

**Table A-5-4 Calculation for Allocation of Maritime Safety Rescue Ships  
(Re-allocation of Bases)**

**(Basic Data 2005)**

1. Calculation for Allocation of Class II Maritime Safety Rescue Ships  
(Re-allocated bases)

(1) Basic Data (2005)

KANWIL		Request Rate	Remarks
II	$\lambda$	0.1250	Reallocated from Dumain to Tg.Uban
III	$\lambda$	0.3910	
IV	$\lambda$	0.3550	
V	$\lambda$	0.0780	Reallocated from B <sup>m</sup> masin to B <sup>p</sup> papan
VI	$\lambda$	0.0990	

(2) Calculation for Allocation of Ships

$\mu 2 = 0.6110$	$\lambda 2 / \mu 2 = 0.2046$
$\mu 3 = 0.6180$	$\lambda 3 / \mu 3 = 0.6327$
$\mu 4 = 0.5900$	$\lambda 4 / \mu 4 = 0.5145$
$\mu 5 = 0.9460$	$\lambda 5 / \mu 5 = 0.0825$
$\mu 6 = 0.5500$	$\lambda 6 / \mu 6 = 0.1800$

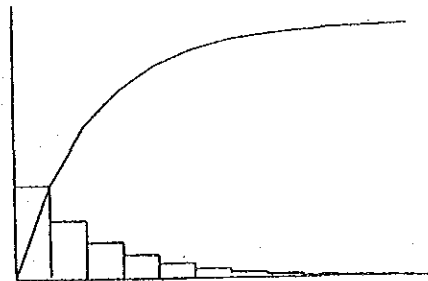
a) In the case of one ship (S=1)

KANWIL II

p 0	.....	0.795417	0.795417
p 1	.....	0.162729	0.958146
p 2	.....	0.033291	0.991437
p 3	.....	0.006811	0.998248
p 4	.....	0.001393	0.999642
p 5	.....	0.000285	0.999927
p 6	.....	0.000058	0.999985
p 7	.....	0.000012	0.999997

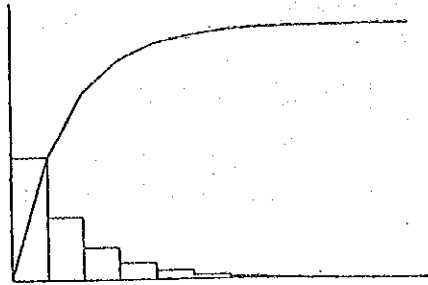
KANWIL III

p 0	.....	0.367314	0.367314
p 1	.....	0.232394	0.599708
p 2	.....	0.147033	0.746741
p 3	.....	0.093026	0.839767
p 4	.....	0.058856	0.898623
p 5	.....	0.037237	0.935860
p 6	.....	0.023560	0.959419
p 7	.....	0.014906	0.974325



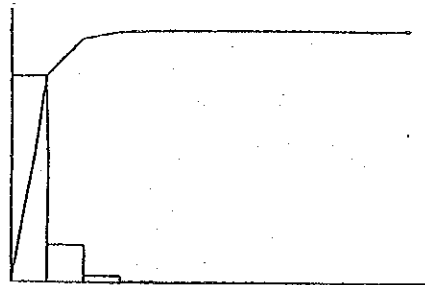
KANWIL IV

p 0	.....	0.485507	0.485507
p 1	.....	0.249790	0.735297
p 2	.....	0.128515	0.863812
p 3	.....	0.066120	0.929932
p 4	.....	0.034018	0.963951
p 5	.....	0.017502	0.981453
p 6	.....	0.009005	0.990458
p 7	.....	0.004633	0.995091



KANWIL V

p 0	.....	0.917548	0.917548
p 1	.....	0.075654	0.993202
p 2	.....	0.006238	0.999440
p 3	.....	0.000514	0.999954
p 4	.....	0.000042	0.999996
p 5	.....	0.000003	1.000000
p 6	.....	0.000000	1.000000
p 7	.....	0.000000	1.000000



KANWIL VI

p 0	.....	0.820000	0.820000
p 1	.....	0.147600	0.967600
p 2	.....	0.026568	0.994168
p 3	.....	0.004782	0.998950
p 4	.....	0.000861	0.999811
p 5	.....	0.000155	0.999966
p 6	.....	0.000028	0.999994
p 7	.....	0.000005	0.999999

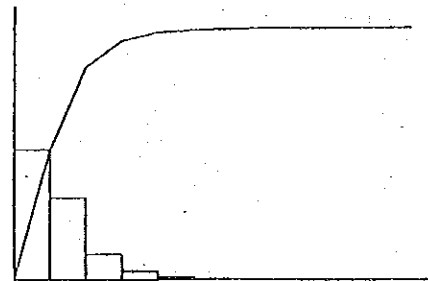
b) In the case of two ships (S=2)

KANWIL II

p 0	.....	0.814402	0.814402
p 1	.....	0.166613	0.981015
p 2	.....	0.017043	0.998058
p 3	.....	0.001743	0.999801
p 4	.....	0.000178	0.999980
p 5	.....	0.000018	0.999998
p 6	.....	0.000002	1.000000
p 7	.....	0.000000	1.000000

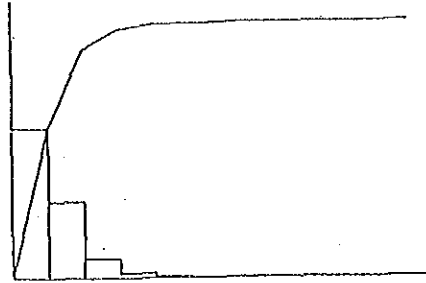
KANWIL III

p 0	.....	0.519361	0.519361
p 1	.....	0.328592	0.847953
p 2	.....	0.103948	0.951901
p 3	.....	0.032883	0.984784
p 4	.....	0.010402	0.995187
p 5	.....	0.003291	0.998477
p 6	.....	0.001041	0.999518
p 7	.....	0.000329	0.999848



KANWIL IV

p 0	.....	0.590778	0.590778
p 1	.....	0.303951	0.894729
p 2	.....	0.078190	0.972919
p 3	.....	0.020114	0.993034
p 4	.....	0.005174	0.998208
p 5	.....	0.001331	0.999539
p 6	.....	0.000342	0.999881
p 7	.....	0.000088	0.999969

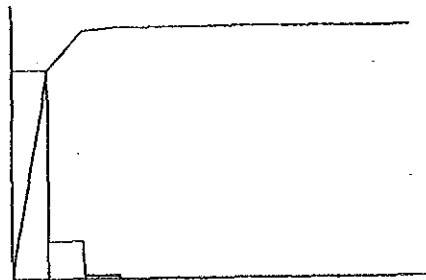


KANWIL V

p 0	.....	0.920812	0.920812
p 1	.....	0.075923	0.996735
p 2	.....	0.003130	0.999865
p 3	.....	0.000129	0.999994
p 4	.....	0.000005	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000
p 7	.....	0.000000	1.000000

KANWIL VI

p 0	.....	0.834862	0.834862
p 1	.....	0.150275	0.985138
p 2	.....	0.013525	0.998662
p 3	.....	0.001217	0.999880
p 4	.....	0.000110	0.999989
p 5	.....	0.000010	0.999999
p 6	.....	0.000001	1.000000
p 7	.....	0.000000	1.000000



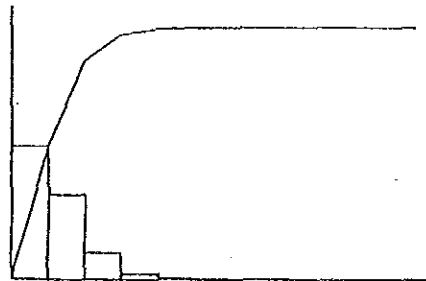
c) In the case of three ships (S=3)

KANWIL II

p 0	.....	0.814969	0.814969
p 1	.....	0.166728	0.981697
p 2	.....	0.017055	0.998752
p 3	.....	0.001163	0.999915
p 4	.....	0.000079	0.999994
p 5	.....	0.000005	1.000000
p 6	.....	0.000000	1.000000
p 7	.....	0.000000	1.000000

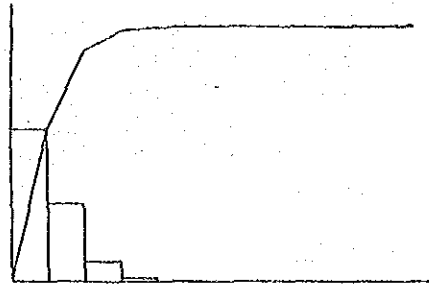
KANWIL III

p 0	.....	0.530132	0.530132
p 1	.....	0.335407	0.865539
p 2	.....	0.106104	0.971643
p 3	.....	0.022377	0.994020
p 4	.....	0.004719	0.998739
p 5	.....	0.000995	0.999734
p 6	.....	0.000210	0.999944
p 7	.....	0.000044	0.999988



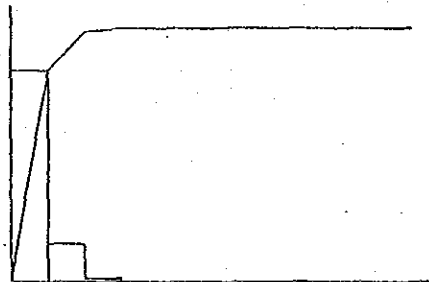
KANWIL IV

p 0	.....	0.597286	0.597286
p 1	.....	0.307299	0.904585
p 2	.....	0.079052	0.983637
p 3	.....	0.013557	0.997194
p 4	.....	0.002325	0.999519
p 5	.....	0.000399	0.999917
p 6	.....	0.000068	0.999986
p 7	.....	0.000012	0.999998



KANWIL V

p 0	.....	0.920855	0.920855
p 1	.....	0.075927	0.996781
p 2	.....	0.003130	0.999912
p 3	.....	0.000086	0.999998
p 4	.....	0.000002	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000
p 7	.....	0.000000	1.000000



KANWIL VI

p 0	.....	0.835259	0.835259
p 1	.....	0.150347	0.985605
p 2	.....	0.013531	0.999136
p 3	.....	0.000812	0.999948
p 4	.....	0.000049	0.999997
p 5	.....	0.000003	1.000000
p 6	.....	0.000000	1.000000
p 7	.....	0.000000	1.000000

Table A-5-5 Calculation for Allocation of Aircraft  
(Basic Data 1982)

1. Calculation for Allocation of Fixed Wing Aircraft

(1) Basic Data (2005)

Base		Accidents
Jakarta	N $\lambda$	1 5 4 0.5020
Ujung Pandang	N $\lambda$	1 0 8 0.3520

(2) Calculation for Allocation of Fixed Wing Aircraft

$$\begin{aligned} \mu 1 &= 3.6900 & \lambda 1 / \mu 1 &= 0.1360 \\ \mu 2 &= 3.2950 & \lambda 2 / \mu 2 &= 0.1068 \end{aligned}$$

a) In the case of one fixed wing aircraft (S=1)

Jakarta			Ujung Pandang		
p 0	.....	0.863957 0.863957	p 0	.....	0.893172 0.893172
p 1	.....	0.117536 0.981492	p 1	.....	0.095416 0.988588
p 2	.....	0.015990 0.997482	p 2	.....	0.010193 0.998781
p 3	.....	0.002175 0.999657	p 3	.....	0.001089 0.999870
p 4	.....	0.000296 0.999953	p 4	.....	0.000116 0.999986
p 5	.....	0.000040 0.999994	p 5	.....	0.000012 0.999999
p 6	.....	0.000005 0.999999	p 6	.....	0.000001 1.000000

b) In the case of two fixed wing aircraft (S=2)

Jakarta			Ujung Pandang		
p 0	.....	0.872621 0.872621	p 0	.....	0.898588 0.898588
p 1	.....	0.118714 0.991336	p 1	.....	0.095995 0.994583
p 2	.....	0.008075 0.999411	p 2	.....	0.005127 0.999711
p 3	.....	0.000549 0.999960	p 3	.....	0.000274 0.999985
p 4	.....	0.000037 0.999997	p 4	.....	0.000015 0.999999
p 5	.....	0.000003 1.000000	p 5	.....	0.000001 1.000000
p 6	.....	0.000000 1.000000	p 6	.....	0.000000 1.000000

c) In the case of three fixed wing aircraft (S=3)

Jakarta			Ujung Pandang		
p 0	.....	0.872801 0.872801	p 0	.....	0.898678 0.898678
p 1	.....	0.118739 0.991540	p 1	.....	0.096004 0.994683
p 2	.....	0.008077 0.999616	p 2	.....	0.005128 0.999811
p 3	.....	0.000366 0.999983	p 3	.....	0.000183 0.999993
p 4	.....	0.000017 0.999999	p 4	.....	0.000007 1.000000
p 5	.....	0.000001 1.000000	p 5	.....	0.000000 1.000000
p 6	.....	0.000000 1.000000	p 6	.....	0.000000 1.000000

## 2. Calculation for Allocation of Helicopters

### (1) Basic Data (1982)

Base		Accidents
Medan	N λ	2 1 0.0680
Bintan	N λ	2 5 0.0820
Jakarta	N λ	6 6 0.2150
Surabaya	N λ	7 6 0.2480
Ujung Pandang	N λ	2 0 0.0650
Ambon	N λ	1 3 0.0420

(Distance)	miles
1. Medan	9 9
2. Bintan	9 3
3. Jakarta	1 1 0
4. Surabaya	1 1 3
5. Ujung Pandang	8 4
6. Ambon	7 3



## 2. Calculation for Allocation of Helicopters

$\mu 1 =$	7.6990	$\lambda 1 / \mu 1 =$	0.0088
$\mu 2 =$	8.0700	$\lambda 2 / \mu 2 =$	0.0102
$\mu 3 =$	7.1000	$\lambda 3 / \mu 3 =$	0.0303
$\mu 4 =$	6.9520	$\lambda 4 / \mu 4 =$	0.0357
$\mu 5 =$	8.7000	$\lambda 5 / \mu 5 =$	0.0075
$\mu 6 =$	9.6170	$\lambda 6 / \mu 6 =$	0.0045

### a) In the case of one helicopter (S=1)

#### Medan

p 0	.....	0.991168	0.991168
p 1	.....	0.008754	0.999922
p 2	.....	0.000077	0.999999
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

#### Bintan

p 0	.....	0.989839	0.989839
p 1	.....	0.010058	0.999897
p 2	.....	0.000102	0.999999
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

#### Jakarta

p 0	.....	0.969718	0.969718
p 1	.....	0.029365	0.999083
p 2	.....	0.000889	0.999972
p 3	.....	0.000027	0.999999
p 4	.....	0.000001	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

#### Surabaya

p 0	.....	0.964956	0.964956
p 1	.....	0.034423	0.999379
p 2	.....	0.000614	0.999993
p 3	.....	0.000007	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

#### Ujung Pandang

p 0	.....	0.992529	0.992529
p 1	.....	0.007415	0.999944
p 2	.....	0.000055	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

#### Ambon

p 0	.....	0.995633	0.995633
p 1	.....	0.004348	0.999981
p 2	.....	0.000019	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

b) In the case of two helicopters (S=2)

Medan

p 0	.....	0.991206	0.991206
p 1	.....	0.008755	0.999961
p 2	.....	0.000039	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Bintan

p 0	.....	0.989890	0.989890
p 1	.....	0.010058	0.999949
p 2	.....	0.000051	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Jakarta

p 0	.....	0.970170	0.970170
p 1	.....	0.029378	0.999548
p 2	.....	0.000445	0.999993
p 3	.....	0.000007	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Surabaya

p 0	.....	0.964952	0.965952
p 1	.....	0.034423	0.999375
p 2	.....	0.000614	0.999989
p 3	.....	0.000011	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ujung Pandang

p 0	.....	0.992557	0.992557
p 1	.....	0.007416	0.999972
p 2	.....	0.000028	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ambon

p 0	.....	0.995642	0.995642
p 1	.....	0.004348	0.999991
p 2	.....	0.000009	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

c) In the case of three helicopters (S=3)

Medan

p 0	.....	0.991207	0.991207
p 1	.....	0.008755	0.999961
p 2	.....	0.000039	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Bintan

p 0	.....	0.989890	0.989890
p 1	.....	0.010058	0.999949
p 2	.....	0.000051	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Jakarta

p 0	.....	0.970172	0.970172
p 1	.....	0.029373	0.999551
p 2	.....	0.000445	0.999996
p 3	.....	0.000004	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Surabaya

p 0	.....	0.964327	0.964327
p 1	.....	0.034401	0.998727
p 2	.....	0.001227	0.999955
p 3	.....	0.000044	0.999998
p 4	.....	0.000002	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ujung Pandang

p 0	.....	0.992557	0.992557
p 1	.....	0.007416	0.999972
p 2	.....	0.000028	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ambon

p 0	.....	0.995642	0.995642
p 1	.....	0.004348	0.999991
p 2	.....	0.000009	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Table A-5-6 Calculation for Allocation of Aircraft  
(Basic Data 2005)

1. Calculation for Allocation of Fixed Wing Aircraft

(1) Basic Data (2005)

Base		Accidents
Jakarta	N $\lambda$	246.4 0.8030
Ujung Pandang	N $\lambda$	172.8 0.5630

(2) Calculation for Allocation of Fixed Wing Aircraft

$$\begin{aligned} \mu 1 &= 3.6900 & \lambda 1 / \mu 1 &= 0.2176 \\ \mu 2 &= 3.2950 & \lambda 2 / \mu 2 &= 0.1709 \end{aligned}$$

a) In the case of one fixed wing aircraft (S=1)

Jakarta		Ujung Pandang	
p 0	..... 0.782385 0.782385	p 0	..... 0.829135 0.829135
p 1	..... 0.170259 0.952644	p 1	..... 0.141670 0.970805
p 2	..... 0.037351 0.989695	p 2	..... 0.024206 0.995012
p 3	..... 0.008063 0.997757	p 3	..... 0.004136 0.999148
p 4	..... 0.001755 0.999512	p 4	..... 0.000707 0.999854
p 5	..... 0.000382 0.999894	p 5	..... 0.000121 0.999975
p 6	..... 0.000083 0.999977	p 6	..... 0.000021 0.999996

b) In the case of two fixed wing aircraft (S=2)

Jakarta		Ujung Pandang	
p 0	..... 0.803740 0.803740	p 0	..... 0.842584 0.842584
p 1	..... 0.174906 0.978645	p 1	..... 0.143968 0.986551
p 2	..... 0.019031 0.997677	p 2	..... 0.012300 0.998851
p 3	..... 0.002071 0.999747	p 3	..... 0.001051 0.999902
p 4	..... 0.000225 0.999973	p 4	..... 0.000090 0.999992
p 5	..... 0.000025 0.999997	p 5	..... 0.000008 0.999999
p 6	..... 0.000003 1.000000	p 6	..... 0.000001 1.000000

c) In the case of three fixed wing aircraft (S=3)

Jakarta			Ujung Pandang		
p 0	.....	0.804411 0.804411	p 0	.....	0.842926 0.842926
p 1	.....	0.175052 0.979463	p 1	.....	0.144026 0.986952
p 2	.....	0.019047 0.998510	p 2	.....	0.012305 0.999257
p 3	.....	0.001382 0.999892	p 3	.....	0.000701 0.999958
p 4	.....	0.000100 0.999992	p 4	.....	0.000040 0.999998
p 5	.....	0.000007 0.999999	p 5	.....	0.000002 1.000000
p 6	.....	0.000001 1.000000	p 6	.....	0.000000 1.000000

## 2. Calculation for Allocation of Helicopters

### (1) Basic Data (2005)

Base		Accidents
Medan	N $\lambda$	33.6 0.1100
Bintan	N $\lambda$	40 0.1300
Jakarta	N $\lambda$	105.6 0.3440
Surabaya	N $\lambda$	121.6件 0.3960
Ujung Pandang	N $\lambda$	32 件 0.1040
Ambon	N $\lambda$	20.8件 0.0680

### (2) Calculation for Allocation of Helicopters

$\mu 1 = 7.6990$	$\lambda 1 / \mu 1 = 0.0143$
$\mu 2 = 8.0700$	$\lambda 2 / \mu 2 = 0.0161$
$\mu 3 = 7.1000$	$\lambda 3 / \mu 3 = 0.0485$
$\mu 4 = 6.9520$	$\lambda 4 / \mu 4 = 0.0570$
$\mu 5 = 8.7000$	$\lambda 5 / \mu 5 = 0.0120$
$\mu 6 = 9.6170$	$\lambda 6 / \mu 6 = 0.0071$

a) In the case of one helicopter (S=1)

Medan

p 0	.....	0.985712	0.985712
p 1	.....	0.014083	0.999796
p 2	.....	0.000201	0.999997
p 3	.....	0.000003	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Bintan

p 0	.....	0.983891	0.983891
p 1	.....	0.015850	0.999741
p 2	.....	0.000255	0.999996
p 3	.....	0.000004	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Jakarta

p 0	.....	0.951549	0.951549
p 1	.....	0.046103	0.997653
p 2	.....	0.002234	0.999886
p 3	.....	0.000108	0.999995
p 4	.....	0.000005	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Surabaya

p 0	.....	0.943038	0.943038
p 1	.....	0.053717	0.996755
p 2	.....	0.003060	0.999815
p 3	.....	0.000010	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ujung Pandang

p 0	.....	0.988046	0.988046
p 1	.....	0.011811	0.999857
p 2	.....	0.000141	0.999998
p 3	.....	0.000002	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ambon

p 0	.....	0.992929	0.992929
p 1	.....	0.007021	0.999950
p 2	.....	0.000050	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

b) In the case of two helicopters (S=2)

Medan

p 0	.....	0.985814	0.985814
p 1	.....	0.014085	0.999899
p 2	.....	0.000101	0.999999
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Bintan

p 0	.....	0.984020	0.984020
p 1	.....	0.015852	0.999871
p 2	.....	0.000128	0.999999
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Jakarta

p 0	.....	0.952695	0.952695
p 1	.....	0.046159	0.998854
p 2	.....	0.001118	0.999972
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Surabaya

p 0	.....	0.944615	0.944615
p 1	.....	0.053807	0.998423
p 2	.....	0.001532	0.999955
p 3	.....	0.000044	0.999999
p 4	.....	0.000001	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ujung Pandang

p 0	.....	0.988117	0.988117
p 1	.....	0.011812	0.999929
p 2	.....	0.000071	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ambon

p 0	.....	0.992954	0.992954
p 1	.....	0.007021	0.999975
p 2	.....	0.000025	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000



c) In the case of three helicopters (S=3)

Medan

p 0	.....	0.985814	0.985814
p 1	.....	0.014085	0.999899
p 2	.....	0.000101	1.000000
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Bintan

p 0	.....	0.984020	0.984020
p 1	.....	0.015852	0.999872
p 2	.....	0.000128	0.999999
p 3	.....	0.000001	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Jakarta

p 0	.....	0.952704	0.952704
p 1	.....	0.046159	0.998863
p 2	.....	0.001118	0.999982
p 3	.....	0.000018	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Surabaya

p 0	.....	0.944630	0.944630
p 1	.....	0.053808	0.998438
p 2	.....	0.001533	0.999970
p 3	.....	0.000029	0.999999
p 4	.....	0.000001	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ujung Pandang

p 0	.....	0.988117	0.988117
p 1	.....	0.011812	0.999929
p 2	.....	0.000071	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

Ambon

p 0	.....	0.992954	0.992954
p 1	.....	0.007021	0.999975
p 2	.....	0.000025	1.000000
p 3	.....	0.000000	1.000000
p 4	.....	0.000000	1.000000
p 5	.....	0.000000	1.000000
p 6	.....	0.000000	1.000000

**APPENDIX - VI**

**(Section 6 Marine Disaster Prevention)**



Table A-6-1 Records of Tanker's Call (82/83 - 86/87)

Name of Port	Year					Order
	82/83	83/84	84/85	85/86	86/87	
BALIKPAPAN	622	554	915	835	915	1
DUMAI	138	628	715	555	767	2
CILACAP	177	404	776	364	751	3
SEMANGKA	475	68	760	630	741	4
PLAJU	888	957	875	515	717	5
SUNGAI PAKNING	75	143	252	491	526	6
TANJUNG PRIOK	230	432	464	510	450	7
PULAU SAMBU	130	-	-	-	362	8
SURABAYA	172	408	328	452	355	9
UJUNG PANDANG	77	109	105	206	270	10
BANJARMASIN	209	228	228	174	258	11
TANJUNG UBAN	315	353	-	356	220	12
MENENG	50	115	85	139	172	13
PONTIANAK	-	167	163	158	151	14
BENOA	70	136	135	146	150	15
BITUNG	68	125	59	97	113	16
SEMARANG	102	121	114	122	105	17
BALONGAN	106	114	125	104	102	18
BELAWAN	105	121	125	109	98	19
MERAK	182	216	216	178	89	20
SABANG	46	-	-	-	80	21
SIBOLGA	49	67	44	50	46	22
TARAKAN	15	123	97	33	44	23
PANGKALAN SUSU	27	46	55	54	42	24
SORONG	-	41	35	29	29	25

Table A-6-2 Tanker Fleet by Pertamina (1987)

TYPE	OWNED SHIPS		BAREBOAT HIRED PURCHASE		TIME CHARTER SHIP		TOTAL	
	UNIT	DWT	UNIT	DWT	UNIT	DWT	UNIT	DWT
BULK LIGHTER	12	9,445.00	-	-	5	4,944.93	17	14,389.93
SMALL TANKER I	7	23,198.00	-	-	23	59,914.43	30	83,112.43
SMALL TANKER II	17	104,959.00	-	-	14	74,343.91	31	179,302.91
GP I	23	323,583.82	2	30,000.00	4	64,405.00	29	417,988.82
GP II	3	51,046.00	2	34,400.00	7	125,959.09	12	211,405.09
MR	7	237,832.00	6	179,400.00	2	63,616.60	15	480,848.60
LR I	-	-	-	-	1	80,093.00	1	80,093.00
LR II	2	168,961.00	2	171,527.00	3	257,427.00	7	597,915.00
VLCC	-	-	-	-	4	897,478.00	4	897,478.00
ULCC	-	-	-	-	-	-----	-	-----
TOTAL	71	919,024.82	12	415,327.00	63	1,628,181.96	146	2,962,533.78

Source: Pertamina

- B.L = BULK LIGHTER
- S.T. I = SMALL TANKER I
- S.T. II = SMALL TANKER II
- G.P. I = GENERAL PURPOSE I
- G.P. II = GENERAL PURPOSE II
- M.R. = MEDIUM RANGE
- L.R. I = LARGE RANGE I
- L.R. II = LARGE RANGE II
- VLCC = VERY LARGE CRUDE CARRIES
- ULCC = ULTRA LARGE CRUDE CARRIES

Table A-6-3 Number of Accidents of Indonesian Tankers

	1979	1980	1981	1982	1983	1984	1985	1986
Number	82	98	114	130	141	153	183	193
Gross Ton	1,359	1,677	2,343	2,446	2,604	2,686	2,630	3,127

Source: Lloyd's Data

Table A-6-4 Accidents of Indonesian Tankers  
in and around Indonesian Waters

Year	1981	1982	1983	1984	1985	1986
Number						
BASARNAS Data*	14	10	12	11	20	-
DGSC Log Book of Accidents**	-	15	9	18	16	9

Note: \* Indonesian tankers only

\*\* Including tankers of other national flags

Table A-6-5 Accidents of Indonesian Tankers by Kind, Area and Number  
occurred in and around Indonesian Waters

Year	Kind of accidents Distance from shore	Col- lision	Strand- ing	Engine trouble	Fire	Flood- ing	Sunk	Propel- ler trouble	Rudder trouble	Missing	Others	Total
1981	In port	5	-	1	1	1	-	-	-	-	2	10
	Less than 3 miles	-	-	1	-	-	-	-	-	-	1	2
	3 - 12 miles	-	-	-	-	-	-	1	-	-	-	1
	12 miles and over	-	-	-	-	-	-	-	-	-	1	1
1982	In port	2	-	1	-	1	-	-	-	-	-	4
	Less than 3 miles	-	1	-	-	-	-	-	-	-	-	1
	3 - 12 miles	-	-	1	-	-	-	-	-	-	-	1
	12 miles and over	-	-	2	-	1	-	-	-	-	1	4
1983	In port	2	1	2	-	-	-	-	-	-	1	6
	Less than 3 miles	1	1	-	-	-	-	-	-	-	-	2
	3 - 12 miles	1	-	2	-	-	-	-	-	-	-	3
	12 miles and over	-	-	1	-	-	-	-	-	-	-	1
Total		11	3	11	1	3	-	1	-	-	6	36

Distance from shore	In port	Less than 3 miles	3 - 12 miles	12 miles and over
Total	20	5	5	6

Table A-6-6 Tanker Accidents by Kind in and around Indonesian Waters

Kind	Year										Total
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	
Collision	4	4	3	7	4						22
Stranding	5	1	7	2							15
Capsized											
Fire	1		2								3
Flooding		1	1	1							3
Sunk	2										2
Engine, Propeller & Rudder Troubles	3	3	4	3	4						17
Drifting				1							1
Human Injury and Loss				2	1						3
Others			1								1
Total	15	9	18	16	9						67



Table A-6-7 Case of Marine Oil Spill

OCCURENCE		Ship's NAME/ DWT/GRT	FLAG	OWNER/AGENT	KIND OF CASE	ACTION TO BE TAKEN
TIME	LOCATION					
7 Jul. 1987	1.11.1 U	STOLT AVANCE	LIBERIA	STOLT NELSON REDERY, NORWAY	Ship's grounded (error Navigation)	-Oilspill recovery has been conducted by SMIT TOWAGE & SALVAGE(S) Pte, Ltd. Singapore
	103.54.4 T	14,418 GRT				
22 Jul. 1987	01.06.00 U	MV. ELHANI	LYBIA	General National Maritime Transport Co., Tripoli	- ditto -	- ditto -
	103.46.04 T	81,411 GRT				

Source: Directorate of Shipping &amp; Marine Safety

Table A-6-8 Number of Tugboats and Oil Barges Belonging to Perumpel

NAME OF PORT	SHIPS TYPE		TUGBOAT		OIL BARGES	
			Horse Power	Number	Gross tonnes	Number
BELAWAN			800 - 2,400	4	-	-
TG. PRIOK			800 - 2,400	14	400	3
TG. PERAK			1,500 - 3,200	8	-	-
UJUNG PANDANG			1,500 - 2,400	3	-	-

Table A-6-9 List of Cutter Suction Dredgers belonging to Public Dredging Corporation

(Perum Pengerukan)

NAME OF SHIP	OVERALL LENGTH	MOULDED BREADTH	MOULDED DEPTH	DIAMETER OF SUCTION PIPE	DREDGING DEPTH	POWER OF DREDGE PUMPS	LOCATION
MAHAKAM	41.45 M	13.41 M	2.90 M	24 Inch	17.68 M	2 x 1225 HP	Samarinda
MUSI	41.45 M	13.41 M	2.90 M	30 Inch	17.68 M	1 x 3600 HP	Tanjung Priok
KAPUAS	41.45 M	13.41 M	2.90 M	30 Inch	17.68 M	1 x 3600 HP	Tanjung Priok

## BUCKET DREDGER

NAME OF SHIP	OVERALL LENGTH	MOULDED BREADTH	MOULDED DEPTH	BUCKET CAPACITY	DREDGING DEPTH	TUMBLER DIESEL ENGINE	LOCATION
SINGALANG	52.02 M	11.02 M	3.70 M	700 Lt	15.00 M	1 x 375 HP	Surabaya
MERAPI	48.10 M	14.66 M	4.10 M	700 Lt	18.00 M	1 x 368 HP	Tanjung Priok
AGUNG	48.10 M	14.66 M	4.10 M	700 Lt	18.00 M	1 x 368 HP	Belawan

## GRAB DREDGER

NAME OF SHIP	OVER DECK LENGTH	MOULDED BREADTH	MOULDED DEPTH	GRAB CAPACITY	DREDGING DEPTH	MACHINERY FOR GRAB	LOCATION
MANINJAU	25.92 M	9.13 M	2.03 M	3.50 M3	7.00 M	1 x 211 HP	Tanjung Priok
TOWUTI	26.00 M	13.00 M	1.60 M	2.50 M3	12.00 M	1 x 160 HP	Surabaya
SINGKARAK	26.00 M	11.00 M	2.50 M	5.50 M3	14.00 M	1 x 325 HP	Tanjung Priok
TOBA	26.00 M	11.00 M	2.50 M	5.50 M3	14.00 M	1 x 325 HP	Senarang
TONDANO	28.00 M	13.00 M	2.60 M	7.00 CbY	20.00 M	1 x 455 HP	Tanjung Priok
RANAU	28.00 M	13.00 M	2.60 M	7.00 CbY	20.00 M	1 x 455 HP	Tanjung Priok
POSO	28.00 M	13.00 M	2.60 M	7.00 CbY	20.00 M	1 x 455 HP	Tanjung Priok
BATUR	28.00 M	13.00 M	2.60 M	7.00 CbY	20.00 M	1 x 455 HP	Tanjung Priok

Table A-6-10 List of Trailing Suction Hopper Dredgers belonging to Public Dredging Corporation  
(Perum Pengerukan)

NAME OF SHIP	OVERALL LENGTH	MOULDED BREADTH	MOULDED DEPTH	LOADED DRAUGHT	GROSS TONNAGE (TON)	NETTO TONNAGE (TON)	CUT PUT OF PROPULSION MACHINERY	POWER OF DREDGE PUMPS	DREDGING DEPTH	HOPPER CAPACITY	LOCATION
LOMBOK	64.90 M	13.00 M	5.46 M	3.50 M	1660.37	560.45	2 x 750 HP	1 x 700 HP	10 M	750 M3	Tanjung Priok
SULAWESI II	92.50 M	16.00 M	8.00 M	7.33 M	4179.85	1179.00	2 x 1900 HP	2 x 900 HP	20 M	3000 M3	Palembang/Tg.Priok
JAWA	92.00 M	16.00 M	8.00 M	7.33 M	3932.00	1179.00	2 x 1900 HP	2 x 900 HP	20 M	3000 M3	Surabaya
SUMBAWA	85.00 M	16.42 M	6.22 M	4.00 M	2838.72	1301.29	2 x 1600 HP	2 x 350 HP	20 M	1000 M3	Tanjung Priok
TIMOR	95.00 M	18.40 M	7.00 M	5.00 M	4145.34	1989.34	2 x 2100 HP	2 x 550 HP	20 M	2000 M3	Tanjung Priok
IRIAN JAYA	109.88 M	18.04 M	8.05 M	6.33 M	5179.20	2469.08	2 x 1795 HP	2 x 898 HP	20 M	4000 M3	Belawan
SERAM	92.00 M	16.00 M	8.00 M	7.30 M	3932.00	1179.00	2 x 2100 HP	2 x 900 HP	20 M	3000 M3	Surabaya
FLORES	95.00 M	18.40 M	7.00 M	5.00 M	4145.34	1989.34	2 x 2100 HP	2 x 550 HP	20 M	2000 M3	Banjarasin
BANDA	71.10 M	14.00 M	4.90 M	4.05 M	1629.34	797.80	2 x 846 HP	1 x 438 HP	14 M	1000 M3	Tanjung Priok
HALMAHERA	92.50 M	16.00 M	8.00 M	7.33 M	3932.00	1179.00	2 x 2000 HP	2 x 900 HP	20 M	3000 M3	Belawan
KALIMANTAN II	109.88 M	18.04 M	8.05 M	6.33 M	5097.52	2469.08	2 x 1795 HP	2 x 898 HP	20 M	4000 M3	Tanjung Priok
NATUNA	71.10 M	14.00 M	4.90 M	4.05 M	1629.34	797.80	2 x 846 HP	1 x 438 HP	14 M	1000 M3	Tanjung Priok
NIAS	71.10 M	14.00 M	4.90 M	4.05 M	1629.34	797.80	2 x 846 HP	1 x 438 HP	14 M	1000 M3	Tanjung Priok

Table A-6-11 List of Tugboats, Workships and Oil Barges belonging to Pertamina

TYPE OF SHIPS	No.	Horse Power	GROSS TONS
TUG BOAT	108	6,416,133	24,479
WORK SHIP	4	480	-
OIL BARGE	40	-	16,184

Table A-6-12 List of Tugboat Equipment with Fire Gun of All Perumpels  
(Port Public Corporation) in Indonesia

Type of TUGBOAT	LOCATION	QUANTITY	REMARKS
800 HP	SEMARANG	1	Fire Gun: 3 Monitors Capacity: 3m <sup>3</sup> /min Foam Tank: 4m <sup>3</sup>
	U'PANDANG	1	
	AMBON	1	
1,500 HP	SURABAYA	1	Fire Gun: 3 Monitors Capacity: 9m <sup>3</sup> /min Foam Tank: 6m <sup>3</sup>
	BATAM	1	
	U'PANDANG	1	
2,400 HP	BELAWAN	1	Fire Gun: 3 Monitors Capacity: 9m <sup>3</sup> /min Foam Tank: 6m <sup>3</sup>
	CILACAP	1	
3,200 HP	BALIKPAPAN	1	Fire Gun: 3 Monitors Capacity: 9m <sup>3</sup> /min Foam Tank: 6m <sup>3</sup>
	DUMAI	1	

- Note:
1. Fire Gun Provided with Salvage System & Suction Hose 60m  
In order able to suck water from the other vessel which Leaked
  2. All Tug Boats equipped with SRP  
(Steerable Rudder Propeller)
  3. Next 2 Tug boat for Tg.Prick will be built with size 2400 PR (HP)

Table A-6-13 List of Marine-disaster Combatting Support Ships (100 G/T or over)

Type	Tug	Tug/Salve Tug	Tug/Salve Tug	Hopper/ Dredger	Work Ship	Supply Ship	Tanker/ Supply Ship	Tank Barge	G.C. Barge	Crane Barge	Landing Barge	Landing Ship	Landing Craft	Beak/Cargo Pontoon	S&R Vessel	S&R Launch	Utility Vessel	Total
Registered																		
Belawan	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	-	-	3
Donsai	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Tanjung Pinang	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Padang	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Singapore	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Singkep	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Sumatra	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	3
Tanjung Priok	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Jakarta	195	28	15	-	-	12	-	12	28	1	3	1	29	1	5	2	3	335
Palembang	14	1	-	-	1	1	-	-	3	-	1	-	1	-	-	-	-	22
Pontianak	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Surabaya	8	-	1	-	-	-	-	-	4	-	-	-	1	-	-	-	-	14
Semarang	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Cilacap	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	3
Benjarasin	3	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	6
Samarinda	2	-	-	-	-	1	-	1	-	-	-	-	6	-	-	-	-	10
Balikpapan	5	-	-	-	-	2	-	1	2	-	1	-	2	-	-	-	-	13
Sampit	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Ujung Pandang	8	-	-	-	-	-	-	-	2	-	-	-	2	-	-	-	-	12
Bitung	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	3
Aebon	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	2
Jayaoura	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2
Sorong	5	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	6
Others	95	-	-	2	-	10	1	10	2	-	-	-	-	-	-	2	-	122
Total	362	29	19	19	1	27	1	25	49	1	5	1	46	1	5	4	3	580

Table A-6-14 Allocation List of Equipment and Materials for Anti-pollution Combatting by Port

OIL SPILL COMBATING EQUIPMENT	OIL					BOOM (m)						OIL SKIMMER (UNIT)											OIL CONFINEMENT BAG (UNIT)				DISP. PUMP/ SPRAYER (UNIT)		CURBICAL DISPERSANT (L)	ABSORBENT (SAND, SAW DUST, STRUBBLES)						
	AB TROLL BOOM	VIKOMA S. PACK	SKA CURTAIN	BENNET	SLECKBAR AKIO 12M	SLECK BAR HKB	JACKSON	SHIBATA	PHAROS MARINE GT105 (45t/h)	VIKOMA 100 (110t/h)	HUSKY (125t/h)	LUCKHKO (1t/h)	SEA HAWK (1t/h)	KOMARA 12K (12t/h)	CYCLOMET T-50 (24t/h)	CYCLOMET T-70 (48t/h)	DIDON JM2	DIDON 10	DIDON 40	RECATOR PUMP	JUNIOR PUMP	KINGKONG SPRAY	DUAYA BRAND													
Sabang																									2											
Banci																														200						
Bangkalan																																				
Bangkalansusu																																				
Bangkalandan																																				
Belawan																																				
Dumai						500																											15,000	20000		
SungaiKuning						400																											1,000			
Palausambu						500																											200	20000		
Tanjunguban						500																											2,600	20000		
Teluk Bayur Padang						300																														
Palau/Sel. Gevorg						500																												400	20000	
Teluk Semangka						500																														
Marak						300																														
TanjungPriok	200	800	780	375	330	300	130	360	1	1	1	1	6	2	2	1	2	4	1	3	3	1	10	1	1	2	1	2	1	200		20000				
Blonjen						300																														
Ciawad						1,010	1,000																													
Samarang						300																														
Surabaya						500																														
Medans																																				
Ampenan																																				
Bima																																				
Badas																																				
Banos/Denaser																																				
Samarinda																																				
Pontianak						210																														
Banjarasin																																				
Balikpapan						500																													400	20000
Sebang						1,000																													2,600	20000
Saragatta																																				
Tarakan/Buruu						500																														
Gorontalo								440																											3,000	20000
Etung						900																													3,000	20000
Ujung Pandang						300																														
Soerong																																				
Masin																																				
SUB TOTAL	200	1,200	780	375	3,560	1,000	500	12,240	600	1	3	2	1	6	25	4	14	12	7	37	13	99	6										27,200			
TOTAL					70,455									49					13															27,200		
																																			151	



Table A-6-15 List of Fire-fighting Materials owned by KPLP

Belonging to	Types of Equipment	DIT. KPLP																																		
		ARMADA KPLP	BELAWAN	SIBOLGA	ULEE-LHUEE	BLAI ASAHAN	DUMAI	TANJUNG UBAN	TELUK BAYUR	TG. PINANG	PEKAN BARU	TG. PRIOK	PALEMBANG	SUNDA KELAPA	CIREBON	PONTIANAK	PANJANG	JAMBI	MERAK	BENGKULU	SURABAYA	SEMARANG	CILACAP	KUPANG	BENOA	AMPENAN	BANJARMASIN	SAMARINDA	BALIKPAPAN	TARAKAN	SAMPIT	UJUNG PANDANG	PARE-PARE	KENDARI	MANADO	BITUNG
Walky-talky		4	18	8	6	6	5	3	3	6	6	4	2	5	3	2	3	5	7	-	6	11	6	1	1	2	4	8	5	-	-	6	-	-	7	-
Life jacket AF		-	18	12	-	4	-	-	-	-	6	-	10	10	12	-	-	-	6	-	20	2	-	-	1	-	3	6	10	-	-	62	-	-	4	2
Asbestos clothes		-	18	4	-	-	-	-	-	-	-	-	-	1	4	-	-	-	4	-	2	6	2	-	-	-	-	-	-	-	-	-	-	-	3	3
Extinguisher		-	54	6	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

PERUSAHAAN UMUM PELABUHAN II  
TG. PRIOK BRANCH

Table A-6-16 Fire-fighting Optional Equipment

NUMBER	TYPE OF EQUIPMENT	CAPACITY	YEAR	POLICE CAR	QUANTITY	CONDITION	REMARKS
1.	Isuzu Unit I	6 Ton.	1973	-	1	75 %	
2.	Isuzu Unit II	3 Ton	1970	-	1	75 %	
3.	Isuzu Unit III	4 Ton	1979	-	1	75 %	
4.	Isuzu Unit IV	3,5 Ton	1977	D. 8602 GE	1	80 %	
5.	Isuzu Unit V	4 Ton	1981	B. 8475 VR	1	80 %	Equipped with UHF
6.	Isuzu Unit VI	4 Ton	1981	B. 8479 VR	1	80 %	-do-
7.	Isuzu Unit VII	4 Ton	1984	B. 8487 WP	1	95 %	-do-
8.	Motor Pump	V. 75	1977	-	1	50 %	
9.	Motor Pump	V. 75	1972	-	1	50 %	
10.	Motor Pump	V. 50	1977	-	1	50 %	
11.	Yamato ABC	50 Type	1974	-	2	100 %	
12.	Yamato ABC	20 Type	1974	-	10	100 %	
13.	Yamato ABC	10 Type	1984	-	28	100 %	
14.	Chevrolet Luv.	1.600 CC.	1981	B. 8080 VR	1	75 %	Equipped with UHF
15.	Zusuki A.100	100 CC.	1984	B. 8950 VK.	1	90 %	
16.	Handy Talky	-	-	-	5	90 %	
17.	Fireproof Clothing	-	-	-	6	100 %	6 Out of order
18.	Heat resistant Clothing	-	-	-	6	100 %	6 Out of order
19.	Gas Mask	-	-	-	14	100 %	2 pcs new ( 1986)
20.	Life Jacket	-	-	-	37	90 %	
21.	Megaphone	-	1984	-	2	90 %	
22.	Flash light	-	1984	-	50	90 %	

Tanjung Priok 5 January 1987  
Head of Fire Fighting Unit



**APPENDIX – VII**

**(Section 7 Maritime Safety and SAR Communications  
and Information System)**



Table A-7-1 List of DGSC Ships for Installation of VHF,  
NAVTEX, MF SDC/NBDP, Air VHF/Air HF and MRDTS

KAN-WIL	Base	No.	Code/Name of ship	Class		VHF	MF NBDP Air HF/VHF NAVTEX	MRDTS		
				KPLP	NAV					
I	BELAWAN	1	KN-423	IV		X		X		
		2	KN-513	V		X		X		
		3	KN-522	V		X		X		
		4	SUAR-008		III	X		X		
		5	B-008		III	X		X		
		6	B-118		III	X		X		
		7	BLEKOK		II	X	X	X		
II	DUMAI	8	KN-412	IV				X		
		9	KN-408	IV				X		
		10	KN-502	V				X		
		11	KN-503	V				X		
		12	KN-538	V				X		
		13	KN-539	V				X		
		14	KN-540	V			X	X		
		15	KARAKATA		I	X		X		
		16	MUSI		I			X		
		17	SUAR-006		III			X		
		18	SUAR-012		III			X		
		TG. UBAN		19	KN-401	IV				X
				20	KN-514	V				X
				21	KN-542	V				X
				22	KN-543	V				X
				23	KN-544	V				X
				24	KN-545	V				X
				25	KN-546	V				X
TG. PINANG		26	KN-431	IV				X		
		27	KN-521	V				X		
		28	KN-548	V				X		
		29	KN-549	V				X		
		30	BARAU		II			X		
		31	DUDAT		III			X		
		32	SUAR-004		III			X		
TELUK BAYUR	33	PUSPARAGAM		II	X	X	X			
III	JAKARTA	34	KN-201/KUJANG	II		X	X	X		
		35	KN-202/PARANG	II		X	X	X		
		36	KN-203/CERURIT	II		X	X	X		
		37	KN-204/CUNDRIK	II		X	X	X		
		38	KN-205/BELATI	II		X	X	X		
		39	KN-206/GOLOK	II		X	X	X		
		40	KN-207/PANAI	II		X	X	X		
		41	KN-208/PEDANG	II		X	X	X		
		42	KN-209/KAPAK	II		X	X	X		
		TG. PRIOK		43	KN-309	III		X		X
				44	KN-323	III		X		X
				45	KN-410	IV		X		X
				46	KN-424	IV		X		X
				47	KN-504	V		X		X
48	KN-557			V		X		X		

KAN-WIL	Base	No.	Code/Name of ship	Class		VHF	MF NBDP Air HF/VHF NAVTEX	MRDTS
				KPLP	NAV			
	TG. PRIOK	49	MESA		I	X	X	X
		50	PARI		I	X	X	X
		51	PAMANCASA		II	X	X	X
		52	PERMATA		II	X	X	X
		53	BAYAN		II	X		X
		54	SUAR-014		III	X		X
		55	AP-027		IV	X		X
		56	AB-P3		IV	X		X
		57	BIMASAKTI		I	X	X	X
		58	MITRA-I		II			X
		59	MITRA-II		II			X
60	MITRA-III		III			X		
61	MITRA-IV					X		
	SUNDA KELAPA	62	KN-318	III				X
		63	KN-426	IV				X
		64	KN-553	V				X
		65	KN-558	V				X
IV	SURABAYA	66	KN-306	III				X
		67	KN-411	IV				X
		68	KN-416	IV				X
		69	KN-436	IV				X
		70	KN-505	V				X
		71	KN-506	V				X
		72	KUMBA		I	X		X
		73	PRAJAPATI		I	X		X
		74	MANDALIKA		I	X		X
		75	BOGA		II			X
		76	SUAR-002		III			X
	KALIANGET SURABAYA	77	B-120		III			X
		78	AE-029		III			X
V	BANJARMASIN	79	KN-413	III				X
		80	KN-417	IV				X
		81	BIDO		II			X
		82	AE-032		III			X
	BALIKPAPAN	83	KN-428	IV				X
		84	KN-554	V				X
		85	KN-555	V				X
		86	DUKU					X
	SAMARINDA	87	MITHUNA		I	X		X
VI	UJUNG PANDANG	88	KN-305	III				X
		89	KN-414	IV				X
		90	KN-435	IV				X
		91	KN-511	V				X
		92	KN-512	V				X
		93	KN-536	V				X
		94	BETTET		II			X



KAN- WIL	Base	No.	Code/Name of ship	Class		VHF	MF NBDP Air HF/VHF NAVTEX	MRDTS	
				KPLP	NAV				
VI	MANADO	95	KN-419	IV				X	
	BITUNG	96	KN-510	V				X	
		97	BEO		II			X	
		98	SUAR-009		III			X	
		99	B-134		III			X	
VII	AMBON	100	KN-308	III				X	
		101	KN-324	III				X	
		102	KN-527	V				X	
		103	KN-551	V				X	
		104	KN-561	V				X	
		105	BALAM		II			X	
		106	BENDALU		II			X	
IX	JAYAPURA	107	KN-312	III				X	
		108	KN-432	IV				X	
		109	KN-556	V				X	
		110	TLK. DOPERI		III			X	
	SORONG	111	KN-319	III					X
		112	PRADAWANA		I	X	X	X	
		113	ELPA PUTIH		II			X	
		114	TLK. UTUMBUE		III			X	
115		S KAIBUS	IV				X		
Total (KPLP/NAV)						(34/26)	(9/13)	(68/47)	
						60	22	115	

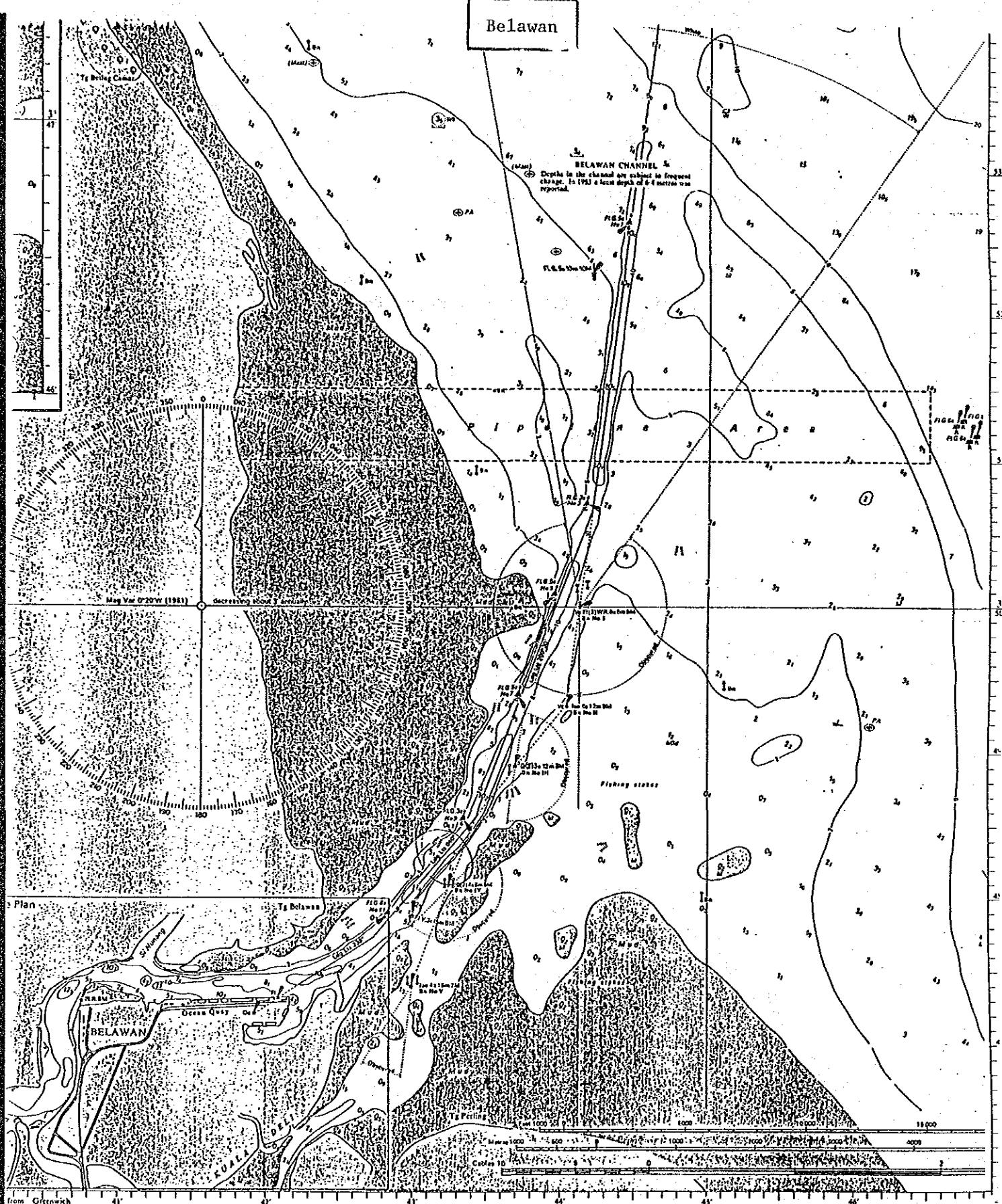
**APPENDIX - VIII**

**(Section 8 Harbour Traffic Control System)**

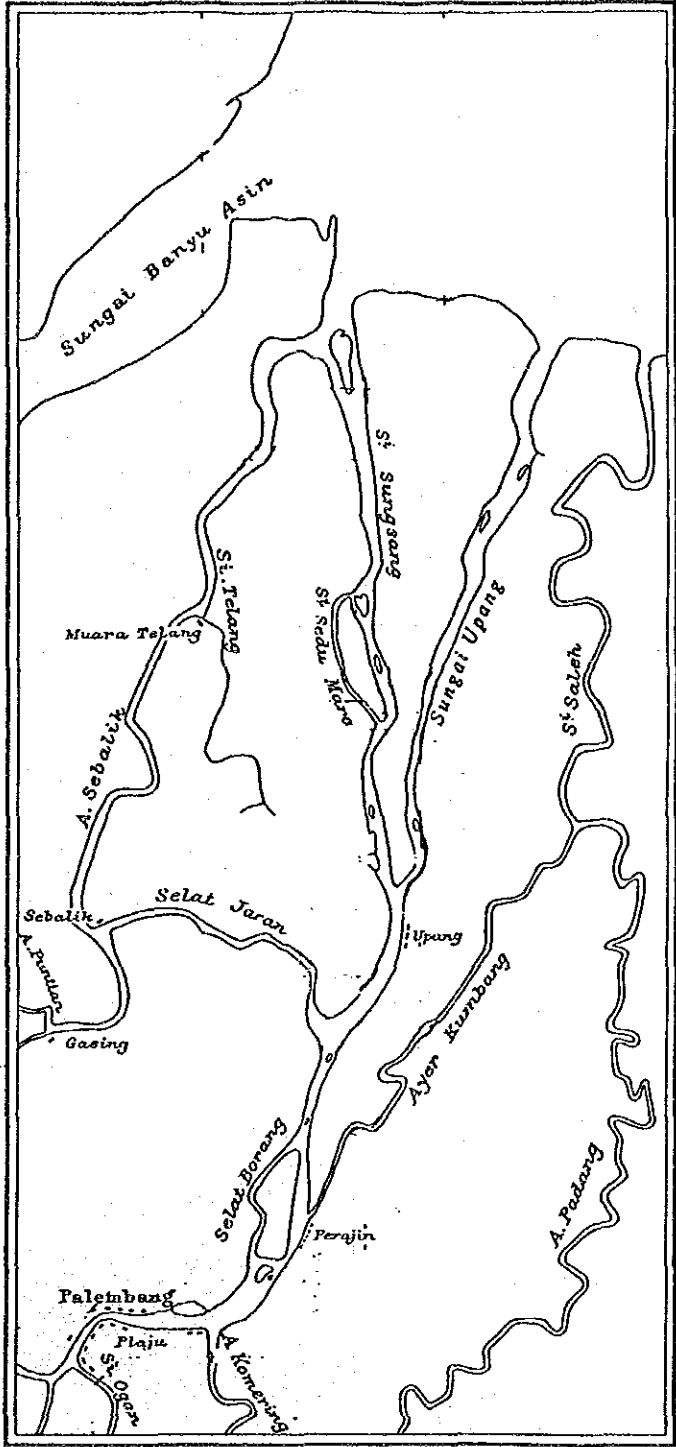


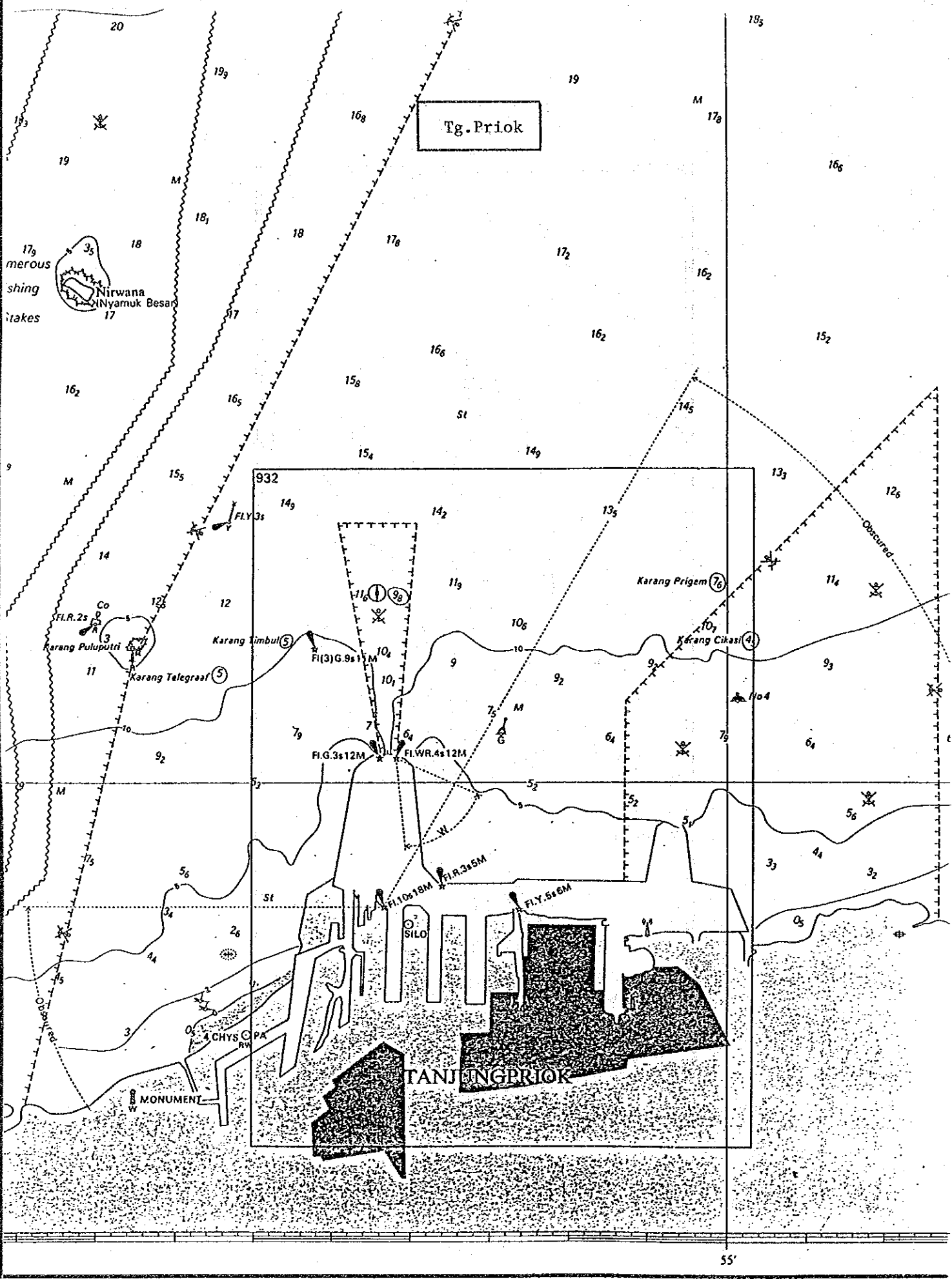
Fig. A-8 Area Map of Major Ports

# Belawan

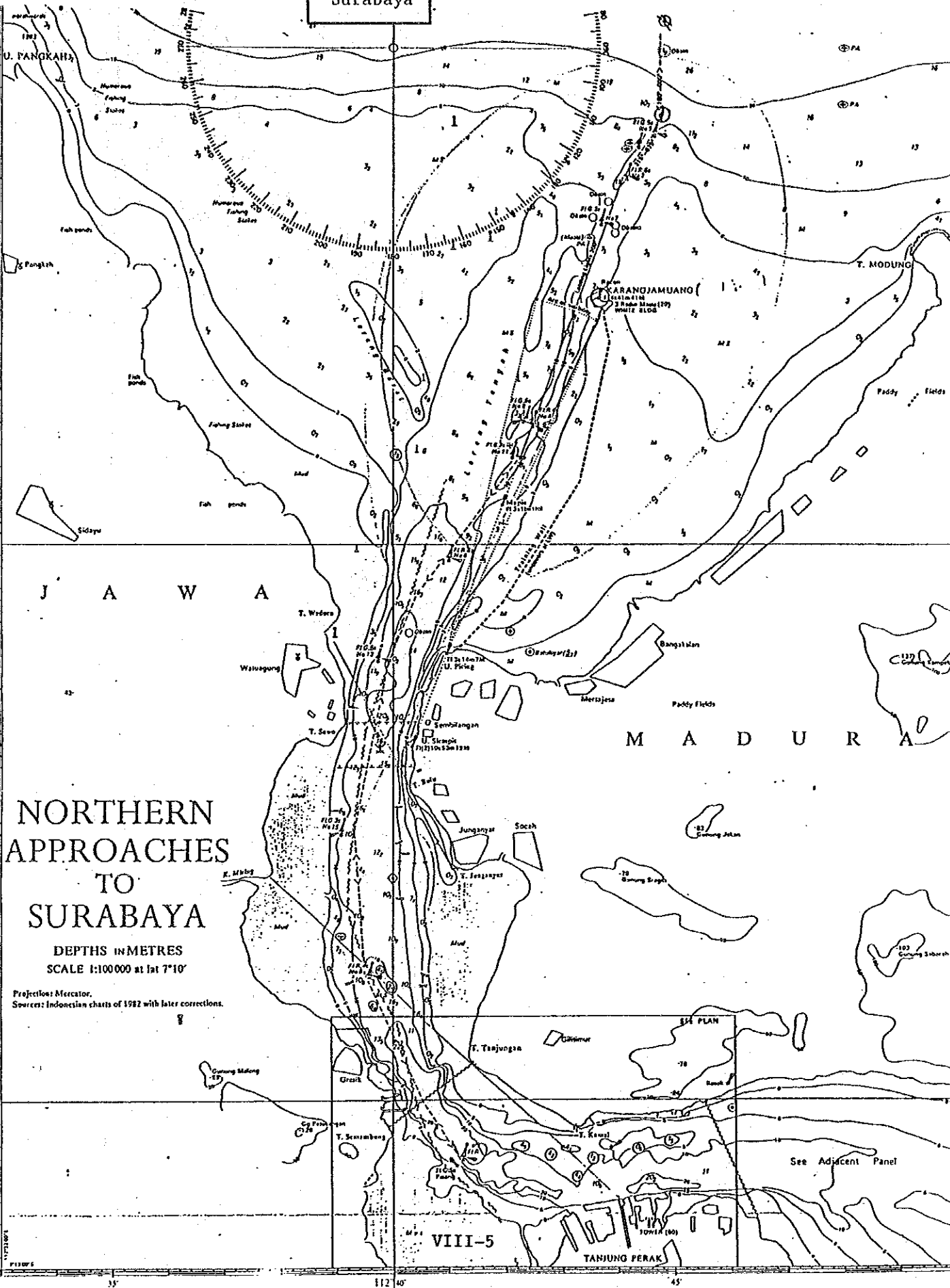


Palembang





Surabaya



**NORTHERN  
APPROACHES  
TO  
SURABAYA**

DEPTHS IN METRES  
SCALE 1:100 000 at lat 7°10'

Projection: Mercator.  
Source: Indonesian charts of 1982 with later corrections.

VIII-5

TANJUNG PERAK

See Adjacent Panel

J A W A

M A D U R A

55°  
7°  
5°  
10°  
112°40'  
113°05'

112°40'  
113°05'

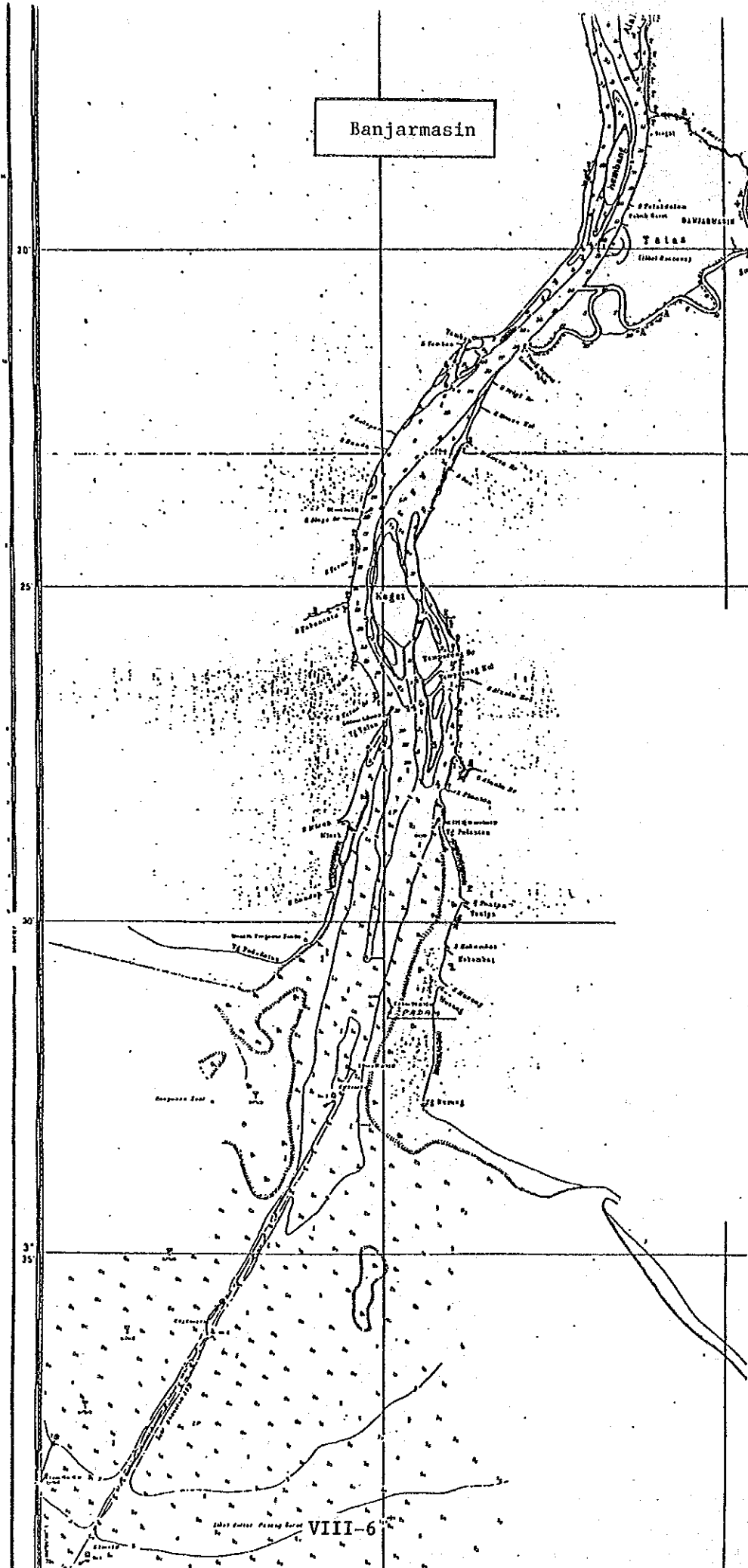
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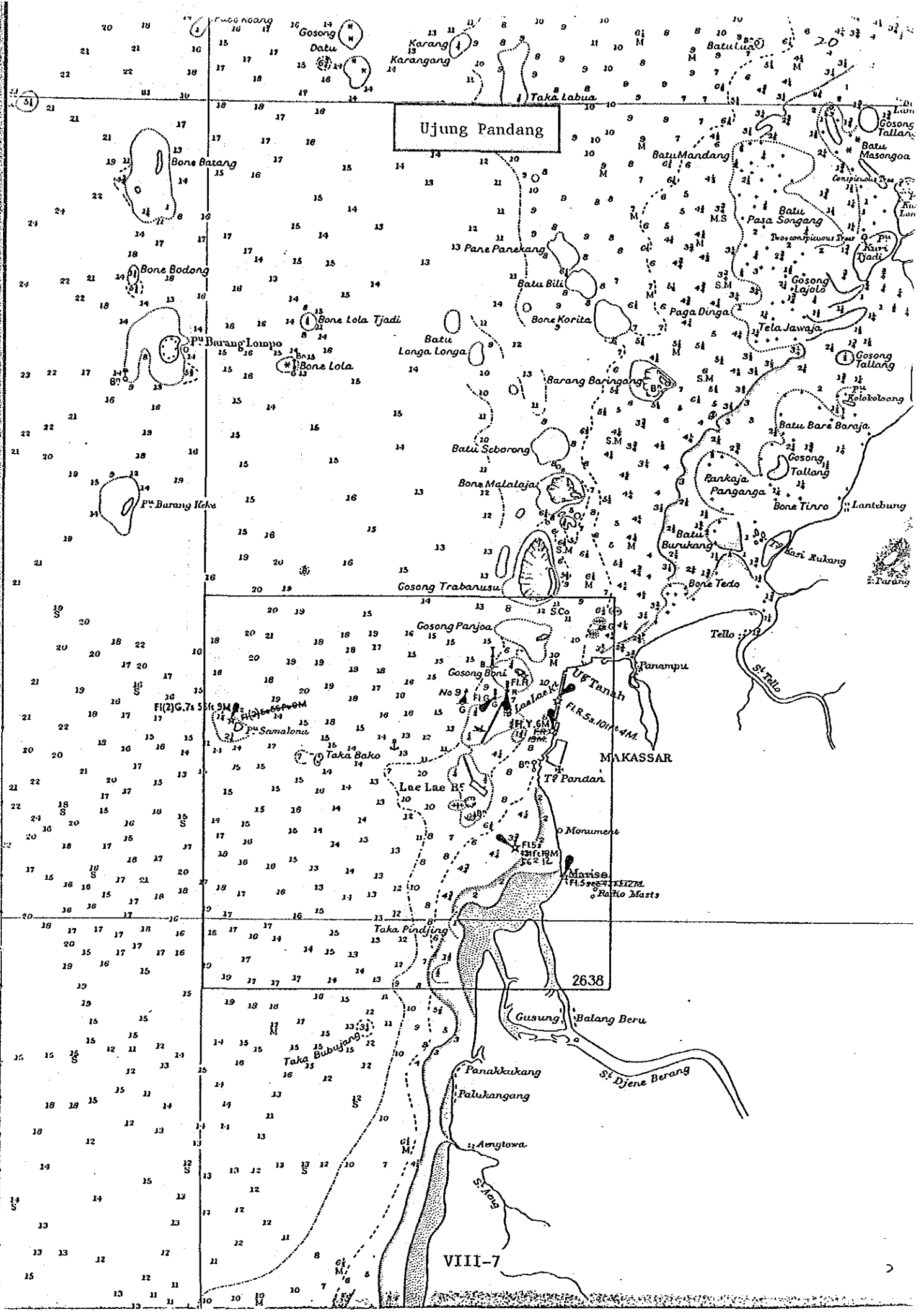
112°40'

45



Banjarmasin





Ujung Pandang

MAKASSAR

VIII-7

2638

Table A-8-1 General Specifications of Standard Type Ship by Category

Category	Gross Tonnage	Overall Length (m)	Breadth Extream (m)	Depth (m)	Draft (m)
Cargo Ship	500	51	10.2	4.0	2.9
	1,000	68	11.9	5.0	3.6
	2,000	92	13.9	6.2	4.5
	3,000	109	15.3	7.1	5.1
	4,000	123	16.3	7.8	5.6
	5,000	135	17.2	8.4	6.0
	6,000	138	17.8	10.6	7.4
	7,000	144	18.6	11.1	7.7
	8,000	150	19.3	11.6	7.8
	9,000	155	20.0	12.0	8.0
	10,000	160	20.6	12.3	8.2
	15,000	181	23.1	13.9	8.8
	20,000	197	25.1	15.1	9.2
	30,000	223	28.2	17.0	10.0
General Cargo Ship	700	51	8.5	4.6	3.8
	1,000	58	9.5	5.1	4.2
	2,000	74	11.7	6.3	5.1
	3,000	86	13.2	7.2	5.9
	4,000	95	14.4	7.8	6.4
	5,000	103	15.4	8.4	6.8
	6,000	124	16.9	9.5	7.2
	7,000	129	17.6	10.0	7.5
	8,000	135	18.3	10.4	7.8

Category	Gross Tonnage	Overall Length (m)	Breadth Extream (m)	Depth (m)	Draft (m)
General Cargo Ship	9,000	139	18.9	10.8	8.0
	10,000	144	19.4	11.2	8.2
	15,000	162	21.7	12.7	9.1
	20,000	177	23.4	13.8	10.0
	30,000	199	26.1	15.7	11.0
	40,000	217	28.3	17.2	11.9
	50,000	232	30.0	18.4	12.7
Over Carrier	10,000	140	18.7	10.5	8.1
	15,000	157	21.5	11.9	9.0
	20,000	170	23.7	12.9	9.6
	30,000	192	27.3	14.5	10.6
	40,000	208	30.2	15.8	11.4
	50,000	222	32.6	16.8	11.9
	70,000	244	37.8	18.7	13.3
	90,000	250	38.5	19.7	14.5
	100,000	275	42.0	23.0	16.1
	150,000	313	44.5	24.7	18.0
Oil Tanker	700	50	8.5	4.0	3.7
	1,000	57	9.4	4.5	4.2
	2,000	73	11.4	5.6	5.1
	3,000	85	12.8	6.4	5.9
	5,000	102	14.7	9.9	6.9
	10,000	139	19.0	7.9	8.1
	15,000	157	21.7	11.3	9.0

Category	Gross Tonnage	Overall Length (m)	Breadth Extream (m)	Depth (m)	Draft (m)
Oil Tanker	20,000	171	23.8	12.4	9.8
	30,000	194	27.2	14.1	10.9
	40,000	211	29.9	15.4	11.7
	50,000	226	32.1	16.5	12.5
	70,000	250	35.9	18.4	13.6
	100,000	270	39.0	19.2	14.6
	150,000	291	44.2	23.0	17.9
	200,000	325	47.2	24.5	19.0
	250,000	348	51.8	25.6	20.0
Car Ferry	1,000	75	13.4	5.0	4.0
	2,000	90	16.2	9.8	4.3
	3,000	105	17.7	10.5	5.0
	4,000	122	20.0	11.2	5.3
	6,000	138	21.4	12.7	5.9
	8,000	155	21.8	13.2	6.1
	10,000	168	24.0	14.7	6.5
	13,000	195	24.0	16.1	6.7



JICA