Bilge water)				o
	3)Coast erosion by vessel wave			o	
	4)Appearance of Wastes (including Dredging soil)				o
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution			o	
	2)Water Pollution and Sediment Pollution			o	
	3)Noise level		o		
	4)Offensive odours			o	
	5)Changes of Aquatic Ecosystem			o	
	6)Appearance of Wastes			o	
	7)Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
	4)Changes of Distributed Population in Planning area			o	
	5)Traffic jams, accidents			o	
	6)Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Lembar]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)			o	
	2)Offensive odours		o		
	3)Decrease of Aquatic/Marine Fauna and Flora			o	
	4)Pollution of Marine products		o		
	5)Less value of Tourism (Water color, Coral reef)			o	
1.3 Gathering soil	1)Changes to Landforms		o		
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosysten		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution			o	
	2)Impact to Terrestrial Ecosysten		o		
1.5 Employment	1)Influx of different cultures		o		
	2)Changes in Economic activity		o		
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)		o		
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution	o			
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife	o			
	6)Changes to Landscape		o		
	7)Changes in Residential areas	o			
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)			o	
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)			o	
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Kupang]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms			o	
	2)Changes to Ground water		o		
	3)Disappearance of Terrestrial Ecosysten		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sedinent Pollution		o		
	2)Impact to Terrestrial Ecosysten		o		
1.5 Employment	1)Influx of different cultures		o		
	2)Changes in Econonic activity		o		
1.6 Congestion of Construction vehicles and vessels	1)Econonic loss (Traffic jan)		o		
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current			o	
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape			o	
	7)Changes in Residential areas	o			
	8)Disappearance of Fishing grounds	o			
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)			o	
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jans, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Dilli]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosysten	o			
1.5 Employment	1)Influx of different cultures	o			
	2)Changes in Econonic activity	o			
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)	o			
	2)Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife	o			
	6)Changes to Landscape		o		
	7)Changes in Residential areas	o			
	8)Disappearance of Fishing grounds	o			
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)		o		
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations	o			
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area	o			
	5)Traffic jans, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Balikpapan]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1) Atmospheric Pollution			o	
	2) Noise and Vibration			o	
	3) Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1) Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2) Offensive odours	o			
	3) Decrease of Aquatic/Marine Fauna and Flora	o			
	4) Pollution of Marine products	o			
	5) Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1) Changes to Landforms			o	
	2) Changes to Ground water		o		
	3) Disappearance of Terrestrial Ecosystem		o		
1.4 Appearance of Wastes Dumping Dredged soil	1) Water Pollution and Sediment Pollution			o	
	2) Impact to Terrestrial Ecosystem		o		
1.5 Employment	1) Influx of different cultures		o		
	2) Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1) Economic loss (Traffic jam)			o	
	2) Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1) Water Pollution and Sediment Pollution		o		
	2) Coast erosion and deposition			o	
	3) Change in Tidal current			o	
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5) Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6) Changes to Landscape				o
	7) Changes in Residential areas			o	
	8) Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1) Impact to Water Quality and Sediment Quality	o			
	2) Coast erosion and deposition	o			
	3) Change in Tidal current	o			
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5) Changes to Landscape	o			
2.3 Existence of Waterways	1) Change in Tidal current		o		
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
2.4 Existence of Basins	1) Change in Tidal current	o			
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1) Atmospheric Pollution			o	
	2) Water Pollution (Bilge water)				o
	3) Coast erosion by vessel wave			o	
	4) Appearance of Wastes (including Dredging soil)				o
	5) Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1) Atmospheric Pollution			o	
	2) Water Pollution and Sediment Pollution			o	
	3) Noise level		o		
	4) Offensive odours			o	
	5) Changes of Aquatic Ecosystem			o	
	6) Appearance of Wastes			o	
	7) Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1) Atmospheric Pollution			o	
	2) Noise and Vibration			o	
	3) Changes to Terrestrial Ecosystem		o		
	4) Changes of Distributed Population in Planning area			o	
	5) Traffic jams, accidents			o	
	6) Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Samarinda]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)				o
	2)Offensive odours		o		
	3)Decrease of Aquatic/Marine Fauna and Flora				o
	4)Pollution of Marine products		o		
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosystem	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution				o
	2)Impact to Terrestrial Ecosystem		o		
1.5 Employment	1)Influx of different cultures		o		
	2)Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)			o	
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclaimed Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape				o
	7)Changes in Residential areas			o	
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
2.4 Existence of Basins	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution			o	
	2)Water Pollution (Bilge water)				o
	3)Coast erosion by vessel wave			o	
	4)Appearance of Wastes (including Dredging soil)				o
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution			o	
	2)Water Pollution and Sediment Pollution			o	
	3)Noise level		o		
	4)Offensive odours			o	
	5)Changes of Aquatic Ecosystem		o		
	6)Appearance of Wastes			o	
	7)Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
	4)Changes of Distributed Population in Planning area			o	
	5)Traffic jams, accidents			o	
	6)Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Bitung]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of working vessels and Construction machinery	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms			o	
	2)Changes to Ground water		o		
	3)Disappearance of Terrestrial Ecosystem		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution		o		
	2)Impact to Terrestrial Ecosystem		o		
1.5 Employment	1)Influx of different cultures			o	
	2)Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)			o	
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition			o	
	3)Change in Tidal current			o	
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape				o
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution			o	
	2)Water Pollution (Bilge water)				o
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)			o	
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution			o	
	2)Water Pollution and Sediment Pollution			o	
	3)Noise level		o		
	4)Offensive odours			o	
	5)Changes of Aquatic Ecosystem			o	
	6)Appearance of Wastes			o	
	7)Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
	4)Changes of Distributed Population in Planning area			o	
	5)Traffic jams, accidents			o	
	6)Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Pantoloan]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1) Atmospheric Pollution		o		
	2) Noise and Vibration		o		
	3) Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1) Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2) Offensive odours	o			
	3) Decrease of Aquatic/Marine Fauna and Flora	o			
	4) Pollution of Marine products	o			
	5) Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1) Changes to Landforms	o			
	2) Changes to Ground water	o			
	3) Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1) Water Pollution and Sediment Pollution	o			
	2) Impact to Terrestrial Ecosysten	o			
1.5 Employment	1) Influx of different cultures	o			
	2) Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1) Economic loss (Traffic jam)	o			
	2) Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1) Water Pollution and Sediment Pollution	o			
	2) Coast erosion and deposition	o			
	3) Change in Tidal current		o		
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5) Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife	o			
	6) Changes to Landscape		o		
	7) Changes in Residential areas	o			
	8) Disappearance of Fishing grounds	o			
2.2 Existence of Protective Facilities for Harbours	1) Impact to Water Quality and Sediment Quality	o			
	2) Coast erosion and deposition	o			
	3) Change in Tidal current	o			
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5) Changes to Landscape	o			
2.3 Existence of Waterways	1) Change in Tidal current	o			
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1) Change in Tidal current	o			
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1) Atmospheric Pollution		o		
	2) Water Pollution (Bilge water)		o		
	3) Coast erosion by vessel wave		o		
	4) Appearance of Wastes (including Dredging soil)		o		
	5) Hindrance to fishing operations	o			
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1) Atmospheric Pollution		o		
	2) Water Pollution and Sediment Pollution		o		
	3) Noise level		o		
	4) Offensive odours		o		
	5) Changes of Aquatic Ecosysten		o		
	6) Appearance of Wastes		o		
	7) Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1) Atmospheric Pollution		o		
	2) Noise and Vibration		o		
	3) Changes to Terrestrial Ecosysten	o			
	4) Changes of Distributed Population in Planning area	o			
	5) Traffic jams, accidents		o		
	6) Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Uj.Pandang]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)		o		
	2)Offensive odours		o		
	3)Decrease of Aquatic/Marine Fauna and Flora		o		
	4)Pollution of Marine products		o		
	5)Less value of Tourism (Water color, Coral reef)		o		
1.3 Gathering soil	1)Changes to Landforms			o	
	2)Changes to Ground water		o		
	3)Disappearance of Terrestrial Ecosystem		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution		o		
	2)Impact to Terrestrial Ecosystem		o		
1.5 Employment	1)Influx of different cultures			o	
	2)Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)			o	
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition			o	
	3)Change in Tidal current			o	
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape				o
	7)Changes in Residential areas			o	
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Changes to Landscape		o		
2.3 Existence of Waterways	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
2.4 Existence of Basins	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution			o	
	2)Water Pollution (Bilge water)				o
	3)Coast erosion by vessel wave			o	
	4)Appearance of Wastes (including Dredging soil)				o
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution			o	
	2)Water Pollution and Sediment Pollution			o	
	3)Noise level		o		
	4)Offensive odours			o	
	5)Changes of Aquatic Ecosystem			o	
	6)Appearance of Wastes				o
	7)Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
	4)Changes of Distributed Population in Planning area			o	
	5)Traffic jams, accidents			o	
	6)Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Pare-Pare]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Loss value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosysten	o			
1.5 Employment	1)Influx of different cultures		o		
	2)Changes in Economic activity		o		
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)		o		
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife	o			
	6)Changes to Landscape			o	
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)			o	
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)			o	
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Kendari]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms		o		
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosystem	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosystem	o			
1.5 Employment	1)Influx of different cultures	o			
	2)Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)	o			
	2)Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape		o		
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)		o		
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosystem		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
	4)Changes of Distributed Population in Planning area	o			
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Ternate]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosystem	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosystem	o			
1.5 Employment	1)Influx of different cultures	o			
	2)Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)	o			
	2)Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape		o		
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)		o		
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosystem		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
	4)Changes of Distributed Population in Planning area	o			
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Anbon]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms			o	
	2)Changes to Ground water		o		
	3)Disappearance of Terrestrial Ecosystem		o		
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution		o		
	2)Impact to Terrestrial Ecosystem		o		
1.5 Employment	1)Influx of different cultures			o	
	2)Changes in Economic activity			o	
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)			o	
	2)Reduced value of Fishing grounds		o		
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition			o	
	3)Change in Tidal current			o	
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape				o
	7)Changes in Residential areas			o	
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
2.4 Existence of Basins	1)Change in Tidal current		o		
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution			o	
	2)Water Pollution (Bilge water)				o
	3)Coast erosion by vessel wave			o	
	4)Appearance of Wastes (including Dredging soil)				o
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution			o	
	2)Water Pollution and Sediment Pollution			o	
	3)Noise level		o		
	4)Offensive odours			o	
	5)Changes of Aquatic Ecosystem			o	
	6)Appearance of Wastes				o
	7)Employment			o	
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution			o	
	2)Noise and Vibration			o	
	3)Changes to Terrestrial Ecosystem		o		
	4)Changes of Distributed Population in Planning area			o	
	5)Traffic jams, accidents			o	
	6)Outflow of cultures		o		

Result of Initial Environmental Examination (IEE)

[Port of Sorong]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1.Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosystem	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosystem	o			
1.5 Employment	1)Influx of different cultures	o			
	2)Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)	o			
	2)Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclaimed Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape		o		
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)		o		
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosystem		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosystem	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Biak]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1) Atmospheric Pollution		o		
	2) Noise and Vibration		o		
	3) Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1) Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2) Offensive odours	o			
	3) Decrease of Aquatic/Marine Fauna and Flora	o			
	4) Pollution of Marine products	o			
	5) Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1) Changes to Landforms	o			
	2) Changes to Ground water	o			
	3) Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1) Water Pollution and Sediment Pollution	o			
	2) Impact to Terrestrial Ecosysten	o			
1.5 Employment	1) Influx of different cultures	o			
	2) Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1) Economic loss (Traffic jam)	o			
	2) Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclaimed Land)	1) Water Pollution and Sediment Pollution		o		
	2) Coast erosion and deposition		o		
	3) Change in Tidal current		o		
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5) Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6) Changes to Landscape		o		
	7) Changes in Residential areas		o		
	8) Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1) Impact to Water Quality and Sediment Quality	o			
	2) Coast erosion and deposition	o			
	3) Change in Tidal current	o			
	4) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5) Changes to Landscape	o			
2.3 Existence of Waterways	1) Change in Tidal current	o			
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1) Change in Tidal current	o			
	2) Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1) Atmospheric Pollution		o		
	2) Water Pollution (Bilge water)		o		
	3) Coast erosion by vessel wave		o		
	4) Appearance of Wastes (including Dredging soil)		o		
	5) Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo Handling and Utilization of Storage Facilities	1) Atmospheric Pollution		o		
	2) Water Pollution and Sediment Pollution		o		
	3) Noise level		o		
	4) Offensive odours		o		
	5) Changes of Aquatic Ecosysten		o		
	6) Appearance of Wastes		o		
	7) Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1) Atmospheric Pollution		o		
	2) Noise and Vibration		o		
	3) Changes to Terrestrial Ecosysten	o			
	4) Changes of Distributed Population in Planning area		o		
	5) Traffic jans, accidents		o		
	6) Outflow of cultures	o			

Result of Initial Environmental Examination (IEE)

[Port of Jayapura]

Elements of Environmental Impact	Impact to Environment	Volume of Impact			
		Nil	Small	Medium	Large
1. Impact by Construction work					
1.1 Operation of Working vessels and Construction machinery	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
1.2 Dredging and Dumping soil	1)Water Pollution and Sediment Pollution (SS, Toxic substance)	o			
	2)Offensive odours	o			
	3)Decrease of Aquatic/Marine Fauna and Flora	o			
	4)Pollution of Marine products	o			
	5)Less value of Tourism (Water color, Coral reef)	o			
1.3 Gathering soil	1)Changes to Landforms	o			
	2)Changes to Ground water	o			
	3)Disappearance of Terrestrial Ecosysten	o			
1.4 Appearance of Wastes Dumping Dredged soil	1)Water Pollution and Sediment Pollution	o			
	2)Impact to Terrestrial Ecosysten	o			
1.5 Employment	1)Influx of different cultures	o			
	2)Changes in Economic activity	o			
1.6 Congestion of Construction vehicles and vessels	1)Economic loss (Traffic jam)	o			
	2)Reduced value of Fishing grounds	o			
2. Impact by Existence of Port Facilities and Land					
2.1 Existence of Land(including Reclained Land)	1)Water Pollution and Sediment Pollution		o		
	2)Coast erosion and deposition		o		
	3)Change in Tidal current		o		
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora		o		
	5)Decrease of Terrestrial Habitats for Terrestrial Vegetation and Wildlife		o		
	6)Changes to Landscape		o		
	7)Changes in Residential areas		o		
	8)Disappearance of Fishing grounds		o		
2.2 Existence of Protective Facilities for Harbours	1)Impact to Water Quality and Sediment Quality	o			
	2)Coast erosion and deposition	o			
	3)Change in Tidal current	o			
	4)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
	5)Changes to Landscape	o			
2.3 Existence of Waterways	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
2.4 Existence of Basins	1)Change in Tidal current	o			
	2)Decrease of Aquatic Habitats for Aquatic Fauna and Flora	o			
3. Impact by Utilization of Water Facilities and Mooring Facilities					
3.1 Operation of Vessels	1)Atmospheric Pollution		o		
	2)Water Pollution (Bilge water)		o		
	3)Coast erosion by vessel wave		o		
	4)Appearance of Wastes (including Dredging soil)		o		
	5)Hindrance to fishing operations		o		
4. Impact by Utilization of Cargo Sorting Facilities and Storage Facilities					
4.1 Cargo handling and Utilization of Storage Facilities	1)Atmospheric Pollution		o		
	2)Water Pollution and Sediment Pollution		o		
	3)Noise level		o		
	4)Offensive odours		o		
	5)Changes of Aquatic Ecosysten		o		
	6)Appearance of Wastes		o		
	7)Employment		o		
5. Impact by Traffic					
5.1 Land Traffic	1)Atmospheric Pollution		o		
	2)Noise and Vibration		o		
	3)Changes to Terrestrial Ecosysten	o			
	4)Changes of Distributed Population in Planning area		o		
	5)Traffic jams, accidents		o		
	6)Outflow of cultures	o			

Appendix 6-1 Geographical location plan of Visual ATN

(LIGHT HOUSE 40 M)

No.	Dis Nav		Location & Unit	Position	Remarks
1.	Uj.Pandang	1.	Tg.Agar-Agar	08-12-55. S 116-22-00. E	
		2.	Tg.Pakijongan	08-04-20. S 117-50-36. E	
		3.	P.Pulasi	06-40-15. S 120-20-52. E	
		4.	P.Banawaya	06-50-00. S 119-10-09. E	
2.	Kendari	5.	Tg.Lamulu	04-41-00. S 121-28-00. E	
		6.	P.Runduma	05-18-00. E 124-18-20. E	
		7.	Tg.Goram	04-51-00. S 123-12-00. E	
		8.	Moromaho	06-07-00. S 124-36-10. E	1991-92
		9.	Tg.Ulunabu	03-33-10. S 123-09-30. E	
		10.	Tg.Batumanuk	02-55-20. S 122-19-00. E	1992-93
3.	Ambon	11.	Tg.Woka	02-28-30. S 126-03-00. E	
		12.	Ug.Hatuloi	03-40-00. S 126-48-10. E	
		13.	P.Ambelau	05-53-20. S 127-13-10. E	
		14.	P.Akelamo	01-39-00. S 127-24-00. E	1992-93
		15.	P.Damar	07-04-40. S 128-26-30. E	
		16.	Kr.Borang	05-16-30. S 133-14-55. E	1993-94
		17.	Wasela	08-12-40. S 129-50-00. E	
		18.	P.Manawoka	04-10-00. S 131-23-00. E	
		19.	P.Muor	00-10-30. N 128-57-30. E	
		20.	P.P.Latalata	00-02-00. S 127-03-30. E	
		21.	P.Kaitanimbar	06-02-00. S 132-26-30. E	
		22.	P.Enu	07-05-00. S 134-30-00. E	1992-93
		23.	P.Molu	06-41-00. S 131-34-20. E	1993-94
		24.	Tg.Sofi	02-38-00. S 128-33-30. E	
		25.	P.Dama	02-28-00. S 127-37-00. E	1993-94
4.	Sorong	26.	P.Ayu	01-03-50. N 131-03-30. E	

(LIGHT HOUSE 40 M)

No.	Dis Nav		Location & Unit	Position	Remarks
5.	Jayapura	27.	P.Bopondi	00-10-12. S 134-30-49. E	1993-94
		28.	Tlk.Materer	02-10-00. S 140-00-21. E	1992-93
6.	Merauke	29.	Tg.Salak	08-10-10. S 137-40-00. E	1993-94
7.	Kupang	30.	Tg.Kapondai	08-04-40. S 122-50-18. E	
		31.	P.Batek	09-16-00. S 123-59-30. E	
		32.	Tg.Mabuer	08-15-10. S 125-30-00. E	
		33.	P.Yako	08-25-10. S 127-20-10. E	
8.	Balikpapan	34.	P.Ambungi	02-04-30. S 117-16-00. E	
9.	Manado/Bitung	35.	P.Batunderang	03-20-00. N 125-30-36. E	
		36.	P.Kaburunang	03-45-00. N 126-51-00. E	1991-92
		37.	P.P.Nanusa	04-35-00. N 127-12-00. E	1992-93
		38.	P.Tifore	01-01-00. S 126-09-10. E	
		39.	P.Puludua	00-50-00. S 123-26-40. E	
		40.	Banggai	01-37-00. S 123-36-30. E	

(LARGE LIGHT BEACON 30 M)

No.	Dis Nav		Location & Unit	Position	Remarks
1.	Uj.Pandang	1.	P.Kapoposang Bali	07-30-00. S 117-10-06. E	1991-92
		2.	P.Sangeang	08-00-48. S 119-00-24. E	
		3.	Tg.Lameriki	04-10-00. S 120-20-18. E	1991-92
2.	Kandari	4.	Tg.Batu Turo	05-42-00. S 122-46-30. E	1991-92
		5.	P.L.Abengke	03-30-00. S 122-26-00. E	1992-92
		6.	P.Binongko	06-02-20. S 124-02-10. E	1991-92
3.	Ambon	7.	P.Seku	02-00-00. S 124-19-30. E	
		8.	Tg.Maluang	07-40-30. S 125-54-30. E	
		9.	P.Romang	07-30-30. S 127-22-30. E	
		10.	P.Nila	06-45-00. S 129-30-00. E	

(LARGE LIGHT BEACON 30 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		11.	P.Wetan	07-53-00. S 129-21-00. E	
		12.	P.Nitu	07-29-00. S 130-45-00. E	
		13.	Tg.Arousu	08-20-00. S 130-46-00. E	1992-93
		14.	P.Tioor	04-46-00. S 131-44-00. E	
		15.	Tg.Bolifar	03-09-00. S 130-36-00. E	
		16.	Tg.Namda	02-47-30. S 129-02-30. E	
		17.	Tg.Batunuhan	03-03-00. S 126-42-10. E	
		18.	P.Jorong	01-06-30. S 128-22-00. E	
		19.	Tg.Lelai	01-34-00. N 128-43-00. E	
		20.	Tg.Bobo	01-02-50. S 127-24-00. E	1993-94
4.	Sorong	21.	P.Bo Br	01-11-00. S 129-18-30. E	1992-93
		22.	P.Umera	00-12-00. S 129-35-00. E	
		23.	P.Kawe	00-00-00. S 130-06-00. E	
		24.	P.Sayang	00-29-30. S 129-54-30. E	
		25.	Tg.Manfufa	01-13-00. S 131-20-30. E	
		26.	Tg.Fatagpor	02-46-30. S 131-55-40. E	
		27.	Tg.Nasu Ulong	04-06-40. S 131-00-30. E	1993-94
		28.	Tg.Saukorem	00-22-30. S 132-44-00. E	
		29.	Tg.Namaripi	04-12-30. S 134-30-36. E	
5.	Jayapra	30.	P.Mioslum	00-40-27. S 134-30-15. E	
		31.	P.Ron	02-00-51. S 134-30-36. E	
6.	Merauke	32.	Utara S.Kuningan	06-20-00. S 138-22-15. E	
		33.	Tg.Dolak	07-00-40. S 138-00-06. E	
		34.	Ug.Komorat	08-20-06. S 138-50-23. E	
7.	Kupang	35.	Toro Kerita	08-50-06. S 119-50-30. E	1992-93
		36.	Tg.Karoso	09-30-15. S 118-50-36. E	1993-94
		37.	Tg.Kalobono	10-09-30. S 124-23-15. E	1993-94

(LARGE LIGHT BEACON 30 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		38.	Tg.Fapara	09-24-00. S 125-12-00. E	
		39.	Tg.Beaso	08-56-40. S 126-28-00. E	1993-94
		40.	Tg.Atade	08-33-30. S 123-33-00. E	1993-94
8.	Manado/Bitung	41.	P.Manipa	03-43-00. N 125-19-00. E	1991-92
		42.	Tg.Batu Putih	01-42-20. S 122-54-15. E	1992-93
		43.	Tg.Api	00-48-20. S 121-39-00. E	1993-94
		44.	Tg.Salonggaka	04-02-40. S 126-36-40. E	1993-94
9.	Samarinda	45.	P.Bakungun	02-06-00. N 118-43-30. E	1992-93
10.	Benoa	46.	P.Sangang	08-00-48. S 119-00-24. E	1992-93
		47.	Torodoro	08-50-21. S 118-30-00. E	1993-94

(MEDIUM LIGHT BEACON 20 M)

No.	Dis Nav		Location & Unit	Position	Remarks
1.	Uj.Pandang	1.	Tg.Mangkun	09-00-00. S 116-40-27. E	
		2.	Torodoro	08-50-21. S 118-30-00. E	
		3.	P.Moyo (S.Saleh)	08-20-06. S 117-20-54. E	
		4.	Tg.Batu Besar	08-10-24. S 118-30-00. E	
		5.	P.Bunta	08-20-48. S 119-10-42. E	
		6.	Selat Tanakeke	05-30-30. S 119-20-33. E	1991-92
		7.	P.Lanyukang	04-50-48. S 119-00-27. E	1991-92
		8.	Tg.Selupolo	04-03-12. S 119-20-30. E	1992-92
		9.	Tg.Lameriki	04-10-00. S 120-20-18. E	
2.	Kendari	10.	Tg.Tabako	03-25-30. S 120-46-40. E	
		11.	Tg.Tambako	04-44-00. S 121-40-00. E	
		12.	Tg.Kosolanatubi	05-17-40. S 123-12-00. E	1991-92
3.	Ambon	13.	P.Maru	06-54-30. S 131-27-00. E	
		14.	P.Team	05-04-00. S 132-10-00. E	

(MEDIUM LIGHT BEACON 20 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		15.	PP.Penyu (Mai)	05-25-00. S 127-47-30. E	1992-93
		16.	PP.Maisel	05-28-30. S 127-31-00. E	1993-94
		17.	Tg.Sial	03-33-20. S 127-56-00. E	1993-94
		18.	P.Tobalai	01-38-00. S 128-19-30. E	
		19.	Tg.Tokaka	00-12-30. S 127-21-30. E	
		20.	P.Makian	00-19-30. N 127-21-30. E	1993-94
		21.	P.Leleve	00-42-50. N 128-32-45. E	1992-93
		22.	Tg.Lolobata	01-16-00. N 128-05-30. E	
4.	Sorong	23.	P.Pensin	02-10-21. S 130-10-36. E	
		24.	Daram	02-00-57. S 130-50-36. E	
		25.	Tg.Mabo	00-50-36. S 130-20-20. E	
		26.	P.Augusts	00-40-06. S 130-30-20. E	1992-93
		27.	P.Karas	03-25-30. S 132-36-36. E	
5.	Jayapura	28.	P.Angrameus	02-20-03. S 134-20-33. E	
		29.	P.Waren	02-10-12. S 136-00-48. E	
		30.	P.Sowok	00-20-00. S 134-40-10. E	1993-94
6.	Merauke	31.	Ug.Kumpur	07-10-06. S 138-40-05. E	
7.	Kupang	32.	Tg.Bundura	08-25-25. S 126-24-00. E	
		33.	Tg.Parimbala	08-38-40. S 125-05-50. E	1993-94
		34.	P.Trewek	08-28-30. S 124-16-18. E	
		35.	Tg.Batu Putih	09-03-00. S 124-41-20. E	1993-94
		36.	Tg.Bobo	08-56-10. S 121-03-00. E	1993-94
		37.	P.Mangudu	10-10-56. S 120-00-52. E	
		38.	Tg.Pukuatu	10-26-00. S 123-22-00. E	1993-94
		39.	P.Bunta	08-20-48. S 119-10-42. E	1993-94
8.	Manado/Bitung	40.	Tg.Losoni	02-20-00. S 122-01-30. E	1992-93
		41.	Tg.Kembani	01-35-00. S 122-53-30. E	1991-92

(MEDIUM LIGHT BEACON 20 M)

No.	Dis Nav		Location & Unit	Position	Remarks
9.	Benoa	42.	Tg.Batu Besar	08-10-24. S 118-30-00. E	1992-93

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
1.	Ug.Pandang	1.	S.Batakai	08-00-48. S 117-40-06. E	
		2.	P.Ngali	08-20-57. S 117-40-24. E	
		3.	P.Pakyet	08-30-42. S 117-50-42. E	
		4.	P.Komodo	08-20-39. S 119-20-33. E	
		5.	P.Panjang	08-20-45. S 116-50-06. E	
		6.	P.Belang	08-30-15. S 116-40-42. E	
		7.	Tg.Baru	08-50-12. S 119-10-06. E	
		8.	Tlk.Cempi	08-40-36. S 118-20-12. E	
		9.	Tg.Batu Gendang	08-40-45. S 115-40-57. E	
		10.	Tlk.Awang	08-50-45. S 116-20-18. E	
		11.	Tlk.Sanggar	08-20-03. S 118-10-42. E	
		12.	P.Tinggi Linggang	07-00-12. S 118-00-18. E	
		13.	P.Longko Itang	06-40-09. S 118-10-45. E	
		14.	Kr.Satunggai	07-30-15. S 118-00-00. E	
		15.	P.Jai Lamo (K.U.)	06-30-27. S 118-50-00. E	1991-92
		16.	Tg.Labuah	05-20-03. S 120-20-25. E	
		17.	Tg.Lasa	05-30-45. S 120-20-48. E	1992-93
		18.	P.Belong-Belong	06-20-24. S 121-00-33. E	1991-92
		19.	KR.Korea Selatan	04-30-48. S 120-30-45. E	
		20.	Yg.Loko-Loko	03-40-12. S 120-20-39. E	
		21.	Tg.Lombone	03-00-30. S 118-40-42. E	
		22.	Tg.Kai	02-50-12. S 118-40-36. E	1991-92
		23.	Tfg.Larereh	01-50-54. S 119-10-18. E	1992-93

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		24.	P.Langkai	05-10-48. S 119-05-48. E	
		25.	P.Karangrang	04-51-30. S 119-23-13. E	
		26.	P.Barang Lompo	05-02-55. S 119-19-45. E	
		27.	P.Samateloraya	04-42-42. S 119-20-42. E	
2.	Kendari	28.	Kr.Wawo	03-40-00. S 120-51-30. E	
		29.	Kr.Tlk.Waminda	03-52-00. S 121-00-00. E	
		30.	Kr.Rosamarie	04-05-00. S 121-08-30. E	
		31.	P.Maniang	04-12-00. S 121-28-00. E	
		32.	Sofang	04-44-00. S 121-32-00. E	
		33.	Kr.Sogori	05-23-00. S 121-44-00. E	
		34.	Tg.Talabasi	05-14-00. S 122-04-00. E	
		35.	Tg.Wetak	05-23-30. S 122-16-30. E	
		36.	Tlk.Kaluku	05-08-30. S 123-01-10. E	
		37.	Kapota	05-29-30. S 123-22-00. E	
		38.	Kr.Kota	06-04-30. S 124-20-00. E	
		39.	Kr.Kalelupa	05-50-00. S 123-37-30. E	
		40.	Kr.Kentiole	05-43-00. S 124-29-20. E	
		41.	Tg.Babu	04-56-00. S 123-00-00. E	
		42.	Tg.Womoni	04-16-00. S 123-08-00. E	
		43.	Kolono	04-25-00. S 122-52-30. E	
		44.	Tg.Saponda Selatan	04-04-00. S 122-49-00. E	
		45.	Tg.Sawak	03-45-30. S 122-26-30. E	
		46.	PP.Dua	03-16-00. S 122-31-30. E	1991-92
3.	Ambon	47.	P.Limbo	01-46-00. S 124-18-00. E	
		48.	Tg.Kona	01-56-30. S 125-00-00. E	
		49.	Tg.Batukapitani	01-57-00. S 125-25-30. E	
		50.	P.Tabuku	01-46-00. S 125-31-30. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav	Location & Unit	Position	Remarks
	51.	Tg.Pelpetu	03-07-00. S 126-06-00. E	
	52.	Tg.Walwawat	03-36-20. S 126-11-00. E	
	53.	Tg.Wamsisi	03-46-00. S 126-57-00. E	
	54.	Tg.Saroma	03-39-30. S 127-13-00. E	
	55.	Tg.Kayu Putih	03-23-00. S 127-15-30. E	
	56.	P.Boano	03-01-30. S 127-41-00. E	
	57.	Tg.Nusa Telu	03-41-00. S 127-55-30. E	
	58.	P.Gomumuh	01-51-00. S 127-35-00. E	
	59.	Tg.Pasi Item	01-11-00. S 127-32-00. E	
	60.	P.Obilatu	01-25-00. S 127-16-00. E	
	61.	Tg.Gegoru	00-45-00. S 127-10-00. E	1992-93
	62.	Tg.Silang	00-52-00. S 127-44-30. E	
	63.	P.Miskin	00-09-00. N 127-26-00. E	
	64.	P.Kusu	00-27-30. S 127-42-00. E	
	65.	P.Batu Sombo	00-18-00. S 127-33-30. E	
	66.	P.Rao	02-38-00. S 128-09-30. E	
	67.	P.P.Lalodu Selatan	01-41-30. N 127-30-30. E	
	68.	Tg.Wayumli	01-04-00. N 128-41-45. E	
	69.	P.Sayafi	00-32-30. N 128-49-00. E	
	70.	Tg.Inggelang	00-33-00. N 128-40-30. E	
	71.	Tg.Libobo	00-44-00. S 128-26-40. E	
	72.	P.Pisang	01-23-30. S 128-55-00. E	
	73.	TG.Saml	02-06-00. S 129-51-30. E	
	74.	Tg.Seitu	03-27-00. S 129-33-30. E	
	75.	Tg.Saradona	08-09-30. S 128-08-00. E	
	76.	P.Kasa	03-10-48. S 128-00-53. E	
	77.	Tg.Tihulate	03-27-00. S 128-31-00. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav	Location & Unit	Position	Remarks
	78.	P.Haruku	03-37-30. S 128-25-00. E	
	79.	P.Parang	03-19-00. S 130-47-00. E	
	80.	Kr.Bajs	02-55-00. S 130-26-00. E	
	81.	P.Besar	02-44-10. S 128-59-00. E	
	82.	Tg.Pamali	02-48-00. S 129-22-00. E	
	83.	P.Dawora	00-51-00. S 128-00-48. E	
	84.	Tg.Silota	00-17-00. N 127-55-00. E	
	85.	P.Sukar	00-33-30. S 128-18-30. E	
	86.	Tg.Babua	01-01-00. S 127-28-00. E	
	87.	Tg.Jojefa	02-11-30. N 128-03-30. E	
	88.	P.Tonu	01-47-30. S 128-00-00. E	
	89.	P.Kolorai	01-40-00. N 128-02-30. E	
	90.	P.Kiliwaru	03-53-30. S 130-53-00. E	
	91.	P.Run	04-34-00. S 129-40-30. E	
	92.	Tg.Weduak	06-03-00. S 132-50-00. E	
	93.	P.Runuat (S.Nerong)	05-49-00. S 132-49-35. E	
	94.	Kr.Mitnaloa	05-35-55. S 132-58-30. E	
	95.	P.Sermata	08-13-00. S 139-00-00. E	
	96.	Kr.Krus	05-34-43. S 131-39-50. E	
	97.	Kr.Ngaf	05-37-30. S 132-39-50. E	1993-94
	98.	Kr.Patilmas	05-43-55. S 132-36-45. E	
	99.	P.Taroa	05-47-50. S 132-37-00. E	
	100.	Tg.Matot	05-32-35. S 132-23-10. E	
	101.	Tg.Arat	05-54-30. S 132-39-25. E	
	102.	Tg.Wakadan	01-37-50. S 133-04-35. E	
	103.	P.Wasir	05-29-20. S 134-14-00. E	
	104.	Tg.Ngabordamlu	06-56-25. S 134-11-05. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		105.	P.Arakula	05-35-45. S 134-46-10. E	
		106.	Kr.Sarikilmasa	07-39-00. S 131-43-45. E	
		107.	P.Sukeler	07-38-10. S 130-56-40. E	
		108.	P.Prinoen	07-02-40. S 131-34-00. E	
		109.	P.Parnusan	07-04-50. S 131-39-10. E	
		110.	Kr.Noekaha	07-03-00. S 132-02-00. E	
		111.	Tg.Letwurung	07-54-30. S 129-50-06. E	
		112.	Tlk.Lelang	08-15-00. S 128-56-00. E	
		113.	Tg.Solat	07-10-40. S 128-41-00. E	1993-94
		114.	Tlk.Pumuhkuda	07-36-00. S 127-25-00. E	
		115.	Tlk.Tg.Eden	07-58-00. S 126-24-00. E	
4.	Sorong	116.	P.Senapan	00-54-20. S 131-02-30. E	
		117.	PP.Menon	01-21-20. S 130-42-57. E	
		118.	Tg.Tapokreng	00-26-25. S 130-44-15. E	
		119.	P.Ifinun	01-08-48. S 130-33-48. E	1993-94
		120.	P.Sangewin	00-56-25. S 130-48-10. E	
		121.	Kr.Elanglaut	01-20-12. S 130-30-18. E	
		122.	Kr.Tg.Babula	00-24-20. S 130-56-40. E	
		123.	P.Waiabu	00-20-40. S 130-57-10. E	
		124.	P.Filsytour	00-18-30. S 130-54-45. E	
		125.	P.Waiwali	00-19-30. S 130-52-20. E	
		126.	Tg.Mingari	02-10-24. S 132-50-42. E	
		127.	Kr.Tlk.Bintuni	02-18-00. S 133-37-05. E	
		128.	Tg.Kausore	02-23-18. S 133-50-40. E	
		129.	P.Amutu Kecil	02-29-45. S 133-37-55. E	
		130.	P.Barat (Tlk.Bintuni)	02-36-35. S 132-23-20. E	1993-94
		131.	Tg.Dore	00-43-55. S 131-32-30. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		132.	Tg.Sawasar	00-39-10. S 131-54-15. E	
		133.	Tg.Sofa	00-07-00. N 129-15-12. E	
		134.	Timur Tg.Uaim	00-43-00. S 131-32-30. E	
		135.	P.P.Kasya	00-20-08. N 131-00-29. E	
		136.	Kr.Tg.Sari	01-59-00. S 133-33-30. E	
		137.	P.Urobi	04-03-40. S 132-20-45. E	
		138.	Kr.Madais	03-37-30. S 133-36-00. E	
		139.	P.Mios Ging	00-24-20. S 129-44-30. E	
		140.	P.Batu Putih	03-56-00. S 131-57-12. E	1992-93
		141.	Kr.Tg.tubok Matan	03-06-00. S 132-18-00. E	
		142.	Tg.Maniam	03-30-50. S 132-40-35. E	
		143.	Tg.Kainara	04-06-10. S 133-18-30. E	
		144.	P.Segin	03-52-30. S 133-55-10. E	
		145.	P.Lanjaro	03-55-20. S 133-59-30. E	
		146.	Tg.Aiduma	04-02-00. S 134-11-10. E	
		147.	P.Kayumerah	04-06-00. S 134-26-50. E	
		148.	Tg.Bohia	01-06-50. S 134-37-30. E	
		149.	Tg.Sansapor	00-30-00. S 132-04-20. E	
		150.	Tg.Siam	00-14-30. S 130-47-50. E	
5.	Jayapura	151.	P.Wansra	01-00-48. S 134-50-12. E	
		152.	P.Mios Indi	01-20-54. S 135-50-48. E	
		153.	P.Yobi	01-40-24. S 136-30-54. E	
		154.	Tg.Praisbari	00-40-30. S 135-49-00. E	
		155.	Tlk.Wari	00-51-10. S 136-03-00. E	
		156.	Tg.Wantiori	01-02-00. S 136-17-30. E	
		157.	PP.Ponokabai	01-30-00. S 135-22-10. E	1993-94
		158.	Tg.Sherisbari	01-05-40. S 135-48-30. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		159.	P.Nu Tabari	03-06-30. S 135-09-20. E	
		160.	PP.Kuran	01-53-30. S 135-48-40. E	
		161.	Kr.Tydeman	02-08-30. S 135-11-40. E	
		162.	Utara Nusambier	01-52-50. S 134-48-40. E	
		163.	P.Wandoswaar	02-00-00. S 134-24-40. E	
		164.	Kr.Isabel	00-29-50. S 135-14-20. E	
		165.	PP.Moor	02-50-36. S 135-40-12. E	
		166.	Tg.Tanah Merah	02-23-36. S 140-21-00. E	
		167.	P.Kelapa	02-26-12. S 140-36-48. E	
		168.	P.Dayuer	02-08-12. S 139-31-00. E	
		169.	P.Yamma	02-01-00. S 129-14-48. E	
		170.	PP.Wakdeh	01-56-00. S 139-01-24. E	1993-94
		171.	Tg.Mataboreh	01-32-00. S 139-59-24. E	
6.	Merauke	172.	Tg.Owaiwiri	04-52-00. S 136-46-20. E	
		173.	S.Digul	07-10-00. S 139-00-00. E	1992-93
		174.	P.Gosong Triton	05-50-24. S 138-00-36. E	1993-94
7.	Kupang	175.	Iliwariran	08-14-00. S 123-22-00. E	
		176.	Batutara	07-47-00. S 123-36-00. E	
		177.	P.Biang Merang	08-27-10. S 123-56-40. E	
		178.	P.Dao.Br	10-48-10. S 122-39-00. E	
		179.	P.Sukur	08-06-40. S 122-07-00. E	
		180.	P.Raja	08-18-00. S 121-43-30. E	
		181.	P.Dana	10-49-30. S 121-17-00. E	
		182.	P.Seraya Besar	08-22-00. S 119-52-00. E	
		183.	Tlk.Malekaba	09-58-00. S 119-55-00. E	
		184.	Ketewil	09-21-30. S 119-17-30. E	
		185.	P.Gelinta	08-54-30. S 120-17-00. E	

(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
		186.	Tg.Yarakeh	08-53-30. S 120-45-00. E	
		187.	P.Padar	08-40-00. S 119-33-00. E	
		188.	P.Nusaenda	08-50-30. S 121-31-30. E	
		189.	Tg.Batumanuk	08-26-30. S 122-01-30. E	
		190.	P.Pulubesar	08-27-00. S 122-20-00. E	
		191.	P.Kaliwatu	08-27-30. S 122-57-30. E	
		192.	Tg.Suda	08-32-00. S 123-12-30. E	
		193.	P.Ternate	08-21-00. S 124-32-00. E	
		194.	Tg.Manamonik	08-09-00. S 125-04-30. E	
		195.	Tg.Batuata	09-37-00. S 120-28-30. E	
		196.	Tg.Mas	09-39-00. S 123-40-30. E	
		197.	Tg.Meliboot	09-08-30. S 125-49-00. E	
		198.	Tg.Batu Putih	08-45-30. S 126-49-00. E	
		199.	P.Timur Ipet	08-05-30. S 123-20-00. E	
		200.	Tg.Rua	09-47-30. S 119-24-00. E	
8.	Balikpapan	201.	Kr.Batumeha	01-55-00. S 116-33-00. E	
		202.	Kr.Unatang	02-30-00. S 117-00-12. E	1993-94
9.	Samarinda	203.	P.Birah Birahan	00-41-40. N 118-27-45. E	1992-93
		204.	Kr.Bilang Bilangan	01-33-30. N 118-56-30. E	
		205.	P.Bakungan	02-06-00. N 118-43-30. E	
		206.	Kr.Balik Tabah	02-35-03. N 118-00-06. E	
		207.	Tg.Bilah	03-55-00. N 117-17-10. E	
		208.	Kr.Nunukan	03-57-00. N 116-52-00. E	
		209.	P.Sebetik Barat	04-09-30. N 117-53-20. E	
		210.	P.Sebetik Timur	04-09-30. N 117-53-20. E	
		211.	Gosong Karang	01-39-15. N 118-34-00. E	
		212.	Kr.Gosungara	01-57-00. N 118-47-30. E	

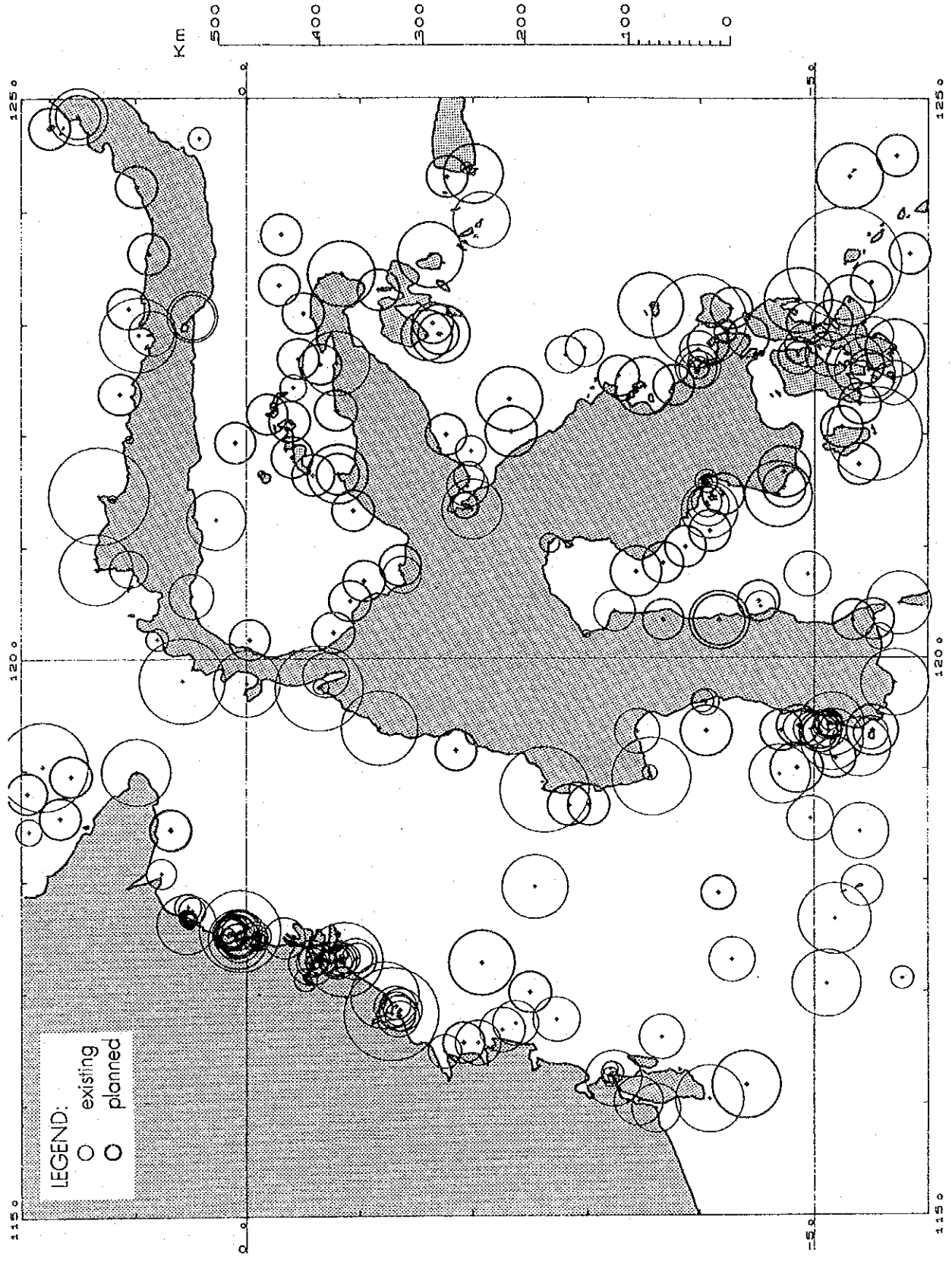
(SMALL LIGHT BEACON 10 M)

No.	Dis Nav		Location & Unit	Position	Remarks
10.	Manado/Bitung	213.	Kr.Tg.Damari	01-45-30. S 122-00-00. E	
		214.	Tg.Batu Puti	01-41-20. S 122-54-15. E	
		215.	Bangkalan Utara	01-09-25. S 123-18-00. E	
		216.	P.Mentawatudaa	00-30-10. S 123-05-30. E	
		217.	Kr.Tg.Batu Hitam	00-39-00. S 122-38-00. E	
		218.	Tg.Pongian	00-47-20. S 122-13-00. E	
		219.	Kr.Utara P.Popoli	00-11-00. S 122-11-00. E	
		220.	P.Pasir Tengah	00-35-25. S 121-38-20. E	
		221.	Tg.Api	00-48-20. S 121-39-00. E	
		222.	Tg.Maburoto	00-56-15. S 121-19-30. E	
		223.	Tg.Karawasa	01-21-00. S 120-50-00. E	
		224.	Kr.Latenga	01-02-00. S 120-41-50. E	
		225.	Kr.Utara Tg.Samsu	00-54-40. S 120-31-00. E	
		226.	Kr.Tg.Makatata	00-46-00. S 120-14-00. E	
		227.	Kr.Pasimunto	00-01-30. S 120-10-10. E	
		228.	Tg.Panjang	00-24-20. S 121-48-00. E	
		229.	Kr.Bitila	00-23-00. S 122-07-10. E	
		230.	Tlk.Paguyama	00-27-30. S 122-41-00. E	
		231.	Tg.Tombalilatu	00-17-20. S 123-20-40. E	1993-94
		232.	Tg.Dominango	00-18-30. S 123-47-30. E	
		233.	Tlk.Peleng	01-38-15. S 123-00-05. E	
		234.	Tg.Konjai	00-06-20. N 121-55-40. E	
		235.	Kr.Bulolio	01-08-15. N 122-21-50. E	
		236.	Kr.Bangkili	01-03-45. N 123-08-00. E	1991-92
		237.	P.Tiga	00-53-00. N 123-37-20. E	
		238.	Tg.Lobi	00-59-30. N 124-13-00. E	1991-92
		239.	P.Matereu	01-45-00. N 124-44-00. E	

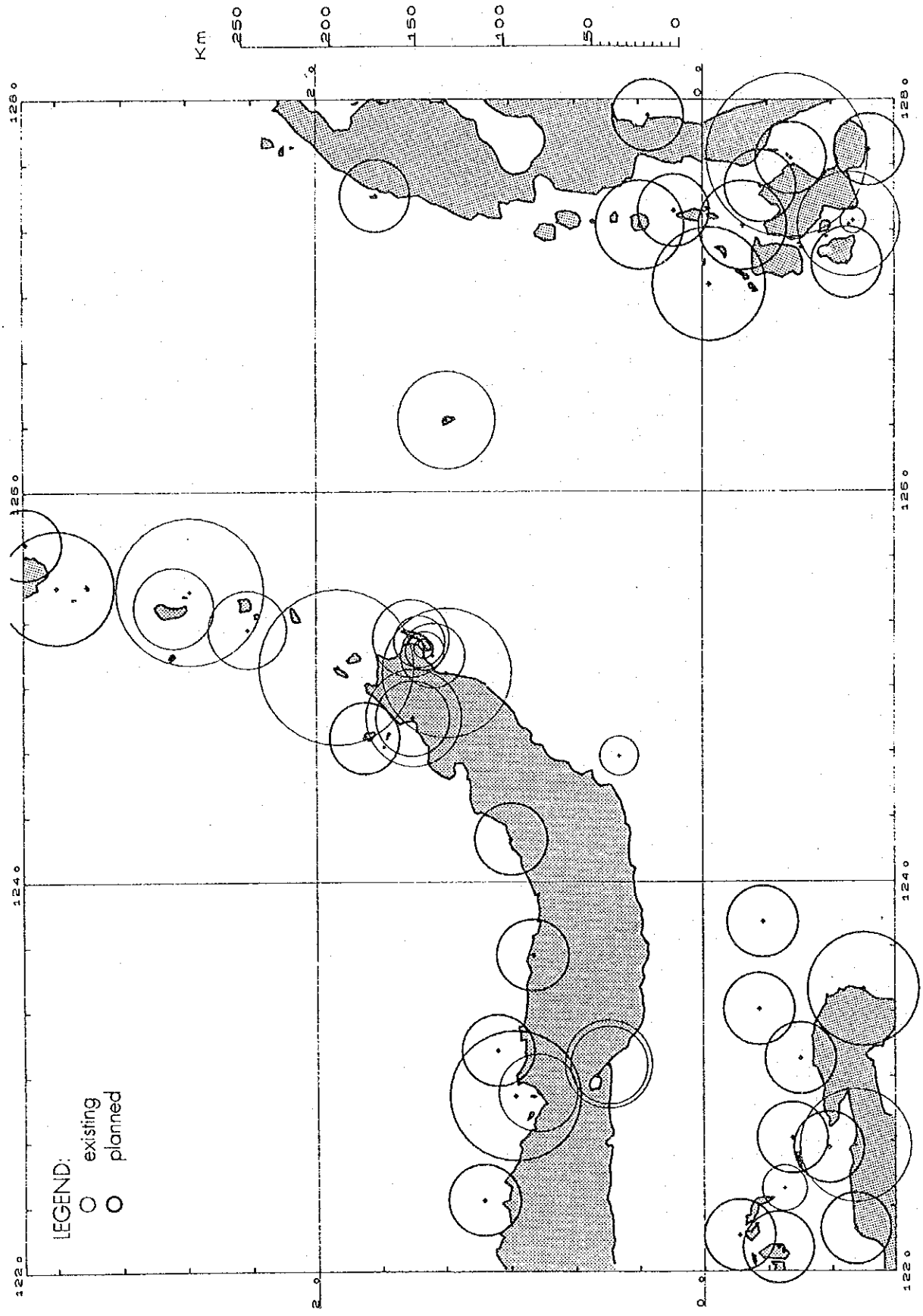
(SMALL LIGHT BEACON 10 M)

No.	Dis Nav	Location & Unit	Position	Remarks
	240.	P.Benglaoet	03-29-30. N 125-44-00. E	1992-93
	241.	Tg.Lehe	03-36-50. N 125-35-45. E	
	242.	Tg.Salonggaka	04-02-40. N 126-36-40. E	
	243.	Tg.Mananantoleh	04-02-00. N 126-48-45. E	
	244.	Tg.Totowantan	04-16-10. N 126-55-00. E	

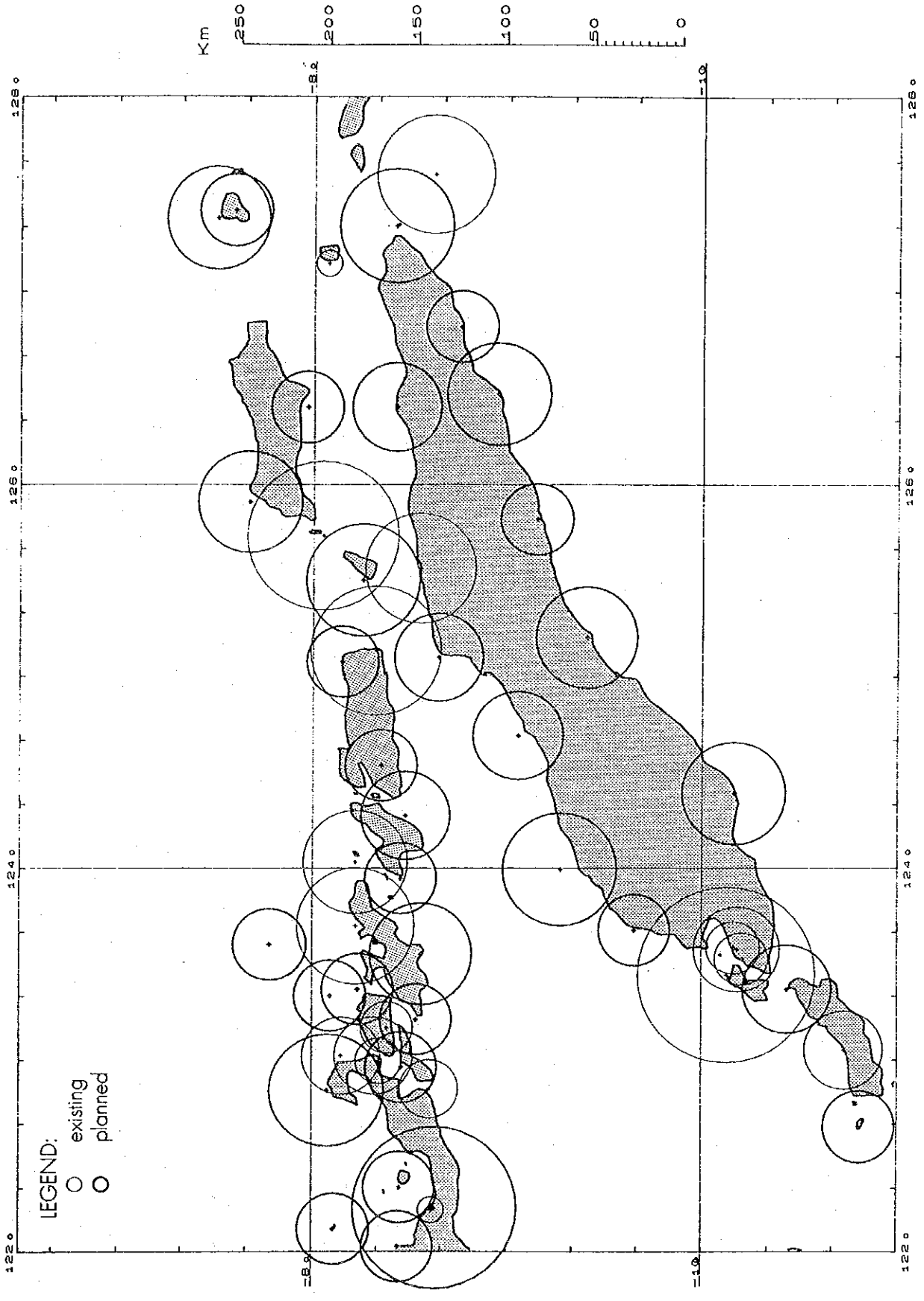
Location of Visual ATN (Makkassar, 1/350,000 Lat. Oo)

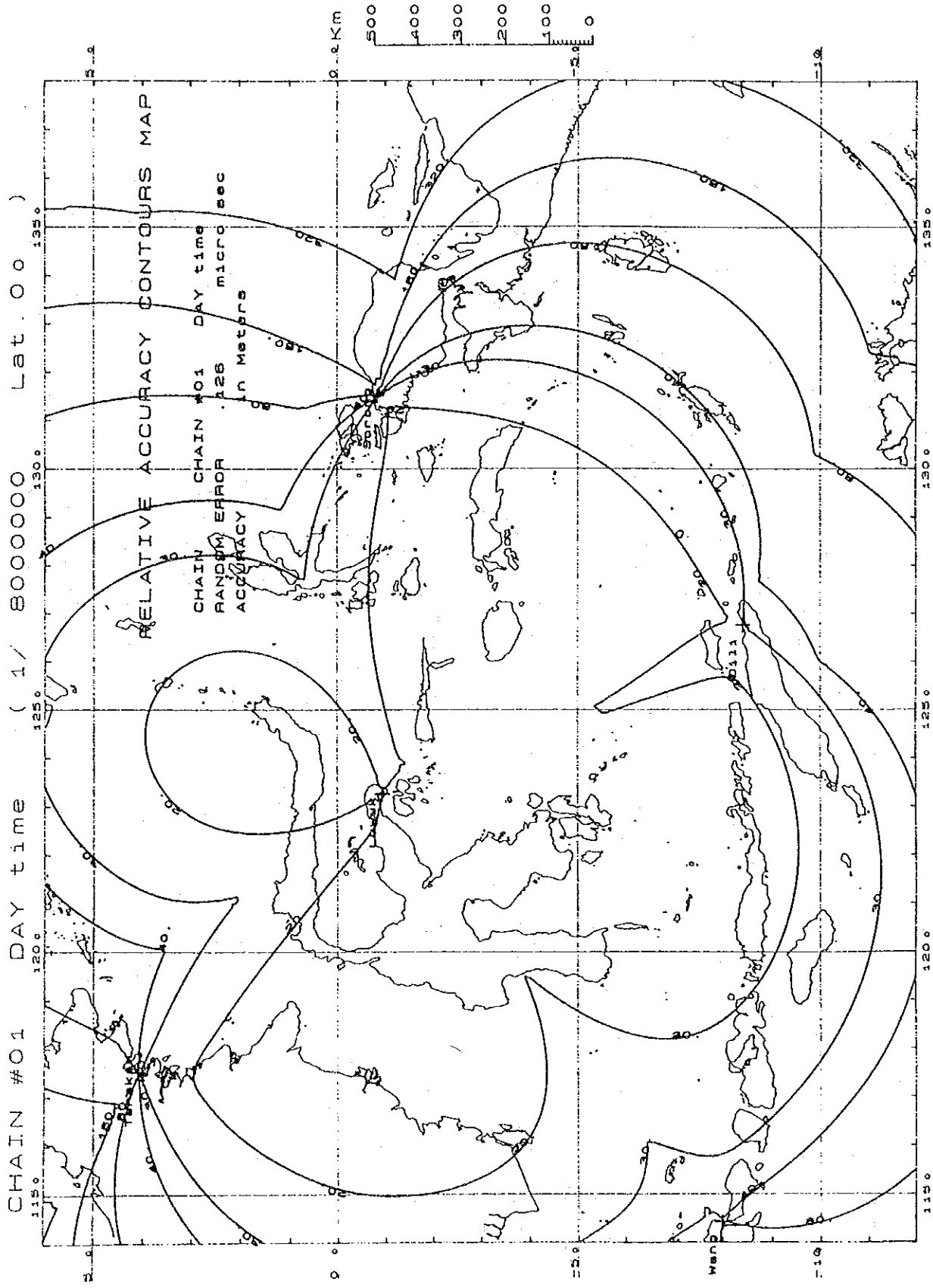


Location of Visual ATN (Bitung, 1/200,000 Lat. Oo)



Location of Visual ATN (Kupang, 1/200,000 Lat. Oo)

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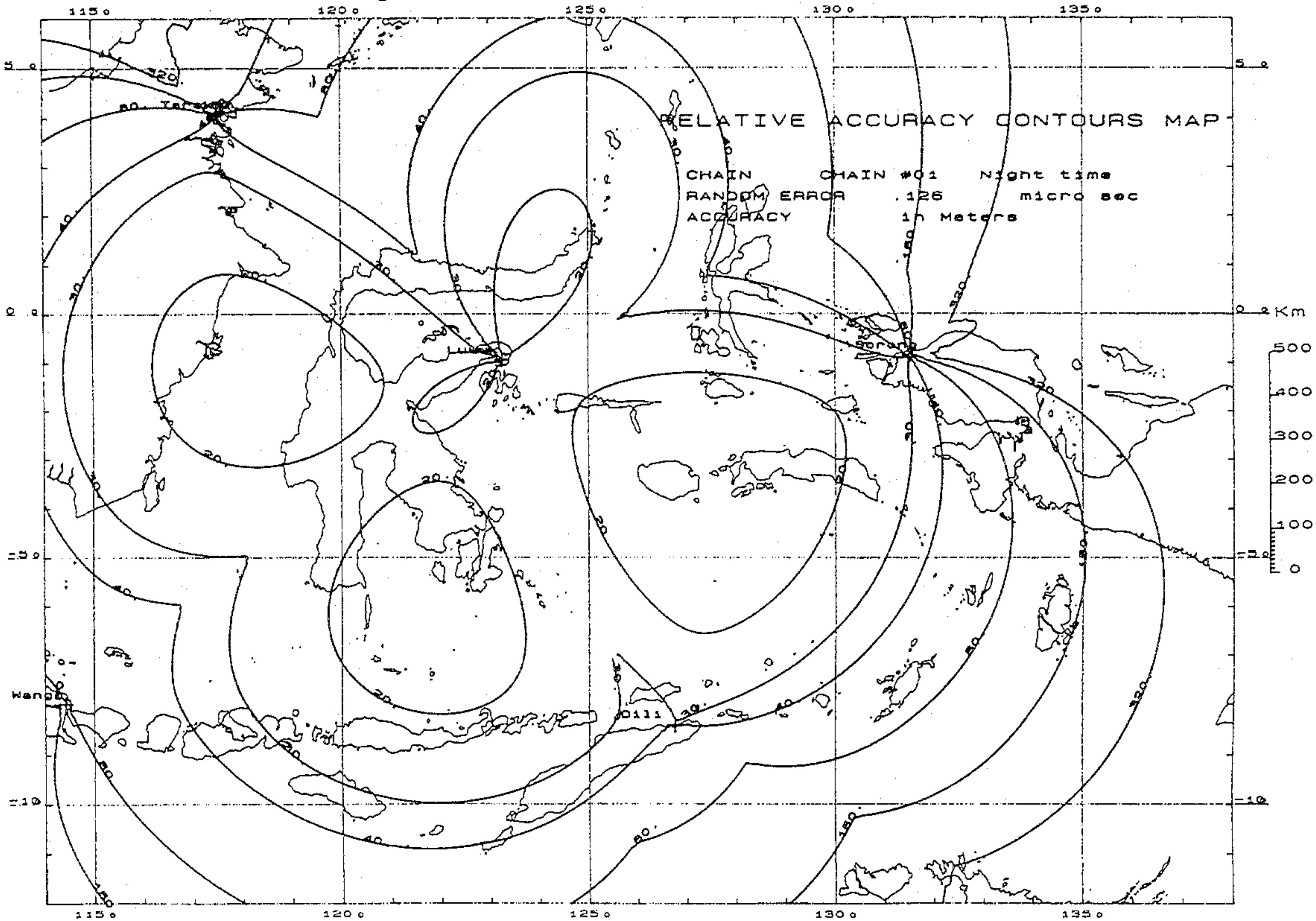
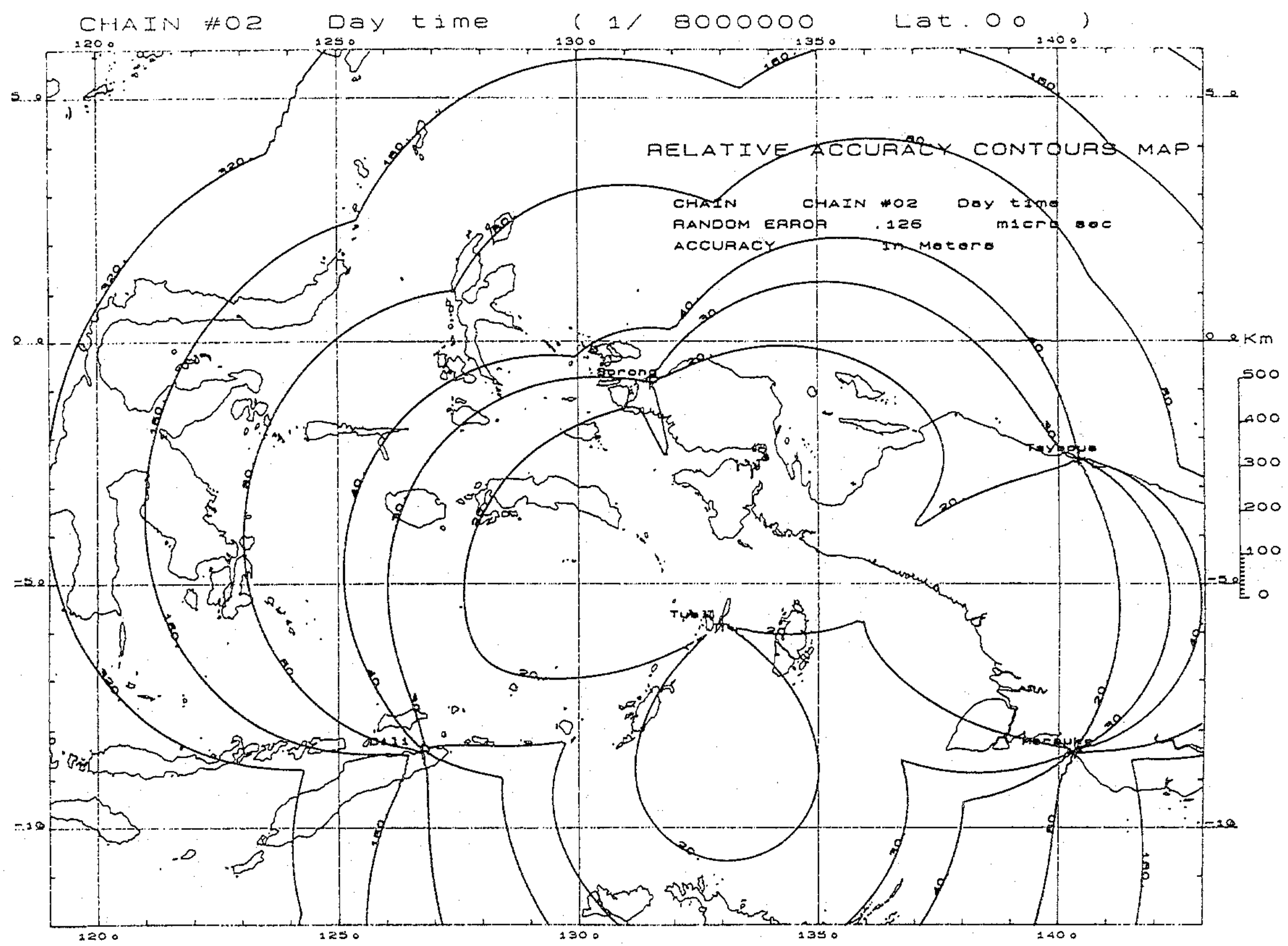
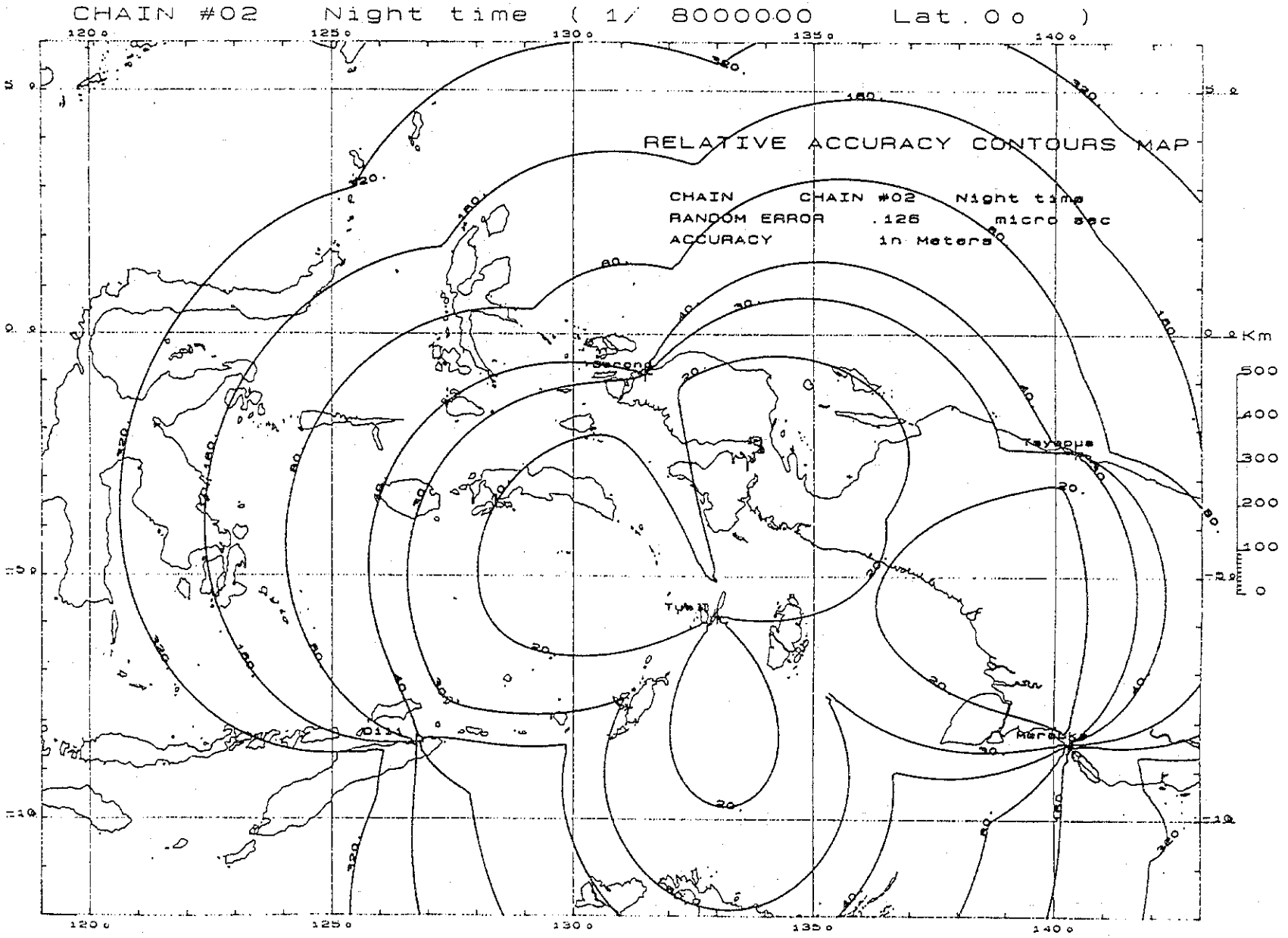
RELATIVE ACCURACY CONTOURS MAP
CHAIN #01 DAY time sec
RANDOM ERROR micro
ACCURACY in Meters
0 Km
500 400 300 200 100 0
115°
120°
125°
130°
135°

CHAIN #01 Night time (1/ 8000000 Lat. 0o)





CHAIN #02 Day time (1/ 8000000 Lat. 0o)
RELATIVE ACCURACY CONTOURS MAP
CHAIN CHAIN #02 Day time
RANDOM ERROR .126 micro sec
ACCURACY in Meters
Km
500
400
300
200
100
0
Sorong
Tual
Dili
Merauke
120o
125o
130o
135o
140o
5.0
0.0
-5.0
-10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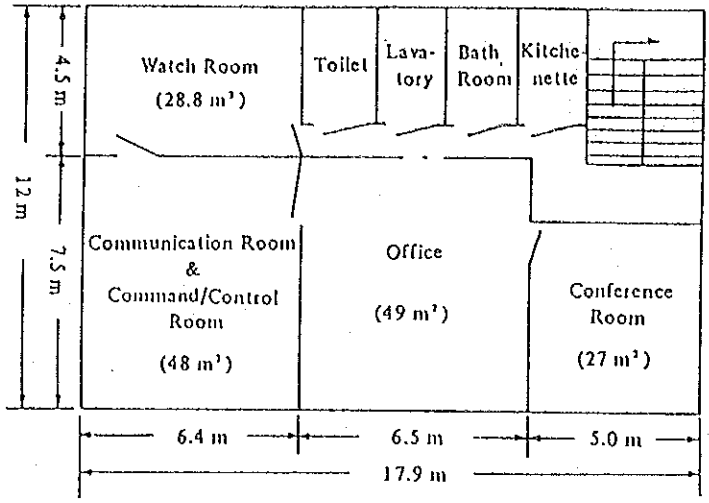
RELATIVE ACCURACY CONTOURS MAP
CHAIN CHAIN #02 Night time
RANDOM ERROR .126 micro sec
ACCURACY in Meters
Km
500
400
300
200
100
0
120 o
125 o
130 o
135 o
140 o

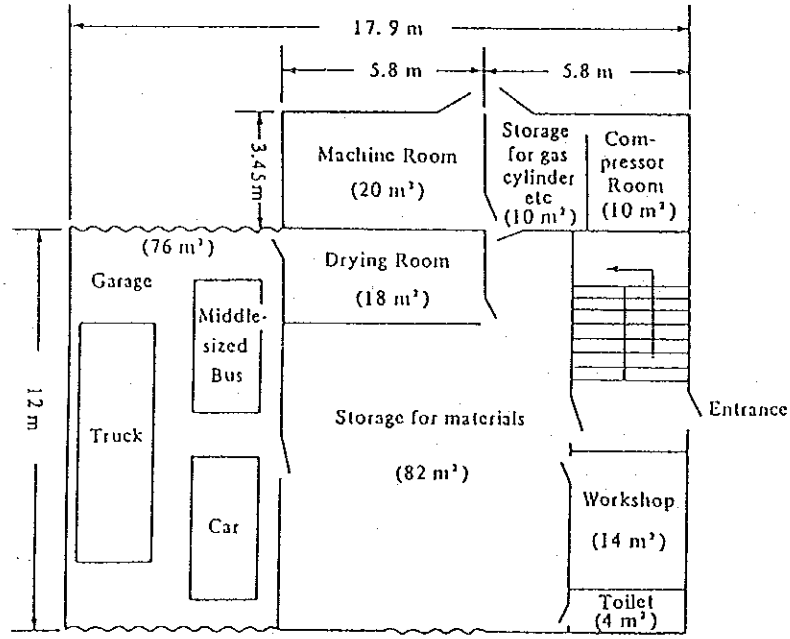
Appendix 6-3 Equipment List and Building Design for A Special Rescue Team

Equipment Item	Quantity	Remarks
DIVING RESCUE EQUIPMENTS		
High Pressure Air Compressor	2	A compressor to recharge a cylinder with air for breathing
Underwater Light	20	
Air Hose	4	A hose to feed air into capsized ships
Aqua Lifter (3 tons)	6	A air balloon for prevention of sinking
Aqua Lifter (1 ton)	4	and lifting of heavy materials in water
Underwater Riveter	2	
Manometer	4	To measure pressure of air in a cylinder
Life Raft	2	
Aqua Speaker	2	To direct instructions to a diver in water
Aqua Camera	4	
Underwater Cable TV	4	To monitor underwater circumstances from a ship
Large Buoy	10	
Small Buoy	20	
Thin Rope	1	6mm in diameter and 400m in length
Middle Rope	2	12mm in diameter and 200m in length
Thick Rope	2	20mm in diameter and 200m in length
Anchor	4	10kg in weight
Aqua Note	20	A writing board in water
Aqua Bag	20	
DIVER'S EQUIPMENTS		
Mask	20	
Snorkel	20	
Fins	20	
Harness	20	To fix and shoulder a diving cylinder
Regulator	20	To breathe air from a diving cylinder
Navy Knife	20	
Sea Gauge	20	
Scuba compass	20	
Scuba Watch	20	
Wet Suit	20	
Dive Boots	20	
Dive Glove	20	
Tank Block	40	Inclusive of valve
RANGER'S TRAINING EQUIPMENTS		
Ranger Rope	10	
Climbing Rope	4	
Helmet	20	
Big Carabiner	40	A steel ring to arrange ropes while
Small Carabiner	80	descending and ascending
Tie Band	20	To support a ranger while descending and ascending
Double Pulley	20	
Portable Winch	4	

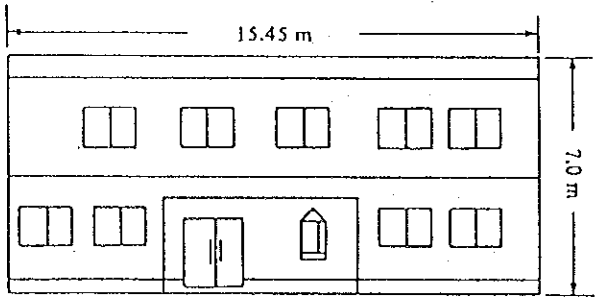
Equipment Item	Quantity	Remarks
Engine Cutter	2	
Decompress Type Stretcher	2	
Skid Strecher	2	
Resuscitator	4	With a spare cylinder
First Aid Kit	5	
Walky-Talky	8	1W type
Walky-Talky	2	10W type
Portal Light	4	Usage for wide luminous illumination
Caving Rudder	4	A rewindable steel rudder
Line Project Gun	2	
RESCUE EQUIPMENTS UNDER FLAMING AND DANGEROUS SITUATION		
Life Gem Apparatus	20	For self-breathing
Oxygen Cylinder	40	A capacity of 8 liters
Fire Proof Cloth	20	
Poison Proof Cloth	20	
Oxygen and Flammable Gas Ditector	4	
Explosion Proof Light	20	
TRANSPORTATION		
Track with Crane	1	
COMMUNICATION EQUIPMENTS		
Digital Multiplex Radio equipments (including parabolic antennae)	2	TDMA relay station and branch station
Emergency generator (including shelter)	1	Electric source 7.5 KAV
Communication operating console	1	II type
Telephone and auxiliary equipments	5	
Teletypewriter and auxiliary equipments	1	
Antenna Tower (including light and lightning rod)	2	Relay station and branch station



2nd Floor Plan (184.2 m²)



1st Floor Plan (254.8 m²)



Side View

Building Design of Special Rescue Station (scale 1:200)

Appendix 6-4 Cost Estimation for ATN Development

(Unit: Rp*1,000)

1. Lighthouse (40M)		Total:	1,442,000
(a) Light tower (Steel)	356,000		
(b) Lantern house	257,000		
(c) Revolving system	386,000		
(d) Lamp changer	46,000		
(e) Light controller	70,000		
(f) Power generator system	257,000		
(g) Cables, accessories and spares	70,000		
2. Light beacon (30M)		Total:	535,000
(a) Light tower (Steel)	257,000		
(b) Lantern house	70,000		
(c) Revolving lense	79,000		
(d) Solar power system	109,000		
(e) Cables, accessories and spares	20,000		
3. Light beacon (20M)		Total:	277,000
(a) Light tower (Steel)	158,000		
(b) Lantern	20,000		
(c) Solar power system	89,000		
(d) Cables, accessories and spares	10,000		
4. Light beacon (10M)		Total:	230,000
(a) Light tower (GRP)	158,000		
(b) Lantern	16,000		
(c) Solar power system	50,000		
(d) Cables, accessories and spares	6,000		
5. Light buoy		Total:	177,000
(a) Buoy body with mooring system	119,000		
(b) Lantern and power system	42,000		
(c) Accessories and soares	16,000		
6. Radar beacon		Total:	199,000
(a) X/S band radar beacon	129,000		
(b) Solar power system	50,000		
(c) Cables, accessories and spares	20,000		
7. Loran-C System (64HCG)			
(a) Master station			
Sub-total	29,810,000		
- Transmitter equipment	21,430,000		
- Chain control equipment	4,079,000		
- Power supply system	1,798,000		
- Antenna system	2,503,000		
(b) Secondary station per each			
Sub-total	24,293,000		
- Transmitter equipment	19,992,000		
- Power supply system	1,798,000		
- Antenna system	2,503,000		

(c) Chain control station
- Control equipment 4,079,000

(d) Monitor station
Sub-total 748,000

- Monitor equipment 540,000
- Power supply system 138,000
- Antenna system 70,000

(e) Spares
Sub-total 9,244,000

- Transmitter station equipment per chain 7,843,000
- Chain control station equipment 540,000
- Monitor station equipment 169,000
- Power supply system 692,000

To introduce Loran-C System in Eastrn Indonesia, the configuration of stations in each grade is planned as follows:

	Sulawesi Chain	Irian Jaya Chain
Master Station	1	1
Secondary Station	4	2
Chain Control Station	1	1
Monitor Station	2	2
Spare Kit	1	1
Total Amount(Rp. mil.)	141,801	93,215

8. Vessel Traffic Service (VTS) Total: 78,901,000

(a) Surabaya control station
Sub total 50,262,000

Consist of:
- High resolution radar
- Radar console
- Data terminal
- Information processor
- Remote radar control
- Microwave link
- TV camera
- Power supply

(b) Sembilangan Radar station
Sub total 12,220,000

Consist of:
- High resolution radar
- TV camera
- Microwave link
- Power supply

(c) Karang Jamuang Radar station

Sub total	16,419,000

Consist of:
- High resolution Radar
- TV camera
- International VHF
- Weather observation unit
- VHF direction finder
- VHF transmitter
- Microwave link
- Power supply

Radio ATN syatem	System description	Purpose	Accuracy and Range	Advantages(A) / Disadvantages(D)
Radar Beacon (racon)	One of transponder system for marine radar which is installed on board. It is able to display cardinal position of ship on the Radar display. Operation frequency band is 9300-9500 mHz(X band) or 2900-3100 mHz(S band). Some racons offer combined service in both bands. Usually it is installed on existing facility.	Bearing to racon station	Dependent on Radar resolution Usually, less than±1 Deg.	(A)No special equipment needed, if radars are available on board. (D)Only vessels carrying radar on board. (A)Easy maintenance, small unit, and solar source are available.
Medium Wave Radio Beacon (MWRB) Rotating pattern radio beacon.	MWRB operates in the 285 kHz to 325 kHz frequency band. The transmitted signal consists of two different moduration frequencies to make keying signal. Firstly, station ID signal and "A" signal are transmitted continuously, then keyed dods signal is also transmitted to provide the identifying bearing from station. Each minute the code is interrupted by a 10-second dash to allow mariners to refine their bearing from station. Bearing is found by counting dots from beginning to a dip point during a series of dots train.	Bearing from MWRB station	System resolution is ±3deg. or more. Up to 50nm from station	(D)Special receiver needed. (D)Only one lop available from a station. (A)If two or more beacons are available, a fix may be obtained.
Differential Omega (DF)	Large area coverage systems such as OMEGA may have variance from a predicted grid established for navigation. The variance may be caused by propagation anomalies, error in geodesy, accidental perturbations of signal timing or other factors. Differential system is the system which improves accuracy by transferring correction to users at real time. The system reduces cause of such variance. In such differential operation, reference facility may be located at a fixed point within an area of interest. Differences between observed signals and predicated signal are transmitted to users in real time as a differential correction to improve the precision	Positioning	±0.5 to ±3nm up to 300nm from Reference station	(D)Special receiver needed. (D)Reference station and Communication line of correction data are needed.
To be continued				

Radio ATN syatem	System description	Purpose	Accuracy and Range	Advantages(A) / Disadvantages(D)
	and performance of the user's receiver processor.			
Loran-C (LC)	This system is a pulsed and hyperbolic system, operating in the 90 to 110 kHz frequency band. the system is based upon measurement of the difference in time of arrival of pulses of RF energy radiated by a chain of synchronized transmitters which are separated by hundreds of miles. The measurements of time difference(TD) are made by a receiver which achieves high accuracy by comparing a zero crossing of a specified RF cycle within the pulses transmitted by Master and Secondary stations within the chain. Usually, a chain consists of 1 Master with 2, 3, 4, or 5 secondaries.	Positioning.	Typical relative accuracy is ±16to±100m Absolute accuracy is ±400m	(D)Loran-C receiver needed. (A)More than 500,000 marine receiver in use. Lat/Long read out available on latest Rx. Easy to use. (A)Plan for international chain network of Asian area including CIS, China and USA is progressed (A)Wide range, High accuracy and high reliability.
Vessel Traffic Service (VTS)	The VTS system consists of a chain of high resolution surveillance radars and VHF direction finder with the international VHF. The system comprises one Center station with some remote Radar Station. The basic functions of the VTS are: Data collection, Data evaluation, Information service, Navigational assistance service, Traffic organization service and support of allied activities.	Surveillance and Vessel control	Dependent on Surveillance Radar resolution	(A)Traffic control from center available. (D)No information available on board, obtained only from center station via VHF.

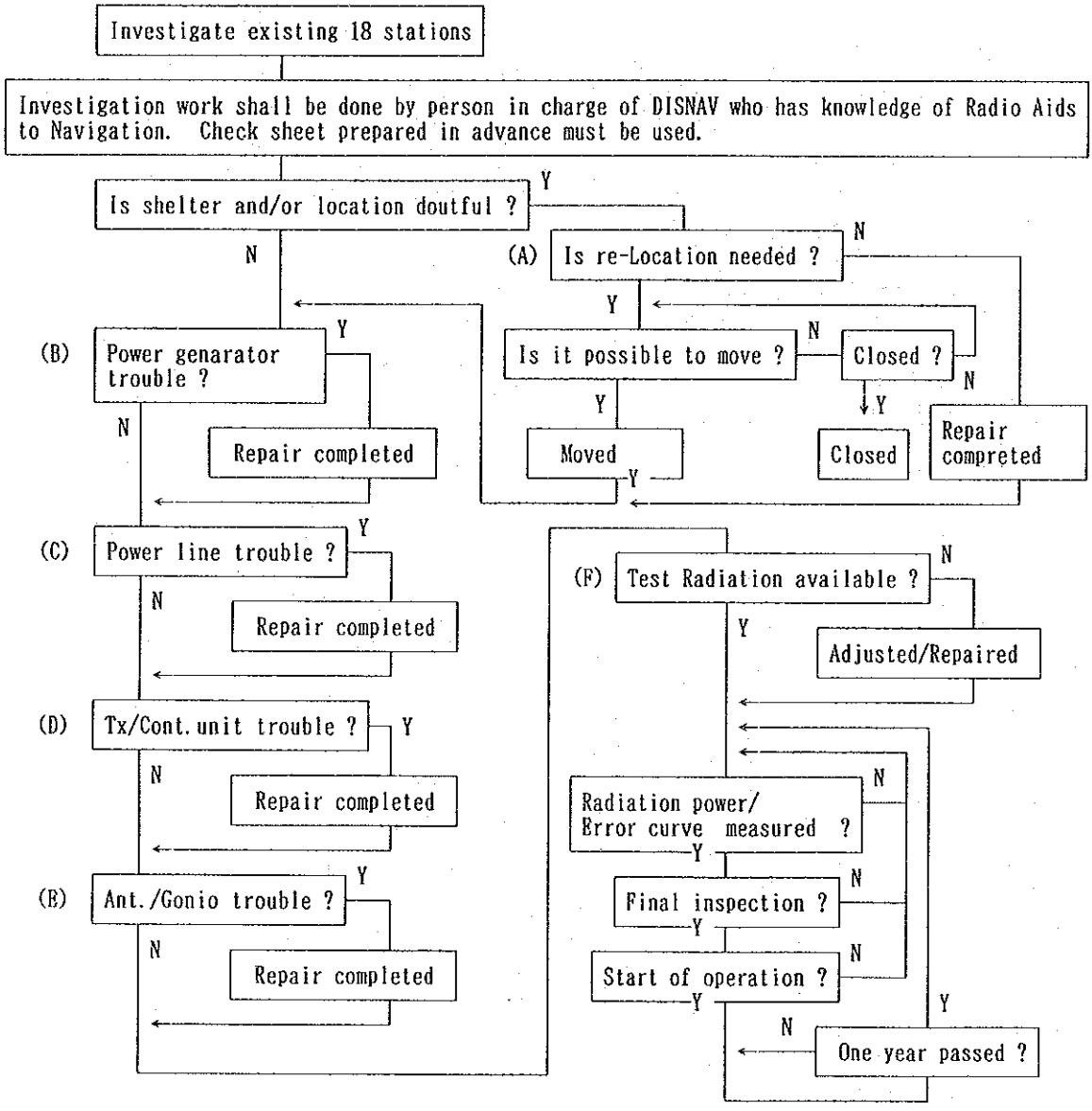
Appendix 6-6 Rehabilitation Program for Medium Wave Radio Beacon

1. Concept of rehabilitation program for MWRB

1) Cause of trouble occered should be investigated and reasons for have been restored should also be investigated. This investigation will allow to establish measures for prevention of recurrence.

2) Number of users at each area should be examined, then cost for rehabiritation of each station should be estimated as (A) to (F) of next paragraph. Priority of order have to be decided by cost vs efficiency.

2. Rehabilitation plan of MWRB



3-1 SITUATION OF EXISTING MEDIUM WAVE RADIO BEACON STATION (As of Aug. 1993, Source DGSC)

No.	Name of station Location	Condition	Check point Location Condition	Relay 1 Location Condition	Relay 2 Location Condition	Relay 3 Location Condition	Telp Comm. Facility Location Condition	Costal Monitor Location Condition	DISVAV Monitor Location Condition
1.	Sabang Tpk. Gajah Sabang Is.	Fault	-	-	-	-	-	Sabang Castal Station Good	-
2.	Simedang Simedang Is.	Good	Simedang Light house Good	Kasenga Is. Good	-	-	-	Tjn. Pandan (belitung Is.) Good	-
3.	Peniki Peniki Is.	Good	Peniki Light house Good	Damar Besar Is. Good	-	-	-	Jakarta Coastal Station (Tx St.) Good	-
4.	Pontianak Mampawar	Good	-	-	-	-	-	Pontianak Coastal station Good	-
5.	Pesemut Pesemut Is.	Good	Pesemut Light house Good	-	-	-	-	Tanjung pandan (Belitung Is.) Good	-
6.	Muria Danaraja	Good	Mandalika Light house (Mandalika Is.) Good	-	-	-	-	Semarang Coastal Station(Rx St.) Good	Semarang Sub DISNAV Good
7.	Cilacap Kilirong	Good	Cimiring Light house (Nusa Kambangan Is.) Fault W/G	-	-	-	-	Cilacap Coastal Station Good	Cilacap Sub DISNAV No data

3-2 SITUATION OF EXISTING MEDIUM WAVE RADIO BEACON STATION (As of Aug. 1993, Source DGSC)

No.	Name of station Location	Condition	Check point Location Condition	Relay 1 Location Condition	Relay 2 Location Condition	Relay 3 Location Condition	Telp Comm. Facility Location Condition	Costal Monitor Location Condition	DISVAV Monitor Location Condition
8.	Jamuang Is. Karang Jamuang	Good	Karang Jamuang Light house Good	-	-	-	-	Surabaya Coastal Station(Rx St.) Good	-
9.	Tanjung Selatan Tanjung Selatan	Fault	Tanjung Selamat Light house Fault	Bawah Layung Fault	-	-	-	Banjarmasin Coastal Station(Rx St.) Good	-
10.	Benoa Bukit Badung	Fault E/G	-	-	-	-	-	Benoa Castal Station Good	Benoa Sub DISNAV Good
11.	Balik Papan Tanjung Manggar	Good	-	-	-	-	-	Balikpapan Castal Station (Rx St.) Fault 1 Mhz OSC	-
12.	Tanjung Mang- kalihat Tanjung Mang- kalihat	Fault	Tg. Mangkalih at Light house Good	-	-	-	-	Balik papan Castal Station(Rx St.) Good	-
13.	Tanjung Mandar Tanjung Mandar	Fault	Tg. Mandar Light house Good	Makadae Good	Lawalu Good	Tg. Butung Good	Kapoposang Is. Good	Ujn. Pandang Coastal Station Good	-

3-3 SITUATION OF EXISTING MEDIUM WAVE RADIO BEACON STATION (As of Aug. 1993, Source DGSC)

No.	Name of station Location	Condition	Check point Location Condition	Relay 1 Location Condition	Relay 2 Location Condition	Relay 3 Location Condition	Telp Comm. Facility Location Condition	Costal Monitor Location Condition	DISVAV Monitor Location Condition
14.	Dewakang Is. Dewakang	Fault	Dewakang Light house Nusa kambang Is. Good	Bangkuluang Is. Fault B/G	Dayangdayangan Is. Good	-	-	Ujn. pandang Coastal Station(Rx St.) Good	-
15.	Ambon Tanjung Nusan ive	Fault E/G	-	-	-	-	-	Ambon Coastal Station(Rx St.) Good	Ambon Sub DISNAV Good
16.	Manado Talise Is.	Fault	Talise Light house Fault	Batu Angus Fault				Bitung Coastal Station(Rx St.) Fault	-
17.	Sorong Raam Is.	Good	-	-	-	-	-	Sorong Coastal Station(Rx St.) Good	Sorong Sub DISNAV No data
18.	Merauke Lampu Satu	Good	-	-	-	-	-	Merauke Coastal Station Good	-

4. Cost estimation for rehabilitation of MWRB

(in 1000 Rupiah)

1. PROCUREMENT..... Total 1,967,477
   (1) Station

Station		
No.	Name of location	
1.	Sabang	81,718
3.	Peniki	149,947
7.	Cilacap	187,203
9.	Tg. Selatan	151,702
10.	Benoa	141,890
12.	Tg. Mangkalihat	132,799
13.	Tg. Mandar	272,074
14.	Dewakang	204,106
15.	Ambon	101,330
16.	Talisei	153,178
Sub total		1,577,947

   (2) Spare unit for Transmitter 389,530

2. SERVICE..... Total 342,523
   (1) Relocation expanse
   14,760/each x 9 stations as applicant 132,840
   Local engineer 13,284
   Inland transportation 80,000
   Sub total 226,124
   (2) Test 99,399
   (3) OJT 17,000

3. GRAND TOTAL..... 2,310,000

Note: Above is rough estimation by DGSC and to be used for reference only.

Appendix 7-1 Observation of Proposed Sites for A Rating School

Picture -1: Proposed Site in Sorong

Picture -2: Proposed Site in Ambon

Appendix 7-2 Brief Notes of Major Training Facilities and Equipments

(a) Basic Training Facilities
- (i) Buildings inc., class rooms, work shop, dormitories, and library
- (ii) Pond (boat harbor) with boat davits, slip way and boat house
- (iii) 5 GRT motor ship for general use
- (iv) Cutter (for survival and physical training)
- (v) Transportation (mini-bus)

(b) Deck Department Equipment
- (i) Ship chandlery
- (ii) Wall chart of ships and model of valves and cargo gears
- (iii) Navigation aids equipment
  - Steering trainer
  - Gyro compass trainer
  - Magnetic compass trainer
  - Radar observation trainer
  - Engine telegraph

(c) Catering Department Equipment: Cooking training room with necessary training equipment and tools

(d) Engine Department Equipment
- (i) Machine tool: Lath, Universal machine, Arc welder, Tool grinder, etc.
- (ii) Remote and automatic control equipment
  - Temperature control apparatus
  - Flow control apparatus
  - Level control apparatus
  - Electric control training unit
  - Hydraulic control training unit
  - Main engine remote control trainer
  - Control valve cross section
- (iii) Electric training equipment
  - Experimental equipment for basic of electric/electronic circuit
  - Experimental equipment for transister type power source circuit
  - Experimental equipment for semi-conductor static characteristic measurement
  - Power source equipment
  - Measuring equipment (Oscilloscope, Ammeter, Voltmeter, etc.)
- (iv) Engine room model
  - Diesel engine plant
  - Wall chart for engine room of steam turbine plant
  - Cut-away model of diesel engine, pumps, steering gear, etc.

(e) Audio-visual Teaching Aids

(f) Survival Training Equipment
  (i) Inflatable life raft
  (ii) Life saving signal flares

(g) Fire Fighting Equipment
  (i) Fire fighting apparatus
  (ii) Halon type extinguisher system
  (iii) Fire detecting system

Appendix 7-3 Home Provinces of Maritime School Students between 1990 and 1992

	Academy			Rating School		
	JKT	U.P	SMRNG	BRMBNG	SRBYA	Total
1. Daerah Istimewa Aceh	0	0	1	0	1	2
2. North Sumatra	33	10	31	5	1	80
3. West Sumatra	26	0	13	0	0	39
4. Riau	2	1	6	1	0	10
5. Jambi	2	0	5	0	0	7
6. South Sumatra	6	4	11	0	1	22
7. Bengkulu	8	0	0	0	0	8
8. Lampung	3	0	6	0	0	9
9. DKI Jakarta	123	18	42	11	5	199
10. West Jawa	45	8	23	0	1	77
11. Central Jawa	35	21	319	3	11	389
12. Daerah Istimewa Yogyakarta	3	0	14	0	0	17
13. East Jawa	35	19	57	0	169	280
14. Bali	2	0	7	2	0	11
15. West Nusa Tenggara	1	1	1	0	0	3
16. East Nusa Tenggara	1	2	0	0	2	5
17. East - Timor	0	0	2	0	1	3
18. West Kalimantan	4	1	8	0	1	14
19. Central Kalimantan	0	0	1	0	0	1
20. South Kalimantan	3	0	0	0	0	3
21. East Kalimantan	0	10	2	3	0	15
22. North Sulawesi	3	27	1	0	3	34
23. Central Sulawesi	0	9	2	4	0	15
24. South Sulawesi	8	187	3	457	2	657
25. South-East Sulawesi	0	4	0	5	0	9
26. Maluku	7	18	4	8	1	38
27. Irian Jaya	2	13	2	2	0	19
Total	352	353	561	501	199	1,966

* MMA Jakarta & MMA Ujung Pandang : 1989 - 1991

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