

Appendix C.11 FINANCE OF THE PORT DEVELOPMENT AND MANAGEMENT

11.3 FINANCIAL SITUATION OF IPC I ~IV

11.3.1 FINANCIAL SITUATION OF IPC I

Source : IPC I

Table C.11.3.1 Profit and Loss Statement of IPC I in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
Operating revenues	59,266	66,221	73,369	90,834	101,825
Operating expenses :					
Working expense	33,639	37,094	39,745	46,835	51,706
Depreciation	8,166	12,769	13,865	15,385	17,875
Total	41,805	49,863	53,610	62,220	69,581
Operating income	17,461	16,358	19,759	28,614	32,244
Other income (loss)	15,366	11,086	10,122	12,267	14,274
Income before interest	32,827	27,446	29,881	40,881	46,518
Interest & extra Expenses	0	0	0	0	27
Income before tax	32,827	27,446	29,881	40,881	46,491
Income tax	10,191	6,073	8,537	10,813	7,429
Net income	22,636	21,373	21,344	30,068	39,062
Financial ratio :					
Working ratio (%)	57%	56%	54%	52%	51%
Operating ratio (%)	71%	75%	73%	69%	68%
Target operation ratio	-	-	-	-	-

Note : Working ratio = working expenses divided by operating revenues

Operating ratio = operating expenses divided by operating revenues

Table C.11.3.2 Distribution of Profit after Tax of IPC I

Items	FY1995	FY1996
① Company reserve	41.24%	41.20%
② Dividend	30.91%	35%
③ Employees and social activities	23.19%	20.80%
④ Small-scale entrepreneurs and cooperative assistance	4.66%	3%

Table C.11.3.3 Operating Revenues and Expenses of IPC I by Type
in the Last Five Years

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Operating revenues :					
① Main port facilities	8,940	10,267	11,988	18,205	19,842
② Ship services	14,511	15,196	17,342	18,877	21,130
③ Stacking facilities	899	908	1,202	2,692	3,054
④ Business on equipment	652	817	901	989	758
⑤ Terminal services	2,754	2,857	3,210	3,197	4,208
⑥ Container terminal services	15,548	18,914	20,741	25,169	27,897
⑦ Business on land, etc.	4,462	5,082	6,734	7,224	8,347
⑧ Others	11,500	12,180	11,251	14,481	16,589
Total operating revenue	59,266	66,221	73,369	90,834	101,825
Operating expenses :					
① Main port facilities	2,311	2,660	3,153	3,349	5,427
② Ship services	5,559	6,281	9,455	10,043	10,751
③ Stacking facilities	1,352	2,291	1,888	2,005	2,216
④ Business on equipment	924	1,141	1,218	1,294	1,023
⑤ Terminal services	1,482	2,078	2,270	2,411	2,921
⑥ Container terminal services	5,374	6,691	5,736	6,093	7,169
⑦ Business on land, etc.	1,504	2,512	3,217	3,417	3,284
⑧ Others	4,457	5,466	2,882	3,063	3,207
Total direct expenses	22,963	29,120	29,819	31,675	35,998
Supporting operating Expenses	18,842	20,743	23,791	30,545	33,583
Total operating expenses	41,805	49,863	53,610	62,220	69,581

Table C.11.3.4 Breakdown of Working Expenses of IPC I in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
① Personnel	9,630	9,387	11,304	12,814	13,648
② Material	5,267	6,383	6,791	7,936	8,328
③ Maintenance	6,020	8,178	5,895	6,830	6,466
④ Insurance	254	285	338	276	460
⑤ Rent	3,954	3,670	4,407	4,756	5,492
⑥ Administration	1,968	872	878	967	973
⑦ General	6,546	8,319	10,132	13,255	16,339
Total	33,639	37,094	39,745	46,834	51,706
① Personnel	29%	25%	28%	27%	26%
② Material	15%	17%	17%	17%	16%
③ Maintenance	18%	22%	15%	15%	12%
④ Insurance	1%	1%	1%	1%	1%
⑤ Rent	12%	10%	11%	10%	11%
⑥ Administration	6%	2%	2%	2%	2%
⑦ General	19%	23%	26%	28%	32%
Total	100%	100%	100%	100%	100%

Table C.11.3.5 Financial Situation of Each Port in IPC I in FY 1996

(Unit : million Rp.)

No	Port	Revenue	Expenditure	Profit	Working Ratio(%)
1	Belawan	61,985	27,752	34,233	44.7
2	Dumai	17,717	9,970	7,747	56.3
3	Lhok Seumawe	8,007	2,526	5,481	31.5
4	Tanjung. Pinang	5,443	3,265	2,178	60.0
5	Pekanbaru	4,243	1,774	2,469	41.8
6	T. Balai Asahan	632	491	141	77.7
7	Sibolga	753	592	161	78.6
8	Malahayati	410	895	-485	218
9	Tembilahan	490	456	34	93
10	Kuala Langsa	157	222	-65	141
11	Gunung Sitoli	266	206	60	77.4
12	Rengat	101	135	-34	133.6
13	Bengkalis	194	331	-137	170.6
14	Selat Panjang	230	349	-119	151.7
15	RSF. Belawan	1,737	1,681	56	96.8
16	RSP. Dumai	549	601	-52	109.5
17	Kantor Pusat	14,704	19,881	-5,177	135.2
Total		117,618	71,127	46,491	60.5

Table C.11.3.6 Breakdown of Fixed Assets of IPC I

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Acquisition cost					
① Port facility	97,038	100,548	105,510	176,312	194,621
② Ships	28,196	35,779	36,958	38,080	41,625
③ Port equipment	24,518	24,729	26,008	27,981	28,573
④ Network	8,740	8,916	12,140	12,392	15,074
⑤ Land	660,467	663,162	663,162	661,523	662,466
⑥ Roads and buildings	31,149	33,607	35,934	35,095	49,505
⑦ Small equipment	2,772	3,375	4,369	5,471	7,982
⑧ Vehicles	1,219	1,298	1,326	2,142	2,515
⑨ Structure	2,190	2,190	2,325	3,754	5,076
⑩ Others	0	0	2,000	2,000	2,000
Total	856,289	873,604	889,732	964,749	1,009,438
Accumulated depreciation	899	12,058	23,496	36,820	50,760
Net fixed assets	855,390	861,546	866,236	927,929	958,678

Table C.11.3.7 Long-term Notes Payable

Kinds of long-term notes	
① Creditor	Government
② Port financed	Belawan Dumai
③ Type of loan	Installment
④ Commitment	-
① Actual draw	-
② Balance. at 12/31/96	Rp.2,471 M
③ Term	10 years
④ Grace period	5 years
⑤ Interest	10 %
⑥ Commitment fee	-
⑦ Bank charge	-
⑧ Repayment start	12/15/93

Table C.11.3.8 Projected Debt Service Payment

(Unit : million Rp.)

Year	Principal	Interest	Total
1997	369.50	357.59	727.09
1998	369.50	258.44	627.94
1999	369.50	159.29	528.79
2000	369.50	122.14	491.64
2001	369.50	84.36	453.86
2002	369.50	46.90	416.40
2003	184.75	9.44	194.19
2004	-	-	-
2005	-	-	-
Thereafter	-	-	-
Total	2,401.75	1,038.16	3,439.91

Table C.11.3.9 Summary Cash Flow Statements of IPC I in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
(1) Operating cash flows					
1) Op. Receipts	59,268	66,221	73,369	85,784	95,603
2) Op. Disbursement	-29,559	-37,094	-39,745	-42,214	-47,302
3) Income tax paid	-10,191	-6,074	-8,537	-11,074	-14,153
4) Other	12,604	10,591	9,194	14,161	12,496
Total	32,122	33,644	34,281	46,657	46,644
(2) Financing cash flow					
1) Proceeds from notes	-	-	-	-	-
2) Repayment of loans	0	-185	-370	-370	-370
3) Payment of interest	0	-219	-321	-445	-396
4) State assistance	0	0	0	0	0
5) Distribution/Contribution	-5,404	-9,963	-21,432	-14,732	-23,790
Total	-5,404	-10,367	-22,123	-15,547	-24,556
(3) Investing cash flows	-26,132	-23,141	-12,292	-24,625	-25,500
Net cash flow	586	136	-134	6,485	-3,412
Cash balance at beginning	4,741	5,327	5,463	5,329	11,814
Cash balance at end	5,327	5,463	5,329	11,814	8,402

11.3.2 FINANCIAL SITUATION OF IPC II

Source : IPC II

Table C.11.3.10 Profit and Loss Statement of IPC II in the Last Four Years

(Unit : million Rp.)

Item	1993	1994	1995	1996
Operating revenues	266,935	313,936	439,303	469,926
Operating expenses :				
Working expense	130,129	150,624	212,772	250,711
Depreciation	34,908	36,103	38,455	45,297
Total	165,037	186,727	251,227	296,008
Operating income	101,898	127,209	188,076	173,918
Other income (loss)	1,356	3,283	896	7,571
Income before interest	103,254	130,492	188,972	181,489
Interest & extra ord. Expenses	285	437	-9,044	28,271
Income before minority right	103,539	130,929	179,928	209,760
Minority right on profit(loss)	0	0	-15	646
Income before tax	103,539	130,929	179,913	210,406
Income tax	24,754	43,784	49,739	43,758
Net income	78,785	87,145	130,174	166,648
Financial ratio :				
Working ratio (%)	49%	48%	48%	53%
Operating ratio (%)	62%	59%	57%	63%
Target operation ratio	-	-	-	-

Note : Working ratio = working expenses divided by operating revenues

Operating ratio = operating expenses divided by operating revenues

Table C.11.3.11 Distribution of Profit After Tax of IPC II

Items	FY 1995	FY 1996
① Company reserve	54.56 %	62.06 %
② Dividend	26.18 %	24 %
③ Employees and social activities	16.84 %	10.64 %
④ Small-scale entrepreneurs and cooperative assistance	2.42 %	3.30 %

Table C.11.3.12 Operating Revenues and Expenses of IPC II by Type
in the Last Four years

(Unit : million Rp.)

Description	1993	1994	1995	1996
Operating revenues :				
① Main port facilities	34,161	39,289	56,648	56,344
② Ship services	26,236	28,850	37,874	40,575
③ Stacking facilities	9,212	12,923	27,996	25,856
④ Business on equipment	833	775	619	0
⑤ Terminal services	10,699	15,239	25,183	26,495
⑥ Container terminal services	143,336	169,068	228,060	245,560
⑦ Business on land, etc.	19,825	21,793	24,475	32,817
⑧ Special port / berth	7,803	8,069	12,939	14,069
⑨ Others	15,022	17,997	25,602	28,396
Revenue reduction	-192	-67	-94	-186
Total operating revenue	266,935	313,936	439,302	469,926
Operating expenses :				
① Main port facilities	10,150	10,153	12,729	12,185
② Ship services	16,152	17,610	21,794	26,305
③ Stacking facilities	10,035	9,643	20,228	14,887
④ Business on equipment	1,035	945	837	847
⑤ Terminal services	7,845	11,702	16,991	18,318
⑥ Container terminal services	34,046	40,255	51,732	81,467
⑦ Business on land, etc.	12,663	13,619	13,042	16,732
⑧ Special port / berth	203	214	240	308
⑨ Others	11,944	13,813	15,999	18,814
Total direct expenses	104,073	117,945	153,592	189,863
Supporting operating Expenses	60,964	68,782	97,635	107,031
Total operating expenses	165,037	186,727	251,227	296,894

Table C.11.3.13 Breakdown of Working Expenses of IPC II in the Last Four Years

(Unit : million Rp.)

Item	1993	1994	1995	1996
① Personnel	31,248	35,073	44,487	48,392
② Material	34,633	39,427	39,986	48,645
③ Maintenance	18,167	20,984	33,895	25,920
④ Insurance	762	1,011	1,256	914
⑤ Rent	15,120	19,942	37,998	71,371
⑥ Administration	4,045	4,931	6,028	6,830
⑦ General	26,154	29,256	49,122	48,639
Total	130,129	150,624	212,772	250,711
① Personnel	24%	23%	21%	19%
② Material	27%	26%	19%	19%
③ Maintenance	14%	14%	16%	10%
④ Insurance	1%	1%	1%	0%
⑤ Rent	12%	13%	18%	29%
⑥ Administration	3%	3%	3%	3%
⑦ General	20%	20%	23%	20%
Total	101%	100%	101%	100%

Table C.11.3.14 Financial Situation of Each Port in IPC II in FY 1996

(Unit : million Rp.)

No	Port	Revenue	Expenditure	Profit	Working Ratio(%)
1	Container Terminal	230,852	92,744	138,108	40.1
2	Tanjung Priok	127,725	70,458	57,267	55.1
3	Banten	26,957	14,450	12,507	53.6
4	Panjang	20,516	12,572	7,944	61.2
5	Palembang	11,298	10,461	837	92.6
6	Teluk Bayur	10,039	9,222	817	91.9
7	Cirebon	9,034	8,345	689	92.3
8	Pontianak	8,978	6,826	2,152	76
9	Sunda kelapa	4,572	3,623	949	79.2
10	Jambi	2,900	2,599	301	89.6
11	Bengkulu	2,838	4,270	-1,432	150
12	Pangkal Balam	956	905	51	94.7
13	Tanjung Pandan	833	831	2	99.8
14	Hospital	10,313	9,945	368	96.4
15	Training Center	1,198	1,853	-655	154.7
16	Head Office	31,728	41,227	-9,499	129.9
	Total	500,737	290,331	210,406	58

Table C.11.3.15 Breakdown of Fixed Assets of IPC II

(Unit : million Rp.)

Description	1993	1994	1995	1996
Acquisition cost				
① Port facility	355,021	365,293	417,283	502,155
② Ships	16,627	16,614	18,098	19,385
③ Port equipment	153,930	155,038	165,805	181,910
④ Network	13,518	15,462	17,606	21,008
⑤ Land	1,872,472	1,873,931	1,874,275	1,834,012
⑥ Roads and buildings	52,617	52,450	57,216	68,056
⑦ Small equipment	12,306	17,653	25,656	36,967
⑧ Vehicles	3,430	3,651	3,949	4,486
⑨ Structure	4,308	6,539	6,864	4,646
Total	2,484,229	2,506,631	2,586,752	2,672,625
Accumulated depreciation	37,266	72,410	109,771	152,449
Net fixed assets	2,446,963	2,434,221	2,476,981	2,520,176

Table C.11.3.16 Long-term Notes Payable

Kinds of long-term notes	IBRD	EXIM	Project UTPK Koja
① Creditor	IBRD	EXIM	PT.Eksim Bank
② Port financed	Tg. Priok	Tg. Priok	Container Terminal Koja-Jakarta
③ Type of loan	Development Project	Development Project	Investment Credit & Constructions
④ Commitment	Rp.64.7 B	US \$ 58 M	Rp.250 B
① Actual draw	Rp.64.7 B	US \$ 58 M	Rp.200 B
② Balance. at 12/31/96	-	-	Rp.50 B
③ Term	20 years	14 years	13 years
④ Grace period	5 years	-	3 years
⑤ Interest	-	11 %	Floating rate
⑥ Commitment fee	-	-	1 %
⑦ Bank charge	0.4 %	0.40 %	-
⑧ Repayment term	1/1/1991~ 1/7/2005	15/7/1992~ 15/1/2001	4/3/1996~ 4/3/2008

Kinds of long-term notes	Obligations	MTN
① Creditor	Public /Investor	Investor
② Port financed	CT III Tg. Priok	Bojonegara
③ Type of loan	Development Project	Development Project
④ Commitment	Rp.100 M	US \$ 200 M
① Actual draw	Rp.100M	US \$ 200 M
② Balance. at 12/31/96	-	-
③ Term	5 years	5 years
④ Grace period	1 years	1 years
⑤ Interest	Floating rate	8.06 %
⑥ Commitment fee	0.4 %	0.4 %
⑦ Bank charge	-	-
⑧ Repayment term	1995~1999 Sinking Fund	15/4/2002

Table C.11.3.17 Projected Debt Service Payment

(Unit : million Rp.)

Year	Principal	Interest	Total
1998	45,589	33,831	79,420
1999	53,457	16,760	70,217
2000	12,799	5,000	17,799
2001	11,882	5,000	16,882
2002	11,002	5,000	16,002
Total	134,729	65,591	200,320

Table C.11.3.18 Summary Cash Flow Statements of IPC II in the Last Four Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
(1) Operating cash flows					
1) Op. Receipts		78,785	87,144	130,203	166,647
2) Op. Disbursement		-	-	-	-
3) Income tax paid		-12,892	-21,791	-10,547	-3,157
4) Other		2,438	-8,390	-22,588	-51,948
Total		68,331	56,963	97,068	111,542
(2) Financing cash flow					
1) Pension Funds		2,796	-1,767	-1,028	0
2) Guarantees Funds		-3	0	790	0
3) Private Investment Loans		1,497	-2,570	-4,660	227,544
		-16	-8,953	-4,459	-17,602
4) Government Payable		0	-197	424	-10,021
5) BBD Payable		-6,131	100,000	-11,000	-2,000
6) Bond Payable		0	46,436	47,554	81,378
7) Retained Earnings		-	-	1,944	-649
8) Minorities		-	-	-	-
Total		-1,857	132,946	29,565	278,650
(3) Investing cash flows		-49,736	-178,980	-126,182	-381,148
Net cash flow		16,738	10,928	451	9,045
Cash balance at beginning		14,988	31,727	42,656	43,107
Cash balance at end	14,988	31,727	42,656	43,107	52,152

11.3.3 FINANCIAL SITUATION OF IPC III

Source : IPC III

Table C.11.3.19 Profit and Loss Statement of IPC III in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
Operating revenues	91,265	117,431	139,959	195,745	216,813
Operating expenses :					
Working expense	52,496	59,363	66,098	80,603	95,770
Depreciation	18,299	26,283	26,907	26,882	29,474
Total	70,795	85,646	93,005	107,485	125,244
Operating income	20,470	31,785	46,954	88,260	91,569
Other income (loss)	15,645	14,409	19,885	19,873	28,189
Income before interest	36,115	46,194	66,839	108,133	119,758
Interest & extra ord. Expenses	15,551	22,302	20,460	23,915	19,571
Income before tax	20,564	23,892	46,379	84,218	100,187
Income tax	1,832	5,266	13,688	21,394	22,164
Net income	18,732	18,626	32,691	62,824	78,023
Financial ratio :					
Working ratio (%)	58%	51%	47%	41%	44%
Operating ratio (%)	78%	73%	66%	55%	58%
Target operation ratio	99%	81%	78%	75%	94%

Note : Working ratio = working expenses divided by operating revenues

Operating ratio = operating expenses divided by operating revenues

Table C.11.3.20 Distribution of Profit After Tax of IPC III

Item	FY 1995	FY 1996
① Company reserve	40-50%	40-50%
② Dividends to government	30%	30%
③ Employees bonus fund	10-15%	10-15%
④ Small business fund	5%	5%
⑤ Others (Pension fund, etc.)	3.5-6%	3.5-6%

Table C.11.3.21 Operating Revenues and Expenses of IPC III by Type
in the Last Five Years

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Operating revenues :					
① Main port facilities	21,497	25,784	29,546	47,638	48,400
② Ship services	11,624	13,083	14,861	18,007	19,284
③ Stacking facilities	5,578	5,464	11,475	23,923	27,492
④ Business on equipment	1,450	1,524	1,370	1,728	1,031
⑤ Terminal services	6,216	8,116	10,373	13,042	14,036
⑥ Container terminal services	29,523	43,210	48,855	60,255	72,291
⑦ Business on land, etc.	10,494	14,735	15,427	23,795	21,170
⑧ Others	4,884	5,515	8,052	29,108	41,298
Total operating revenue	91,266	117,431	139,959	217,496	245,002
Operating expenses :					
① Main port facilities	4,784	6,854	6,423	7,862	9,232
② Ship services	7,614	9,423	9,644	10,490	10,975
③ Stacking facilities	3,567	4,968	7,339	7,250	6,906
④ Business on equipment	1,784	2,126	1,869	2,071	1,778
⑤ Terminal services	4,239	5,120	5,741	5,484	6,185
⑥ Container terminal services	13,367	11,603	11,085	10,962	14,303
⑦ Business on land, etc.	4,462	6,999	6,590	9,732	8,280
⑧ Others	861	1,087	1,391	1,804	2,095
Total direct expenses	40,678	48,180	50,082	55,655	59,754
	5,492	3,522	3,758	3,758	4,849
Supporting operating Expenses	15,318	25,190	27,032	27,032	55,701
Total operating expenses	61,488	76,892	80,872	86,445	120,304

Table C.11.3.22 Breakdown of Working Expenses of IPC III in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
① Personnel	18,138	19,009	18,858	24,491	27,093
② Material	7,187	12,957	14,380	14,329	17,064
③ Maintenance	6,672	7,440	8,889	12,254	12,731
④ Insurance	196	218	263	612	563
⑤ Rent	6,080	6,069	7,615	10,845	8,521
⑥ Administration	2,037	2,388	2,751	2,065	3,638
⑦ General	14,878	14,480	15,418	15,905	26,158
Total	55,188	62,561	68,174	80,501	95,768
① Personnel	33%	30%	28%	30%	29%
② Material	13%	21%	21%	18%	18%
③ Maintenance	12%	12%	13%	15%	13%
④ Insurance	0%	0%	0%	1%	1%
⑤ Rent	11%	10%	11%	13%	8%
⑥ Administration	4%	4%	4%	3%	3%
⑦ General	27%	23%	23%	20%	28%
Total	100%	100%	100%	100%	100%

Table C.11.3.23 Financial Situation of Each Port in IPC III in 1996

(Unit : million Rp.)

No	Port	Revenue	Expenditure	Profit	Working Ratio(%)
1	Head office	16,817	19,366	-2,549	115.2
2	Tanjung Perak	163,160	80,256	82,904	49.2
3	Tanjung Emas	23,083	13,497	9,586	58.5
4	Gresik	4,554	1,557	2,997	34.2
5	Banjarmasin	12,197	12,134	63	99.5
6	Cliacap	6,556	3,120	3,436	47.6
7	Meneng	1,910	1,422	488	74.4
8	Kota Baru	4,510	1,565	2,945	34.7
9	Probolinggo	1,217	951	266	78.1
10	Benoa	3,614	3,036	578	84
11	Sampit	1,143	1,070	73	93.60
12	Tegal	376	542	-166	144.3
13	Dilli	867	766	101	88.4
14	Celukan Bawang	474	425	49	89.6
15	Lembar	698	607	91	86.9
16	Pulang Pisau	0	0	0	0
17	Kuala Kapuas	471	462	9	98.1
18	Kumai	0	0	0	0
19	Pangkalan Bun	562	636	-74	113.2
20	Pasuruan	182	233	-51	128
21	Badas	208	222	-14	106.8
22	Maumere	203	254	-51	125.2
23	Kalabahi	154	315	-161	204.6
24	Waingapu	220	306	-86	138.8
25	Ende	146	327	-181	223.9
26	Panarukan	0	0	0	0
27	Kalianget	157	225	-68	142.9
28	Bima	292	382	-90	130.6
29	Kupang	1,231	1,139	92	92.5
	Total	245,002	144,815	100,187	59.5

Table C.11.3.24 Breakdown of Fixed Assets of IPCIII

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Acquisition cost					
① Port facility	281,567	289,809	311,102	322,930	347,005
② Ships	34,417	34,488	34,462	34,512	39,220
③ Port equipment	65,248	64,752	64,874	64,892	97,524
④ Network	24,292	25,482	27,027	27,900	31,658
⑤ Land	484,117	485,948	489,195	489,214	490,400
⑥ Roads and buildings	79,305	83,995	86,913	91,808	105,395
⑦ Small equipment	12,893	13,201	15,936	16,172	21,583
⑧ Vehicles	1,930	2,449	2,580	3,128	4,459
⑨ Structure	16,576	17,524	19,750	19,924	21,197
Total	1,000,345	1,017,648	1,051,839	1,070,480	1,158,439
Accumulated depreciation	2,148	28,288	54,834	81,311	110,155
Net fixed assets	998,197	989,360	997,005	989,169	1,048,284

Table C.11.3.25 Long-term Notes Payable

Kinds of long-term notes	ADB688	SFD*	ADB797	NIB *	EXIM *
① Creditor	7th Port	7th Port	8th Port	8th Port	9th Port
② Port financed	Surabaya	Surabaya	Banjarmasin	Banjarmasin	Banjarmasin
③ Type of loan	Installment	Equal princ.	Installment	Equal princ.	Equal princ.
④ Commitment	US \$ 86 M	SR. 72 M	US \$ 26.3 M	US \$ 26.3 M	US \$ 1.13 M
① Actual draw (in Rp.)	US \$ 94 M (Rp.171B)	SR.72 M (Rp.36.7B)	US \$ 12 M (Rp.24.8B)	US \$ 4.5M (Rp.8.5B)	US \$ 1.1M (Rp.2.2B)
② Balance. at 12/31/96	Rp.12.8B	Rp.2.63B	Rp.639M	Rp.439M	Rp.110M
③ Term	20 years	20 years	25 years	25 years	25 years
④ Grace period	5 years	4 years	5 years	5 years	5 years
⑤ Interest	10.50 %	10.50%	10.50%	10.50%	10.50%
⑥ Commitment fee	0.75 %	N/A	0.75 %	0.50%	0.75 %
⑦ Bank charge	0.25 %	0.25%	0.25 %	0.25 %	0.25 %
⑧ Repayment start	4/15/93	3/15/93	4/15/93	4/15/93	4/15/94

* Note : SFD= Saudi Arabia Fund Development

NIB = Nordiska Investing Banken

Table C.11.3.26 Projected Debt Service Payment

(Unit : million Rp.)

Year	Principal	Interest	Total
1997	16,675	20,419	37,094
1998	17,867	18,570	36,437
1999	19,184	16,587	35,771
2000	20,639	14,498	35,137
2001	22,251	12,165	34,416
2002	24,032	9,694	33,726
2003	25,998	7,020	33,018
2004	16,062	4,115	20,177
2005	4,625	3,029	7,654
Thereafter	20,311	8,149	28,460
Total	187,644	114,246	301,890

Table C.11.3.27 Summary Cash Flow Statements of IPC III in the Last Five Years

(Unit : million Rp.)

Item	1991	1992	1993	1994	1995	1996
(1) Operating cash flows						
1) Op. Receipts		87,458	114,600	130,434	197,854	351,516
2) Op. Disbursement		-19,964	-67,728	-18,489	-89,952	-349,327
3) Income tax paid		-9,864	-1,606	-10,497	11,638	10,038
4) Other		12,432	11,257	-1,411	33,393	15,616
Total		70,062	56,523	100,037	152,933	27,843
(2) Financing cash flow						
1) Proceeds from notes		21,819			3,748	
2) Repayment of loans			-1	-33,973		
3) Payment of interest		-15,551	-22,302	-20,460	-23,973	
4) State assistance		2,080	11,665	16,581	14,221	-14,114
5) Distribution /Contribution		5,711	-23,427	-8,801	-45,683	
Total		14,059	-34,065	-46,653	-51,687	-14,114
(3) Investing cash flows		-55,412	-20,974	-45,825	-55,857	-2,704
Net cash flow		28,709	1,484	7,559	45,389	11,025
Cash balance at beginning		68,332	97,041	98,525	106,084	118,249
Cash balance at end	68,332	97,041	98,525	106,084	151,473	129,274

11.3.4 FINANCIAL SITUATION OF IPC IV

Source : IPC IV

Table C.11.3.28 Profit and Loss Statement of IPC IV in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
Operating revenues	33,904	39,743	43,888	58,441	63,321
Operating expenses :					
Working expense	22,686	24,191	29,929	35,985	35,692
Depreciation	6,762	5,042	6,477	7,295	9,548
Total	29,448	29,233	34,406	43,280	45,240
Operating income	4,456	10,510	7,482	15,161	18,081
Other income (loss)	4,124	5,044	3,601	3,401	3,663
Income before interest	8,580	15,554	11,083	18,562	21,744
Interest & extra Expenses	754	1,529	1,467	4,074	6,150
Income before tax	7,826	14,025	9,616	14,488	15,594
Income tax	3,475	4,466	1,906	3,159	3,415
Net income	4,351	9,559	7,710	11,329	12,179
Financial ratio :					
Working ratio (%)	67%	61%	68%	62%	56%
Operating ratio (%)	87%	74%	83%	74%	71%
Target operation ratio	98%	83%	83%	83%	68%

Note : Working ratio = working expenses divided by operating revenues

Operating ratio = operating expenses divided by operating revenues

Table C.11.3.29 Distribution of Profit after Tax of IPC IV

Items	FY 1995	FY 1996
① Company reserve	44%	41%
② Dividend to government	25%	23%
③ Employees bonus fund	23%	29%
④ Pension Fund	4%	4%
⑤ Others (Special fund etc.)	4 %	3%

Table C.11.3.30 Operating Revenues and Expenses of IPC IV by Type
in the Last Five Years

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Operating revenues :					
① Main port facilities	8,415	8,387	10,276	13,827	14,831
② Ship services	8,064	9,007	10,003	12,637	13,964
③ Stacking facilities	1,280	986	1,214	2,585	2,600
④ Business on equipment	1,179	1,197	1,231	1,382	1,455
⑤ Terminal services	2,090	2,131	2,531	3,041	3,747
⑥ Container terminal services	753	2,852	4,486	5,574	7,012
⑦ Business on land, etc.	3,950	4,813	5,720	8,150	8,517
⑧ Others	8,173	10,370	8,427	11,149	12,172
Total operating revenue	33,904	39,743	43,888	58,345	64,298
Operating expenses :					
① Main port facilities	3,358	2,520	2,979	3,955	4,390
② Ship services	4,422	4,215	4,819	5,388	5,496
③ Stacking facilities	1,318	1,194	1,503	1,620	1,981
④ Business on equipment	1,165	1,012	1,150	1,544	1,339
⑤ Terminal services	1,695	1,698	2,100	2,705	2,480
⑥ Container terminal services	170	471	810	739	1,681
⑦ Business on land, etc.	2,048	2,380	2,943	3,164	3,206
⑧ Others	1,168	1,420	2,058	2,526	2,759
Total direct expenses	15,344	14,910	18,362	21,641	23,332
Indirect operating expenses	1,258	1,431	1,696	1,973	2,308
Supporting operating expenses	7,351	7,462	9,594	10,257	11,285
Total operating expenses	23,953	23,803	29,652	33,871	36,925

Table C.11.3.31 Breakdown of Working Expenses of IPC IV in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
① Personnel	7,367	8,173	8,360	8,720	10,333
② Material	3,071	3,892	5,407	5,593	5,949
③ Maintenance	2,996	2,724	3,879	3,787	3,550
④ Insurance	27	66	207	325	392
⑤ Rent	1,437	1,545	2,108	2,950	3,077
⑥ Administration	879	1,105	1,165	1,421	1,430
⑦ General	6,029	6,757	8,803	10,732	11,500
Total	21,806	24,262	29,929	33,528	36,231
① Personnel	34%	34%	28%	26%	29%
② Material	14%	16%	18%	17%	16%
③ Maintenance	14%	11%	13%	11%	10%
④ Insurance	0%	0%	1%	1%	1%
⑤ Rent	7%	6%	7%	9%	9%
⑥ Administration	4%	5%	4%	4%	4%
⑦ General	28%	28%	29%	32%	31%
Total	100%	100%	100%	100%	100%

Table C.11.3.32 Financial Situation of Each Port in IPC IV in 1996

(Unit : million Rp.)

No	Port	Revenue	Expenditure	Profit	Working Ratio(%)
1	Makasar	18,314	8,139	10,175	44.4
2	Balikpapan	12,909	6,182	6,727	47.9
3	Bitung	6,704	4,333	2,371	64.6
4	Samarinda	6,082	3,368	2,714	55.4
5	Ambon	5,119	3,323	1,796	64.9
6	Pantoloan	2,519	1,712	807	68
7	Sorong	2,256	1,906	350	84.5
8	Ternate	1,506	1,145	361	76
9	Pare Pare	1,220	815	405	66.8
10	Biak	927	930	-3	100
11	Other ports	6,551	5,161	1,390	78.8
12	Corporate & other	2,877	14,376	-11,499	500
Total		66,984	51,390	15,594	76.7

Table C.11.3.33 Breakdown of Fixed Assets of IPC IV

(Unit : million Rp.)

Description	1992	1993	1994	1995	1996
Acquisition cost					
① Port facility	77,134	103,726	147,651	171,015	186,223
② Ships	15,490	15,988	16,479	17,327	17,904
③ Port equipment	3,070	3,117	3,317	4,843	5,372
④ Network	2,775	3,864	4,705	5,865	6,817
⑤ Land	200,441	201,297	202,685	203,469	203,957
⑥ Roads and buildings	16,632	21,015	27,622	18,808	19,298
⑦ Small equipment	2,669	2,902	3,345	3,851	4,002
⑧ Vehicles	771	1,158	1,562	1,987	2,159
⑨ Structure	2,744	3,508	6,377	7,168	7,930
Total	321,726	356,575	413,743	434,333	453,662
Accumulated depreciation	350	5,311	11,023	18,263	26,156
Net fixed assets	321,376	351,264	402,720	416,070	427,506

Table C.11.3.34 Long-term Notes Payable

Kinds of long-term notes	ADB797	NIB *	ADB951	EIBJ *	IDB *
① Creditor	8th Port	8th Port	9th Port	9th Port	U.Pandang
② Port financed	Balikpapan	Balikpapan	6ports (Balikpapan, etc)	Consulting	U.Pandang
③ Type of loan	Installment	Equal princ	Equal princ	Equal princ	Installment
④ Commitment	US \$ 10 M	US \$ 3.7 M	US \$ 19 M	US \$ 2.3 M	US \$ 25.46M
① Actual draw in US \$ (in Rp.)	US \$5.95M (Rp11.25B)	US \$ 1.6 M (Rp3.52 B)	US\$ 20.44M (Rp44.96B)	US\$1.86M (Rp4.09B)	Nil
② Balance. at 12/31/95	Rp10.6B	Rp3.3B	Rp.35.5B	Rp.3.6B	Nil
③ Term	25 years	25 years	25 years	25 years	10 years
④ Grace period	5 years	5 years	5 years	5 years	2 years
⑤ Interest	10.50%	10.50%	10.50%	10.50%	8.5 %
⑥ Commitment fee	0.75%	0.50%	0.75%	0.25%	N/A
⑦ Bank charge	0.25%	0.25%	0.25%	0.25%	N/A
⑧ Repayment start	10/15/93	7/92	1/95	1/95	N/A

Note : NIB = Nordiska Investing Banken

EIBJ = Export Import Bank of Japan

IDB = Islamic Development Bank

Table C.11.3.35 Projected Debt Service Payment

(Unit : million Rp.)

Year	Existing Loans			Interest		Existing & IDB Total
	Principal	Interest	Total	Principal	Interest	
1997	2,663	5,647	8,310			8,310
1998	2,694	5,339	8,033	5,367	5,053	18,453
1999	2,728	5,034	7,762	5,847	4,574	18,183
2000	2,766	4,731	7,497	6,370	4,051	17,918
2001	2,807	4,406	7,213	6,940	3,481	17,634
2002	2,854	4,088	6,942	7,560	2,861	17,363
2003	2,905	3,760	6,665	8,236	2,185	17,086
2004	2,962	3,434	6,396	8,972	1,448	16,816
2005	3,025	3,088	6,113	9,775	646	16,534
Thereafter	25,006	11,654	36,660			36,660
Total	50,410	51,181	101,591	59,067	24,299	184,957

Table C.11.3.36 Summary Cash Flow Statements of IPC IV in the Last Five Years

(Unit : million Rp.)

Item	1992	1993	1994	1995	1996
(1) Operating cash flows					
1) Op. Receipts	33,977	36,843	42,845	55,532	63,450
2) Op. Disbursement	-14,619	-23,977	-21,839	-33,519	-45,230
3) Income tax paid	-1,748	-6,868	-2,960	-4,910	-1,694
4) Other	3,582	3,692	-6,327	-1,745	-2,800
Total	21,192	9,690	11,719	15,358	13,726
(2) Financing cash flow					
1) Proceeds from notes	17,548	12,746	2,186	0	0
2) Repayment of loans				-1,378	-2,870
3) Payment of interest	-754	-1,529	-1,467	-4,074	-5,571
4) State assistance	0	0	0	0	0
5) Distribution / Contribution	14,543	-2,921	25,790	8,211	-1,187
Total	31,337	8,296	26,509	2,759	-9,628
(3) Investing cash flows	-44,951	-19,679	-44,803	-22,911	-780
Net cash flow	7,578	-1,693	-6,575	-4,794	3,318
Cash balance at beginning	24,156	31,734	30,041	23,466	18,672
Cash balance at end	31,734	30,041	23,466	18,672	21,990

Appendix C.13 ENVIRONMENTAL ASPECTS

Table C 13.2.1 The area and condition of land habitat by its type in Indonesia

Habitat type	Area at the beginning(km ²)	Left area(%)	Protected area(%)
Forest at limestone	135,793	39.3	4.1
Plain water swamp forest	103,054	46.8	5.2
Kerangas forest	91,660	28.6	1.2
Ebony Forest	3,420	34.2	8.2
Lowland rain forest	896,157	57.5	4.9
Mountain range forest	206,233	77.1	21.1
Peat moss swamp forest	219,252	78.8	6.5
Half muddy rain forest	150,877	28.3	2.0
Tropical pine forest	3,215	60.0	15.6
Mangrove	50,800	43.9	11.2
Forest at ultrabasik rock	8,299	46.9	0.4
Monsoon forest	24,192	39.0	4.4
Coastal vegetation	390	39.7	2.5
Alpine	2,170	100.0	34.1
Total	1,895,512	55.8	6.6

Source : BAPPENAS(1991, based on Mackinnon and Artha 1981-1982 ; Salam and Halim, 1984 ; Petocz and Raspedo, 1989)

Table C 13.2.2 List of Rare Flora Protected in Indonesia 1995/1996

Region	Familia	Species	Dissemination
Budang	Palmae	Borrassodendron borneensis	Kalimantan Timur
Sarai Raja	Palmae	Caryota no	Kalimantan Timur
Palem Jawa	Palmae	Ceratolabus	Pelabuhan Ratu
Daun Payung	Palmae	Johanneste ijsmaria altrifrons	DI Aceh dan
Palem Gajah	Palmae	Nenga Gajah, Eugeissona	Bengkulu dan, Sumatera Barat
Bertam	Palmae	Livistona	Kalimantan Timur
Serdang	Palmae	Livistona rotundifolia	Sumatera Barat
Wanga	Palmae	Pigafatta filaris	Sulawesi & Halmahera
Pinang Jawa	Palmae	Pinanga Javena	Jawa Barat
Korma Rawa	Palmae	Phoenix paludosa	DI Aceh Bagian Barat
Anggrek Koribas	Orchidaceae	Asscocentrum miniatum	Sulawesi Utara
Anggrek Hitam	Orchidaceae	Coelogyne pandurata	Kalimantan Barat, Kalimantan Timur dan Padang
Anggrek Hartinah	Orchidaceae	Cimbidium, Hartinahianum	Sulawesi Utara
Anggrek Albert	Orchidaceae	Dendrobium d'albertisii	Manokwari bagian, Selatan
Anggrek Stuberi	Orchidaceae	Dendrobium, Lasianthera	Irian Jaya
Anggrek Jamrud	Orchidaceae	Dendrobium, Macrophyllum	P.Sulawesi, Ambon, Irian Jaya & P.Jawa
Anggrek Karawai	Orchidaceae	Dendrobium	Irian Jaya
Anggrek Larat	Orchidaceae	Dendrodium phalaenopsis	P.Larat, Tanimbar & Irian Jaya
Anggrek Raksasa	Orchidaceae	Grammatophyllum papuanum	Irian Jaya
Anggrek Tebu	Orchidaceae	Grammatophyllum, Speciosum	P.Sumatera, P.Kalimantan, P.Jawa & Irian Jaya
Anggrek Ki Aksara	Orchidaceae	Macodes petola	Sumatera Utara & Sumatera
Anggrek Kasut	Orchidaceae	Paphiopedillum	Sumatera Utara & Sumatera
Anggrek Kasut	Orchidaceae	Paphiopedillum	Jawa Barat & Jawa Timur
Anggrek Kasut Pita	Orchidaceae	Paphiopedillum praestns	Irian Jaya
Anggrek Bulan	Orchidaceae	Paphiopedillum amboinensis	P.Seram & Ambon
Anggrek Bulan	Orchidaceae	Phalaenopsis gigantea	Peg. Lung Karang(Kalimantan)
Anggrek Bulan	Orchidaceae	Phalaenopsis sumatrana	DI.Aceh
Anggrek Bulan	Orchidaceae	Paraphalaenopsis denevai	Bitung(Kalimantan-Barat)
Anggrek Bulan Kalimantan Tengah	Orchidaceae	Paraphalaenopsis, Laycockii	Kalimantan Barat, Kalimantan Tengah
Anggrek Bulan Kalimantan Barat	Orchidaceae	Paraphalaenopsis serpentilingau	Kalimantan Barat
Anggrek Jingga	Orchidaceae	Renanthera matutina	DI.Aceh, Sumatera Utara, Bengkulu, Gunung Salak
Anggrek Sendok	Orchidaceae	Spathoglottis zurea	P.Jawa & P.Sumatera
Vanda Mini	Orchidaceae	Vanda pumila	Sumatera Utara
Vanda Sumatera	Orchidaceae	Vanda Sumatrana	Sumatera Utara, Sumatera Barat & Sumatera Timur
Vanda Mungil	Orchidaceae	Vanda celebica	Minahasa(Sulawesi Utara)
Anggrek Pensil	Orchidaceae	Vanda hookeriana	Bengkulu, P.Belitung, Kalimantan Barat & Selatan
Bunga Bangkai	Araceae	Amorphophallus decussilvae	Jawa Barat

Table C 13.2.2 (Continued)

Region	Familia	Species	Dissemination
Bunga Bangkai Raksasa	Araceae	Amorphophallus titanum	SumateraUtara, Sumatera Barat & Sumatera Selatan
Rafflesia, Bunga	Parasite	Rafflesia spp	P.Sumatera, P.Jawa,
Balanoflora	Parasite	Balanophora spp	P.Sumatera & Jawa Barat
Risantes	Parasite	Rhisanthes sippelii	Jawa Barat
Pulau Pandak	Apocynacea	Rauwolfia spp	Jawa Tengah & Jawa Timur

source : Department Forestry, 1995/1996 Forestry Statistics of Forest Protection and Nature Conservation

Table C 13.2.3 Number of Wildlife Species in Wildlife Park up to 1994/1995

Name of Wildlife Park	Province	Mammal	Aves	Reptile	Pisces	Amphibian	Insect	Total
TM. Medan	Sumatera	25	25	7	29	-	-	86
TM.Pematang Siantar	Sumatera	14	20	5	-	-	-	39
T.Buaya Asam	Medan	2	6	2	-	-	-	10
TM.Bundo Kanduan Bukittinggi	Sumatera Barat	27	56	5	11	-	-	99
TM.Kasang Kulin	Riau	14	20	5	-	-	-	39
TM.Lahat	Sumatera Selatan	9	10	3	-	-	-	22
Yayasan KB.Sriwijaya	Palembang	22	40	3	26	-	-	91
TM.Aneka Rimba	Jambi	10	16	5	-	-	-	31
TM.Taman Satwa Bengkulu	Bengkulu	7	17	3	-	-	-	27
TM.Rangunan Jakarta	DKI Jakarta	104	185	46	5	1	5	346
Gelanggang Jaya Ancol Jakarta	DKI Jakarta	11	28	5	78	-	-	122
Taman Burung TMII Jakarta	DKI Jakarta	-	249	-	-	-	-	249
T.Buaya Indonesia Jaya	DKI Jakarta	-	-	3	-	-	-	3
TM.Taman Sari Bandung	Jawa Barat	44	25	25	31	-	1	126
Taman Safari Indonesia Bogor	Jawa Barat	84	113	16	-	-	-	214
TM.Gembira Loka Yogyakarta	DI.Yogyakart a	52	66	27	165	-	15	325
TM.Semarang/ Tinjomoyo	Jawa Tengah	32	42	3	-	-	-	77
TM.Solo/Satwa Taru Solo	Jawa Tengah	21	39	8	1	-	-	69
TM.Cilacap	Jawa Tengah	24	9	-	-	-	-	33
TM.Umbul Madiun	Jawa Timur	11	16	1	-	-	-	28
TM.Surabaya	Jawa Timur	84	133	21	175	-	-	413
TM.Tirto Asri Jember	Jawa Timur	-	-	-	-	-	-	-
T.Burung Bali	Bali	-	160	-	-	-	-	160
TM.Pontianak	Kalimantan Barat	5	6	1	-	-	-	12
TM.Balangai Palangkaraya	Kalimantan Tengah	-	-	-	-	-	-	-
TM.Balikpapan	Kalimantan Timur	-	-	-	-	-	-	-
TM.Mentaos Banjar Baru	Kalimantan Selatan	10	7	-	-	-	-	17
TM.Karawasi Ujung Pandang	Sulawesi Selatan	-	-	-	-	-	-	-
TM.Biak	Irian Jaya	-	-	-	-	-	-	-
Total		612	1,288	194	521	1	21	2,647

note : TM.;Wildlife Park, T.;Park

source : Department of Forestry, 1994/1995 Forestry Statistics of Forestry Protection and Nature Conservation, Jakarta

Table C 13.2.4 Flora and Fauna Situation in Several Provinces, 1995

Province	Mammal		Aves		Reptile		Amphibia		Fish		Plant	
	Detected	Protected	Detected	Protected	Detected	Protected	Detected	Protected	Detected	Protected	Detected	Protected
Daerah Istimewa Aceh	41	35	92	27	15	3	3	0	150	5	129	5
Sumatera Utara	37	37	-	46	-	11	-	-	-	2	-	12
Sumatera Barat	39	19	37	12	5	2	-	-	4	2	35	5
Jambi	49	28	239	25	16	4	-	-	34	1	228	13
Bengkulu	400	37	650	97	850	5	500	0	1,200	0	14,000	43
Lampung	37	67	74	82	15	28	-	-	60	7	89	-
DKI Jakarta	9	-	102	-	11	-	5	-	190	-	7	-
Jawa Tengah	133	14	362	29	173	4	-	-	242	-	630	-
DI Yogyakarta	14	8	68	13	5	2	-	-	-	-	122	11
Jawa Timur	28	17	111	11	12	2	5	2	4	4	350	11
Bali	19	11	76	34	5	2	-	-	-	-	93	7
Nusa Tenggara Timur	56	22	190	46	72	7	0	0	0	0	39	39
Kalimantan Selatan	-	19	-	62	-	4	-	-	-	2	-	29
Kalimantan Timur	228	38	300	129	9	7	2	2	-	-	-	19
Sulawesi Tengah	25	9	161	6	31	2	7	4	65	-	200	4
Sulawesi Selatan	15	11	32	31	8	8	2	2	3	3	-	5
Maluku	78	14	413	28	119	11	16	-	303	-	642	23
Irian Jaya	154	15	631	91	253	13	174	0	158	2	2000	2770

source : 1995 Account of Regional Environment Quality

Table C 13.2.5 List of Marine Conservation Area (Excluding Marine Park) in Several Provinces up to 1995/1996

Province/Name of Parks	Number (unit)	Status of Area	Regency	Issued Date	Area (ha)
Daerah Istimewa Aceh Pulau weh	1	Mrine Park	Sabang	24/12/1982	2,600 2,600
Lampung Krakatau Bukit Barisan Selatan	2	Natural Preserve Natural Preserve	Lampung Selatan Lampung Selatan	20/02/1990 15/02/1990	32,900 11,300 21,600
Jawa Barat Leuweung Sancang P.Sangiang	2	Natural Preserve Natural Preserve	Garut Serang	06/03/1990 23/05/1985	1,850 1,150 700
Nusa Tenggara Barat P.Moyo Gili Air, Gili Meno, Gili Trawangang	2	Recreation Park Recreation Park	Sumbawa Sumbawa	29/09/1986 16/02/1993	8,954 6,000 2,954
Nusa Tenggara Timur P.Teluk Maumere Tujuh Belas Pulau Teluk Kupang	3	Recreation Park Natural Preserve Recreation Park	Sikka Ngada Kupang	21/04/1986 28/12/1987 28/01/1993	121,350 59,450 11,900 50,000
Kalimantan Timur P.Semama P.Sangkalaki	2	Wildlife Preserve Marine Park	Berau Berau	19/08/1982 19/08/1982	500 220 280
Kalimantan Barat Kep.Karimata	1	Natural Preserve	Ketapang	27/12/1985	77,000 77,000
Sulawesi Tenggara Tukang Besi Wakotabi	1	Recreation Park	Sultra	4/9/95	306,690 306,690
Maluku P.Pombo Laut Banda P.Kasa Kep.Aru Tenggara	5	Recreation Park Recreation Park Recreation Park Wildlife Preserve Natural Preserve	Maluk Tengah Maluk Tengah Maluk Tengah Maluk Tengah Maluk Tenggara	14/07/1973 25/04/1977 25/10/1978 25/10/1978 4/2/91	119,500 1,000 2,500 1,100 900 114,000
Irian Jaya Kep.Raja Ampat Sabudataruga	2	Wildlife Preserve Wildlife Preserve	Sorong FakFak	16/02/1993 16/02/1993	65,000 60,000 5,000
Indonesia	21				736,344

Source: Department of Forestry, Directorate General of Forest Protection and Nature Conservation, 1995/1996 Forestry Statistic of Forest Protection and Nature Conservation

Table C 13.2.6 Indicators of socio-demography of Indonesia

Indicator	Period	Value
Number of population(1,000)	1996	196,343
Population growth rate(%)	1995-1996	0.27
Infant mortality rate(‰)	1996	54.00
Life expectancy rate(year)	1996	63.86
Labor force participation level(%)	1996	65.09
Opened unemployment level(%)	1996	4.89
Illiteracy rate(%)	1996	12.65
Civic population rate(%)	1996	37.13

Source : Projection of Indonesian Population Parameter per Province 1990-2000 and SUSENAS 1996

Table C.13.3.1 Monthly Average of Water Quality of Brantas River

(unit : mg/l)

Place	Year	BOD		COD		SS	
		Max	Min	Max	Min	Max	Min
Upper Dam Mlirip	1994	7.9	3.4	19.5	8.4	270.0	8.0
	1995	5.0	4.0	10.2	9.2	532.0	421.0
	1996	5.3	2.5	11.2	7.5	241.0	21.0
Ferryng Perning	1994	7.9	3.6	19.5	8.4	197.0	14.0
	1995	4.4	3.7	9.7	8.8	472.0	282.0
	1996	6.7	2.1	14.5	7.5	210.0	28.0
Bridge Jribeng	1994	8.9	3.6	24.5	8.4	304.0	17.5
	1995	4.5	3.3	9.5	9.1	429.0	284.0
	1996	7.0	2.7	13.8	7.5	236.0	19.0
Village Semambung Kulon	1994	8.9	3.6	22.5	8.5	498.0	12.0
	1995	5.4	4.5	10.6	9.8	499.0	352.5
	1996	7.1	2.7	15.5	7.5	206.5	19.9
Village Tanjung Sari	1994	12.6	3.8	33.0	8.5	541.0	25.0
	1995	5.5	4.6	10.8	9.8	682.0	260.0
	1996	9.2	2.2	17.3	7.5	356.0	19.0
Upper PT. Suparma	1994	26.2	4.9	56.3	9.5	531.0	8.0
	1995	6.1	3.6	13.6	8.8	615.0	261.0
	1996	11.7	3.9	20.5	9.4	561.0	17.0
Upper PDAM Karang Pilar	1994	26.4	6.1	55.0	13.8	516.0	8.0
	1995	6.5	3.9	13.8	10.1	749.5	162.0
	1996	14.0	3.2	24.1	8.5	293.0	21.0
Bridge Sepanjang	1994	28.4	4.8	48.0	11.4	491.0	17.0
	1995	7.5	4.3	16.8	10.4	677.0	160.0
	1996	12.4	2.2	21.6	10.6	177.0	18.0
Village Kedurus Duko	1994	63.0	5.3	72.0	13.2	488.0	11.0
	1995	9.4	5.4	20.0	10.4	641.5	75.0
	1996	11.7	3.2	25.5	9.4	197.0	16.0
Upper Dam Gunung Sari	1994	23.1	4.8	67.0	11.4	381.0	7.0
	1995	9.1	4.3	18.4	9.1	883.5	79.0
	1996	11.6	6.1	23.5	12.8	155.0	15.0
Intake PDAM Jagir	1994	35.7	5.4	65.0	13.2	711.0	8.0
	1995	10.7	5.8	21.2	11.1	528.0	81.1
	1996	13.9	7.2	24.1	15.5	259.0	16.0

Note: threshold value ; BOD=6.00mg/l, COD=10.00mg/l, SS=1500mg/l

Source : Service of Public Works Irrigation of Jawa Timur

Table C.13.3.2 Industrial Waste Pollutant Load of COD/BOD of River

(COD/BOD, unit ; ton/year)

Province	River Basin	River	1993/1994	1994/1995	1995/1996
Daerah Istimewa	Langsa	Langsa	240/105	1447/752	-
Aceh	Tamiang	Tamiang	684/480	4449/2106	-
Sumatera Utara	Deli	Deli	96/57	91/57	74/41
	Semayang	Semayang	135/88	196/119	379/248
	Asahan	Asahan	896/521	709/650	3462/1830
	Merbau	Merbau	196/115	222/119	948/542
Riau	Siak	Siak	6870/3246	-	-
Sumatera Selatan	Musi	Musi	26910/7760	19102/5499	-
Lampung	Pengubuan	Pengubuan	-/353	-	-
	Pegadungan	Pegadungan	-/351	-	-
	Seputih	Seputih	-/48	-	-
	Terusan	Terusan	-/559	-	-
	Sekampung	Sekampung	-/5030	-	-
	Tulangbawang	Tulangbawang	-/1457	-	-
DKI Jakarta	Ciliwung	Ciliwung	857/474	623/330	185/65
	Cipinang	Cipinang	236/139	433/198	431/142
	Mookervart	Mookervart	260/151	337/118	289/121
	Grogol	Grogol	-	-	67/25
	Cakung	Cakung	-	-	122/36
Jawa Barat	Ciujung	-	-	-	2233/2131
	Cisadane	-	-	-	3350/1371
	Ciliwung	-	-	-	782/314
	Cileungsi, Bekasi	-	-	-	2120/842
	Citarum	-	-	-	8782/3884
	Cimanuk	-	-	-	2292/1158
Jawa Tengah	Bengawan Solo	Kali Anyar	-	237/91	-
		Bengawan Solo	-	-	-
		Premulung	-	795/274	-
		Ngringo	-	501/189	-
		Palur	-	5875/924	-
		Pengo	-	401/54	-
		Sroyo	-	1528/598	-
	Kali Garang	Kali Garang	-	338/154	-
Jawa Timur	Kali Brantas	Kali Brantas	3455/1272	2738/1431	291/401
		Kali Surabaya	6052/3213	3338/1671	3647/2599
		Kali Lesti	2345/1113	1732/928	1917/1107
		Kanal Mengetan	2155/623	3455/1220	3570/1591
		Kali Porong	2533/1228	3403/1691	4476/2461
	Bengawan Solo	Kali Madiun	119/65	141/75	298/195
Kalimantan Barat	Kapuas	-	3894/3042	2875/1294	
Kalimantan Selatan	Barito	-	10/5	8/3	
	Martapura	-	7/4	6/2	
Kalimantan Timur	Mahakam Dan Karang Mumus	-	630/310	4345/1030	14755/4404

Source : Environmental Impact Management Agency, 1993/1994-1995/1996 Clean River Program

Table C.13.3.3 Total Water Pollution from Domestic Source

Province	Waste Water(1000m ³)		BOD ₅ (ton)		COD(ton)		SS(ton)	
	With Drainage	Without Drainage	With Drainage	Without Drainage	With Drainage	Without Drainage	With Drainage	Without Drainage
Riau	238,981,122	3,968,368	64,492,166	3,750,923	64,492,166	3,750,923	55,010,884	19,161,188
Bengkulu	33,335	6,450	8,996	6,096	20,093	14,137	9,113	14,137
Lampung	91,925	1,309	25	1	55	3	25	3
DKI Jakarta	630,760,527		172,627,706		395,851,799		183,211,000	
Jawa Tengah	523,748	159,183	141,431	150,461	316,173	348,894	147,946	348,894
Jawa Timur	647,710	182,596	174,793	172,591	390,401	400,211	177,455	400,211
Bali	26,707,269	3,823,171	7,207,304	3,613,682	16,097,532	8,379,552	7,317,060	8,379,552
Nusa Tenggara Timur	0	23,851	0	22,544	0	52,276	0	15,481
Maluku	11,826	22,696	3,191	21,452	7,128	49,744	3,240	49,744

Province	TDS(ton)		N(ton)		P(ton)	
	With Drainage	Without Drainage	With Drainage	Without Drainage	With Drainage	Without Drainage
Riau	100,426,538	38,905,861	9,079,660	3,517,516	1,100,565	426,366
Bengkulu	16,667,725	32,249	1,506,945	2,916	183	353
Lampung	46	7	4	1	1	0
DKI Jakarta	334,718,250		30,229,636		3,664,300	
Jawa Tengah	273,542	795,915	24,731	71,959	2,998	8,722
Jawa Timur	323,855	912,980	29,280	82,543	3,549	10,005
Bali	13,353,634	19,115,853	1,207,315	1,728,283	146,341	209,489
Nusa Tenggara Timur	0	35,316	0	3,193	0	387
Maluku	5,913	113,478	535	10,259	65	1,243

Source: 1995 Account of Regional Environmental Quality

Table C.13.3.4 Water Quality in and around Port Development Sites

Project/Site Parameter	Bojonegara Port	East Ancol	Indo Cement (Kotabaru)	Banjarmasin Port	Bitung Port	
SS	average	208/453	610/659	34	93	17/19
	maximum	388/1664	800/788	39	136	40/45
	standard	1000	200	1000	-	1000
COD	average	464/434	31/30	12	34	36/37
	maximum	624/688	75/83	18	39	90/100
	standard	80	80	-	-	40
Cr	average	<0.001/0.001	0.542/0.150	0.065	0.02	0.0/0.0
	maximum	<0.001/0.001	1.023/1.021	0.139	0.03	0.0/0.0
	standard	0.05	0.001	0.05	0.05	0.05
Cd	average	0.050/0.037	0.041/0.029	0.008	0.01	0.0/0.0
	maximum	0.101/0.062	0.085/0.055	0.018	0	0.0/0.0
	standard	0.01	0.01	0.01	0.01	0.01

note : unit;mg/l, EBB tide/Low tide

Table C.13.3.5 Seabed Quality in and around Port Development Sites

Project/Site Parameter	Bojonegara Port	East Ancol	Indo Cement (Kotabaru)	Benoa Port	
Cr	average	0.056	26.198	71.40	0.125
	maximum	0.168	30.025	87.60	0.130
Cd	average	0.035	3.640	2.400	0.650
	maximum	0.102	4.240	4.000	1.000
Hg	average	0.032	0.4093	<0.001	-
	maximum	0.201	0.5699	<0.001	-

note : unit;ppm

Table C.13.3.6 Monthly Average of Suspended Particulate Matter in Jakarta Stations

(unit : $\mu\text{g}/\text{m}^3$)

Month	Year	BMG	Ancol	Bandengan	Glodog	Halim	Ciledug	Tangerang
January	1994	175.60	-	410.85	394.12	-	113.93	95.36
	1995	104.31	546.44	430.43	726.11	-	199.45	100.60
February	1994	68.59	251.03	340.87	336.48	105.49	140.27	121.79
	1995	65.53	484.09	556.85	700.50	-	138.46	72.43
March	1994	43.97	396.25	312.13	350.74	119.38	110.97	185.28
	1995	98.01	554.78	561.26	857.50	-	107.74	61.24
April	1994	71.55	437.75	213.41	544.05	112.12	84.81	-
	1995	143.81	611.42	630.52	844.64	-	126.83	126.99
May	1994	75.44	464.80	403.22	638.37	120.40	232.88	372.33
	1995	127.72	599.57	447.44	572.06	154.45	-	172.80
June	1994	95.59	481.77	438.36	880.00	76.31	216.11	332.83
	1995	157.22	-	476.91	950.81	239.96	185.47	203.49
July	1994	151.03	582.83	461.96	930.62	91.94	310.73	490.87
	1995	135.61	-	451.80	934.64	178.85	139.56	169.27
August	1994	146.57	601.83	388.47	836.55	98.01	281.78	551.60
	1995	120.12	-	508.66	917.10	209.36	161.11	191.01
September	1994	175.55	323.51	599.53	805.96	181.86	236.29	279.99
	1995	127.32	-	463.19	703.15	170.78	-	149.85
October	1994	91.55	640.91	511.24	838.07	109.30	-	116.01
	1995	115.85	-	476.75	547.96	165.46	-	131.41
November	1994	122.56	641.65	498.01	882.90	110.26	156.73	131.14
	1995	105.85	-	247.82	429.71	142.24	-	70.81
December	1994	89.70	268.06	504.19	765.83	100.18	115.99	-
	1995	112.61	-	351.60	359.74	90.86	-	40.10

Note : threshold value $260 \mu\text{g}/\text{m}^3$

Source : Department of Communications, Meteorological and Geophysical Agency

Table C.13.3.7 Monthly Average of Suspended Particulate Matter in Outer Jakarta Stations

(unit : $\mu\text{g}/\text{m}^3$)

Month	Year	Jayapura	Banjar Baru	Ujung Pandang	Palembang	Pontianak	Winangun	Medang	Kupang	Pekan Baru	Mataram	Jambi
January	1994	72.91	30.41	39.50	61.84	107.25	46.53	178.26	63.84	85.36	116.29	72.27
	1995	17.84	34.44	74.27	-	73.44	41.20	192.38	43.09	54.24	69.04	-
February	1994	57.26	27.65	46.67	42.64	137.41	46.17	47.84	48.40	86.40	93.64	68.18
	1995	17.89	27.16	85.74	-	61.55	37.40	71.32	37.91	47.18	74.83	-
March	1994	53.23	21.24	55.51	52.49	71.15	41.70	167.80	71.26	48.03	178.58	36.69
	1995	15.55	26.67	85.40	-	84.31	42.73	48.66	33.11	47.23	103.16	-
April	1994	48.83	32.79	87.26	46.10	97.40	48.26	150.76	65.10	66.54	130.52	36.71
	1995	17.34	27.80	91.29	-	56.00	47.07	288.55	37.94	47.67	75.83	-
May	1994	53.95	38.17	92.73	104.66	184.61	53.91	-	76.08	52.96	125.37	35.74
	1995	18.67	33.36	73.75	-	49.32	47.82	199.56	38.25	61.40	80.51	-
June	1994	45.32	41.08	100.10	81.60	172.50	47.89	-	121.10	95.50	188.85	-
	1995	22.14	30.68	174.74	-	54.46	48.64	139.61	62.36	85.94	68.22	-
July	1994	25.89	55.98	99.62	63.62	302.48	53.85	202.84	76.88	206.40	190.53	-
	1995	19.46	37.12	250.05	-	-	33.08	292.01	89.32	73.86	79.62	-
August	1994	33.20	45.80	161.84	92.78	-	76.11	28.89	80.75	115.82	179.13	-
	1995	20.04	41.29	293.01	98.10	-	35.36	94.28	62.66	-	85.19	-
September	1994	44.81	91.39	226.45	294.27	-	94.09	115.97	91.70	161.85	171.21	-
	1995	23.82	37.34	320.49	79.92	-	57.67	125.99	70.67	45.04	95.35	-
October	1994	29.70	102.13	373.50	-	-	77.22	112.12	354.28	144.25	151.93	-
	1995	27.82	49.78	244.08	69.02	-	56.31	129.25	54.90	46.14	90.24	56.90
November	1994	34.66	44.82	230.50	-	-	47.09	60.49	106.75	57.04	192.70	-
	1995	29.22	24.45	76.91	96.68	-	42.14	129.25	58.78	21.79	67.83	74.17
December	1994	25.56	28.73	105.37	-	81.78	48.13	-	61.61	89.09	74.13	-
	1995	27.98	29.12	64.62	52.42	-	44.27	94.73	57.17	13.12	43.72	56.24

Table C.13.3.7 (continued)

Month	Year	(unit : $\mu\text{g}/\text{m}^3$)										
		Tanjung Krang	Bengkulu	Surabaya	Palu	Ambon	Samarinda	Padang	Cilacap	Sam Ratulangi	Dilli	Bandung
January	1994	102.82	72.47	60.84	80.61	46.61	112.57	65.60	-	50.70	40.18	-
	1995	59.99	34.02	72.59	77.25	28.36	-	47.88	46.99	42.97	50.93	58.12
February	1994	113.95	112.93	85.36	69.89	103.61	133.95	39.87	50.43	38.64	43.10	208.93
	1995	40.61	26.64	70.88	84.48	29.36	135.52	75.06	39.91	36.95	40.92	43.59
March	1994	147.55	92.17	54.15	27.97	116.77	140.75	-	-	50.87	34.15	133.78
	1995	53.18	27.37	56.27	64.66	44.43	148.22	-	30.09	40.77	58.31	71.47
April	1994	133.56	90.22	67.75	38.27	70.37	211.32	-	101.30	35.17	39.82	99.29
	1995	61.96	32.67	73.06	53.51	39.00	95.58	69.74	44.15	52.34	52.22	77.86
May	1994	144.93	127.01	74.03	36.01	68.58	167.88	72.66	100.30	36.35	66.43	105.73
	1995	57.16	33.70	64.73	56.24	-	112.91	-	41.55	39.95	62.14	79.72
June	1994	182.59	133.51	87.26	43.02	130.09	172.52	77.63	-	42.77	50.81	138.35
	1995	50.97	30.71	50.53	50.18	-	87.53	85.69	49.89	49.73	76.00	78.04
July	1994	234.26	46.62	97.52	57.51	130.97	189.37	106.09	-	51.72	100.56	168.55
	1995	-	39.01	89.82	52.87	-	152.31	69.78	46.35	33.47	101.61	133.80
August	1994	242.80	111.27	98.77	27.26	-	112.64	67.20	-	53.64	147.01	153.03
	1995	66.65	47.49	90.33	46.05	-	195.74	-	46.21	30.83	87.91	177.09
September	1994	195.68	129.02	93.26	95.31	-	206.26	-	-	87.43	163.78	137.04
	1995	41.51	40.39	83.78	57.44	-	129.84	-	55.54	50.75	80.95	109.61
October	1994	197.99	-	96.77	161.18	-	210.98	134.85	76.83	72.59	204.59	-
	1995	125.39	36.22	102.28	43.58	-	125.39	-	43.61	64.05	106.07	89.35
November	1994	173.46	45.16	116.85	136.98	53.34	214.98	68.97	68.45	-	108.87	116.06
	1995	40.10	28.37	78.48	54.78	-	71.46	-	43.76	40.31	60.84	41.03
December	1994	81.14	17.51	83.08	90.80	37.76	100.09	101.12	38.59	-	48.45	91.41
	1995	-	25.14	68.41	95.74	-	61.72	-	38.15	45.33	31.80	43.00

Note : threshold value $260 \mu\text{g}/\text{m}^3$

Source : Department of Communications, Meteorological and Geophysical Agency

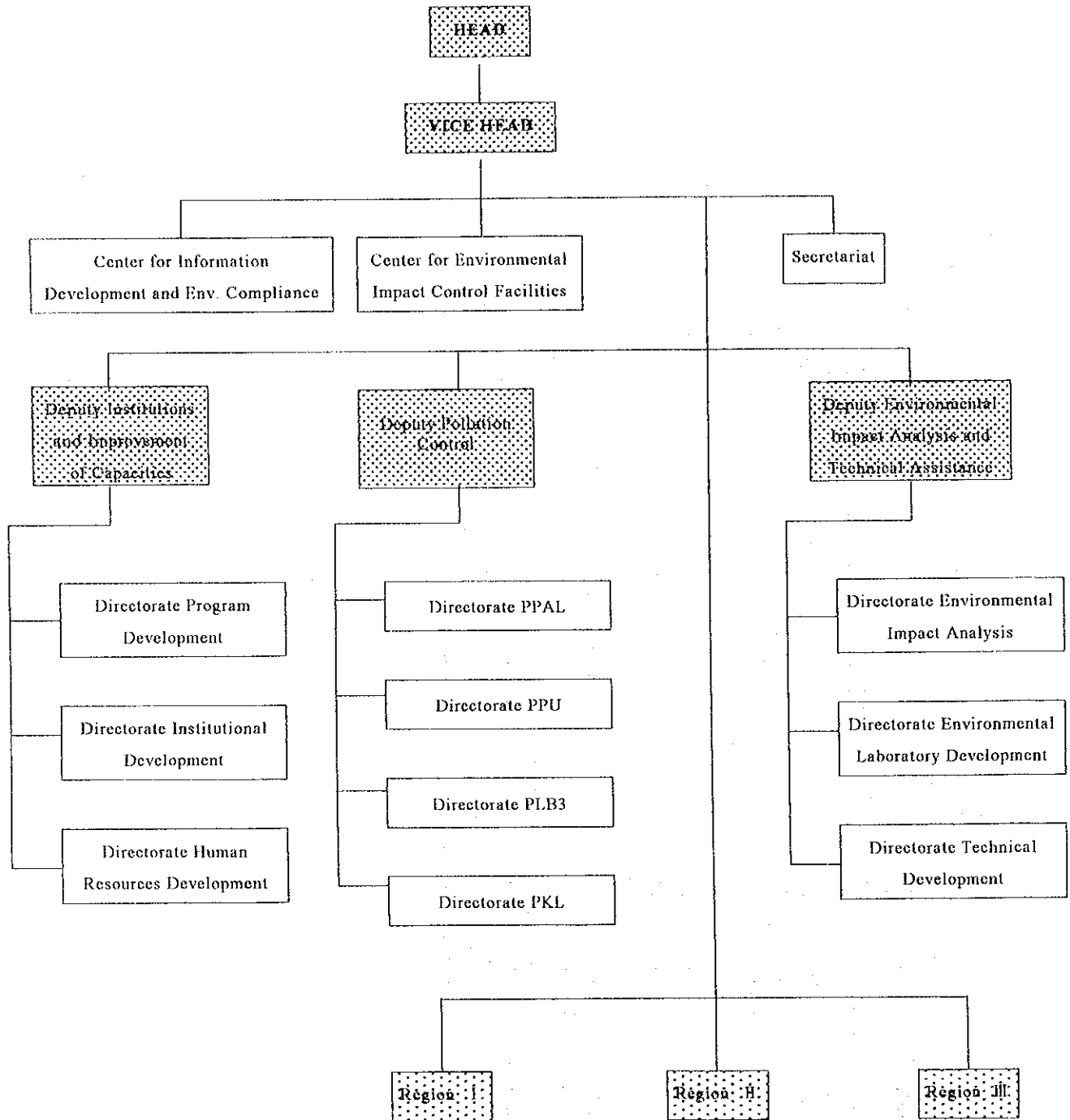
Table C.13.3.8 Concentration Measuring of SO₂ & NO_x in Jakarta
(unit : ppm/24 hours)

Month	1992		1993		1994		1995		1996	
	SO ₂	NO _x	SO ₂	NO _x	SO ₂	NO _x	SO ₂	NO _x	SO ₂	NO _x
January	0.004	0.014	-	-	0.005	0.005	0.002	0.033	0.002	0.005
February	0.005	0.008	-	-	0.004	0.012	0.003	0.016	0.003	0.005
March	0.005	0.006	-	-	0.007	0.010	0.002	0.008	0.004	0.004
April	0.005	0.004	-	-	0.011	0.028	0.002	0.016	0.004	0.034
May	0.006	0.004	0.009	0.005	0.015	0.013	0.003	0.016	0.005	0.173
June	0.009	0.004	0.008	0.006	0.009	0.032	0.003	0.017	0.005	0.084
July	0.009	0.004	0.006	0.008	0.010	0.020	0.005	0.030	0.003	0.093
August	0.008	0.005	0.007	0.008	0.010	0.022	0.006	0.036	0.008	0.083
September	0.008	0.004	0.008	0.009	0.011	0.030	0.005	0.036	0.008	0.045
October	0.006	0.004	0.009	0.010	0.004	0.018	0.005	0.020	0.005	0.031
November	0.005	0.004	0.006	0.007	0.005	0.056	0.030	0.004	-	-
December	0.005	0.007	0.004	0.007	0.005	0.005	0.002	0.006	-	-

Note : threshold value ; SO₂=0.10ppm/24hours, NO_x=0.05ppm/24hours

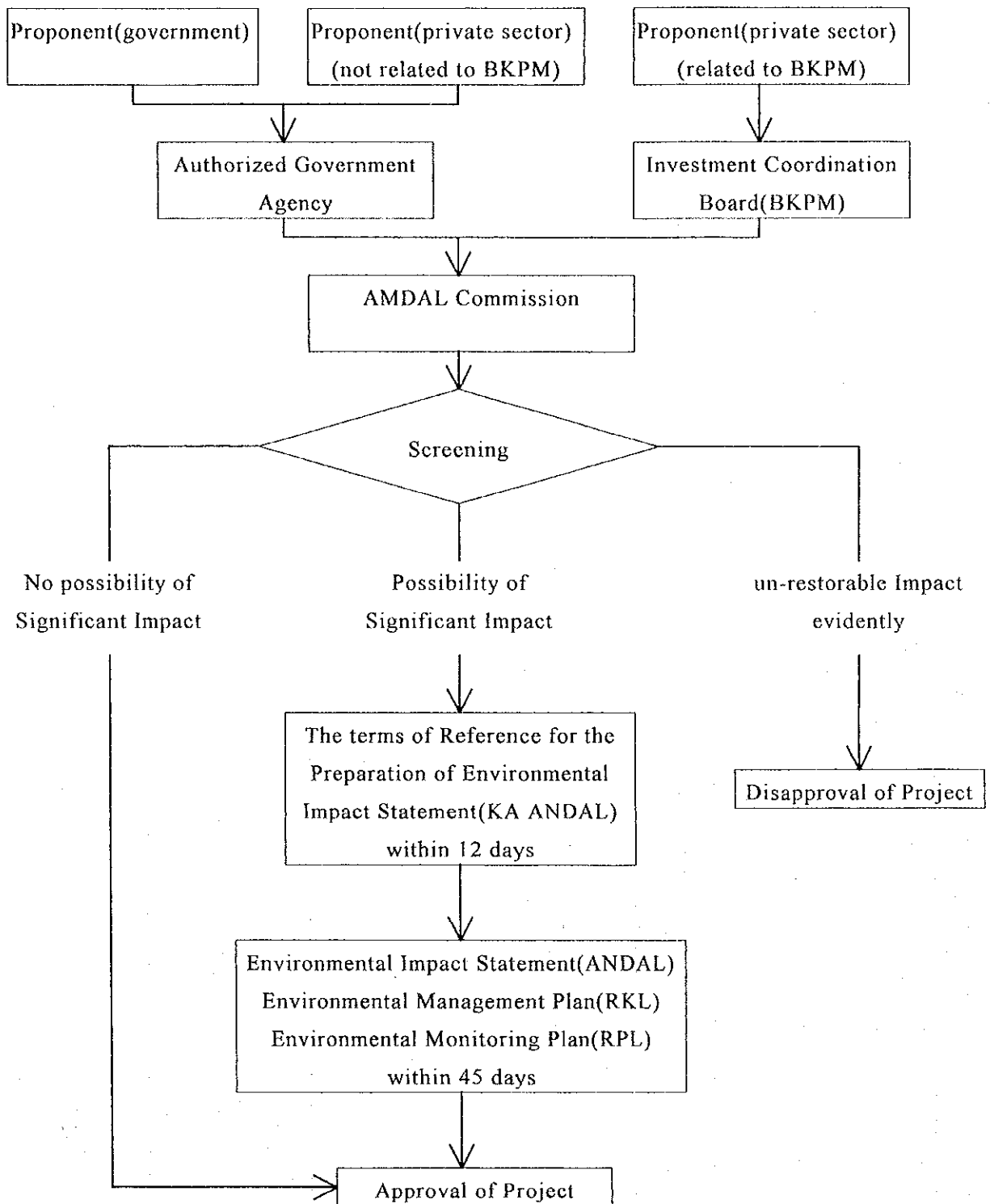
Source : Department of Communications, Meteorological and Geophysical Agency

Figure C.13.5.1 Organisational Structure of BAPEDAL



Source : BAPEDAL

Figure C.13.5.2 Procedure of AMDAL



Source : JICA

Table C.13.5.1 Environmental Standard of Surface Water Quality

No.	Parameter	Unit	Max Cocentration			
			Category A	Category B	Category C	Category D
Physical						
1	Ordor	-	nil	-	-	-
2	Total Dissolved Solid Substances(TDS)	mg/l	1000	1000	1000	2000
3	Turbidity	NTU	5	-	-	-
4	Taste	-	nil	-	-	-
5	Temperatur	°C	Air Temperature ±3°C	Normal Water Temperature	Normal Water Temperature ±3°C	Normal Water Temperature
6	Colour	TCU	15	-	-	-
7	Electrical Conductivity	μ mho	-	-	-	2250
Chemical						
a. Inorganic Chemicals						
1	Mercury	mg/l	0.001	0.001	0.002	0.005
2	Aluminium	mg/l	0.2	-	-	-
3	Free Ammonia	mg/l	-	0.5	0.02	-
4	Arsenic	mg/l	0.05	0.05	1.0	1.0
5	Barium	mg/l	1.0	1.0	-	-
6	Iron	mg/l	0.3	5.0	-	-
7	Fluorida	mg/l	0.5	1.5	1.5	-
8	Baron	mg/l	-	-	-	1.0
9	Cadmium	mg/l	0.005	0.018	0.01	0.01
10	CaCO ₃ Hardness	mg/l	500	-	-	-
11	Choloride	mg/l	250	600	-	-
12	Free Chlorine	mg/l	-	-	0.003	-
13	Cobalt	mg/l	-	-	-	1.0
14	Chromium(hexavalen)	mg/l	0.05	0.05	0.05	0.003
15	Manganese	mg/l	0.1	0.5	-	60%
16	Sodium	mg/l	200	-	-	-
17	Na(alkali salt)	mg/l	-	-	-	0.06
18	Nickel	mg/l	-	-	-	0.5
19	Nitrate, as N	mg/l	10	10	-	-
20	Nitrite as N	mg/l	1.0	1.0	0.06	-
21	Silver	mg/l	0.05	-	-	-
22	Dissolved Oxygen(DO)	mg/l	-	[≥6]	[>3]	-
23	pH	-	6.5-8.5	5-9	6-9	6-9
24	Selenium	mg/l	0.01	0.01	0.05	0.05
25	Zinc	mg/l	5.0	5.0	0.02	2.0
26	Cyanida	mg/l	0.1	0.1	0.02	-
27	Sulphate	mg/l	400	400	-	-
28	Sulphate, as H ₂ S	mg/l	0.05	0.1	0.002	-
29	Sodium Absorption Ratio(SAR)	mg/l	-	-	-	0.02
30	Copper	mg/l	1.0	1.0	0.02	0.2
31	Lead	mg/l	0.05	0.1	0.03	1.0
32	Residual Sodium Cabonate(RSC)	mg/l	-	-	-	1.25-2.50
b. Organic Chemical						
1	Aldrin dan Dieldrin	mg/l	0.0007	0.017	-	-
2	Benzene	mg/l	0.01	-	-	-
3	BHC	mg/l	-	-	0.21	-
4	Benzo(a) Pyrene	mg/l	0.00001	-	-	-
5	Carbon Chloroform extract	mg/l	-	0.5	-	-

Table C.13.5.1(continued)

6	Cholordane(total isomer)	mg/l	0.0003	0.003	-	-
7	Chloroform	mg/l	0.03	-	-	-
8	2,4-D	mg/l	0.1	-	-	-
9	DDT	mg/l	0.03	0.042	0.002	-
10	Detergent	mg/l	0.5	-	-	-
11	1,2-Dichloroethane	mg/l	0.01	-	-	-
12	1,1-Dichloroethane	mg/l	0.0003	-	-	-
13	Endrin	mg/l	-	0.001	0.004	-
14	Heptachlor and Heptachlorepoxyde	mg/l	0.003	0.018	-	-
15	Hexachlorobenzene	mg/l	0.00001	-	-	-
16	Linden	mg/l	0.004	0.056	-	-
17	Methoxychlor	mg/l	0.03	0.0035	-	-
18	Methylene Blue Active Substance(surfactant)	mg/l	-	0.5	0.2	-
19	Oil and Grease	mg/l	-	nil	1.0	-
20	Organophosphate & Carbonate	mg/l	-	0.1	0.1	-
21	PCB	mg/l	-	nil	-	-
22	Pentachlorophenol	mg/l	0.01	-	-	-
23	Phenol	mg/l	-	0.002	0.001	-
24	Total Pesticide	mg/l	0.1	-	-	-
25	2,4,6-Trichlorophenol	mg/l	0.01	-	-	-
26	Organic Substances(KMnO ₄)	mg/l	10.0	-	-	-
27	Toxaphene	mg/l	-	0.005	-	-
Micro Biologocal						
1	Faecal Colliform	total per	0	2000	-	-
2	Total Colliform	/100ml	3	10000	-	-
Radio Activity						
1	Gross Alpha Activity	Bq/l	0.1	0.1	0.1	0.1
2	Gross Beta Activity	Bq/l	1.0	1.0	1.0	1.0

Table C.13.5.2 Environmental Standard of Sea Water Quality for Tourism and Recreation(Swimming and Diving)

No.	Parameter	Unit	Standard Quarity	
			Allowed	Wanted
Physical				
1	Colour	TCU	≤ 50	≤ 30
2	Ordor	-	natural	nil
3	Clarity	m	≥ 10	≥ 30
4	Turbidity	NTU	≤ 30	≤ 10
5	Suspended Substances	mg/l	≤ 23	≤ 20
6	Afloat Article	-	nil	nil
7	Oil and Grease	-	nil	nil
8	Temperatur	°C	natural	26-30
Chemical				
1	pH	-	6-9	6.5-8.5
2	Salinity	%	natural ± 10%	natural
3	Dissolved Oxygen(DO)	mg/l	≥ 5	≥ 5
4	BOD ₅	mg/l	≤ 20	≤ 10
5	COD	mg/l	≤ 40	≤ 20
6	NH ₃ -N	mg/l	≤ 4	nil
7	N-NO ₂	mg/l	nil	nil
8	CN	mg/l	≤ 0.20	≤ 0.05
9	H ₂ -S	mg/l	-	-
10	Petroleum	mg/l	≤ 3	nil
11	Fenol	mg/l	≤ 0.002	nil
12	DDT	mg/l	≤ 0.042	nil
13	PCB	mg/l	≤ 0.001	nil
14	Sulfur(Detergent)	mg/l	≤ 0.5	nil
15	Metal			
	Mercury	mg/l	≤ 0.005	0.0001
	Chromium(hexavalen)	mg/l	≤ 0.01	0.00004
	Arsenic	mg/l	≤ 0.05	0.0026
	Selenium	mg/l	≤ 0.06	0.00045
	Cadmium	mg/l	≤ 0.01	0.00002
	Copper	mg/l	≤ 1.0	0.001
	Lead	mg/l	≤ 0.05	0.00002
	Zinc	mg/l	≤ 15	0.002
	Silver	mg/l	≤ 0.05	0.0004
	Nickel	mg/l	≤ 0.1	0.007
Micro Biologocal				
1	E.Colliform	/100ml	≤ 1000	nil
2	Patogen	/100ml	nil	nil
3	Plankton		not blooming	not blooming
Radio Activity				
1	Gross Alpha Activity	pCi/l	≤ 1	nil
2	Gross Beta Activity	pCi/l	≤ 100	nil
3	Sr-90	pCi/l	≤ 1	nil
4	Ra-226	pCi/l	≤ 3	nil

Table C.13.5.3 Standard of Liquid Waste Quality by Type of Industry(extract)

Industry	BOD ₅	COD	TSS	Phenols/Sulphide	Cd	CN	Hg	Mn	Metals Total Cr	Cr ⁶⁺	Oil	NH ₃ -N	Pb	Cu	Zn	Ni	pH
Caustic Soda		150	50				0.005										6.0-9.0
Mercury Process		1.5	0.5				5*10 ⁻⁵										6.0-9.0
Diaphragm & membranes process		150	50										0.03	0.3	2.0		6.0-9.0
Electroplating		1.5	0.5										0.03	0.003	0.02		
Copper			60		0.05	0.5		8.0						3.0			6.0-9.0
			60		0.005	0.05		0.8						0.3			6.0-9.0
Nickel			60		0.05	0.5		8.0								5.0	6.0-9.0
			6.0		0.005	0.05		0.8								0.5	
Chromium			60		0.05	0.5		8.0	2.0	0.3							6.0-9.0
			60		0.005	0.05		0.8	0.2	0.03							6.0-9.0
Zinc			60		0.05	0.5		8.0							2.0		6.0-9.0
			6.0		0.005	0.05		0.8							0.2		6.0-9.0
Leather Tanning	150	300	150		1.00				2.0		5.0	10.0					6.0-9.0
	10.5	21.0	10.5		0.07				0.14		0.35	0.70					6.0-9.0
Palm Oil	250	500	300								30	20					6.0-9.0
	1.5	3.0	1.8								0.18	0.12					6.0-9.0
Sugar Cane	100	250	175		1.0												6.0-9.0
	4.0	10.0	7		0.04												6.0-9.0
Tapioka Starch	200	400	150			0.5											6.0-9.0
	12.0	24.0	9.0			0.03											6.0-9.0
Textile	85	250	60	1.0					2.0		5.0						6.0-9.0
	12.75	37.5	9.0	0.15					0.30		0.75						6.0-9.0
Urea Fertilizer	100	250	100								25	50					6.0-9.0
	1.5	3.75	1.5								0.4	0.75					6.0-9.0
Ethanol Industry	150		400														6.0-9.0
	10.5		28.0														6.0-9.0
Mono sodium Glutamate	100	250	100														6.0-9.0
	12	30	12														6.0-9.0
Plywood	100	250	100	1.0													6.0-9.0
	0.28	0.70	0.28	2.8													6.0-9.0
Dry Cell Battery																	
Alkaline Mangan			15				0.015	0.5	0.1		3				0.3	0.6	6.0-9.0
			45				0.045	1.5	0.3		9.0				0.9	1.8	6.0-9.0
Zinc Carbon			30				0.02	0.6			12	4			0.8		6.0-9.0
			15				0.01	0.3			6	2			0.4		6.0-9.0

Note 1 : value of upper row indicates the concentration and lower indicates the effluent volume of monthly average permissible

Note 2 : unit of concentration : mg/l

Note 3 : unit of effluent volume is, Electroplating : g/m³, Plywood : kg/m³, Dry Cell Battery : mg/kg(product), Other Industry : kg/t

Table C.13.5.4 Environmental Standard of Air Quality

No.	Parameter	Measuring Time	Standard Quality
1	SO ₂	24 hours	0.10 ppm (260 μ g/m ³)
2	CO	8 hours	20 ppm (2260 μ g/m ³)
3	NO _x	24 hours	0.05 ppm (92.50 μ g/m ³)
4	O ₃	1 hour	0.10 ppm (200 μ g/m ³)
5	Dust	24 hours	0.26 mg/m ³
6	Pb	24 hours	0.06 mg/m ³
7	H ₂ S	30 minutes	0.03 ppm (42 μ g/m ³)
8	NH ₃	24 hours	2.0 ppm (1360 μ g/m ³)
9	Hydrocarbon	3 hours	0.24 ppm (160 μ g/m ³)

Table C.13.7.1 Japanese Environmental Quality Standards for Conservation of the Living Environment (Rivers)

Classification	Applicable Level	Standard Value				
		pH	BOD	SS	DO	Coliform Groups
AA	Waterworks class-1, conservation of natural environment and other items listed in A-E	6.5-8.5	1mg/l or less	25mg/l or less	7.5mg/l or more	50MPN/100ml or less
A	Waterworks class-2, fishery class-1, bathing and other items listed in B-E	6.5-8.5	2mg/l or less	25mg/l or less	7.5mg/l or more	1000MPN/100 ml or less
B	Waterworks class-3, fishery class-2 and other items listed in C-E	6.5-8.5	3mg/l or less	25mg/l or less	5mg/l or more	5000MPN/100 ml or less
C	Fishery class-3, industrial water class-1 and other items listed in D-E	6.5-8.5	5mg/l or less	50mg/l or less	5mg/l or more	-
D	Industrial water class-2, agricultural water and other item listed in E	6.0-8.5	8mg/l or less	100mg/l or less	2mg/l or more	-
E	Industrial water class-3, and environmental conservation	6.0-8.5	10mg/l or less	No detection of floating	2mg/l or more	-

Table C.13.7.2 Japanese Environmental Standards for Conservation of the Living Environment (Sea Area)

Classification	Applicable Level	Standard Value				
		pH	COD	DO	Coliform Groups	grease, etc.
A	Fishery class-1, bathing, conservation of natural environment and other items listed in B-C	7.8-8.3	2mg/l or less	7.5mg/l or more	1000MPN/100 ml or less	Must not be detected
B	Fishery class-2, industrial water and other item listed in C	7.8-8.3	3mg/l or less	5mg/l or more	-	Must not be detected
C	Environmental conservation	7.0-8.3	8mg/l or less	2mg/l or more	-	-

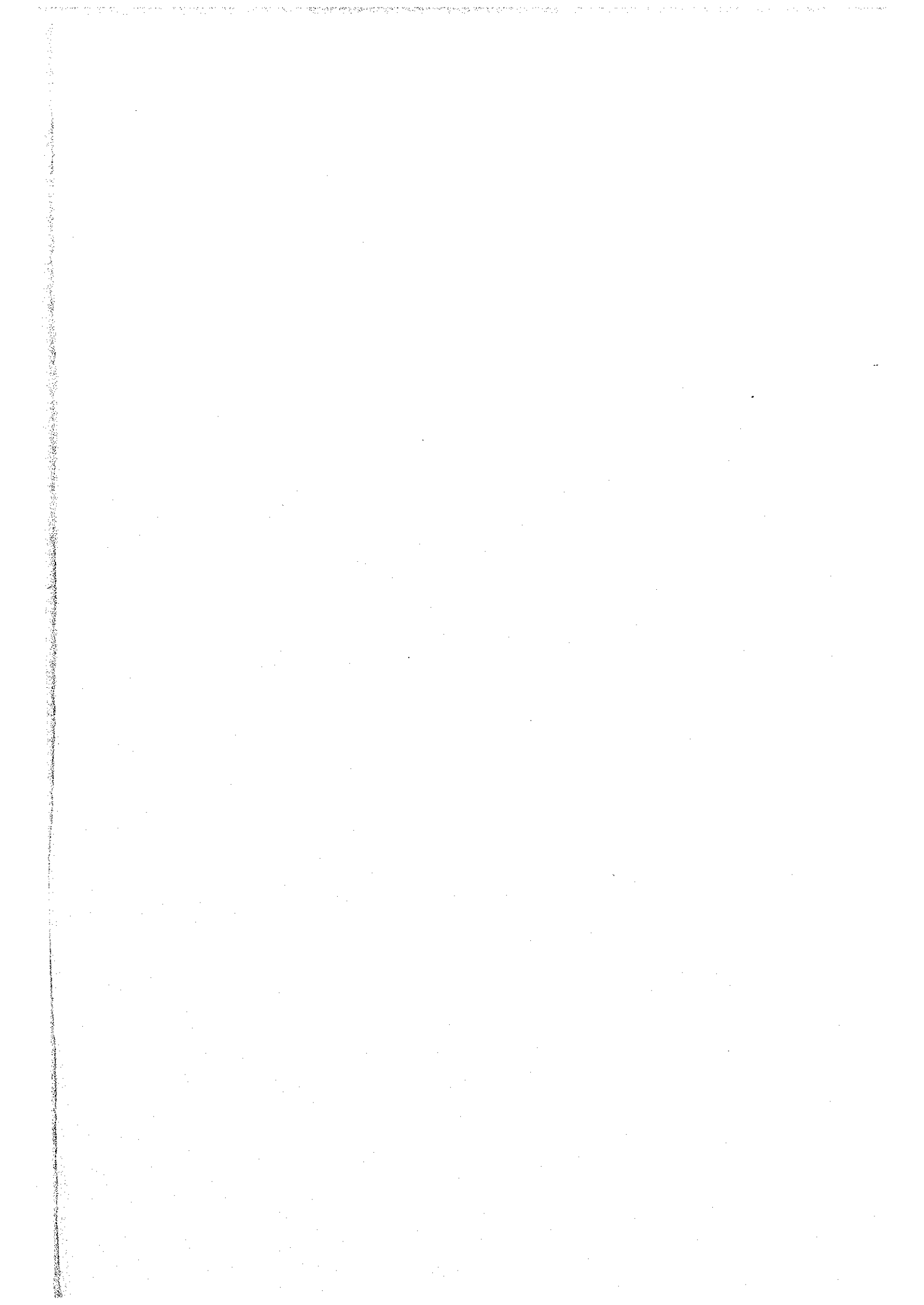
Table C.13.7.3 Japanese Environmental Standards of Nitrogen and Phosphorus in Seas

Category	Purpose of Water Use	Standard Value	
		Total Nitrogen	Total Phosphorus
I	Conservation of natural environment and uses listed in II-IV (excluding fishery class 2 and 3)	0.2mg/l or less	0.02mg/l or less
II	Fishery class 1, bathing and the uses listed in III-IV (excluding fishery)	0.3mg/l or less	0.03mg/l or less
III	Fishery class 2 and the uses listed in IV (excluding fishery class 3)	0.6mg/l or less	0.05mg/l or less
IV	Fishery class 3, industrial water and conservation of habitable environment for marine lives	1mg/l or less	0.09mg/l or less

Table C.13.7.4 COD Annual Average in Tokyo Bay

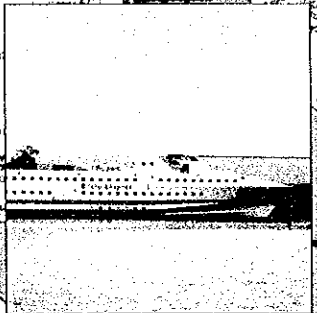
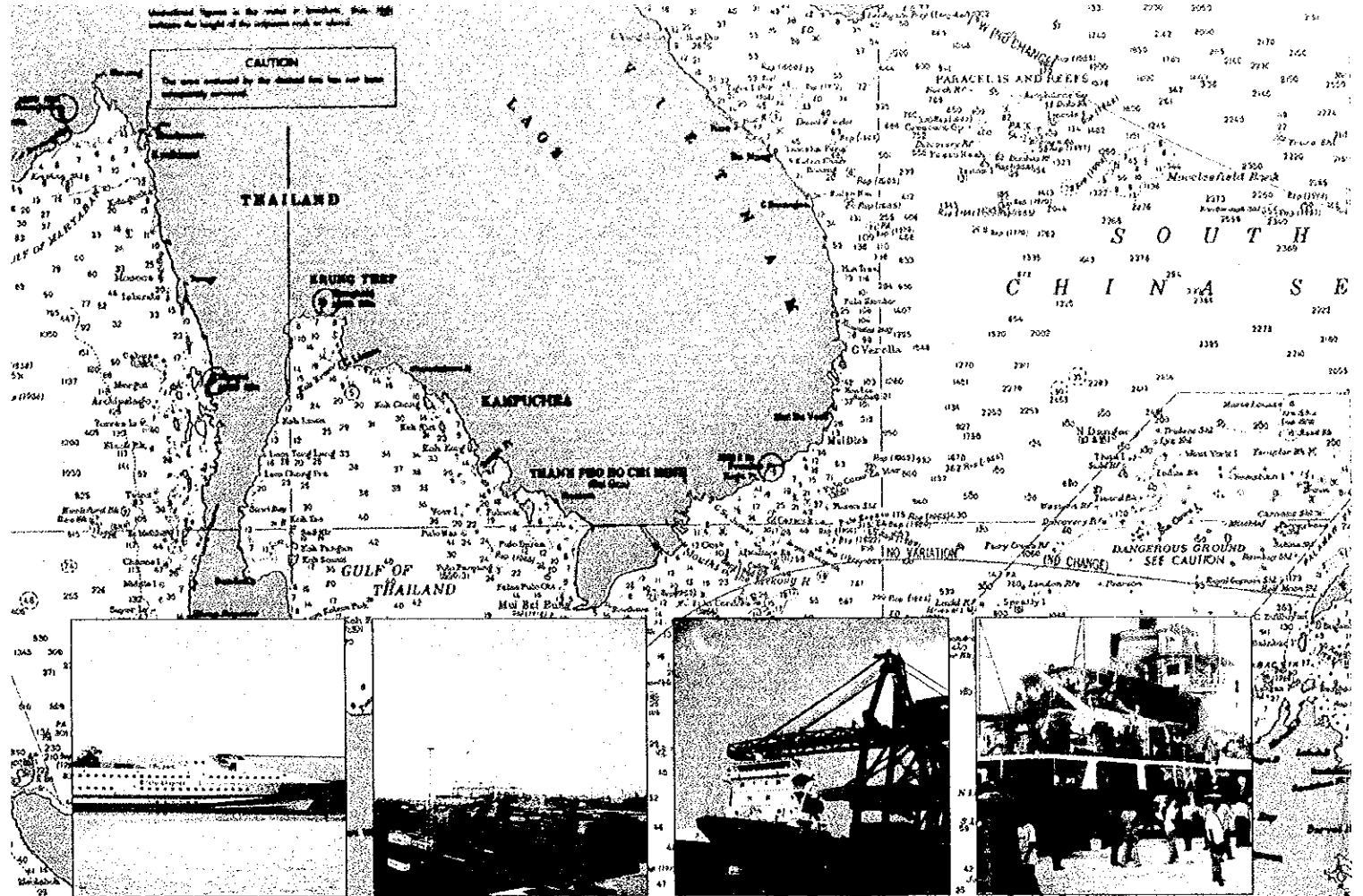
unit;mg/l

Fiscal Year	1973	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Area													
Sea Areas	5.4	3.4	3.2	4.4	3.5	3.7	3.4	3.3	3.4	3.2	3.0	3.1	4.0
Canals	8.9	7.5	5.5	8.1	7.8	7.6	6.4	6.3	6.2	5.9	5.9	6.1	6.9

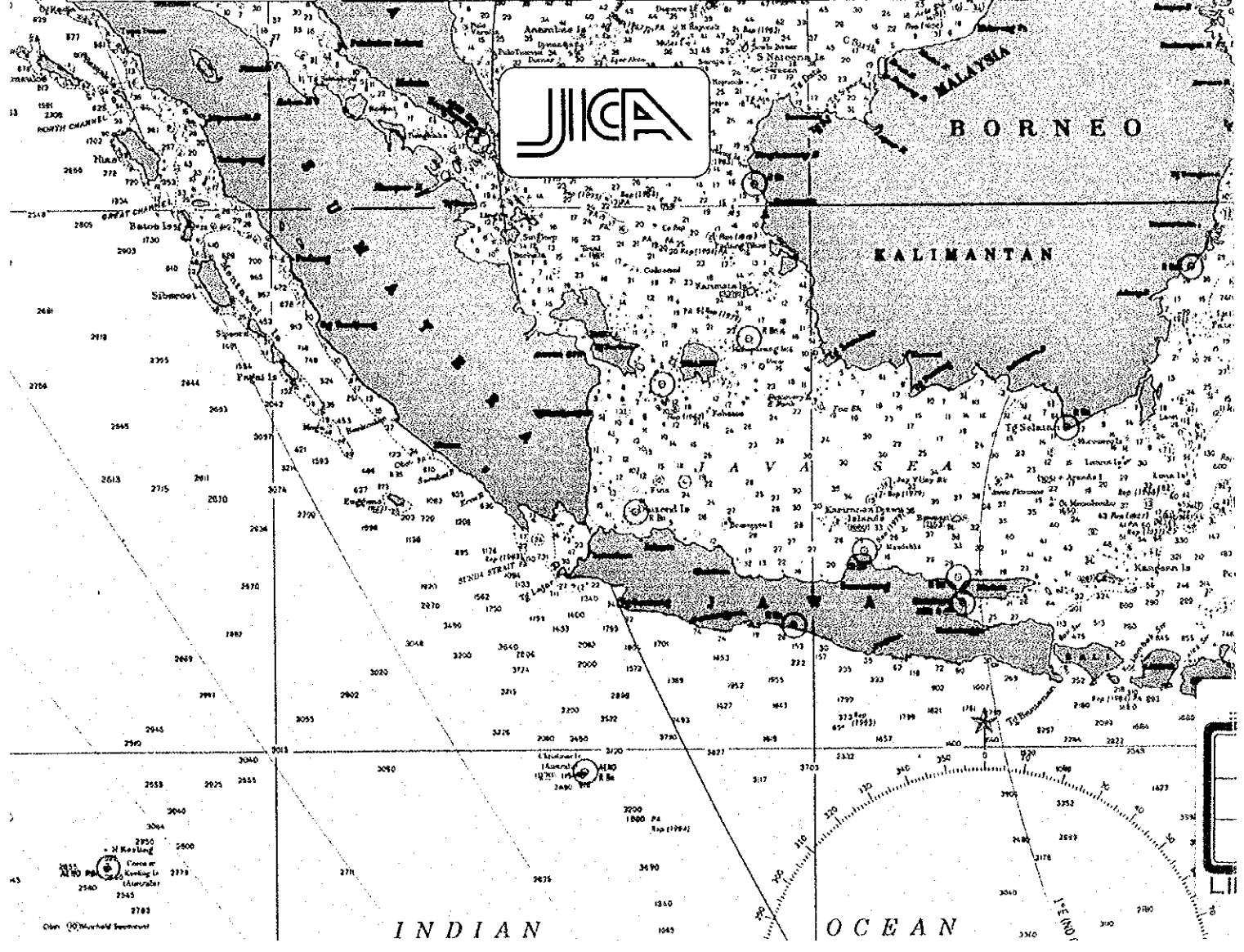


Unshaded figures in the circle indicate spot heights between the height of the adjacent rock or shoal.

CAUTION
The area enclosed by the dotted line has not been completely surveyed.



JICA



Obtain charts from the Hydrographic Office, Washington, D.C. or from the Hydrographic Office, London, England.

