

Appendix 2

Meteorological Data

NATIONAL CENTER FOR HYDROMETEOROLOGICAL FORECASTING
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METEOROLOGICAL DATA

Hanoi, 1996

Hanoi, Oct. 24, 1996

REMARK

- Location of meteorological stations and their height (m) compared with sea level are as follows:

- + Hon Dau: 20° 40' - 106° 49'. Height: 38m.
- + Hai Phong: 20° 48' - 106° 38'. Height: 113m.
- + Da Nang: 16° 02' - 108° 11'. Height: 6m.
- + Son Tra: 16° 06' - 108° 13'. Height: 3m.
- + Vung Tau: 10° 20' - 107° 05'. Height: 18m.
- + Can Tho: 10° 02' - 105° 47'. Height: 3m.

- Vung Tau station is substituted by Can Tho station because there is no equipment for measuring solar radiation at Vung Tau and Can Tho is the only one which has the solar radiation measuring equipment in the South of Vietnam.

- x: missing data

- Many: many directions without any prevailing one.

- The unit used for solar radiation measuring was Kcal/cm² for the period before 1994. From 1995, this unit is Kwh/m².

Table 2.A.1
MONTHLY AVERAGE SPEED (M/S) OF WIND FOR RECENT 20 YEARS

Marine station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hon Dau	4.8	4.6	4.4	4.7	5.6	5.7	6.0	4.7	4.6	5.0	4.9	4.7	5.0
Son Tra	1.8	2.0	2.1	1.9	1.8	1.5	1.5	1.5	1.7	1.9	2.2	1.7	1.8
Vũng tàu	3.2	4.6	4.7	3.8	2.7	3.2	2.8	2.9	2.3	2.0	2.4	2.1	3.1

Table 2.A.2
MONTHLY DIRECTION AND SPEED (M/S) OF MAXIMUM WIND
FOR RECENT 20 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hon Dau	E 23	E 20	SSE 34	SE 24	NE 34	WNW 40	MANY 40	MANY 40	MANY 34	ENE 34	NNE 34	ENE 20	MANY 40
Son Tra	NNW 16	NNE 17	N 17	N 18	SW 17	N 20	SW 18	N 16	N 20	NNW 31	N 22	NW 16	NNW 31
Vũng tàu	E 15	E 15	E 15	E 15	SW 20	SW 26	SW 20	SW 19	MANY 18	NW 14	E 16	E 14	SW 26

Table 2.A.3
MONTHLY AVERAGE SPEED (M/S) OF WIND FOR RECENT 30 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	3.3	3.3	3.4	3.8	4.0	3.6	3.7	3.3	3.4	3.7	3.7	3.5	3.6
Đà Nẵng	1.8	2.0	2.1	1.9	1.8	1.5	1.5	1.5	1.7	1.9	2.2	1.7	1.8
Vũng tàu	3.2	4.6	4.7	3.8	2.7	3.2	2.8	2.9	2.3	2.2	2.4	2.1	3.1

Table 2.A.4
MONTHLY DIRECTION AND SPEED (M/S) OF MAXIMUM WIND
FOR RECENT 30 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	SSE 19	SE 24	SSW 27	NNE 31	NNW 28	WNW 33	NE 51	ESE 44	SSE 50	SSE 25	NE 24	NNE 20	NE 51
Đà Nẵng	NNW 20	NW 17	N 17	N 18	S 26	N 20	SW 27	W 17	S 23	NNW 33	N 22	N 16	NNW 33
Vũng tàu	E 15	E 15	E 15	E 15	SW 20	SW 26	SW 20	SW 19	SW 18	NW 14	E 16	E 14	SW 26

Table 2.A.5
MONTHLY AVERAGE WIND SPEED (M/S) IN 1993

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	2	2	2	2	3	2	3	2	2	3	2	2	2.25
Đà Nẵng	2	1	2	2	1	1	1	1	1	2	2	2	1.5
Vũng Tàu	3	3	4	3	2	2	3	2	2	2	2	2	2.5

Table 2.A.6
MONTHLY DIRECTION AND SPEED (M/S) OF MAXIMUM WIND IN 1993

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	SSE 10	ESE 10	SW 19	SSW 20	SW 16	S 10	ESE 19	SE 10	SE 8	NE 10	NE 10	N 10	SSW 20
Đà Nẵng	N 16	N 7	NNE 14	N 9	N 12	NW 12	NW 13	NNW 9	N 10	N 8	NNW 12	N 10	NNE 14
Vũng Tàu	E 12	E 10	E 14	E 10	S 8	W 12	W 18	SW 13	N 12	E 7	E 9	E 9	W 18

Table 2.A.7
MONTHLY AVERAGE WIND SPEED (M/S) IN 1994

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	2	2	2	3	2	2	3	2	2	2	2	1	2.1
Đà Nẵng	1	1	2	1	2	1	1	1	1	1	1	2	1.25
Vũng Tàu	2	3	4	3	2	3	3	3	3	2	3	3	2.8

Table 2.A.8
MONTHLY DIRECTION AND SPEED (M/S) OF MAXIMUM WIND IN 1994

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	NE 7	E 8	E 8	NE 7	SSW 20	S 10	NNE 19	W 28	SW 26	NE 10	NW 7	NW 7	W 28
Đà Nẵng	NNE 10	N 14	N 10	N 9	NNW 16	SSW 9	NNW 8	W 10	NNW 10	N 10	NE 8	NE 10	NNW 16
Vũng Tàu	E 10	E 10	E 12	W 10	W 14	W 14	W 16	W 12	WSW 12	E 8	E 12	E 12	W 16

Table 2.A.9
MONTHLY AVERAGE SUNSHINE DURATION (HOUR) FOR RECENT 20 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	83	44	40	96	184	177	190	166	180	192	151	129	1632
Đà Nẵng	135	142	114	206	256	237	256	207	174	144	123	112	2106
Vũng Tàu	264	261	293	274	239	239	221	198	185	212	216	230	2593

Table 2.A.10
MONTHLY AVERAGE INTENSITY OF HORIZONTAL SOLAR RADIATION (Kcal/cm²)
FOR RECENT 20 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	1.5	0.5	0.5	1.2	4.2	4.3	6.0	4.7	5.0	4.7	3.5	2.8	3.2
Đà Nẵng	4.3	4.9	6.8	8.3	10.0	8.8	10.3	8.2	6.6	4.6	3.1	2.5	6.5
Vũng Tàu	7.6	7.8	8.8	8.6	6.3	4.6	5.2	4.9	4.8	4.6	5.5	6.4	6.3

Table 2.A.11
MONTHLY SUNSHINE DURATION (HOUR) IN 1993

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	95	88	53	60	154	211	131	176	203	201	147	140	1659
Đà Nẵng	160	216	185	210	232	274	286	199	215	102	156	49	2284
Vũng Tàu	242	260	x	255	222	209	194	196	198	189	223	182	>2370

Table 2.A.12
MONTHLY INTENSITY OF HORIZONTAL SOLAR RADIATION (Kcal/cm²) IN 1993

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	1.8	X	0.9	0.6	4.2	X	X	X	4.1	5.0	2.8	2.8	2.8
Đà Nẵng	4.8	7.9	6.9	8.2		11.3	12.5			3.5	5.9	1.5	6.9
Vũng Tàu	6.8	7.6	8.1	8.2	7.7	5.9	X	4.6	6.5	4.9	7.4	5.6	6.7

Table 2.A.13
MONTHLY SUNSHINE DURATION (HOUR) IN 1994

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	82	36	22	48	200	123	111	162	186	219	210	117	1516
Đà Nẵng	144	x	107	255	268	189	180	231	169	160	154	167	>2024
Vũng Tàu	270	271	280	x	235	203	142	195	168	164	x	220	>2148

Table 2.A.14
MONTHLY INTENSITY OF HORIZONTAL SOLAR RADIATION (Kcal/cm²) IN 1994

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	X	0.8	0.1	0.3	3.3	2.1	2.9	5.2	4.1	5.2	3.3	1.3	2.6
Đà Nẵng	4.1	5.8	4.0	11.4	12.2	6.9	5.9	9.7	6.8	6.6	4.4	5.0	6.9
Vũng Tàu													
Can Tho	7.1	7.6	7.5	9.0	4.3	2.7	1.4	X	4.0	5.9	6.4	6.3	>5.7

Table 2.A.15
MONTHLY SUNSHINE DURATION (HOUR) IN 1995

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	60	35	28	60	178	152	173	124	185	214	103	145	1457
Đà Nẵng	157	125	183	243	265	267	250	232	140	135	68	71	2136
Vũng Tàu	x	266	273	206	219	209	212	190	112	201	126	155	>1960

Table 2.A.16
MONTHLY INTENSITY OF HORIZONTAL SOLAR RADIATION (Kcal/cm²) IN 1995

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hải phòng	16.1	X	1.8	7.7	53.2	31.9	46.6	21.3	47.3	X	X	X	28.2
Đà Nẵng	55.2	51.2	76.3	X	125.0	132.5	129.2	104.3	55.0	51.1	X	X	86.6
Vũng Tàu													
Can Tho	78.7	84.1	97.8	116.5	84.4	62.0	53.5	51.2	17.7	51.4	X	X	69.7

Table 2.A.17
MONTHLY AVERAGE HEIGHT (M) OF WAVE FOR RECENT 20 YEARS

Marine station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hon Dau	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.6	0.6	0.65	0.6	0.6	0.7
Son Tra	2.3	2.0	1.8	1.5	1.2	1.6	1.6	1.9	1.7	1.6	2.2	2.6	1.8
Vung tau	2.4	2.2	2.0	1.5	1.4	1.7	1.8	2.0	1.8	1.8	2.4	2.7	2.0

Table 2.A.18
MONTHLY DIRECTION AND HEIGHT (M) OF MAXIMUM WAVE
FOR RECENT 20 YEARS

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Hon Dau	S	ESE	E	SSE	SSE	SE	S	E	E	E	S	ENE	ES
Son Tra	2.8	2.2	2.3	2.8	3.5	4.0	5.6	5.0	5.6	2.4	2.1	2.1	5.6
Vung tau	NW	NW	NW	NE	NNW	NW	SE	W	WNW	NW	NE	NW	WNW
	2.5	1.5	2.0	2.0	1.25	1.25	1.25	1.25	3.5	3.0	2.0	3.0	3.5
	S	NE	SE	SE	SW	SW	SW	W	S	W	NE	NE	SW
	2.0	2.5	2.5	2.0	2.5	3.0	2.5	2.5	2.0	2.0	1.5	1.5	3.0

Table 2.A.19
**FREQUENCY OF CALMY DAYS (%);
 FREQUENCY AND AVERAGE SPEED (M/S) IN 8 DIRECTIONS
 AT HAI PHONG STATION**

Dir.		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Calmy	Fre.	0.8	0.9	1.7	1.3	1.7	2.49	3.2	5.6	4.0	1.5	1.0	0.9
N	Fre.	13.7	9.0	6.0	4.0	5.2	5.8	4.1	7.7	16.2	19.4	17.3	14.6
	Speed	2.7	2.5	2.5	2.8	3.0	3.4	3.3	3.2	3.6	4.0	3.6	3.1
NE	Fre.	25.1	22.8	16.8	9.5	6.5	7.1	5.6	9.9	18.1	23.4	27.3	26.5
	Speed	3.4	3.3	3.3	3.6	3.5	3.4	3.5	3.5	3.8	3.9	3.8	3.7
E	Fre.	25.9	30.8	31.7	26.1	14.9	13.3	10.7	13.4	14.4	18.5	22.8	25.1
	Speed	3.8	3.6	3.7	3.8	4.0	3.7	3.6	3.5	3.7	3.8	3.9	3.8
SE	Fre.	16.1	20.5	26.8	33.5	31.4	23.8	23.5	17.4	16.0	14.7	13.5	14.2
	Speed	3.7	3.9	3.9	4.1	4.1	4.2	4.2	3.8	3.6	3.8	3.8	3.6
S	Fre.	6.1	6.6	9.3	17.4	25.5	28.8	32.6	19.1	10.5	6.7	5.4	6.2
	Speed	3.0	3.0	3.5	4.0	4.3	3.9	3.8	3.3	3.2	3.1	3.1	3.2
SW	Fre.	2.0	2.0	2.2	3.5	8.0	8.6	11.1	10.8	4.6	2.2	1.0	2.1
	Speed	2.4	2.7	2.7	3.4	3.9	3.2	3.2	3.1	2.5	2.6	2.8	3.3
W	Fre.	2.4	1.3	1.1	1.6	3.0	3.3	4.3	5.6	3.8	1.8	1.5	1.9
	Speed	2.1	2.1	2.3	2.8	3.2	2.7	3.4	3.0	2.8	2.7	2.6	2.7
NW	Fre.	7.9	6.1	4.4	3.1	3.8	6.4	4.9	10.5	12.4	11.8	10.2	8.5
	Speed	2.6	2.4	2.5	2.8	3.2	3.5	3.8	3.6	3.7	3.7	3.4	3.0

Table 2.A.20
**FREQUENCY OF CALMY DAYS (%);
 FREQUENCY AND AVERAGE SPEED (M/S) IN 8 DIRECTIONS
 AT DA HANG STATION**

Dir.		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Calmy	Fre.	44.1	38.0	39.0	41.6	45.8	47.5	46.1	49.0	48.7	44.7	34.7	42.1
N	Fre.	12.3	18.7	14.8	11.1	6.4	5.6	6.1	9.4	14.5	16.1	19.9	16.1
	Speed	3.8	3.6	4.0	4.0	5.0	4.5	4.3	3.8	4.5	4.3	3.9	3.1
NE	Fre.	6.0	2.6	2.1	2.6	4.0	3.8	3.1	2.7	2.3	8.5	16.5	8.9
	Speed	3.8	3.7	3.8	3.6	3.6	2.9	3.3	3.1	3.9	3.8	3.9	3.5
E	Fre.	11.7	14.0	19.6	21.2	15.8	14.2	13.3	8.9	9.9	10.1	10.4	8.4
	Speed	3.3	3.4	3.4	3.7	3.8	3.7	3.3	3.1	3.4	3.3	3.4	2.9
SE	Fre.	1.8	4.4	6.7	8.2	5.8	4.3	6.4	3.4	2.6	3.4	1.4	1.5
	Speed	3.2	3.3	3.2	3.3	2.4	2.1	2.1	2.3	2.6	2.5	3.2	2.6
S	Fre.	0.6	1.6	3.3	5.5	7.4	8.0	8.9	6.8	4.1	2.0	0.2	0.7
	Speed	1.4	1.4	1.9	1.7	1.9	2.0	2.0	2.4	2.1	2.4	1.4	1.2
SW	Fre.	1.0	1.2	2.0	3.8	7.3	10.2	10.5	12.1	6.6	2.6	1.7	1.3
	Speed	1.2	1.5	1.7	1.4	2.8	2.4	2.7	2.6	1.9	1.9	1.7	1.3
W	Fre.	2.7	0.5	0.7	0.8	1.5	2.5	2.1	2.5	2.5	2.0	2.5	3.2
	Speed	1.8	1.7	2.1	1.3	1.8	2.6	2.0	2.5	2.3	1.8	1.8	2.7
NW	Fre.	19.8	19.0	11.8	5.2	6.0	3.9	3.5	5.2	8.8	10.6	12.7	16.4
	Speed	2.7	3.0	3.2	2.8	3.2	2.7	2.6	2.8	3.0	3.2	2.4	2.9

Table 2.A 21
**FREQUENCY OF CALMY DAYS (%);
 FREQUENCY AND AVERAGE SPEED (M/S) IN 8 DIRECTIONS
 AT VUNG TAU STATION**

Dir.		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Calmy	Fre.	25.6	12.0	8.8	13.3	23.0	16.8	16.2	9.4	28.8	33.8	30.9	40.2
N	Fre.	0.7	0.3	2.0	1.0	2.2	0.8	0.2	0.5	1.3	2.3	5.7	4.5
	Speed	2.2	1.5	4.7	2.9	2.0	2.3	4.0	2.5	1.9	2.1	1.8	1.7
NE	Fre.	10.2	6.7	12.5	5.7	3.8	0.6	0.3	0.2	1.3	3.9	10.1	11.3
	Speed	3.0	4.0	5.3	3.0	2.5	3.0	2.0	3.5	1.8	3.3	3.2	3.2
E	Fre.	52.3	73.4	63.2	46.8	18.0	2.3	0.6	1.0	6.2	17.1	33.0	31.2
	Speed	4.8	5.5	5.6	5.4	4.3	3.4	2.0	1.7	2.9	3.6	4.2	4.2
SE	Fre.	5.4	4.6	10.9	20.4	11.1	1.9	0.9	0.5	1.8	3.9	3.7	3.4
	Speed	3.7	3.7	4.0	3.3	3.0	2.8	2.5	3.2	2.7	2.5	2.5	2.9
S	Fre.	2.0	1.8	1.6	8.5	14.2	7.6	9.2	5.9	6.9	4.8	2.5	2.2
	Speed	2.8	2.9	3.0	3.0	3.4	3.3	3.1	4.1	3.5	2.4	2.7	2.6
SW	Fre.	0.7	0.9	0.9	3.3	19.7	31.3	46.4	55.4	28.3	10.9	1.9	1.0
	Speed	3.0	2.5	3.9	3.0	3.6	3.8	3.5	4.0	3.5	3.3	2.8	2.7
W	Fre.	0.7	0.0	0.0	0.4	6.0	30.0	21.8	22.4	18.1	12.9	2.9	1.2
	Speed	2.6	0.0	0.0	1.7	3.2	4.0	3.4	3.5	3.2	3.0	3.4	2.2
NW	Fre.	2.4	0.3	0.1	0.6	2.0	8.7	4.4	4.7	7.3	10.4	9.3	5.0
	Speed	2.1	3.0	2.0	1.8	2.5	3.3	2.3	3.2	2.3	2.8	3.2	2.0

Appendix 3

List Of Ships(Vms)

Table 2.A.22
LIST OF SHIPS (VIETNAM MARITIME SAFETY AGENCY)
AS OF 15TH FEBRUARY 1996

No.	Name of Vessel	Type of Vessel	Basic dimension (in meter)				Tonnage	Type of Engine	Capacity	Controlled by	Remarks
			Length	Width	Height	Draft					
1	Hai Dang 01	Dry Cargo	54.35	8.2	3.2	2.5	400	6NVD36-1U	305	XN BDATAH	
2	Hai Dang 02	Dry Cargo	34.5	6.2	2.9	2.1	150	6 L160	185	Bien Dong	
3	Hai Dang 04	Dry Cargo	69	10.4	6.0	3.91	1500	427-H	1000	Bien Dong	
4	VS 28	Dry Cargo	26.5	5	2.0	1.4	50	306	150	XN XDCT	*Buoy
5	VS 316	Dry Cargo	26.5	5	2.0	1.4	50	306	150	Region I	*Buoy
6	VS 755	Dry Cargo	26.5	5	2.0	1.4	50	6135.G	120	Region I	*Buoy
7	VS 568	Dry Cargo	26.5	5	2.0	1.4	50	6 HAE	165	Region II	*Buoy
8	VS 61	Oil Tanker	26.5	5	2.0	1.4	50			Region IV	*Buoy
9	Vinh Thuc	Cargo	26.5	5	2.0	1.4	50	60H-UTE	255	Region I	*Buoy
10	MJ 511	Dry Cargo	26.5	5	2.0	1.4	50	4 NVD 26	135	Region IV	*Buoy
11	VS 406	Oil Tanker	26.8	5.9	2.0	1.4	50	3 D 6	150	Region II	*Buoy
12	VS 58	Oil Tanker	26.8	5.9	2.0	1.4	50	3 D 6	150	Region I	*Buoy
13	VS 216	Dry Cargo	26.8	5.9	2.0	1.4	50	3 D 6	240	Region III	*Buoy
14	Cuu Long	Buoy Tender	45.2	9.75	4.5	3.05	403		6X300	Region IV	*Buoy Tender
15	Tien Sa	Survey	29.5	6.7	3.2	1.55	50	8 NVD36-1	305	XN Bien Dong	
16	KS 01	Survey	29.5	6.7	3.2	1.55	50	8 NVD36-1	305	XNKS SO 2	
17	KS 02	Survey	29.5	6.7	3.2	1.55	50	8 NVD36-1	305	XNKS SO 2	
18	Tu Luc 09	Supporting	17.8	3.8	1.6	1.1	10	3 D 6	150	Region I	
19	Co To	Research	18.2	4.7	1.6	1.0	10	3 D 6	150	Region I	*Research
20	Song Can	Survey	17.5	3.8	1.6	1.1	10	3 D 6	150	XNKS SO 1	
21	TV 2	Supporting	17.7	4.4	1.5	1.4	10	K 161	90	Region II	*Supporting
22	TV 3	Supporting	17.7	4.4	1.5	1.4	10	K 161	80	Region II	*Supporting
23	TV 6	Survey	17.7	4.4	1.5	1.4	10	K 161	90	Region II	
24	TK 173	Service	19.8	5.56	2.06	1.26	50	2x S D12	2x300	XN XDCT	
25	Tau Keo KS 01	Service	16.2	3.8	1.56	1.1	250	3 D 6	150	XN Bien Dong	
26	Sa Lan 05	Service	38.0	8.0	1.55	1.25	250	Khong lep		XN Bien Dong	
27	Sa Lan 06	Service	38.0	8.0	1.55	1.25	250	may		XN Bien Dong	
28	G 01	Cil Tanker	29.0	5.61	1.2	0.81	40	may		XN Bien Dong	
29	G 02	Oil Tanker	29.0	5.61	1.2	0.81	40	may		XN Bien Dong	

* mark are being concerned with Aids to Navigation.

No.	Name of Vessel	Type of Vessel	Basic dimension (in Meter)			Tonnage	Type of Engine	Capacity	Controlled by	Remarks
			Length	Width	Height					
30	Ca no Song Ba	Research	6.0	2.1	0.85	3	BTD 38 MD	30	Region I	
31	Ca no Hai yen	Research	6.0	2.1	0.85	3	4 4.5/11	23	Region I	
32	Ca no Hong Ha 1	Service	8.1	2.6	1.1	2	4 4.5/11	23	NHa nghi Ha: dong-Đao Day	
33	Ca no Hong Ha 2	Service	8.1	2.6	1.1	2	BTD 38 MD	30	Region I	
34	Ca no sat 1.4	Service	7.76	2.48	1.1	2	4 4.5/11	23	XNKS so 1	
35	Ca no Hai 2.5	Survey	7.76	2.48	1.1	2	4 4.5/11	23	XNKS so 2	
36	Ca no khao sat 3	Survey	7.76	2.48	1.1	2	4 4.5/11	23	Region III	
37	Ca no vo go	Service	17.0	3.8	1.6	5			Region IV	
38	Ca no Hon Khoai	Service	17.0	3.8	1.6	5			XN XDCT	
39	Cano Songtutay 1	Service	8.3	2.68	1.1	3	2 TGGE	22	XN XDCT	
40	Cano Songtutay 2	Service	8.3	2.68	1.1	3	3 TGGE	33	XN XDCT	

Appendix 4

Lighthouse Rehabilitation/ Improvement Plant (1996-2000)

Table 2.A.23
 PLAN 1996-2000
LIGHTHOUSE - REHABILITATION/IMPROVEMENT

No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark
1	Vinh Thuc	21° 23' 48" N 107° 59' 30" E	F.L.W.6S	18/67	18/24		I	- Indicate position of East-North of Vinh Thuc island - Orientate for transportation means
2	Co To	20° 59' 58" N 107° 45' 10" E	FL(2+1).W12S	15/101	15/27		I	- Indicate position of Co To island, Quang ninh province - Orientate for transportation means
3	Soi Den	20° 49' 37" N 107° 17' 15" E	FL.W.5S	4/38	8/18		III	- Indicate position of Soi Den island - Navigation mark at river mouth, orientate for transportation means
4	Diem Den	20° 33' 26" N 107° 59' 30" E	FL.W.6S	-	-		Port mark	- Indicate position of Tra Ly river mouth, direction to Diem Dien port, Thai Binh province - Orientate for transportation means
5	Quat Lam	20° 11' 05" N 106° 21' 30" E	FL.W.15S	22/4	15/15		III	- Indicate position of Ha Lan river mouth, Nam Ha province - Independent light, indicate coastal route

No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark
6	Lach Trao	19° 47' 30" N 105° 55' 24" E	F.L(2).W.10S	15/4	15/14		III	- Indicate position of Hoi river mouth (Lach trao- Ma river) Thanh hoa province - Indicate coastal route, indicate the chanel to Thanh hoa port
7	Bien Son	19° 20' 20" N 105° 49' 14" E	FL.W.5S	6/23	12/16		III	- Indicate position of Bien Son island, Thanh hoa province - Orientate for ships to navigate at Bien son port
8	Lach Quen	19° 06' 14" N 105° 43' 53" E	FL(2).W.10S	-	-		River mouth mark	- Indicate position of Lach Quen cape, Nghe an province - Coastal light, orientate for transportation means
9	Cua Hoi	18° 45' 41" N 105° 45' 14" E	FL(3).W.15S	15/5	15/14		III	- Indicate position of Hoi river mouth - lam river, Nghe an province - Coastal light, orientate for transportation means
10	Cua Sot	18° 27' 23" N 106° 56' 07" E	FL(2).W.6S	6/42	15/19		II	- Indicate position of Sot cape, Ha tinh province - Coastal light, orientate for transportation means
11	Mui Ron	18° 07' 03" N 106° 25' 19" E	FL(2+1)W.15S	-	-		I	- Indicate position of ron cape, Quang binh province - Indicate coastal route
12	Nhat Le	17° 28' 45" N 107° 37' 06" E	FL(2+1)W.12S	17.5/27	15/19		II	- Indicate position of Nhat Le river mouth (Nhat Le river), Quang binh province

No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark
								- Coastal light, orientate for ships to navigate at that Le river
13	Cua Tung	17° 01' 06" N 107° 06' 18" E	FL(3+1)W10S	-	-		River mouth mark	- Indicate position of Tung river mouth (Ben Hai river), Quang binh province - Orientate for transportation means to navigate
14	Cua Viet	16° 54' 06" N 107° 11' 30" E	FL.W.12S	16/6	12/14		River mouth mark	- Indicate position of Viet river mouth (Thach Han river), Quang tri province - Orientate for ships to enter Dong Ha port
15	Tien Sa	16° 08' 15" N 108° 19' 36" E	FL(2).W.10S	9/ 151	28/31		I	- Indicate position of Son Tra mountain, Quang nam - Da nang province - Orientate for transportation means to navigate
16	Ly Son	15° 23' 10" N 109° 08' 45" E	FL.W4S	17/95	16/27		I	- Indicate position of Ly Son island (Quang Ngai province) - Coastal light, orientate for transportation means to navigate
17	Phuoc Mai	13° 45' 34" N 109° 15' 23" E	FL.W.4S	6/46	6/20		III	- Indicate position of phuoc Mai island (Binh dinh province) - Orientate for transportation means to navigate at Qui nhon port
18	Ba Ngoi	11° 54' 00" N 109° 15' 23" E	FL.W.10S	13/5	13/13		Port mark	- Indicate position of Ba Ngoi port, Khanh hoa province - Orientate for ships to navigate at Ba ngoi port
19	Cua Tieu	10° 15' N 106° 26' E	FL(3+1)W15S	13/5	13/13		River mouth mark	- Indicate position of Tieu river mouth, Tien giang province - Coastal light, orientate for ships to

navigate at Tien river mouth									
No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark	
20	Ong Doi	10° 00' N 104° 03' E	FL.W.15S	10/44	13/20		River mouth mark	- Indicate position of Ong Doi cape, southern of Phu Quoc island(Kien Giang province) - River mouth mark, orientates for ships to navigate at the sea area between Vietnam-Cambodia	
21	Dinh An	09° 33' N 106° 33' E	FL.(2)W.7S	19/2	12/14		III	- Indicate position of Dinh An river mouth (Tra vinh province) - Indicate coastal route, orientates for ships to enter Dinh An river mouth	
22	Hon Chuoi	8° 57' N 104° 32' E	FL.W.10S	10/147	12/31		I	- Indicate position of Hon Chuoi island (Minh Hai province) - Indicate coastal route, Orientate for transportation means to navigate	
23	Nam Du	09° 38' N 104° 39' E	FL.W.12S	15/309	12/24			- Indicate position of Nam du island (Kien giang province) - Orientate for transportation means to navigate	
24	Nui Nai	10° 22' N 104° 26' E	FL.(3+1)W.15S	8/54	12/21		II	- Indicate position of Nui Nai mountain (Kien giang province) - Orientate for transportation means to navigate	
25	Tho Chu	09° 28' N 103° 28' E	FL.W.6S	15/138	12/30		I	- Indicate position of Tho Chu island (Kien giang province) - Indicate coastal route, orientate for ships to navigate	
26	Ba Lang	15° 14' N 108° 50' E	FL.(2)W.10S	8.5/25.5	10/17		III	- Indicate position of Ba Lang An cape (Quang Ngai province) - Cooperate with Ly son light house, orientate for transportation means to navigate	

No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark
27	Hon Chut	11° 46' 54" N 104° 03' E	F.L.W.15S	10/44	13/20		III	- Coastal light, orientates for ships to enter Cam Ranh port - Indicates Ba Dong area (Tra Vinh province) - Coastal light, orientates for ships to navigate
28	Ba Dong	09° 41' 05" N 106° 34' 55" E	FL.(2)W.7S	19/2	12/14		III	
29	Ham Ninh	8° 57' N 104° 32' E	FL.W.10S	10/147	12/31		River mouth mark	- Indicates Eastern of Phu Quoc island (Kien Giang province) - Port mark, orientates for ships to navigate at the sea area between Vietnam - Cambodia
30	Con Dao	09° 38' N 104° 39' E	FL.W.12S	15/309	12/24		Port mark	- Indicate position of Con Dao berth - Orientates for ships to come in and out Con Dao port
31	Da Trang	10° 22' N 104° 26' E	FL(3+1)W.15S	8/54	12/21		Port mark	Orientate for ships to come in and out Con Dao port from East-South direction
32	An Thoi	09° 28' N 103° 28' E	FLW.6S	15/138	12/30		River mouth mark	- Indicate position of Ong Doi cape, Southern of Phu Quoc island, Kien Giang province - River mouth beacon, orientates for ships to navigate at the sea area between Vietnam-Cambodia
33	Duong Dong	15° 14' N 108° 50' E	FL(2)W10S	8.5/25.5	10/17		Rivermouth mark	- Indicate position Eastern of Phu Quoc island, Kien Giang province - Port mark, orientates for ships to navigate at sea area between Vietnam-Cambodia

No.	Name of lighthouse	Geographic coordinate (Approximate)	Light character	Height of light tower/ height of ground	Vision distance/ Geographical vision	Vision distance needed	Classification	Remark
34	Mui Chut	11° 46' 54" N 104° 03' E	F.L.W1SS	10/44	13/20		III	- Indicates position of Mui Chut cape, Khanh hoa province - Indicates coastal route, orientates for ships to enter Nha trang port
35	Rach gia	09° 41' 05" N 106° 34' 55" E	FL.(2)W.7S	19/2	12/14		III	-

Appendix 5

List of Newbuilding Lighthouses

Table 2.A.24
NEWBUILDING LIGHTHOUSE

No.	Name of light house	Geographical coordinate (Approximate)	Light character	Classification	Height of light tower/ height of ground	Light vision/ Geographical vision	Position, action of light house
1	Chan May	16° 20' 17" N 108° 01' 02" E	FL(2+1)W10S	III	20/ 5	16/ 15	Indicate position of Chan May cape, Quang nam-Da nang province. Coastal light, orientates for ships to navigate at Chan May bay area
2	Hon Hai	09° 58' N 109° 05' E	FL.W.10S	II	10/ 111	25/ 27	Indicate position of Hon Hai-Binh Thuan island. Instructs for ships to navigate at international sea area and the area between shore and Truong Sa island
3	My Thanh	09° 21' 05" N 106° 10' 00" E	FL(3)W15S	III	25/ 5	14/ 16	Locates on Southern side of My thanh river mouth. Soc trang province. Indicates position of My thanh river and instructs for ships to navigate at the sea at Southern of Hai river
4	Hon Doc	10° 19' N 104° 19' E	FL(2)W10S	III	10/ 40	14/ 19	Locates on Western of Hon Doc island, Kien giang province. Gives signal and instructs for ships to navigate at the sea area between Vietnam and Cambodia
5	Hon Chong	10° 08' N 104° 38.5' E	FL(1)W5S	III	19/ 5	14/ 15	Locates on Hon Chong cape, Kien giang province. Indicates position of Hon Chong port and instructs for ships to come in and out Hon Chong port
6	Bai Ca Mau	08° 08' N 103° 35' E	FL(2+1).W.15S	III	30/ 15	14/ 19	Locates on west-south direction of Ca Mau cape. Indicates position of construction at sea and position of Vietnamese West-South sea

No.	Name of light house	Geographical coordinate (Approximate)	Light character	Classification	Height of light tower/ height of ground	Light vision/ Geographical vision	Position, action of light house
7	Hon Bai	20° 44' 16" N 107° 10' 26" E	FL(2)W12S	River mouth mark	8/ 42	15/ 19	Indicates position of Hon Bai, Ha Long bay, Quang Binh province. River mouth mark and drives ships to navigate at Lach Mieu river mouth, the channel to Hon Cai port
8	Lach Giang	20° 00' N 106° 12' 5" E	FL(S)W.10S	River mouth mark	15/ 5	14/ 14	Locates on shallow area at the North of Lach giang river mouth, Nam Ha province. River mouth mark and indicates shallow area at river mouth
9	Qua Tu Hien	16° 21' 2" N 107° 55' 1" E	FL(2+1)W10S	River mouth mark	13/ 5	13/ 13	Locates on Southern side of Tu Hien river mouth, Thua Thien-Hue province. Indicates Cau Hai bay and drives ships to navigate at Cham May bay
10	Van Ca	15° 25' 3" N 108° 47' 5" E	FL(2)W10S	Port mark	10/ 141	14/ 30	Locates on Nawn Tram cape, 141m high. Indicates Dung Quat bay and drives ships to come in and out Dung Quat port
11	Cua Dai	15° 52' 7" E 108° 23' 6" E	FL.W.5S	River mouth mark	13/ 5	13/ 13	Locates on An Luong cape, Northern side of Dai river mouth, Quang nam-Da nang province. Indicates position of Hoi An river mouth and drives ships to navigate at Dai river mouth, Hoi An

No.	Name of light house	Geographical coordinate (Approximate)	Light character	Classification	Height of light tower/ height of ground	Light vision/ Geographical vision	Position, action of light house
12	Sa ky	15° 13' 0" N 108° 55' 3" E	FL(2+1)W10S	Port mark	13/ 15	13/ 13	Locates on Northern side of Sa ky river mouth, Quang ngai province. Indicates the channel to Sa ky port and drives ships to come in and out the port
13	Tinh Loong	15° 10' N 108° 54' E	FL.W.6S	River mouth mark	13/ 15	13/ 13	Locates on tra Khuc river mouth, Quang ngai province. Indicates position of tra khuc river mouth and instructs for ships to navigate at Tra khuc river mouth area
14	My A	14° 49' 7" N 108° 59' 7" E	FL(2)W10S	Port mark	13/ 15	13/ 13	Locates on My A river mouth, Quang ngai province. Indicates Tra river mouth and drives ships to come in and out river mouth and Quang Ngai port
15	Ganh Den	13° 22' N 109° 17' E	FL(2+1)W10S	River mouth	13/ 15	13/ 13	Locates on Northern side of Ganh Den cape, Phu Yen province. Indicates position of Northern Ninh Thuan bay and Xuan Dai bay, Chao bay
16	Hoa Do	12° 29' E 109° 21' E	FL(3).W.12S	River mouth mark	10/ 140	15/ 30	Locates on Hon Do island, 140m high, Khanh hoa province. Indicates the channel to Van Phong bay and drives ships to come in and out Hon Khoi port, Dam Mon port

No.	Name of light house	Geographical coordinate (Approximate)	Light character	Classification	Height of light tower/ height of ground	Light vision/ Geographical vision	Position, action of light house
17	Phan Rang	11° 35' 2" N 109° 03' 0" E	FL(2+1)W12S	River mouth mark	13/15	13/13	Locates on Northern side of phan Rang bay, Ninh Thuan province. Indicates position of Phan Rang port and instructs ships to navigate at phan Rang bay area
18	Phan Ri	11° 10' 0" N 108° 33' 7" E	FLW5S	River mouth mark	13/4	13/13	Locates on Northern side of Luy river, Binh Thuan province. Indicates position of phan Ri bay and drives ships to come in and out Phan Ri river mouth
19	Phan Thiet	10° 55' N 108° 06' E	FL(S)W10S	Port mark	13/4	13/13	Locates on the shore of Phan thiet bay, Binh thuan province. Indicates the channel to Phan thiet port and instructs ships to come in and out the port
20	Dong Tranh	10° 22' 5" N 106° 52' 0" E	FLW6S	River mouth mark	13/5	13/13	Locates on Dong tranh cape, Ho chi Minh city. Indicates position of Dong Tranh river mouth and drives ships to navigate at Dong tranh river mouth, Soai Rap river mouth
21	Ganh Hao	09° 01' E 105° 25' E	FLW5S	River mouth mark	13/5	13/13	locates on Ganh Hao river mouth, Minh Hai province. Indicates position of ganh hao river mouth and drives ships to come in and out Ganh Hao port, Minh Hai province
22	Cua Bo De	08° 43' 7" N 105° 14' 5" E	FLW6S	River mouth mark	13/5	13/13	Locates on Bo De river mouth, Minh Hai province. Indicates position of Duong Keo river mouth and drives ships to come in and out Ngoc Hien port, Minh Hai province

No.	Name of light house	Geographical coordinate (Approximate)	Light character	Classification	Height of light tower/ height of ground	Light vision/ Geographical vision	Position, action of light house
23	Qua Lon	08° 43' 5" N 104° 50' 5" E	FL(2+1)W10S	Port mark	13/ 5	13/ 13	Locates on Lon river mouth, Minh Hai province. Indicates Qua Lon river mouth and drives ships to come in and out Ngoc Hien port, Nam Can port, Minh Hai province
24	Ong Doc	09° 02' N 104° 48' E	FL(3)W.12S	Portmark	13/ 5	13/ 13	Locates on Ong Doc river mouth, Minh Hai province. Indicates Ong Doc river mouth and drives ships to come in and out Ngoc Hien port, minh Hai province
25	Hon Thom	09° 57' N 104° 01' E	FL(2)W10S	Port mark	10/ 10	15/ 15	Locates on Eastern of Hon Thom island-Phu Quoc archipelago, Kien giang province. indicates anchorage area and drives ships to come in and out Hon Chong port (transshipment area), Kien giang province
26	Con Loi	09° 52' 54" N 108° 41' 36" E	FLW5S	River mouth mark	13/ 5	13/ 13	Locates on Con Loi, Ham luong river mouth, Ben tre province. Indicates Ham luong river mouth. Orientates for ships to navigate

Appendix 6

List of Newbuilding Light Beacons

LOCATION AND FUNCTION OF LIGHT BEACON FOR NEW PORT AND RIVER MOUTH MARKS

No.	Name	Geographical coordinate	Light character	Classification	Height of light tower/height of land (M)	Light vision/geographical vision (HL)	Location and function
1.	HON BAI	20°44'16"N 107°10'26"E	Fl(3+1)W.10s	river mouth mark	8/42	18/19	- Indicate Hon Bai - Ha Long bay - Quang Ninh province - River mouth mark for ships' enter and exit Lach Mieu mouth, leading to Hon Gai port - Indicate Thai Binh river mouth - Thai Binh province - River mouth mark for ships' enter and exit Thai binh river mouth
2.	THAI BINH	20°37'30"N 106°37'30"E	Fl(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Tra Ly river mouth - Thai binh province - Port mark for ships' enter and exit Diem Dien port
3.	DIEM DIEN	20°33'26"N 107°69'30"E	Fl.W.5s	port mark	13/5	18/13	- Indicate Tra Ly river mouth - Thai binh province - Port mark for ships' enter and exit Diem Dien port
4.	TRA LY	20°27'12"N 106°35'50"E	Fl(2)W.6s	river mouth mark	13/5	18/13	- Indicate Tra Ly river mouth - Thai Binh province - River mouth mark for ships' enter and exit Tra Ly river mouth
5.	LACH GIANG	20°00'00"N 106°12'05"E	Fl(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Northern dry area of Lach Giang river mouth Nam Ha province - River mouth mark for ships' enter and exit Lach Giang river mouth, Ninh co river
6.	CUA DAY	19°59'17"N 106°06'00"E	Fl(3)W.12s	river mouth mark	13/5	18/13	- Indicate Day river mouth - Nam Ha province - River mouth mark for ships' enter and exit Day river mouth

7.	LACH SUNG	19°58'00"N 105°59'24"E	FLW.5s	river mouth mark	13/5	18/13	- Indicate Lach Sung river mouth - Thanh Hoa province - River mouth mark for ships' enter and exit Lach Sung river mouth, Do len river
8.	LACH TRUONG	19°53'30"N 105°57'42"E	FI(3+1)W.12s	river mouth mark	13/5	18/13	- Indicate Lach Truong river mouth - Thanh Hoa province - River mouth mark for ships' enter and exit Lach Truong river mouth
9.	LACH GHEP	19°34'00"N 105°48'30"E	FLW.5s	river mouth mark	13/5	18/13	- Indicate Lach Ghep river mouth - Thanh Hoa province - River mouth mark for ships' enter and exit Lach Ghep river mouth, Yen river
10.	CUA BANG	19°24'24"N 105°47'06"E	FI(3)W.10s	river mouth mark	13/5	18/13	- Indicate Bank river mouth - Thanh Hoa province - River mouth mark for ships' enter and exit Bang river mouth
11.	CUA TRAP	19°13'30"N 105°45'12"E	FI(3+1)W.10s	river mouth mark	13/5	18/13	- Indicate Trap river mouth - Nghe An province - River mouth mark for ships' enter and exit Trap river mouth, Mai Giang river
12.	LACH QUEN	19°06'12"N 105°42'54"E	FI(2)W.10s	river mouth mark	10/8	18/13	- Indicate Lach Quen river mouth - Nghe An province - River mouth mark for ships' enter and exit Lach Quen river mouth, Do river
13.	CUA VAN	18°59'30"N 105°36'30"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicate Van river mouth - Nghe An province - River mouth mark for ships' enter and exit Van river mouth
14.	CUA RON	17°52'36"N 106°27'00"E	FI(2)W.10s	river mouth mark	10/8	18/13	- Indicate Ron river mouth - Quang binh province - River mouth mark for ships' enter and exit Ron river mouth, Ron river

15.	LY HOA	17°38'16"N 106°34'25"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Ly Hoa river mouth - Nghe An province - River mouth marks for ships' enter and exit Ly Hoa river mouth
16.	CUA DINH	17°33'15"N 106°34'48"E	FI.W.6s	river mouth mark	13/5	18/13	- Indicate Dinh river mouth - Quang Binh province - River mouth mark for ships' enter and exit Dinh river mouth
17.	CUA TUNG	17°01'06"N 107°06'18"E	FI(3+1)W.10s	river mouth mark	10/8	18/13	- Indicate Tung river mouth - Quang Binh province - River mouth marks for ships' enter and exit Tung river mouth, Ben hai river
18.	CUA TU HIEN	16°21'02"N 107°55'01"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Ta Hien river mouth - Thua Thien Hue province - River mouth mark for ships' enter and exit Cau bai river mouth and Cha May bay
19.	CHON MAY	16°20'17"N 108°01'02"E	FI.W.5s	river mouth mark	13/5	18/13	- Indicate Chan May cape - Thua Thien Hue - River mouth mark for ships' enter and exit Chan May bay
20.	CUA DAI	15°52'07"N 108°23'06"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicate An Luong cape, Northern side of Dair river mouth Quang nam - Da nang province - River mouth marks for ships' enter and exit Dai river mouth Hoi An
21.	VAN CA	15°25'05"N 108°47'05"E	FI(3)W.10s	port mark	10/141	18/26	- Indicate the height of 141 m of Nam Tram cape- Quant ngai province - Port mark for ships' enter and exit Dung quat port
22.	SA KY	15°13'00"N 108°55'03"E	FI(2+1)W.10s	port mark	13/5	18/13	- Indicate the Northern area of Sa Ky port Quang ngai province - Port mark for ships' enter and exit Sa Ky port

23.	TINH LUONG	15°10'00"N 108°54'00"E	FI(3+1)W.12s	river mouth mark	13/5	18/13	<ul style="list-style-type: none"> - Indicate the Tra Khuc river mouth - Quang Ngai province - River mouth mark for ships' enter and exit Tra Khuc river mouth - Indicate My A river mouth - Quang Ngai province - Port mark for ships' operations - Indicate Sa Huynh capa - Quang Ngai province -River mouth mark for ships' operation
24.	MY A	14°49'07"N 108°59'07"E	FI W.5s	port mark	13/5	18/13	<ul style="list-style-type: none"> - Indicate Kim Bong cape, Northren side of Lo soi river, Sinh Dinh province - River mouth mark for ships' operations - Indicate Lai Giang river mouth - Binh Dinh province - River mouth marks for ships' enter and exit Lai Giang river mouth
25.	SA HUYNH	14°40'24"N 109°04'30"E	FI(2)W.6s	river mouth mark	13/5	18/13	<ul style="list-style-type: none"> - Indicate Lam cape, Northern side of Nuoc ngot bay - Binh Dinh province - River mouth mark for ships' operation - Indicate the Ba Lai river mouth - Binh Dinh province - River mouth mark for ships' enter and exit Ba Lai river mouth
26.	KIM BONG	14°34'48"N 109°04'30"E	FI(3)W.10s	river mouth mark	13/5	18/13	<ul style="list-style-type: none"> - Indicate the Cu Mong river mouth - Phu Yen province - River mouth mark for ships' enter and exit Cu Mong river mouth - Indicate the Xuan Dai river mouth - Phu Yen province - River mouth mark for ships' enter and exit Xuan Dai bay
27.	LAI GIANG	14°29'54"N 109°05'16"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	
28.	MUI LAM	14°08'24"N 109°13'12"E	FI(2)W.5s	river mouth mark	8/10	18/13	
29.	THACH HY	13°59'20"N 109°15'00"E	FI(3)W.10s	river mouth mark	10/8	18/13	
30.	VINH CUU	13°31'50"N 109°17'18"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	
31.	GANH DEN	13°21'48"N 109°17'24"E	FI W.5s	river mouth mark	13/5	18/13	

32.	DA GIANG	13°05'00"N 109°36'40"E	FI(2)W.6s	river mouth mark	13/5	18/13	- Indicate Da Giang river mouth, Da Rang river - Phu Yen province - River mouth mark for ships' enter and exit Da Giang river mouth
33.	HON NUA	12°49'48"N 109°23'20"E	FI(3+1)W.10s	Port mark	8/10	18/13	- Indicate Vung Ro anchoring area - Phu Yen province - Port mark for ships' enter and exit Vung Ro anchoring are
34.	HON DO	12°29'00"N 109°21'00"E	FI.W.4s	river mouth mark	10/100	18/13	- Indicate Hoo Do -Khanh hoa province - River mouth mark for ships' enter and exit Van phong river mouth, Hon Khoi port, Dam Mon port
35.	BALUM	11°56'22"N 109°10'54"E	FI(4)W.10s	port mark	13/5	18/13	- Indicating Cam Ranh sand port -Khanh Hoa Pr. - Port sinal light instructing vessels to enter and exit Cam Ranh port
36.	BA NGOI	11°54'00"N 109°09'00"E	FI(2+1)W.10s	port mark	8/10	18/13	- Indicating stone reef area in front of Ba Ngoi port - Khanh Hoa province - Port signal light, instructing vessels to enter and exit Ba Ngoi port
37.	PHAN RANG	11°35'02"N 109°03'00"E	FI(3)W.10s	river mouth mark	10/8	18/13	- Indicating the North shore of Phan Rang gulf- Ninh Thuan province - River mouth light, instructing vessels to enter and exit Phan Rang gulf
38.	CANA	11°20'15"N 108°53'00"E	FI(2)W.6s	river mouth mark	13/5	18/13	- Indicating Ca Na fishery area - Binh Thuan Pr. - River mouth light, isntructing vessels to enter and exit Ca Na fishery area
39.	PHAN RI	11°10'00"N 108°33'07"E	FLW.4s	river mouth mark	13/5	18/13	- Indicating Phan Ri river mouth - Binh Thuan Pr. - River mouth light, instrcting vessels to enter and exit Phan Ri river mouth, Luy river

40.	PHAN THIET	10°55'00"N 108°06'00"E	FI(3+1)W.12s	port mark	13/5	18/13	- Indicating Phan Thiet gulf - Binh Thuan province - Port signal light, instructing vessels to enter and exit Phan Thiet port
41.	MUINE	10°54'54"N 108°17'12"E	FI(3)W.10s	river mouth mark	10/8	18/13	- Indicating Ne Cape - Phan Thiet province - River mouth light, instructing vessels to enter and exit Phan Thiet gulf
42.	TAM TAN	10°42'48"N 107°51'48"E	FLW.5s	river mouth mark	13/5	18/13	- Indicate Tam Tam fishery village - Binh Thuan Pr. - River mouth light, instructing operations for vessels in Tam Tam fishery village
43.	HON TRANH	10°31'30"N 108°58'30"E	FI(3)W.10s	port mark	10/8	18/13	- Indicating Hon Tranh - Binh Thuan province - Port signal light, instructing vessels to enter and exit fishery port of Phu Quy island
44.	XICH RAM	10°27'06"N 107°19'36"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Xich Ram riv. mouth - BaRia-Vung Tau - River mouth light, instructing vessels to enter and exit Xich Ram river mouth, Cai river
45.	DONG TRANH	10°22'05"N 106°52'00"E	FL.W.5s	river mouth mark	13/5	18/13	- Indicating Dong Tranh cape - HCM. City - River mouth light, instructing vessels to enter and exit Cua Tieu, Tien river
46.	CUA TIEU	10°15'00"N 106°26'00"E	FI(3+1)W.10s	river mouth mark	13/5	18/13	- Indicating Cua Tieu - Tien Giang province - River mouth light, instructing vessels to enter and exit Cua Tieu, Tien river
47.	LONG HAI	10°13'30"N 108°44'24"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicate Long Song river mouth - Binh Thuan Pr. - River mouth light, instructing vessels to enter and exit Long Song river mouth
48.	BALAI	10°02'24"N 108°41'30"E	FI(3)W.10s	river mouth mark	13/5	18/13	- Indicate Ba Lai river mouth - Ben Tre province - River mouth light, instructing vessels to enter and exit Ba Lai river mouth

49.	CON LOI	9°52'54"N 108°41'36"E	FI(2)W.6s	river mouth mark					
50.	TRANH DE	9°28'36"N 106°12'18"E	FI(3)W.10s	river mouth mark	13/5	18/13	- Indicating Tranh De river mouth - Soc Trang Pr. - River mouth light, instructing vessels to enter and exit Tranh De river mouth		
51.	MY THANH	9°21'05"N 106°10'00"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicating My Thanh river mouth - Soc Trang Pr. - River mouth light, instructing vessels to enter and exit My Thanh river mouth. Hau river		
52.	GANH HAO	9°01'00"N 105°25'00"E	FI.W.5s	river mouth mark	13/5	18/13	- Indicating Ganh Hao river mouth - Minh Hai Pr. - River mouth light, instructing vessels to enter and exit Ganh Hao river mouth		
53.	CUA RACH GIA	8°45'12"N 105°16'06"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicating Rach Gia river mouth - Minh Hai Pr. - River mouth light, instructing vessels to enter and exit Rach Gia river mouth. Rach Gia river		
54.	CON DAO	8°41'00"N 106°35'00"E	FI(3+1)W.12s	port mark	13/5	18/13	- Indicating Con Dao pier - Port signal light, instructing vessels to enter and exit Con Dao port		
55.	BEN DAM	8°40'50"N 106°33'30"E	FI(2)W.5s	port mark	13/5	18/13	- Indicate Ben Dam - Con Dao fishery port - Port signal light, instructing vessels to enter and exit Ben Dam - Con Dao fishery port		
56.	DA TRANG	8°38'05"N 106°36'05"E	FI(2+1)W.10s	port mark	13/5	18/13	- Indicating the South-East of Con Dao port - Port signal light, instructing vessels to enter and exit Con Dao port		
57.	HON TRUNG	8°34'00"N 106°05'00"E	FL.W.5s	river mouth mark	13/5	18/13	- Indicating Hon trung - Minh Hai province - Independent light, instructing operations for vessels in sea area between Con Dao & mainland		

58.	CUA BO DE	8°43'07"N 105°14'05"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicating Bo De river mouth, Dong Keo river - Minh Hai province - River mouth light, instructing vessels to enter and exit Bo De river mouth and Ngoc Hien port
59.	DUONG KEO	8°35'24"N 105°00'06"E	FI(3+1)W.10s	river mouth mark	13/5	18/13	- Indicating Dong Keo river - Minh Hai province - River mouth light, instructing vessels to enter and exit Dong Keo river mouth
60.	BAI CA MAU	8°08'00"N 103°35'00"E	FI(2+1)W.10s	port mark	13/5	18/13	- indicating Ca Mau shallow area - Kien Giang Pr. - Independent light, instructing operations for vessels within the area
61.	CUA LON	8°43'05"N 104°50'05"E	Fl.W.4s	port mark	13/5	18/13	- Indicating Cua Lon - Minh Hai province - Port signal light, instructing vessels to enter and exit Ngoc Hien and Nam Can ports
62.	ONG DOC	9°02'00"N 104°48'00"E	FI(3+1)w.12s	river mouth mark	13/5	18/13	- Indicate OngDoc river mouth - Minh Hai province - River mouth light, instructing vessels to enter and exit Ong Doc river mouth
63.	XEO NHAN	9°44'42"N 104°52'30"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicate Xeo Nhan channel mouth - Kien Giang - River mouth light, instructing operations for vessels
64.	CAI LON	9°57'00"N 105°04'24"E	Fl.W.4s	river mouth mark	13/5	18/13	- Indicating Cai Lon river mouth - Kien Giang - River mouth light, instructing operations for vessels
65.	HON RAI	9°47'50"N 104°38'42"E	Fl.W.5s	river mouth mark	13/5	18/13	- Indicating Hon Rai - Kien Giang province - River mouth light, instructing vessels to enter and exit rach Gia
66.	HON TRE	9°58'30"N 104°51'00"E	FI(2+1)W.10s	river mouth mark	13/5	18/13	- Indicating Hon tre peninsular - Kien Giang - River mouth light, instructing vessels to enter and exit Rach Gia

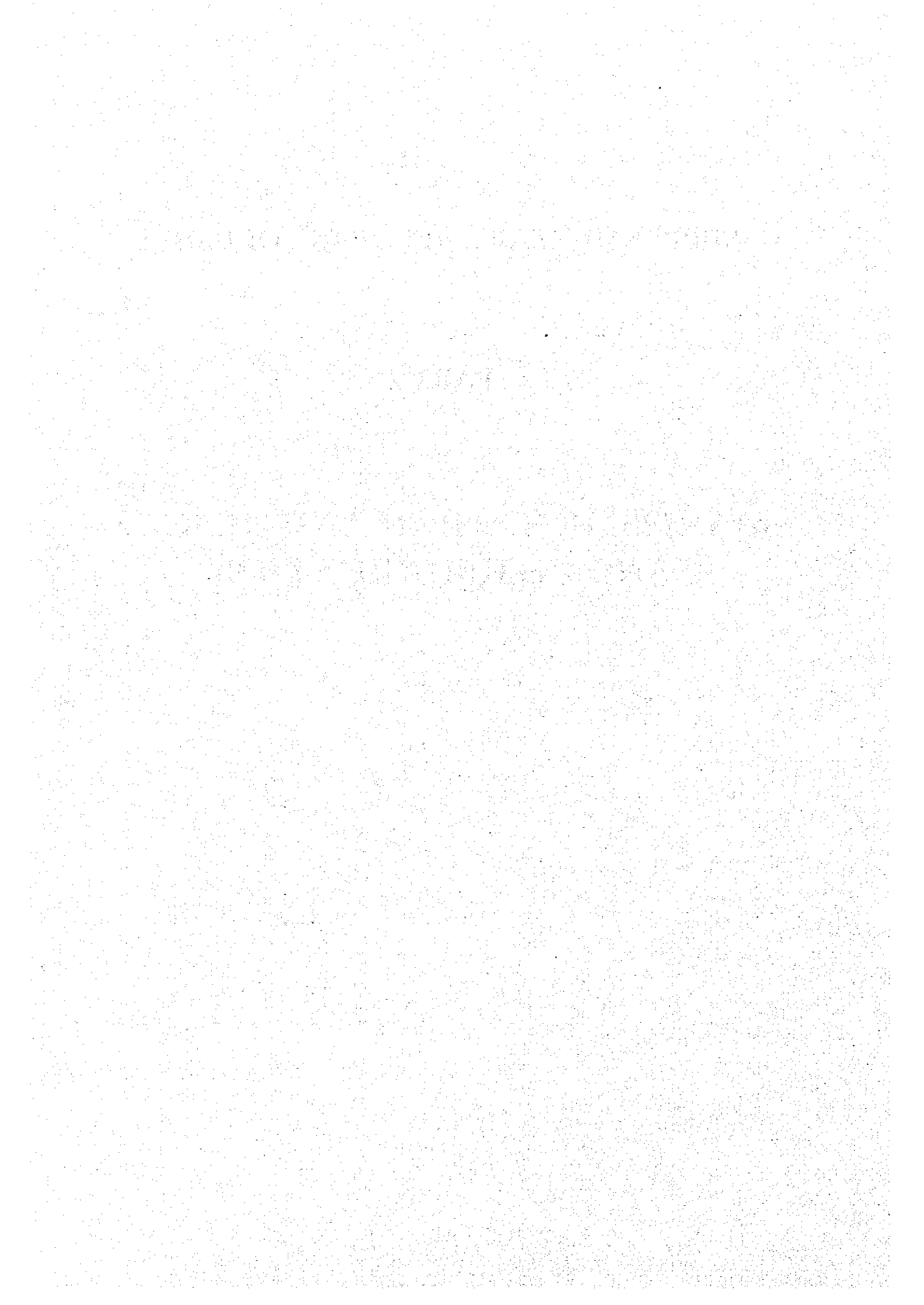
67.	HON DAT	10°06'40"N 104°51'33"E	FI(4)W.10s	river mouth mark	13/5	18/13	- Indicating Hon Dat - Kien Giang province - River mouth light, instructing vessels to enter and exit Cay Me channel mouth - Indicate Luyinh Huynh channel mouth-Kien Giang - River mouth light, instructing operations for vessels
68.	LUYINH HUYNH	10°08'48"N 104°50'42"E	FI.W.5s	river mouth mark	13/5	18/13	-Indicating Hon Chong - Kien Giang province - Port signal light, instructing vessels to enter and exit Hong Chong port - Indicating Ba Hon channel mouth - Kien Giang - River mouth light, instructing operations for vessels
69.	HON CHONG	10°08'00N 104°38'05"E	FI(3+1)W.10s	port mark	13/5	18/13	- Indicating Hon Doc - Kien Giang province - River mouth light, instructing vessels to enter and exit Hon Chong port
70.	BA HON	10°14'48"N 104°34'48"E	FI(2)W.5s	river mouth mark	13/5	18/13	- Indicating Hon Doc - Kien Giang province - River mouth light, instructing vessels to enter and exit Hon Chong port
71.	HON DOC	10°19'00"N 104°19'00"E	FI(2+1)W.10s	rivr mouth mark	13/5	18/13	- Indicating East of Hon Thom - Phu Quoc archipelago - Kien Giang province - Light for anchoring area, instructing vessels to enter and exit Hon Chong port
72.	HON THOM	9°57'00"N 104°01'00"E	FI(4)W.10s	port mark	13/5	18/13	- Indicating Ong Doi cape to the South of Phu Quoc island - Kien Giang province - River mouth light, instructing operations for vessels in sea area between Vietnam & Cambodia
73.	ONG DOI	10°00'00"N 104°03'00"E	FI.W.4s	river mouth mark	13/5	18/13	- Indicating the East of Phu Quoc province - Kien Giang province - River mouth light, instructing operations for vessels in sea area between Vietnam & Cambodia
74.	HAM NINH	10°11'04"N 104°02'08"E	FI(3)W.10s	river mouth mark	13/5	18/13	- Indicating the East of Phu Quoc province - Kien Giang province - River mouth light, instructing operations for vessels in sea area between Vietnam & Cambodia

75.	DA CHONGI02115 N	10°21'15N 104°04'30"E	FI(3+1)W.12s	river mouth mark	13/5	18/13	- Indicating North-East of Phu Quoc island - Kien Giang province - River mouth light, instructing operations for vessels in sea area between Vietnam & Cambodia
76.	RACH TRAM	10°25'00"N 103°57'54"E	FI W.5s	river mouth mark	13/5	18/13	- Indicating Rach tram, Phu Quoc island - Kien Giang province - River mouth light, instructing operations for vessels in sea area between Veitnam & Cambodia
77.	GANH DAU	8°38'05N 106°36'05"E	FI(2+1)W.10s	port mark	13/5	18/13	- Indicating Banh Dau to the North-West of Phu Quoc island - River mouth light, instructing operations for vessels in sea area between Vietnam & Cambodia

SUPPLEMENTARY REPORTS VOLUME 4

PART 2

**MARITIME SEARCH AND RESCUE
AND COMMUNICATION**



PART 2 MARITIME SEARCH AND RESCUE AND COMMUNICATION

Chapter 1 Present Situation of SAR System in Vietnam

1.1 Present Situation of VMS (Vietnam Maritime Safety Agency)

VMS is an organization under VINAMARINE (Vietnam National Maritime Bureau). The Office of Maritime Safety (OMS) which was responsible for northern half (now Regions I and II) and the Service of Maritime Safety (SMS) which was responsible for southern half (now Regions III and IV) has been unified into one new organization as VMS since January 1, 1995.

Its Organization and Areas of Regional Responsibility are shown in Figures 1.1 and 1.2.

In addition to the conventional Aids to Navigation (ATN) service, VMS is said to be responsible for new duties such as Search and Rescue, Marine Environmental Protection, Marine Traffic Safety and Hydrographic services.

From the study, however, it seems that VMS has new functions, staff and facilities for these services. SAR, in particular, nothing at all. VMS is just on the starting in this field.

Therefore, in so far as VMS is concerned, the improvement study should be based on the understanding of the above facts.

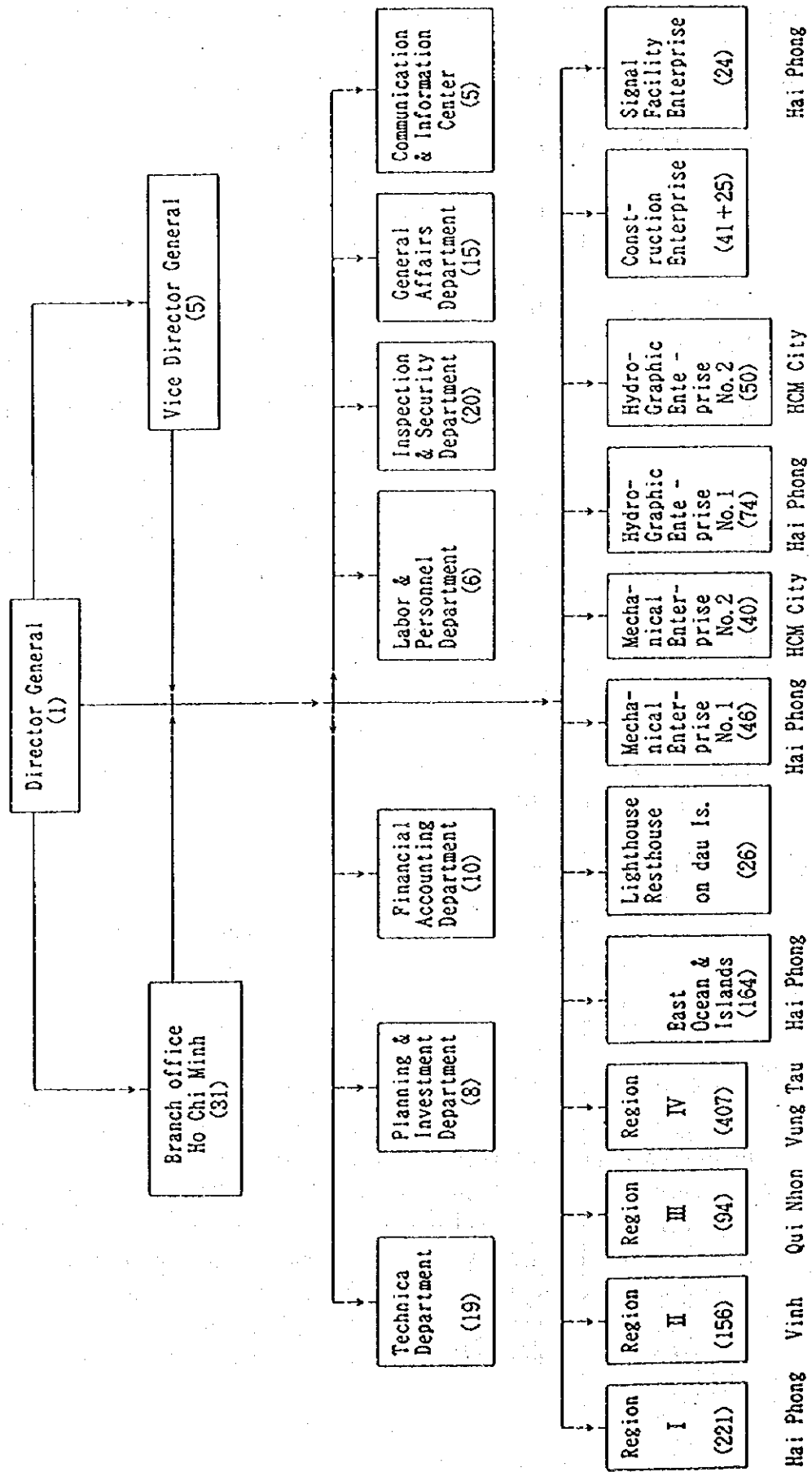
1.2 Overall SAR System in Vietnam

SAR system in Vietnam has not yet been established. There are no organizations primarily responsible for SAR.

As reported in the Progress Report, a country report noted as follows:

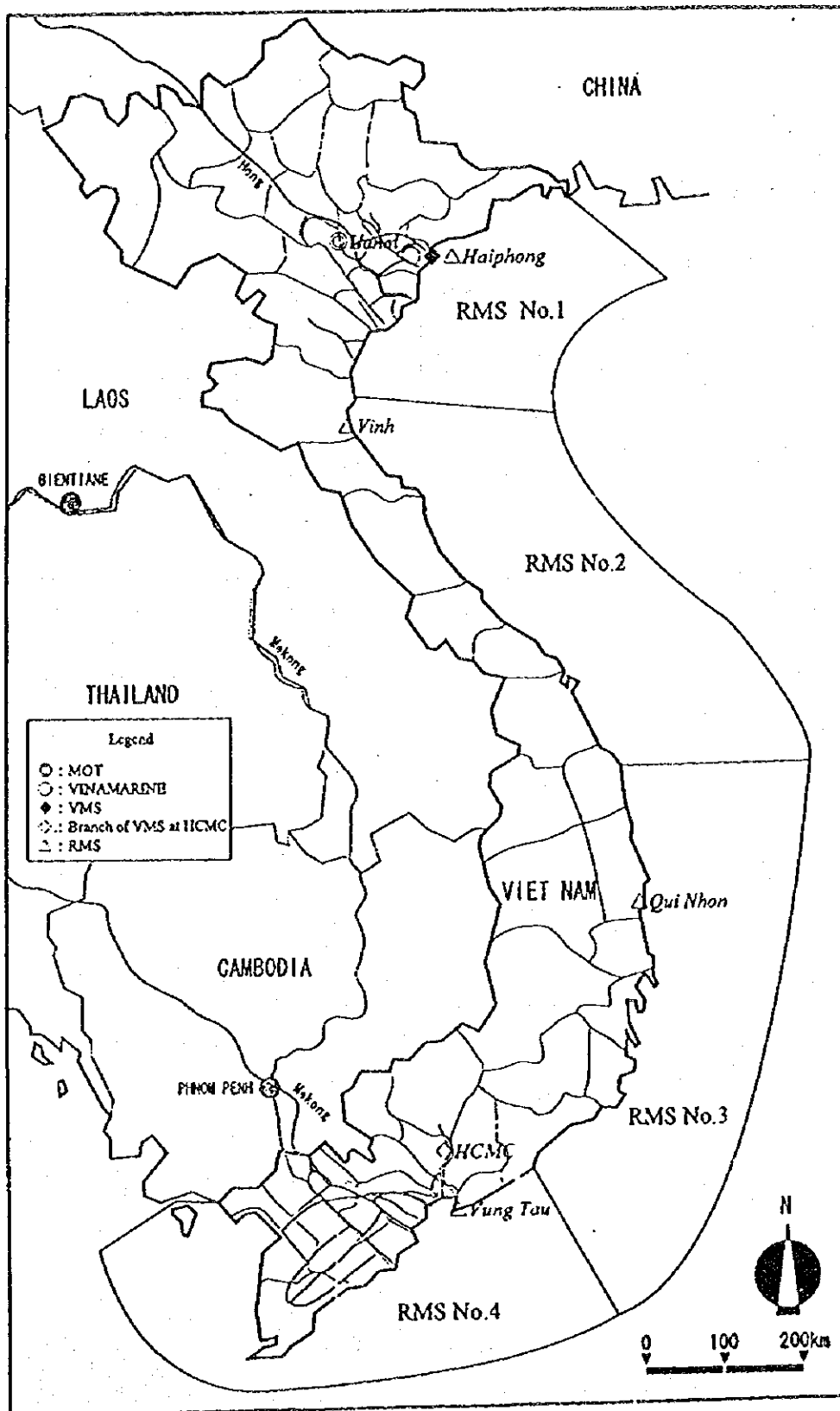
“When distress signals are received at sea, coastal stations, or other agencies which received the signals will immediately relay the information to the Information Processing Center (VISHIPEL) in Hai Phong, and at the same time, to the SAR Coordination Center of Vietnam (under VINAMARINE). The local Port Authority, on behalf of SAR Coordination Center will mobilize SAR activities within their responsibility. In urgent cases, the Vietnamese SAR Coordination Center (RCC) can request assistance from Navy or Air Forces. Upon receiving a distress information, RCC will give instruction to local port authorities and to SAR teams under VMS to conduct SAR activities.” (SAR Command and Coordination Diagram is shown in Figure 1.3)

Figure 1.1
ORGANIZATION OF VIETNAM MARITIME SAFETY



() : Number of personnel

Figure 1.2
 AREA OF RESPONSIBILITY OF REGIONAL
 MARITIME SAFETY OFFICES



As a matter of fact, the above SAR activities is still on paper. At present, they have neither such efficient command and coordination chains nor SAR resources including rescue boats and communication means. Vietnam should have such system installed as early as possible to prevent and reduce accidents in the future and intensify current efforts for the purpose.

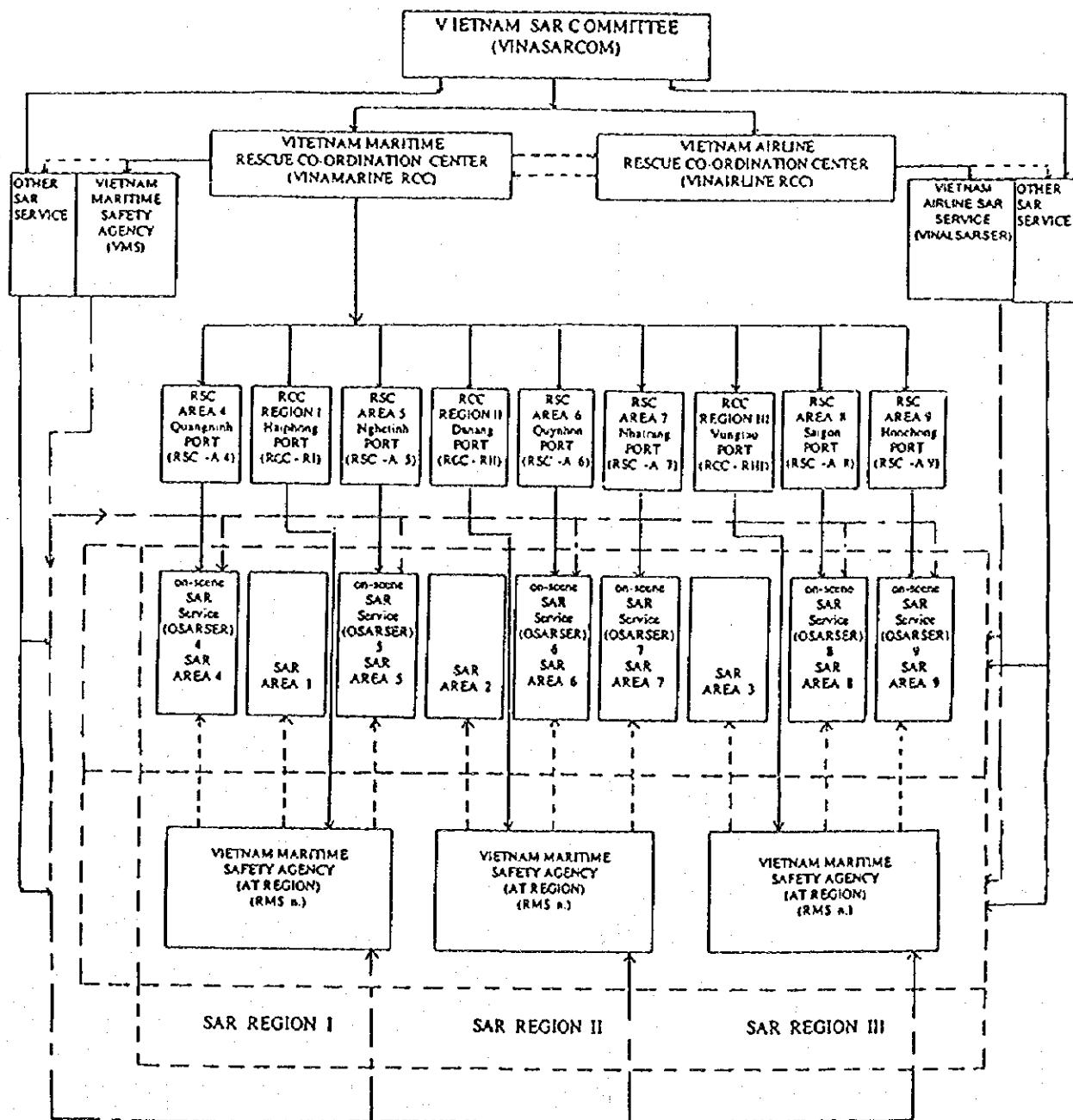
1.3 Actual SAR Activities

Reported or not, many accidents have taken place in and around the waters of Vietnam. What actions are actually taken if an accident occurs at sea?

When a distress signal is received by a coastal radio station, it is reported to VINAMARINE and Port Authorities which have responsibility for the area at the same time. VINAMARINE orders responsible Port Authorities to take action. Port Authorities have no ships and rescue staff of their own, so they ask any ships with rescue capability within port, even ships of foreign flag, to go out for rescue. Sometimes distress information comes through international LUT such as Hongkong SAR Radio Station and sometimes VINAMARINE asks military ships and aircraft for SAR.

According to the MARITIME ACCIDENTS IN VIETNAM WATER AREA (Table 1.1), among 29 rescued cases, 23 cases (nearly 80%) were rescued by salvage ships of VISAL and 5 cases (17%) were by local authorities. Perhaps these data may be limited and outdated (1989-1992), but the trend is unchanged. Under the present SAR circumstances, there are many other cases which were not reported.

Figure 1-3
VIETNAM SEARCH AND RESCUE ORGANIZATION



Note : the above organization has not been fully developed and is now in progress, so has not functioned yet.

- SAR : Search and Rescue
- RCC : Rescue Coordination Center
- RSC : Rescue sub-center
- RMS n. : Maritime Safety Region
- n. : number of Region

Table 1.1
MARITIME ACCIDENTS IN VIETNAM WATER AREA (1/3)

No.	Month/Year	Ship name	GRT	Nationality	Type of Ship	Accident	Place	Note
1	10/89	Offshore	2,000	Singapore	Barge	aground due to storm	Nghe tinh	Rescued by Visal + Navy
2	10/89	Rimanis	2,000	Singapore	Barge	aground due to storm	Cuu long	Rescued by local authority
3	02/90	Song Chanh 450	400	Quang ninh	Dry cargoes	damaged rudder, go adrift	Thua thien	Rescued by local authority
4	03/90	Delta	1,200	USSR	Dry cargoes	damaged rudder, go adrift	Hon Gai	Rescued by Visal
5	03/90	Phu Yen II	10,000	Hai phong	Dry cargoes	collision	Hon Gai	Rescued by Visal
6	04/90	VT 51-11-27	400	Logistics Bureau	Army transport	sank due to collision	Da nang	at 70m deep, not yet picked up
7	07/90	Guam Chang	5,000	China	Dry cargoes	sank due to storm	Da nang	don't know exact place, 36 seamen disappeared, 1 died
8	08/90	Unknown		Foreign		run aground	Truong sa	Message from MOT
9	09/90	Bien Dong	500	Hai phong	Dry cargoes	water run into holds	Vung tau	Rescued by Visal
10	08/90	Viet - Xo 08	500	Hai phong	Dry cargoes	water run into holds	Vung tau	Rescued by Visal
11	09/90	Pong tong	750	X50 Hai phong		sank due to collision	Hon gai	Rescued by Visal
12	09/90	264 fishing boats and 6 ships		Quang Binh Quang tri	Fishing	sank due to storm	Binh tri thien	
13	09/90	Bach Dang 01	1,000					
14	09/90	Viet Trung	600			aground due to storm	Da nang	
15	09/90	Song Ma						
16	09/90	2 dredging ships						
17	09/90	1 canoe				sank due to storm	Quang tri	
18	10/90	Barge	150	Can Tho	Barge	sank due to collision	Hai phong	Rescued by Visal
19	10/90	Truong Lam	150	Vung tau	Dry cargoes	propeller broken, go adrift	Qui nhon	Rescued by Visal
20	10/90	Song Nhue	10,000	Hai phong	Dry cargoes	aground, water run to hold	Qui nhon	Rescued by Visal
21	10/90	Unknown	2,000		Fishing	run aground	Phu Yen	Message from Vosal/IICMC
22	11/90	Hoa Binh II		Cambodia	Ferry	aground due to storm	Da nang	Rescued by local authority
23	11/90	Phuoc Long	400	Ha noi	Dry cargoes	damaged rudder, go adrift	Da nang	Rescued by local authority
24	11/90	Fishing boats			Fishing	sank due to local turbulence	Nghe tinh	many suffered from turbulence in Quynh Luu-Ky anh, 68 fishermen died
25	11/90	Unite ships	150	Quang ninh	Dry cargoes	run aground	Thua thien	Rescued by locality
26	11/90	Thien An	400	Quang ngai	Dry cargoes	propeller trouble, go adrift	Qui nhon	Rescued by Visal
27	12/90	Turbo Pharder	250	Hong Kong	Dry cargoes	engine trouble, go adrift	Binh dinh	Rescued by the P. Authority
28	12/90	Yen Thanh Viet-xo 07 M/S Mimosa M/S Nha be 01 M/S Nha be 02 M/S Dong hai	400	Nghe Tinh	Dry cargoes	sank due to broken hull collided with Newton ship collided with barge propeller trouble due to obstacles in the current collision, stairs broken collided with USSR ship	Qui nhon	Rescued by Visal Bao Viet Saigon compensated in 1990

No.	Month /Year	Ship name	GRT	Nationality	Type of Ship	Accident	Place	Note
1	01/91	Nha trang 06	900	Nha trang	Dry cargoes	hold bed broken	Dinh an	
2	02/91	Nhat le	5,000	VOSCO	Dry cargoes	doubt of breaking hull	Ke ga cape	carried 4,100m3 timber
3	02/91	Experiment 02	250	Mechanics Inst.		go aground	Thuan an	
4	.../91	Internac	5,000	USA	Barge	go aground due to storm	Quang ngai	Rescued by Visal
5	05/91	Training 02		Vietnam		engine trouble, go adrift	Quang ngai	
6	06/91	Fairstar	7,000	Australia	Passengers	engine trouble, go adrift	Binh Dinh	
7	06/91	Tien phong	400	Communist Youth League	Dry cargoes	engine trouble, go adrift	Con Dao	Rescued by Visal
8	06/91	An phu	600	VINASHIP	Dry cargoes	engine trouble, go adrift	Vietnam	Rescued by Visal
9	07/91	Song lam 04	600	Nghe tinh	Dry cargoes	lost communication	Vietnam	
10	07/91	Masada 01	10,000	Indonesia	Dry cargoes	rudder trouble, go adrift		Rescued by Visal
11	07/91	Quang binh 01	200	Quang binh	Dry cargoes	sank	Saigon river	Rescued by Visal
12	08/91	Sam son 12	200	Thanh hoa	Dry cargoes	go aground	Phan Thiet	carried 200T coal
13	08/91	Petchompoo	19,000	Thailand	Dry cargoes	missing in storm	Vietnam	carried 15,000T steel
14	08/91	Golden ocean	2,000	Panama	Dry cargoes	couldn't control, go adrift	Vietnam	Visal couldn't find out
15		Quang ngai		Quang ngai	Dry cargoes	engine trouble, go adrift	Vietnam	2 days of searching
16		Ha noi 01		Hamatco	Dry cargoes	engine trouble, go adrift	Vietnam	Rescued by Visal
17		Truong lam		Vietnam	Dry cargoes	engine trouble, go adrift	Vietnam	Rescued by Visal
18		Lien ket 89		Vietnam	Dry cargoes	engine trouble, go adrift	Vietnam	Rescued by Visal
19		Thanh binh	900	Vietnam	Dry cargoes	engine trouble, go adrift	Vietnam	Rescued by Visal
20	09/91	Soonly	200	Singapore	Dry cargoes	sank due to fire	Con Dao	Rescued by Visal
21	10/91	Nakuryu	3,000	USSR	Dry cargoes	engine trouble, go adrift	Con Dao	carried 420 motorbikes
22	09/91	Phuong dong	650	Hai phong	Oil tanker	rudder trouble, aground	Thua thien	carried 650T petroleum, rescued by Visal
23	12/91	Cargo ship		Hai phong	Cargo ship	missing	Cat Lai	only dead bodies were found
1	03/92	Seaship		Unknown			Da nang	SOS received by South Korean airplane
2	07/92	Barge	250	Thai Binh	Barge	go adrift, missing in storm	Quang ninh	
3	07/92	Barge	200	Railway entpr.	Barge	upside down in storm	Quang ninh	
4	07/92	5 barges	100	VN Army Inst.	Barge	go aground in storm	Quang ninh	
5	07/92	Ham rong 14		Vietnam	Dry cargoes	go aground in storm	China's area	
6	07/92	Quang binh	800	Quang binh	Dry cargoes	engine trouble, go adrift	Thai binh	
7	08/92	Playa Larga	15,000	Cuba	Dry cargoes	sank at Danang port/quay	Da nang	carried 15,000T sugar, rescued by Visal
8	10/92	Hai hui 8	850	Panama	Dry cargoes	go aground	Cua Tieu	
9	10/92	Ho nam		Hongkong	Dry cargoes	people fall into sea	Da nang	informed by Tan Son Nhat
10	10/92	Anohika Adiraja	7,120	Hongkong	Dry cargoes	engine trouble, go adrift	Phu Yen	rescued by the ship itself
11	10/92	Tan phong quoc	29	Taiwan	Dry cargoes	engine trouble, go adrift	Binh dinh	Visal couldn't find, rescued by other ship
12	08/92	Rubie		Unknown	Dry cargoes	engine trouble, go adrift	Thuan hai	informed by Tan Son Nhat

1.4 Philosophy and Policy of SAR (Importance of Human Lives)

Nothing in this world is more important than human lives. The Safety of Life must have the first priority in every aspect in every field of human activity.

Naturally, the Safety of Life is fundamental in thinking about Search and Rescue and then the protection of properties. Without this philosophy, there will be no real development and prosperity.

1.5 Statistics of Marine Accidents

(1) Statistics on Marine Accidents (1987-1992)

According to the statistics of VINAMARINE, the number of accidents at sea in a span of 6 years (1987 - 1992), involving ships over 100 tons, is shown in Table 1.2.

Table 1.2
TREND IN MARITIME ACCIDENTS BY TYPE

Type of Accident	1987	1988	1989	1990	1991	1992	Total
Collision	3	12	7	9	5	8	44
Stranding	0	2	3	1	0	1	7
Fire	1	1	2	3	3	1	11
Inundation	0	3	1	1	0	3	8
Capsizing	0	3	4	2	1	6	16
Engine Trouble	5	3	10	0	7	5	30
Loss of Lives and Injury	0	2	16	1	9	1	29
Others	5	8	1	5	5	5	29
Total	14	34	44	30	30	30	174

(2) Statistics of Maritime Accidents (1993-1995)

Tables 1.3, 1.4 and 1.5 show the causes of accidents and the extent of damage. According to the PR materials of VISAL, there are about 8,000 vessels with Vietnamese flag: 7,300 fishing boats with engines (5 to 300 tons) and 700 cargo vessels (15 to 15,000 tons). A larger percentage of maritime accidents involve fishing boats and are concentrated in the Gulf of Bac Bo, off the shore of Da Nang, east Nam Bo Sea and Thailand Bay.

Table 1.3
NUMBER OF MARITIME ACCIDENTS IN 1993

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	3	5	20	15	1	-
Technical Deficiencies	2	9	17	5	2	3
Deficiencies of Channel	-	-	2	-	-	-
Bad Weather	-	1	3	-	2	-
Objective Reasons	-	2	3	-	-	-
Others	-	-	1	-	-	-
Total	5	17	46	20	5	3

Table 1.4
NUMBER OF MARITIME ACCIDENTS IN 1994

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	5	6	43	6	13	2
Technical Deficiencies	2	4	2	2	5	1
Deficiencies of Channel	-	-	3	3	-	-
Bad Weather	3	4	4	4	6	-
Objective Reasons	-	2	2	3	-	-
Others	-	7	2	6	1	1
Total	10	23	56	24	25	4

Table 1.5
NUMBER OF MARITIME ACCIDENTS IN 1995

Cause of Accident	Extent of Accident				Human Lives	
	Serious	Heavy	Light	Others	Dead	Hurt
Operational Errors	5	16	15	36	2	-
Technical Deficiencies	2	12	28	42	31	9
Deficiencies of Channel	-	-	-	-	-	-
Bad Weather	-	11	1	12	-	-
Objective Reasons	-	7	23	30	-	1
Total	7	46	67	120	33	10

Chapter 2. Evaluation of Present Situation and Basic Ideas for Improvement

2.1 SAR Organizations and Systems

As mentioned in Chapter 1, Vietnam has no established SAR organizations and systems. Resources such as vessels, aircraft and communications network are far from sufficient. Nevertheless, the actual accidents at sea has been increasing in number and getting complicated along with the development of shipping and the modal change of maritime activities.

It is of urgent necessity for this country to set up an efficient and effective SAR system to prevent accidents in the future and to mitigate damages as little as possible, even if accidents take place.

The best way to cope with the above situation is to establish a unified government organization primarily responsible for maritime safety services among which SAR has the first priority. Typical models in developed countries are the United States Coast Guard (USCG) and Japan Maritime Safety Agency (JMSA). USCG is a military organization and JMSA is a civilian organization, but their duties in the peace time are very similar to each other; that is search and rescue, law enforcement, traffic safety, environmental protection, aids to navigation, etc. In any case, SAR has the first priority. For example, if they get information about a ship in distress while they are engaged in law enforcement activities, they will be sent to the scene of the accident without hesitation.

The chains of command of the above agencies are very simple and firmly established with communications network exclusively used for their own services. Cutters and patrol vessels on alert immediately proceed to the scene without waiting for instructions from RCC. If necessary, RCC will send other rescue ships and aircraft. In any particular case, the RCC will ask other agencies such as Navy of their cooperation, but usually most SAR missions are performed with their own resources efficiently and effectively.

2.2 Improvement of SAR Systems in Vietnam

Very important factors for carrying out SAR activities efficiently and affectively are:

- 1) SAR vessels and aircraft and their supporting facilities;
- 2) Communications network;
- 3) Personnel;
- 4) Chains of Command;
- 5) Consciousness of safety among general public.

As mentioned before, overall SAR system is just at the starting point and accordingly, the above factors are to be established or improved from now on. Each factor will be

touched upon in this report hereafter as concretely as possible. Thus, emphasis should be placed on the Chains of Command.

In order to carry out SAR activities adequately and promptly, the Chains of Command should be made simple as possible. For the purpose, it is necessary to study that the organizations which are to be involved in SAR activities should be unified to form one organization including communication facilities.

As some ideal SAR systems, the examples of USCG and JMSA have been introduced above. However, it is not recommended that Vietnam should take them as their practical models. Political, economic and social circumstances of this country are quite different from those of the above countries. In consideration of these circumstances, it is necessary to set up unified organization as early as possible but step by step. For the time being, it is necessary to make all possible efforts to unify related organizations in so far as SAR activities are concerned.

2.3 The Mass Accidents of Fishing Boats in August 1996

Around 17th of August in 1996, some TVs and newspapers of Japan reported that around 13th and 14th in northern sea of Vietnam there had been a serious accident in which hundreds of fishing boats sank and several hundreds of fishermen were killed and missing.

This disastrous accident at sea must be thoroughly examined as to the cause, rescue activities, investigations, etc. for coming up with preventive measures in the future. Detailed information must be collected and analyzed.

Every possible effort for gathering information has been made to study the above factors, however, very few pieces of information have so far been obtained from the government agencies concerned. Most of the information has been given by mass media such as newspapers and magazines. Regrettably the information also is fragmentary and lacks consistency. No news articles have been clearly explained about the exact date, time, cause, rescue activities, investigation thereafter, future preventive measures and so on.

Some of the related articles are picked up as follows:

Thanh Hoa province, in coastal Central Vietnam, was one of the most devastated areas. During a sudden storm at sea, 290 fishermen were killed and 186 remained missing.

(Vietnam Economic Times, September)

Fishermen Search for Storm Victims

THANH HOA--- Survivors from a devastating whirlwind at sea last week in the small fishing village of Ngu Loc in coastal Thanh Hoa have been heading out to sea hoping to find yet other survivors still drifting at sea. -----

As of Saturday, people in Hai Hau and Xuan Thuy had pulled 57 survivors out of the sea, 30 of whom were seriously injured. Another 174 bodies were recovered.

The whirlwind and associated huge waves and driving rain capsized 30 boats carrying about 100 people fishing for squid about 10 km off Thach Thanh last Wednesday.

But another 600 fishermen and many more boats are unaccounted for.

Ngu Loc was the hardest hit by the whirlwind, according to the chairman of the villages People's Council Nguyen Viet Hoa.

Hoa told a group of Ha Noi journalists who arrived at the village on Saturday, five days after a tidal wave hit the coast, that there was no information about the fate of the 161 fishermen since 17 of 31 boats had been destroyed during the tidal waves. Villagers had just found the bodies of five fishermen who drifted ashore.

The village had sent several teams to comb the coastline and the seas to look for survivors, HOA said.

It was the second time his village suffered great human loss, Hoa said. The first time was 65 years ago when 345 villagers fishing off the coast were killed by a tropical storm.

(Vietnam News, Tuesday, Aug. 20, 1996)

Survivors Speak of their Terror at Sea

FISHERMAN Don Van Thien is one of the few survivors of Typhoon Frankie. He was the only man from his boat with a crew of eight to return home to tiny Minh Loc commune after the storm which has claimed hundreds of lives.----[Typhoon Frankie -- may be mistake?]

No one, says Thien, was given proper warning of the typhoon.

"We did not see any risk because before leaving [port] we listened to the radio. The broadcast warned of the approach of tropical depression of grade six or seven, but for fishermen whose lives depend on the sea, that is not a problem," Thien said.

The weather men gave no indication of what was really in store.

Now 91 people from Hau Loc district, where Thien is from, are confirmed dead. Devastated families there are now waiting as hope fades for another 274 people missing.

Ngo Quy Cap, director of the administrative department of Hau Loc district, says it was the worst disaster to hit the district since a similar storm claimed 334 lives in 1931.

Prime Minister Vo Van Kiet has visited affected areas to give his guidance and Politburo Standing Committee member Nguyen Tan Dung visited Thanh Hoa to inspect the damage and comfort families in their time of sorrow. -----

The storm came so suddenly that some were still sleeping when the first wave hit.

Thien swam for six hours in open water before he was picked up by another vessel.

The coast guard and vessels from surrounding districts have been sent in search of survivors and to recover bodies. "We also asked fishermen in the coastal provinces to the southeast of Hanoi to pick up the dead bodies and bury them," Cap said.

Minh Loc commune Party Chief Nguyen Trong Chien said, "We warned them to prepare life buoys and life jackets but people ignored us because they never think of such disasters, and on board they have large cans of water and oil which they think can help them in bad cases,"-----

Ngu Loc commune Party chief Nguyen Viet Hia, told that 128 boats from his area with about 1,115 crew on board were out fishing when the storm hit. So far about 100 boats carrying 1,024 fishermen are confirmed dead and another 28 boats with 129 fishermen are missing.

"Ngu Loc was the hardest hit among the three communes of Hau Loc district as it has the highest death toll caused by the storm," Hoa said. "Some 91 fishermen aged 15 and 50 are still listed as missing."

Nguyen Van Don, a fishermen from Hau Loc commune, who lost three members of his family in the disaster says there were two reasons that led to the disaster: one was inadequate weather forecasting and the other was that the whirlwind gathered in the place where their boat and others were anchored for fishing.

"The lives of sea fishermen depend on the weather forecasting so the radio should spend more time on this work. Adequate information is most important," Don said.

(Vietnam Investment Review 5, 26 August - 1 September, 1996)

Central Coast Fishermen Warned of Regional Perils

HA NOI - The Government has warned central coast fishermen that atmospheric depression and the attendant torrential rain are as dangerous as tropical storms.

The warning came from yesterday's Ha Noi Conference of Flood and Storm Control.

The conference found that the peculiar terrain of the central coast means fishermen face tidal waves at sea caused by the depressions as well as flash flooding inland virtually without warning.

Fishermen were not accustomed to being as wary of tropical lows as tropical storms, representatives of various ministers told the conference.

People always believed that only tropical storms could cause grave trouble. This old belief should be reviewed following the last low which hit the central coast only hours after it developed just 50 km off the coast, Agriculture and Rural Development Minister Nguyen Cong Tan said.

The latest fatal low atmospheric depression occurred almost a month ago, on August 14, when more than 500 fishermen from Thanh Hoa were caught while fishing for squid off-shore.

Almost 100 fishermen were confirmed killed.

Initial reports put human losses from Storm Frankie in mid-July, that same low depression on August 14, and Storm Niki on August 23 at 290 people dead, 503 injured and 186 missing.

The devastating consequences to the central coast caused by the last three tropical storms and low atmospheric depressions have forced the government to initiate more drastic measures to minimize possible human and material losses.

Human settlements should be removed from flash flood prone areas immediately, while it would become obligatory for fishing vessels to be equipped with telecommunications and life saving buoys before they are allowed to go out fishing, the government said.

(Vietnam News, Wed., 11 Sept., 1996)

Judging from the reported articles above, the following should be taken into consideration before thinking of the establishment of the SAR system.

- Proper weather forecasting , especially local forecasting in consideration of special geographical conditions of the area;

- Improvement of safety consciousness among fishermen and those concerned;
- Compulsory equipment with safety devices;
- Prohibition of operation in bad weather and sea conditions;
- Thorough investigation of accidents for the prevention of similar accidents and adequate SAR activities in the future.

2.4 Opinions and Countermeasures on the Government Side after the Recent Accidents

According to the Vietnam News, MOTC is planning to set up efficient Rescue Network in reflection of the recent accidents. In the idea, they stress the importance of a unified Chain of Command for effective SAR activities. Related articles are as follows:

Sea Losses Prompt New Rescue Network

The growing number of shipping accidents off Vietnam's central coast has forced the Ministry of Transport and Communications to open a new rescue network.

Deputy Minister Bui Van Suong said the network - an attempt to make rescues more efficient - was expected to put in place last week.

The network comprises a national sea rescue center headquartered at VINAMARINE and sea rescue bases - at Hai Phong, Da Nang and Vung Tau.

The national center would have a hot-line to the three bases, each of which would be provided with the necessary facilities for their own rescue missions.

But Suong said the MOTC could not guarantee provision of sufficient equipment for the three bases. He said: "The Ministry will supply as much as it can afford."

Suong also said he was not authorized to ensure national coordination with other ministries in making sea rescues.

Ineffective coordination by the relevant authorities has made sea rescue difficult for the Transport Ministry.

Suong told Vietnam News that the Transport Ministry was not able to mount single-handed rescue missions. But much persuasion of other government agencies was needed if rescue missions were to be successful.

This included coordination by the Navy and the Coastal Patrol.

The Transport Ministry could not make direct contact with naval ships after receiving distress signals but had to communicate via naval command.

This had happened off the central coast in early August and mid-September and had sparked heated debates among rescuers in the Transport Ministry.

Suong said the rescue missions after the Bach Dang 02 sank on August 5 and the Bien Dong 08 on September 18 were thought successful given the limited resources available.

Three seamen were known to be dead and the captain, radio operator and a mechanic from the Bien Dong 08 were missing. But all the remaining 34 crewmen from the doomed ships are thought to have been saved.

But the General Director of the Coastal and River Shipping Corporation, Nguyen Viet Bao, said loss of the Bach Dang 02 was "regrettable." The corporation owned the ship.

He said both civil and military rescuers had arrived too late to save the ship although the crew were rescued.

He attributed the late arrival to obsolete communications equipment used by the rescue teams.

But the Director of the Da Nang Salvage and Tug Boat Company, Nguyen Van Thai, said that it was not the obsolete equipment but the mixed chain of command that failed.----- He supported the determination of the Transport Ministry to have all sea rescue missions coordinated under joint command. He said "Now Vietnam's sea lanes are accessible to all kinds of foreign ships which in turn makes sea rescue operations more feasible.

(Vietnam News, Tue., 1 Oct., 1996)

2.5 Ship Reporting System

The Ship Reporting System is one of the systems which are advised to be set up under the SAR Convention 1979. Under the System, information given from ships such as position and navigation schedule is processed by computers. When a ship is reported to be in distress, other ships navigating in the vicinity are searched out by computer very quickly and ask them to give assistance to the ship in distress, making SAR activities as prompt as possible.

The coastal shipping of Vietnam will become more and more active and a lot of ships of various flags will be navigating on the same routes off the coast of Vietnam in the future. Accordingly, as a means of SAR system, Ship Reporting System will be very effective for SAR activities off the coast.

However, judging from the present situation of SAR systems in Vietnam, it will take pretty long time to establish the system on its own. For the time being, it is advisable for this country to utilize the systems already established by neighboring countries such as SINGREP (Singapore Ship Reporting System) and JASREP (Japanese Ship Reporting System).

After Vietnam has started the system, the combination with foreign Ship Reporting Systems will be more effective for SAR activities because international shipping will also increase.

Detailed advice about the system will be given in the latter part of this report.

2.6 Improvement of Marine Accidents Statistics

Judging from the statistics on maritime accidents in Vietnam, available so far, it seems that there is a shortage of detailed information such as places, causes, rescue procedures of accidents. Therefore, those pieces of information are not sufficient to make right policies for the prevention of accidents and SAR activities in the future. The improvement in generating statistics on maritime accidents is very important to establish adequate SAR system in the future.

It is also important to collect the data on accidents as accurate as possible and make thorough investigations on the causes of accidents, taking the following :

- When any maritime accident occurs, never fail to make investigation thoroughly regardless of the necessity of assistance;
- Contents of investigation must be as detailed as possible as to place and type of accident, type and size of the vessel involved in the accident and so on, and to get all necessary data, make a detailed investigation form to fill in;
- The data obtained must be analyzed and studied from every aspect to make them important materials for the improvement of maritime accident prevention measures and the establishment of SAR systems for the future.

As one simple example, combined collection and analysis of the data about places and types of accidents, and size of ships involved is very important in planning location and types of SAR facilities such as number, size and types of SAR boats.

The Japan Maritime Safety Agency (JMSA) which is the primary organization in Japan responsible for SAR and other maritime safety services, provided statistics on maritime accidents by distance from the coast as follows (The data: Jan. 1 - December 31, 1995 in and around Japan):

Within ports	508 cases
Less than 3 miles	842
3 - 12 miles	219

12 - 50 miles	122
50 - 100 miles	22
100 - 200 miles	8
200 - 500 miles	17
500 -	16

In addition, JMSA combines these data with size of ships involved in the accidents as follows:

- Less than 5 gross tons: 5 - 20 tons; 20 - 100 tons;
- 100- 500 tons; 500 - 1,000 tons; 1,000 - 3,000 tons;
- Over 3,000 tons

It is also important that information be provided for different types of accidents such as collision, grounding, engine trouble, fire, explosion, flooding, capsizing, propeller trouble and missing and for other factors, for example, whether rescued or not, how and who rescued, how communications was kept and what were the results.

The data of the accidents in which human lives were involved have been treated separately in special consideration.

How many and what kinds of SAR resources (vessels, aircraft, communications facilities, etc.) should be deployed in what places has been decided in careful consideration of the above factors. For example, special anti-disaster rescue vessels with chemical fire-fighting capability are deployed at the ports with oil storage and/or refinery facilities where many oil tankers are coming in and going out.

For the safety of shipping in Vietnam, it is also important to understand the situation of vessel traffic at present and in the future. What types of ships usually take or (will take) what shipping routes along the coast of Vietnam, the distance to port is a critical factor.

These data are important not only for the establishment of proper SAR system but also for the construction of aids to navigation and efficient and effective communications network, land to sea and ship to ship connection.

Based the data in Vietnam and in other maritime countries as well, a large percentage of accidents has taken place within ports and near the coast. In Japan as indicated above, nearly 80% of maritime accidents occurred within 3 miles and 90% within 12 miles from the coast.

In the cases of Vietnam, this trend may not be apparent since there are unreported incidents. It is necessary to make the data as concrete and detailed as possible as in the

case of Japan, then the statistics will be more persuasive and illustrative in the planning the maritime safety system.

2.7 Effective Use of Communication Network

The specific means of communication is the most important factor for preventing accidents and SAR activities. Without communications devices, ships in distress cannot ask for help even from ships passing by. Some government officers of local branch offices say, "Under the present circumstances, if ships get in distress in the coastal areas of Vietnam, people on board the ship cannot help but give up in most cases. This will be the case even if they have some communications equipment."

To prevent accident is the first step, but unfortunate incident happens to the ship, SAR missions have to be carried out efficiently and effectively to save lives and properties. For the purpose, effective communications network is indispensable. The network should be completed so as to function immediately at the same time in all terminals. In so far as SAR communications at sea is concerned, it is inadequate. In particular, very few of the Vietnamese fishing boats have communications equipment. The fact is one of the decisive reasons of serious accidents in which many fishing boats have met maritime accidents which are not reported at all.

It is noted that Vietnam is actually planning to establish a comprehensive sea communications network including GMDSS. It is desirable that this system will function efficiently and effectively for SAR activities under an organic combination with SAR systems to be developed in the near future. GMDSS is originally for ocean-going ships, however, it is advisable to introduce the system for the safety of coastal shipping and fishing as well.

2.8 Weather Forecasting System

Vietnam has two government agencies in charge of weather observation and forecasting: National Center for Hydrometeorological Forecasting and the other is the Marine Center. The former is mainly for land areas and the other is for sea areas.

(1) The National Center for Forecasting (Ha Noi) [Only information related to weather forecast]

- 1) Weather Forecast is given in two ways: short forecast between 24 and 48 hours later, and long forecast for 48 hours later.
- 2) The Center has about 100 observatories all over the country but only three observatories (Hai Phong, Da Nang, HICM) have radars with the coverage of 100 - 200 km. They cannot follow detailed movements of typhoons, etc.

- 3) Information can be obtained from WMO and neighboring countries including Japan. Information from Japanese weather satellites is also obtained.
- 4) Weather maps are made at 0430 and 1430 [but not reported by TV and newspapers.]
- 5) The mass accident of fishing boats was due to a big tornado and it was made clear 3 days later. This kind of unusual weather cannot be estimated under the present weather observation system.

(2) The Marine Hydrometeorological Center (Ha Noi)

- 1) This organization is rather a research institute than a weather forecasting center. Emphasis is placed on hydrographic data such as sea and tidal current and density of salt.
- 2) Weather and hydrographic data are presented not only for weather forecast but for other weather-affected services such as the construction of ports and harbors.
- 3) 16 observatories along the coast of Vietnam send data to 3 centers (Ha Noi, Da Nang, HCM) every 10 days and every one hour in case of typhoons.
- 4) In addition to the data from observatories, information from navigating ships is also inputted in computer database.
- 5) Necessary weather data are sent to VISHIPEL (Vietnam Ship and Electronic Communication Company).
- 6) Weather forecast is announced by means of TV, radio and newspapers.

(3) Some Comments about Weather Forecasting System at Present

Judging from the observation of the facilities and information obtained from the officers-in-charge, weather forecasting system (including communications facilities) seem far from sufficient for preventing accidents at sea. This field is not under MOTC but very important to prevent marine accidents, especially those of fishing boats, in the future.

The weather forecasts announced in newspapers are so simple that they do not seem to be useful for effective data to prevent any accident occurrence during bad weather condition. It is also necessary for SAR related organizations to keep in close contact with weather agencies to improve weather forecast systems.

(4) Some Examples of Weather Forecast in Vietnam News

Depression Expected to Cause Coastal Storms

A tropical depression moved southwest yesterday to the Hoang Sa archipelago in the East Sea, expecting to cause heavy rain along coastal regions.

The eye of the tropical depression at 1:00 p.m. was 16.6 degrees northern latitude and 112.3 degrees eastern longitude, about 400 km east-northeast off the Quang Nam - Da Nang coastal area.

The strongest wind velocities measured near the eye of the depression were 50 - 61 km. per hour.

The depression is expected to move west - southwest and southwest at 15 - 20 km per hour over the next 24 hours.

Wind velocity was expected to reach 50 - 61 km per hour in the Hoang Sa islands last night, and along coastal areas from Quang Tri to Binh Dinh provinces today.

The East Sea is likely to be very rough. Heavy downpours should be experienced in coastal provinces from Thua Thien - Hue Binh Dinh.

(Oct. 16, 1996)

Weather Forecast (from 16 to 20 October 1996)

The north: Partly cloudy, no rain. Sunny.

The center and the south: cloudy, scattered light rain. Sunny at times.

- HANOI: Wind: NE 3-5 m/s
Temperature: Mean 26-27°C, Max 32-34°C, Min. 22-24°C
Mean Humidity: 75%
Sunshine: 40-45 hrs
- HUE: Wind: NE 3-5 m/s
Temperature: Mean 27-28°C, Max 31-33°C, Min. 23-25°C
Rainfall: 20-40 mm
Humidity: 78%
Sunshine: 25-35 hrs
- HCM: Wind: NE to E 3-5 m/s
Temperature: Mean, 27-28°C, Max 31-33°C, Min: 23-25°C
Rainfall: 30-50 mm
Humidity: 79%

Sunshine: 20-30 hours

(Information Supplied by Weather Bureau)

Tropical Low Poised to Strike

A tropical low is developing off the central coast and was expected to hit the provinces of Thua Thien - Hue, Quang Nam-Da Nang and Binh Dinh early this morning.

The tropical low, detected about 260 km east-northeast of the coast of Quang Nam-Da Nang yesterday afternoon.

The Central Weather Bureau said it was moving towards shore at about 60 kph.

The bureau warned that the seas off the central coast would be very rough while torrential rain would fall between Quang Binh and Phu Yen late last night and early this morning.

Fishermen were warned against going to sea.

(22 Oct. 1996)

Weather Forecast (Report for 22nd Oct. 1996)

HA NOI: Partly cloudy, sunny
Wind: NE 2-4 m/s
Temperature: Max 29-31°C, Min. 22-24°C
Humidity: 65%

HUE: Mostly cloudy, rains at times
Wind: NW 8-10 m/s
Temperature: Max 26-28°C, Min. 22-24°C
Humidity: 85%

HCM: Mostly cloudy, rain at times
Wind: SW 2-4 m/s
Temperature: Max 28-30°C; Min. 23-25°C
Humidity: 86%

Chapter 3. Targets for the Year 2000

As mentioned in Section 2.6, nearly 90 % of accidents have taken place within 12 miles from the coast of Japan. They are mainly collisions, groundings and engine troubles. It is anticipated that maritime accidents in Vietnam will exhibit similar pattern. According to a report in the Magazine (No. 7, 1996) issued by MOTC, 81% of accidents have occurred within 12 miles from the coast.

To cope up with the situation, in parallel with the procurement of rescue fleet, utilization of navigating vessel in the vicinity of ships in distress will be recommended for the time being in terms of fast and efficient responses.

For the time being, with any adequate SAR system, it is necessary to improve on existing organizations and resources for the purpose.

In some cases, it is advisable to utilize SAR systems of neighboring countries including communications systems. Every effort should be made step by step but steadily.

3.1 Establishment of RCCs (Rescue Coordination Centers)

(1) Function

In accordance with the SAR Convention, for SAR activities, rescue coordination should be performed by RCCs. Planning the SAR System, it is necessary for Vietnam to set up proper RCCs to make SAR chains of command as simple as possible, and to be a member of International SAR network under the Convention.

At least three RCCs should be set up; RCC Hai Phong mainly responsible for northern area, RCC Da Nang mainly for middle area and RCC Vung Tau for southern area.

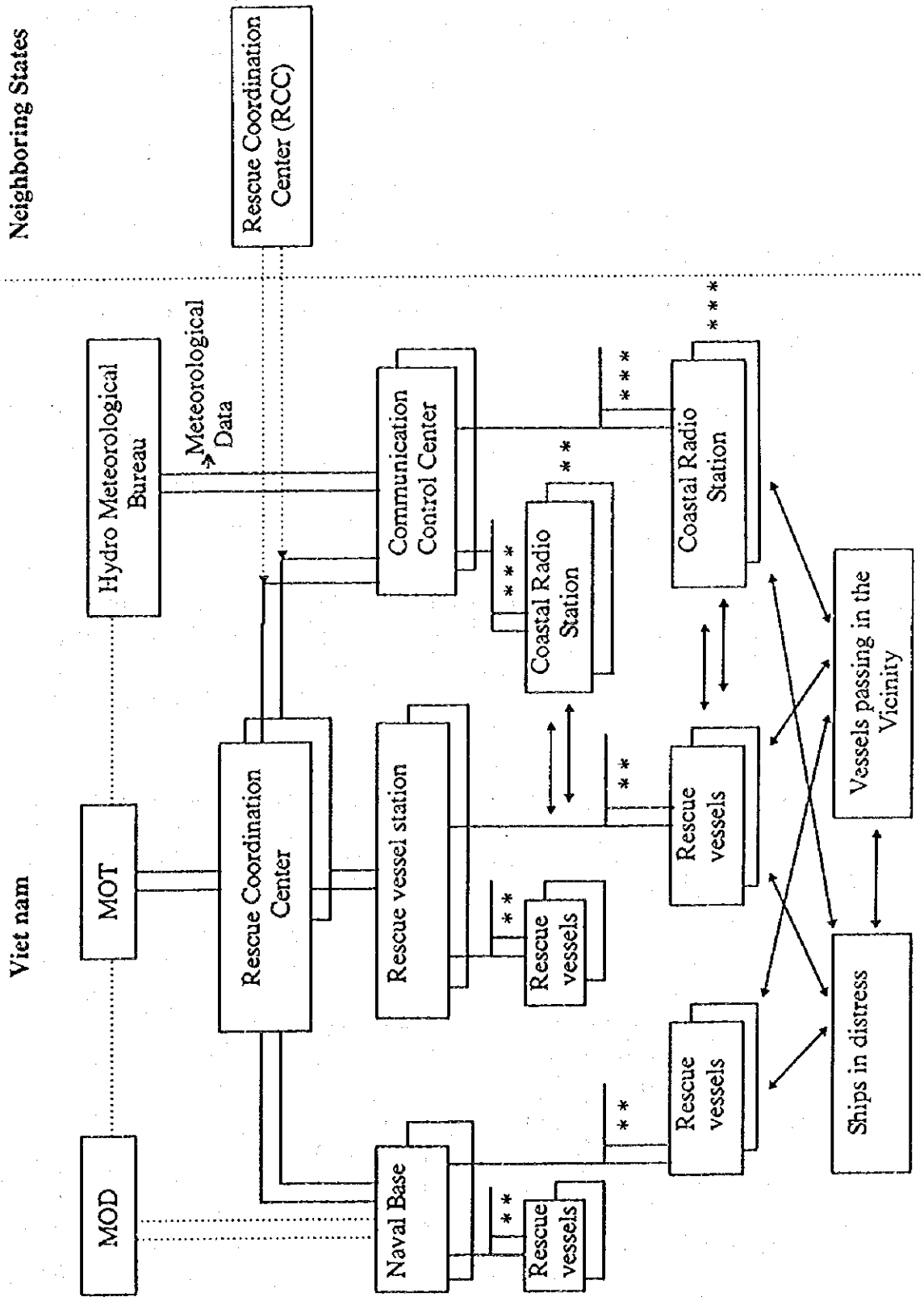
Various information is necessary for RCC to coordinate SAR activities. In order to utilize all information available as early as possible, it is necessary to form Maritime Safety Information (MSI) Networks which connect terminals of RCCs and organizations to be involved in SAR with each other. In the networks, real time maritime safety information will be exchanged among those concerned and in case of SAR, such information must be used and given priority.

The sea communication network now under improvement based on GMDSS will be combined with the above SAR networks. It is also necessary to consider that status and jurisdiction of RCCs should reach government organizations so that RCCs and vessels and aircraft concerned may carry out SAR missions and given priority and undertaken through a simple chain of command.

In addition, it is necessary to establish a system under which urgent SAR information such as distress information will be sent rapidly and accurately to other related organizations.

An example of SAR Coordination Network is shown in Figure 3.1.

Figure 3.1
 AN EXAMPLE OF SAR COORDINATION NETWORK



(2) Implementation

RCCs in Hai Phong and Vung Tau should be placed in the buildings of VMS Hai Phong and VMS Vung Tau or in the buildings of the Port Authorities which will carry out RCC duties. In the case of Da Nang, the RCC should be housed in the building of the Port Authority.

These RCCs will be connected with corresponding coastal radio stations: Hai Phong, Da Nang and Vung Tau. These coastal radio stations will be equipped with GMDSS facilities by the Year 2000. Accordingly, these RCCs will be able to use GMDSS for search and rescue. Connecting lines between each RCC and each corresponding Radio Station will be provided by DGPT (Department General of Post and Telecommunications).

So if everything goes along well with the above plan, the cost for RCCs will be saved only for some small works in taking necessary lines into buildings and some office furnitures. All the cost for these three RCCs will not be more than USD 100,000.

3.2 Procurement of Rescue Craft

Small rescue craft (about 80 gross tons) should be newly stationed at the ports near the sea area where vessel traffic is busy and accidents have occurred frequently. When there are no accidents, these craft will be engaged in the routine works of maritime safety services such as operation and maintenance of lighted buoys and other aids to navigation.

An adequate model for the above purposes can be shown below. This type of craft has been mainly used for maintenance of aids to navigation but is also designed for search and rescue on rough seas. These craft should be mainly used for saving lives within 30 miles from the coast.

1) Main Specifications:

Material of Hull:	High tension steel
Navigation Area:	Coastal
Gross Tonnage:	75 tons
LxBxD:	23.0 x 6.0 x 2.8m
Main Engines:	Diesel 540PS x 2 units
Speed:	14 knots

2) Other Characteristics

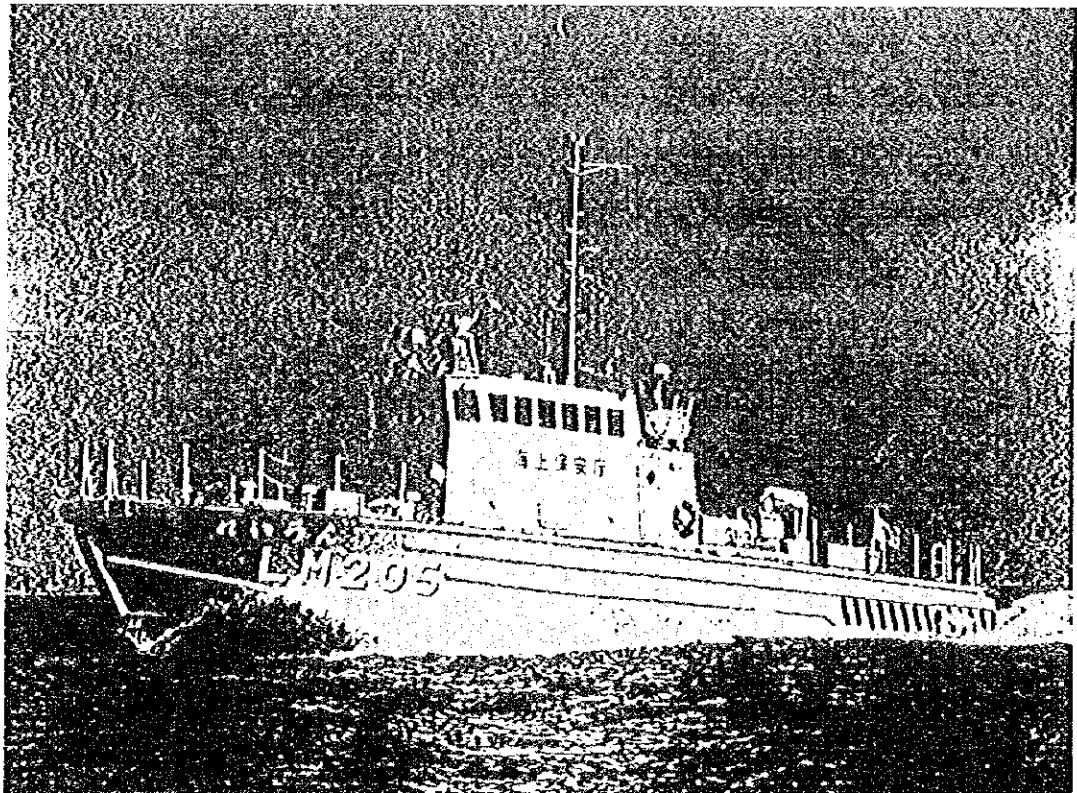
- The engines are made by General Motors and parts are available any place in the world.

- As this type is made for the maintenance of aids to navigation, every piece of information is provided.
- Fire-fighting guns can be installed on the bow.
- The speed can be increased up to 20 knots by increasing the power of engines.
- Stability is very good (80 degrees).
- Construction cost is about 3 million USD for each unit.

In order to support those rescue craft, land stations with personnel and SAR communications terminals should be placed.

In consideration of the location of RCCs to be placed as mentioned in Section 3.1, supporting facilities of the ports and aids to navigation bases, until the year 2000, the craft of this type are advised to be stationed three each at Hai Phong and Vung Tau and two at Da Nang

Picture



3.3 Establishment of Means of Communications

As a means of sending maritime safety information (MSI), NAVTEX system, and as a means of SAR communications between rescue craft, communications network should be established based on GMDSS.

VISHIPEL's plan to set up GMDSS land facilities except for satellite system will be realized by the year 2000. The system should be utilized for SAR activities as early as possible. RCCs and rescue craft above must be incorporated into VISHIPEL's GMDSS network.

Not only ocean-going vessels but also ships engaged in coastal shipping should be equipped with proper GMDSS devices such as EPIRBs and NAVTEX receivers regardless of the regulations under SOLAS Convention.

According to VISHIPEL, ocean-going ships under SOLAS Convention will be equipped with GMDSS devices until 1999, but at present they have no plan to equip domestic ships. But they should be equipped with at least NAVTEX receivers and 406 Mhz EPIRBs as early as possible. The cheapest NAVTEX receiver will cost USD 3,200 and EPIRB USD 4,100 for each unit.

3.4 Training of SAR Personnel

The following must be conducted as early as possible:

- Training of SAR officers in SAR developed countries;
- Dispatch of SAR experts from the above countries;
- Training of instructors in the field of SAR.