

# DRILLING LOG

## THE BASIC STUDY ON THE PROJECT FOR DEVELOPMENT VESSEL TRAFFIC SERVICE IN MALACCA AND SINGAPORE STRAITS IN THE REPUBLIC OF INDONESIA

Project : PCI		Coordinate x : 214.601,2663		Drilling Machine : YSO 1												
Location : Tanjung Parit		y : 168.719,2605		Bor Master : Samsuhadi												
Number of bor hole : BH. 1		Sheet Number : 1/2		Description by : Samsuhadi												
GWL elevation : + 2.090 m.		Day/Date : (25/08-02/09) 2007		Check by : Irawan												
Elevation from MSL (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of Blow	SPT - N Graphic						Remarks		
				N1	N2	N3		0	10	20	30	40	50		60	
+ 4.549	0.00															
+ 3.549	- 1.00		<i>Silty clay, organic matter, brownish grey.</i>	1 / 15	1 / 15	1 / 15	2 / 30		2							SPT-1 : (1.00-1.45)
+ 2.549	- 2.00			1 / 15	1 / 15	1 / 15	2 / 30		2							SPT-2 : (2.00-2.45)
+ 1.549	- 3.00			1 / 15	1 / 15	1 / 15	2 / 30		2							SPT-3 : (3.00-3.45)
+ 0.549	- 4.00		Undisturbed sample (4.50-5.00 m.)	1 / 15	1 / 15	2 / 15	3 / 30		3							SPT-4 : (4.00-4.45)
- 0.451	- 5.00		<i>Clay, grey.</i>	1 / 15	1 / 15	1 / 15	2 / 30		2							SPT-5 : (5.00-5.45)
- 1.451	- 6.00			1 / 15	1 / 15	2 / 15	3 / 30		3							SPT-6 : (6.00-6.45)
- 2.451	- 7.00			1 / 15	1 / 15	1 / 15	2 / 30		2							SPT-8 : (8.00-8.45)
- 3.451	- 8.00		Undisturbed sample (9.50-10.00 m.)	1 / 15	1 / 15	2 / 15	3 / 30		3							SPT-9 : (9.00-9.45)
- 4.451	- 9.00			1 / 15	2 / 15	1 / 15	3 / 30		3							SPT-10 : (10.00-10.45)
- 5.451	- 10.00			1 / 15	2 / 15	2 / 15	4 / 30		4							SPT-11 : (11.00-11.45)
- 6.451	- 11.00		<i>Clay, grey.</i>	1 / 15	2 / 15	2 / 15	4 / 30		4							SPT-12 : (12.00-12.45)
- 7.451	- 12.00			1 / 15	2 / 15	2 / 15	4 / 30		4							SPT-13 : (13.00-13.45)
- 8.451	- 13.00			1 / 15	2 / 15	3 / 15	5 / 30		5							SPT-14 : (14.00-14.45)
- 9.451	- 14.00		Undisturbed sample (14.50-15.00 m.)	1 / 15	2 / 15	3 / 15	5 / 30		4							SPT-15 : (15.00-15.45)
- 10.451	- 15.00			2 / 15	2 / 15	2 / 15	4 / 30		4							SPT-16 : (16.00-16.45)
- 11.451	- 16.00			2 / 15	2 / 15	2 / 15	4 / 30		4							SPT-17 : (17.00-17.45)
- 12.451	- 17.00		<i>Clay, grey.</i>	2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-18 : (18.00-18.45)
- 13.451	- 18.00			1 / 15	2 / 15	2 / 15	4 / 30		4							SPT-19 : (19.00-19.45)
- 14.451	- 19.00			2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-20 : (20.00-20.45)
- 15.451	- 20.00		Undisturbed sample (19.50-20.00 m.)	2 / 15	2 / 15	2 / 15	4 / 30		4							SPT-21 : (21.00-21.45)
- 16.451	- 21.00			2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-22 : (22.00-22.45)
- 17.451	- 22.00			2 / 15	3 / 15	3 / 15	6 / 30		6							SPT-23 : (23.00-23.45)
- 18.451	- 23.00		<i>Clay, grey.</i>	3 / 15	3 / 15	2 / 15	5 / 30		5							SPT-24 : (24.00-24.45)
- 19.451	- 24.00			2 / 15	3 / 15	3 / 15	6 / 30		6							SPT-25 : (25.00-25.45)
- 20.451	- 25.00			2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-26 : (26.00-26.45)
- 21.451	- 26.00		Undisturbed sample (24.50-25.00 m.)	2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-27 : (27.00-27.45)
- 22.451	- 27.00			2 / 15	2 / 15	2 / 15	4 / 30		4							SPT-28 : (28.00-28.45)
- 23.451	- 28.00			2 / 15	2 / 15	3 / 15	5 / 30		5							SPT-29 : (29.00-29.45)
- 24.451	- 29.00			2 / 15	3 / 15	3 / 15	6 / 30		6							SPT-30 : (30.00-30.45)
- 25.451	- 30.00			2 / 15	2 / 15	3 / 15	5 / 30		5							

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Project : PCI	Coordinate x : 214.601,2663	Drilling Machine : YSO 1
Location : Tanjung Parit	Coordinate y : 168.719,2605	Bor Master : Samsuhadi
Number of bor hole : BH. 1	Sheet Number : 2/2	Description by : Samsuhadi
GWL elevation : + 2.09 m.	Day/Date : (25/08-02/09) 2007	Check by : Irawan

Elevation from MSL (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of Blow	SPT - N Graphic						Remarks
				N1	N2	N3		0	10	20	30	40	50	
-25.451	-30.00	30	Clay, grey.	2 / 15	2 / 15	3 / 15	5 / 30	5						SPT-30 : (30.00-30.45)
-26.451	-31.00	31		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-31 : (31.00-31.45)
-27.451	-32.00	32		2 / 15	2 / 15	3 / 15	5 / 30	5						SPT-32 : (32.00-32.45)
-28.451	-33.00	33		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-33 : (33.00-33.45)
-29.451	-34.00	34		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-34 : (34.00-34.45)
-30.451	-35.00	35		2 / 15	2 / 15	3 / 15	5 / 30	5						SPT-35 : (35.00-35.45)
-31.451	-36.00	36		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-36 : (36.00-36.45)
-32.451	-37.00	37		2 / 15	2 / 15	3 / 15	5 / 30	5						SPT-37 : (37.00-37.45)
-33.451	-38.00	38		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-38 : (38.00-38.45)
-34.451	-39.00	39		2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-39 : (39.00-39.45)
-35.451	-40.00	40	Clay, grey.	2 / 15	3 / 15	3 / 15	6 / 30	6						SPT-40 : (40.00-40.45)
-36.451	-41.00	40		2 / 15	2 / 15	4 / 15	6 / 30	6						SPT-41 : (41.00-41.45)
-37.451	-42.00	40		2 / 15	2 / 15	7 / 15	9 / 30	9						SPT-42 : (42.00-42.45)
-38.451	-43.00	40		2 / 15	3 / 15	2 / 15	5 / 30	5						SPT-43 : (43.00-43.45)
-39.451	-44.00	40		2 / 15	4 / 15	4 / 15	8 / 30	8						SPT-44 : (44.00-44.45)
-40.451	-45.00	40		8 / 15	16 / 15	19 / 15	35 / 30	35						SPT-45 : (45.00-45.45)
-41.451	-46.00	40		6 / 15	13 / 15	19 / 15	32 / 30	32						SPT-46 : (46.00-46.45)
-42.451	-47.00	40		7 / 15	17 / 15	21 / 15	38 / 30	38						SPT-47 : (47.00-47.45)
-43.451	-48.00	40		7 / 15	15 / 15	19 / 15	34 / 30	34						SPT-48 : (48.00-48.45)
-44.451	-49.00	40		8 / 15	18 / 15	19 / 15	37 / 30	37						SPT-49 : (49.00-49.45)
-45.451	-50.00	40	8 / 15	16 / 15	19 / 15	35 / 30	35						SPT-50 : (50.00-50.45)	

 UDS Sample	 SPT Test	 Clay	 Sand	 Shell fragment/Organic matter
 DS Sample		 Silt	 Gravel	 Andesit rock

# DRILLING LOG

THE IMPLEMENTATION REVIEW STUDY ON THE PROJECT FOR ENHANCEMENT OF VESSEL TRAFFIC SYSTEM  
IN MALACCA AND SINGAPORE STRAITS IN THE REPUBLIC OF INDONESIA

Project : ORI CONSUL		Coordinate x : 820.702,490		Drilling Machine : YSO 1											
Location : SEPAHAT		Coordinate y : 9.827.789,899		Bor Master : Samsuhadi											
Number of bor hole : DH. 1		Sheet Number : 1/3		Description by : Samsuhadi											
GWL elevation : + 2.50 m		Day/Date : (10/11-14/11) 2008		Check by : Irawan											
Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of Blow	SPT - N Graphic						Remarks	
				N1	N2	N3		0	10	20	30	40	50		60
+ 2.300	0.00							0							
+ 1.300	-1.00		<b>Clay, very soft, grey</b>	1 / 45	-	-	1 / 30	4							SPT-1 : (1.00-1.45) m
+ 0.300	-2.00		Undisturbed sample (1.45-2.00 m.)	1 / 45	-	-	1 / 30	4							SPT-2 : (2.00-2.45) m
- 0.700	-3.00		Undisturbed sample (3.45-4.00 m.)	1 / 45	-	-	1 / 30	4							SPT-3 : (3.00-3.45) m
- 1.700	-4.00		Undisturbed sample (5.45-6.00 m.)	1 / 45	-	-	1 / 30	4							SPT-4 : (4.00-4.45) m
- 2.700	-5.00		Undisturbed sample (5.45-6.00 m.)	1 / 45	-	-	1 / 15	4							SPT-5 : (5.00-5.45) m
- 3.700	-6.00		Undisturbed sample (7.45-8.00 m.)	1 / 45	-	-	1 / 30	4							SPT-6 : (6.00-6.45) m
- 4.700	-7.00		Undisturbed sample (7.45-8.00 m.)	1 / 45	-	-	1 / 30	4							SPT-7 : (7.00-7.45) m
- 5.700	-8.00		Undisturbed sample (9.45-10.00 m.)	1 / 45	-	-	1 / 30	4							SPT-8 : (8.00-8.45) m
- 6.700	-9.00		Undisturbed sample (9.45-10.00 m.)	1 / 45	-	-	1 / 30	4							SPT-9 : (9.00-9.45) m
- 7.700	-10.00		Undisturbed sample (11.45-12.00 m.)	1 / 45	-	-	1 / 30	4							SPT-10 : (10.00-10.45) m
- 8.700	-11.00		Undisturbed sample (11.45-12.00 m.)	1 / 45	-	-	1 / 30	4							SPT-11 : (11.00-11.45) m
- 9.700	-12.00		Undisturbed sample (11.45-12.00 m.)	1 / 45	-	-	1 / 30	4							SPT-12 : (12.00-12.45) m
- 10.700	-13.00			1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-13 : (13.00-13.45) m
- 11.700	-14.00			1 / 15	2 / 15	1 / 15	3 / 30	3							SPT-14 : (14.00-14.45) m
- 12.700	-15.00			1 / 15	1 / 15	1 / 15	2 / 30	2							SPT-15 : (15.00-15.45) m
- 13.700	-16.00		<b>Clay, very soft, grey</b>	1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-16 : (16.00-16.45) m
- 14.700	-17.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-17 : (17.00-17.45) m
- 15.700	-18.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-18 : (18.00-18.45) m
- 16.700	-19.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-19 : (19.00-19.45) m
- 17.700	-20.00			1 / 15	2 / 15	1 / 15	3 / 30	3							SPT-20 : (20.00-20.45) m
- 18.700	-21.00			1 / 15	1 / 15	1 / 15	2 / 30	2							SPT-21 : (21.00-21.45) m
- 19.700	-22.00			1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-22 : (22.00-22.45) m
- 20.700	-23.00			1 / 15	2 / 15	1 / 15	3 / 30	3							SPT-23 : (23.00-23.45) m
- 21.700	-24.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-24 : (24.00-24.45) m
- 22.700	-25.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-25 : (25.00-25.45) m
- 23.700	-26.00			1 / 15	1 / 15	1 / 15	2 / 30	2							SPT-26 : (26.00-26.45) m
- 24.700	-27.00			1 / 15	1 / 15	1 / 15	2 / 30	2							SPT-27 : (27.00-27.45) m
- 25.700	-28.00		<b>Clay, very soft, grey</b>	1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-28 : (28.00-28.45) m
- 26.700	-29.00			1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-29 : (29.00-29.45) m
- 27.700	-30.00			1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-30 : (30.00-30.45) m

 UDS Sample	 SPT Test	 Clay	 Sand	 Shell fragment/Organic matter.
 DS Sample		 Silt	 Gravel	 Andesit rock

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IN MALACCA AND SINGAPORE STRAITS IN THE REPUBLIC OF INDONESIA

Project : ORI CONSUL		Coordinate x : 820.702,490		Drilling Machine : YSO 1	
Location : SEPAHAT		Coordinate y : 9.827.789,899		Bor Master : Samsuhadi	
Number of bor hole : DH. 1		Sheet Number : 2/3		Description by : Samsuhadi	
GWL elevation : 2.50 m		Day/Date : (15/11-3/12) 2008		Check by : Irawan	

Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of Blow	SPT - N Graphic						Remarks	
				N1	N2	N3		0	10	20	30	40	50		60
-28.700	-31.00	31	<i>Clay, very soft, grey</i>	1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-31 : (31.00-31.45) m
-29.700	-32.00	32		1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-32 : (32.00-32.45) m
-30.700	-33.00	33		1 / 15	1 / 15	1 / 15	2 / 30	2							SPT-33 : (33.00-33.45) m
-31.700	-34.00	34		1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-34 : (34.00-34.45) m
-32.700	-35.00	35		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-35 : (35.00-35.45) m
-33.700	-36.00	36		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-36 : (36.00-36.45) m
-34.700	-37.00	37		1 / 15	2 / 15	3 / 15	5 / 30	5							SPT-37 : (37.00-37.45) m
-35.700	-38.00	38		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-38 : (38.00-38.45) m
-36.700	-39.00	39		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-39 : (39.00-39.45) m
-37.700	-40.00	40		1 / 15	1 / 15	2 / 15	3 / 45	3							SPT-40 : (40.00-40.45) m
-38.700	-41.00	41		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-41 : (41.00-41.45) m
-39.700	-42.00	42		1 / 15	2 / 15	1 / 15	3 / 30	3							SPT-42 : (42.00-42.45) m
-40.700	-43.00	43		1 / 15	2 / 15	1 / 15	3 / 30	3							SPT-43 : (43.00-43.45) m
-41.700	-44.00	44		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-44 : (44.00-44.45) m
-42.700	-45.00	45		1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-45 : (45.00-45.45) m
-43.700	-46.00	46		1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-46 : (46.00-46.45) m
-44.700	-47.00	47		1 / 15	1 / 15	2 / 15	3 / 30	3							SPT-47 : (47.00-47.45) m
-45.700	-48.00	48		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-48 : (48.00-48.45) m
-46.700	-49.00	49		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-49 : (49.00-49.45) m
-47.700	-50.00	50		1 / 15	2 / 15	2 / 15	4 / 30	4							SPT-50 : (50.00-50.45) m

UDS Sample	SPT Test	Clay	Sand	Shell fragment/Organic matter.
DS Sample		Silt	Gravel	Andesit rock

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Project : ORI CONSUL		Coordinate x : 820.702,490		Drilling Machine : YSO 1	
Location : SEPAHAT		Coordinate y : 9.827.789,899		Bor Master : Samsuhadi	
Number of bor hole : DH. 1		Sheet Number : 3/3		Description by : Samsuhadi	
GWL elevation : 2.50 m		Day/Date : (15/11-3/12) 2008		Check by : Irawan	

Elevation from LWS (m)	Depth from ground level (m)	Bor Profile	Description of Strata	Number of Blow			Sum of Blow	SPT - N Graphic	Remarks
				N1	N2	N3			
-48.700	-51.00		<i>Clay, very soft, grey</i>	1 / 15	2 / 15	2 / 15	4 / 30	4	SPT-51 : (51.00-51.45) m
-49.700	-52.00			1 / 15	2 / 15	2 / 15	4 / 30	4	SPT-52 : (52.00-52.45) m
-50.700	-53.00			1 / 15	2 / 15	2 / 15	4 / 30	4	SPT-53 : (53.00-53.45) m
-51.700	-54.00			1 / 15	2 / 15	1 / 15	3 / 30	3	SPT-54 : (54.00-54.45) m
-52.700	-55.00			1 / 15	2 / 15	2 / 15	4 / 30	4	SPT-55 : (55.00-55.45) m
-53.700	-56.00			1 / 15	2 / 15	3 / 15	5 / 30	5	SPT-56 : (56.00-56.45) m
-54.700	-57.00			1 / 15	2 / 15	2 / 15	4 / 30	4	SPT-57 : (57.00-57.45) m
-55.700	-58.00		<i>Clay, grey</i>	2 / 15	4 / 15	7 / 15	11 / 30	11	SPT-58 : (58.00-58.45) m
-56.700	-59.00			4 / 15	6 / 15	8 / 15	14 / 30	14	SPT-59 : (59.00-59.45) m
-57.700	-60.00			8 / 15	14 / 15	17 / 15	31 / 30	31	SPT-60 : (60.00-60.45) m
-58.700	-61.00		<i>Fine sand, light grey</i>	14 / 15	17 / 15	24 / 15	41 / 30	41	SPT-61 : (61.00-61.45) m
-59.700	-62.00			9 / 15	15 / 15	21 / 15	36 / 30	36	SPT-62 : (62.00-62.45) m
-60.700	-63.00			11 / 15	16 / 15	23 / 15	39 / 30	39	SPT-63 : (63.00-63.45) m
-61.700	-64.00			14 / 15	19 / 15	26 / 15	45 / 30	45	SPT-64 : (64.00-64.45) m
-62.700	-65.00			16 / 15	20 / 15	27 / 15	47 / 30	47	SPT-65 : (65.00-65.45) m
-63.700	-66.00			15 / 15	19 / 15	25 / 15	44 / 30	44	SPT-66 : (66.00-66.45) m
-64.700	-67.00			18 / 15	21 / 15	27 / 15	48 / 30	48	SPT-67 : (67.00-67.45) m
-65.700	-68.00			17 / 15	24 / 15	28 / 15	52 / 30	52	SPT-68 : (68.00-68.45) m
-66.700	-69.00			16 / 15	23 / 15	25 / 15	48 / 30	48	SPT-69 : (69.00-69.45) m
-67.700	-70.00			15 / 15	22 / 15	27 / 15	49 / 30	49	SPT-70 : (70.00-70.45) m

UDS Sample	SPT Test	Clay	Shell fragment/Organic matter.
DS Sample		Silt	Sand

Required Modifications due to Common Use of the Facilities and Equipment of Sea Com (GMDSS) Project and VTS Project

Table A: Selincing

Facilities/Equipment	Current Plan by Sea Com Project	Requirements by VTS Project	Requirements for Common Use	Required Modifications due to Common Use	Remarks
Tower Height	AGL (m)	85m	85m	Tower height to be modified from 50m to 85m AGL (+ 35m)	VTS Project requirements.
	MSL (m)	87m	87m		
Antenna Installation Height	Direction	to Dumai RX	to Dumai RX	Number of antenna to increase from 2 to 4 units (+ 2 units, design loads will increase)	Two (2) units of parabola antenna to be borne by VTS Project are needed for radio communication link between Selincing and Sepahat. Additional 1 set of communication device is needed for the communication link between Selincing and Sepahat. (Born by VTS Project)
	AGL (m)	49.0m, 44.0m	57m, 47m		
Communication Circuit and Devices	MSL (m)	51.0m, 46.0m	59m, 49m		
	Circuit	AIS by LAN, Voice & SV/Cont Signals of VHF System by E1 (LAN + E1x1)	LAN	Specifications of Sea Com Project are applicable for VTS Project	
Air Conditioner	Multiplex Eq.	1 Set	1 Set	Not Required	
	Router	1 Unit	MUX Unit	Not Required	
Other Devices	1 Unit (Installed by DGST)	1 Unit	1 Unit	Not Required	
	3 Units of VHF Transceiver				
Electrical Devices	SHF Radio (1+1)				
	AIS Base Station (Dual-Transponder)				
Load Consumption	Lighting and socket outlet etc.	Lighting and socket outlet etc.	Lighting and socket outlet etc.	To be modified accordingly.	Load consumption is estimated based on the assumption that the same building will be used for both projects.
	Equipment (kW)	1.1	2.0		
	Building (kW)	1.0	1.0	1.8 kW increase	
Engine Generator	Total Load (kW)	2.1	3.0		
	Single Phase 220V, 5kVA	2 Units	Single Phase 220V, 5kVA	4 Units	To be modified to 7.5 kVA
Buildings	UPS	UPS	UPS	To be modified accordingly.	
	Generator/Equipment Build. (10.0m x 8.0m provided by DGST)	Generator/Equipment Build. (11.0m x 5.0m: tentative)	Generator/Equipment Build. (10.0m x 8.0m)	Not Required	The planned area by Sea Com Project is 30m x 20m while the area secured for the Project is 20m x 15m.
Fuel Tank	1,800 liters	1,800 liters	1,800 liters	Not Required	

Sea Com Project : Marine Telecommunication System Development (MTSD) Project (Phase IV)  
 VTS Project : The Project for Enhancement of Vessel Traffic System in Malacca and Singapore Straits in Indonesia  
 AGL : Above Ground Level  
 MSL : Mean Sea Level

## Required Modifications due to Common Use of the Facilities and Equipment of Sea Com (GMDSS) Project and VTS Project

**Table B: Dumai**

Facilities/Equipment		Current Plan by Sea Com Project	Requirements by VTS Project	Requirements for Common Use	Required Modifications due to Common Use	Remarks
Tower Height	AGL (m)	50m	50m	50m	Not Required	VTS Project Requirements
	MSL (m)	54m	54m	54m		
Antenna Installation Height	Direction	to Selincing	to Selincing	to Selincing	Number of antenna to increase from 2 to 4 units (+ 2 units, design loads will increase)	Two (2) units of parabola antenna to be borne by the VTS Project are needed for radio communication link between Dumai and Tg. Sair.
	AGL (m)	49.5m, 44.5m	50m, 40m	50m, 40m		
Communication Circuit and Devices	MSL (m)	53.5m, 48.5m	54m, 44m	54m, 44m		Additional 1 set of communication device is needed for the communication link between Dumai and Tg. Sair. (Born by VTS Project)
	Circuit	AIS by LAN, Voice & SV/Cont Signals of VHF System by E1 (LAN + E1x1)	LAN	Specifications of Sea Com Project are applicable for VTS Project	Not Required	
Air Conditioner	Multiplex Eq.	1 Set	1 Set	1 Set		To be installed Individually because room is different.
	Router	1 Unit	1 Unit	1 Unit		
Other Devices		Existing (by DGST)	5 Units Installed in the VTS Sub-Center Build.		Not Required	As necessary for each project.
		GMDSS Devices installed in the existing building	VTS System Installed in the VTS Sub-Center Building		Not Required	
Electrical Devices		Lighting and socket outlet etc.	Lighting and Socket (except existing buildings)		Not Required	As necessary for each project.
	Equipment (kW)	5.8	16.0			
	Building (kW)	14.9	24.0		Not Required	
Engine Generator	Total Load (kW)	20.7	40.0		Not Required	As necessary for each project.
		Replacement of Existing E/G	3 Phase 4W 380/220V 45KVA 1 Unit		Not Required	As necessary for each project.
Buildings		Utilize the existing building	Construction of VTS Sub-Center Building and Generator Building		Not Required	As necessary for each project.
	Fuel Tank	Existing tank is not available (by DGST)	2,000 liters		Not Required	As necessary for each project.

Sea Com Project : Marine Telecommunication System Development (MTSD) Project (Phase IV)  
VTS Project : The Project for Enhancement of Vessel Traffic System in Malacca and Singapore Straits in Indonesia  
AGL : Above Ground Level  
MSL : Mean Sea Level

### **Appendix 5-3 Recommendation for VTS Sensor Stations for Malacca Straits**

#### **(1) Basic Design Study Concept**

For this Project, DGST requested the establishment of radar system in three sites for Singapore Strait and two for Malacca Strait for the proposed VTS system for the surveillance of Malacca and Singapore straits.

The objective of the VTS is to enhance vessel traffic safety by monitoring the movements of small vessels crossing the TSS. Based on the concept of DN, the objective vessels to be monitored for the BD study were established at around 100DWT vessels at radius of surveillance of 15 NM from the VTS Sensor Station.

About five potential sites for the establishment of VTS Sensor Stations was requested by DN, and on this basis, studies were made on the actual conditions of vessel traffic in the vicinity of each site, importance of the sites, natural conditions, conditions of infrastructures, land ownership, availability of multiplex communication links. Based on the study results of the above-mentioned items, the development of the sites was prioritized. The sites in Singapore Strait were given more importance as compared with the sites in Malacca Strait. Therefore, the system was planned in such a way that most of the areas in Singapore Strait will be monitored by installing four VTS Sensor Stations including additional site of Takong Kecil.

On the other hand, among the two proposes sites for VTS Sensor Stations in Malacca Straits, Tanjung Medang was considered more important than Tanjung Parit in view of the following reasons: i) the area between Tanjung Medang and Tanjung Tuan in Malaysia is the narrowest section of the Malacca Strait and ii) DW route for deep draft vessels and VLCCs are in the eastward direction because of the presence of scattered shoals along the TSS. Therefore, the establishment of a VTS Sensor Station in Tanjung Medang will enable the monitoring of the movements of large vessel along the DW Route.

However, explaining the viability of Tanjung Parit pose extreme difficulties in view of the following: i) 100 GT objective vessels crossing the TSS could not be monitored by radar because the area is more than 15 NM from the VTS Sensor Station in Tanjung Parit and, ii) Based on the vessel traffic survey conducted during the BD Study, it was discovered that the number of objective ships larger than 100 GT are few in the vicinity of Tanjung Parit when compared with the entire candidate sites for VTS Sensor Stations.

#### **(2) Plan for this Project**

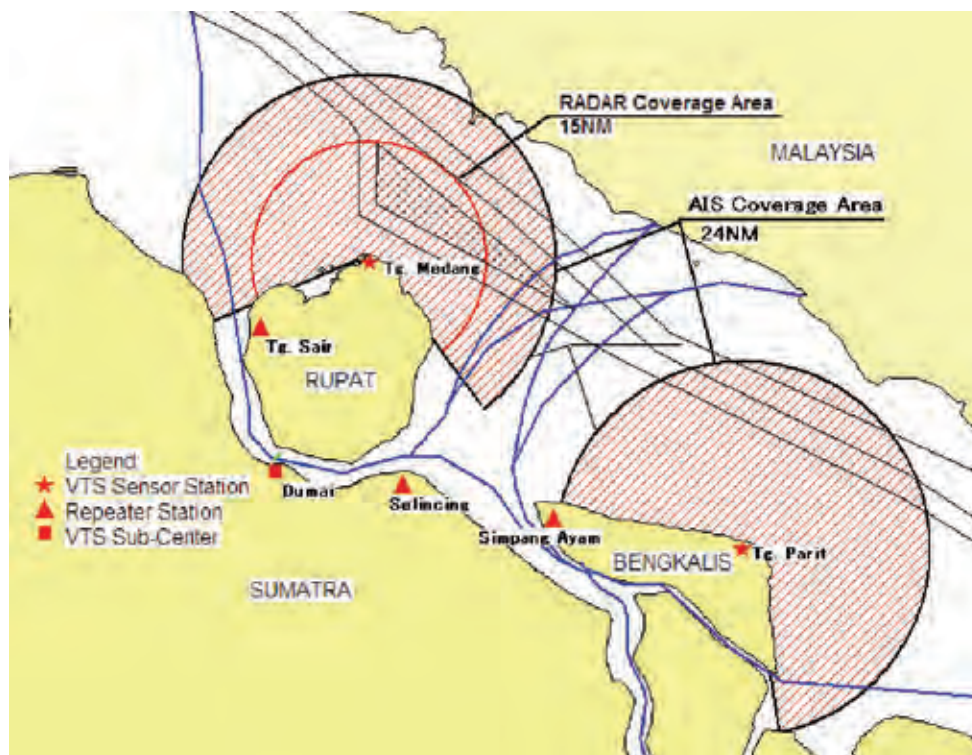
In accordance with the Grant Aid Scheme, the needed land shall be provided by the recipient



country. Land ownership of the sites by DGST however was given priority than technical considerations for the suitability of the sites for surveillance of ship movements by VTS system.

The viability of establishing radar equipment in Tanjung Parit, based on the above-mentioned reasons has obliged the IR Study Team in reiterating to the Indonesian side that while the necessity of vessel monitoring along the Malacca Strait is well understood, there is no point of establishing a radar system at Tanjung Parit considering the initial high investment cost. Thus, it would be more beneficial and advantageous to set up an AIS system at Tanjung Parit for the VTS monitoring of large vessels passing along the TSS. The Indonesian side agreed with the suggestion and ultimately a radar system will not be provided at Tanjung Parit VTS Sensor Station.

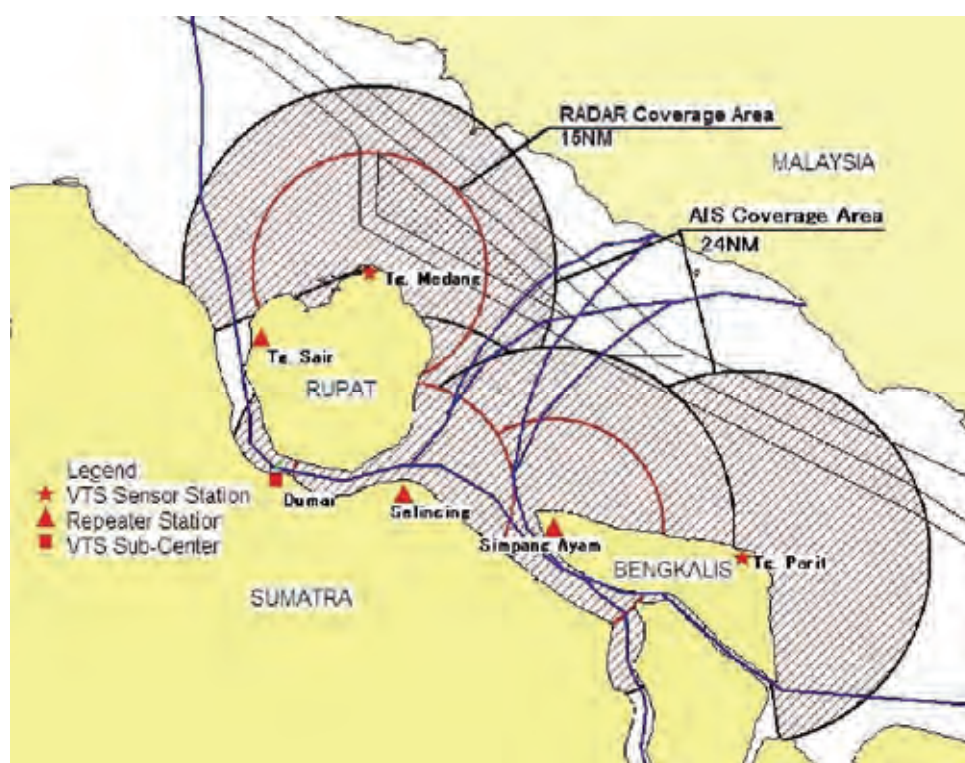
The selected sites for VTS Sensor Stations for this project are shown in Fig. A5-3-1. The Radar and AIS system, CCTV system and other devices to be installed for Tanjung Medang will be for the effective monitoring of ship movements for the enhancement of large vessel traffic safety passing through the TSS. Moreover, monitoring and surveillance of AIS equipped vessel will be possible by use of the AIS system to be installed for Tanjung Parit.



**Fig. A5-3-1 Radius of Surveillance Area by the VTS Sensor Stations**

(3) Recommendation for future development

Dumai port is one of the important ports in Indonesia for import and export of natural resources and there are also many small passenger-ferry calls. In the future, if a VTS Sensor Station (with AIS, VHF, CCTV and radar system) will be installed in Dumai and/or Selincing, the following surveillance will be possible: i) monitoring and controlling of ships movements along the TSS and ships movements to/from Dumai port, ii) navigation safety support for small vessels which are passing in front of Dumai port waters, and the system will also play an effective role in enhancing navigation safety in the vicinity of Dumai port where traffic is congested. Based on this point of view, if VTS Sensor Stations will be established in Selincing and Simpang Ayam, possible areas for surveillance are as shown in Fig. A5-3-2, the area from Tanjung Medang to Tanjung Parit could be monitored by the system. However, as shown in Fig. A5-3-2, to monitor the ships passing through the TSS, a VTS Sensor Station will have to be installed off-shore.



**Fig. A5-3-2 Possible Surveillance Areas by Additional VTS Sensor Stations**

Further detail studies however, are necessary, considering the above-mentioned points for the desirable expansion of the VTS system by Indonesia's own efforts to further enhance navigation safety for Malacca Strait in the future.



## **SOFT COMPONENT IMPLEMENTATION PLAN**

### **1 INTRODUCTION**

#### **1-1 SCOPE**

1. This paper describes the Soft Component plan and implementation schedule of the technical training for the DGST personnel who will be expected to assign to the VTS Center and Radar Sensor Stations. The paper covers the Soft Component objectives; system/equipment fields to be covered in the training; training procedures; as well as implementation schedule.

#### **1-2 OBJECTIVES**

2. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) has developed a model course for VTS operators, namely IALA Model Course V-103/1 Vessel Traffic Services Operators Basic Training, that is intended to provide with specific guidance on the training of VTS operators. For the purpose of the Soft Component and to provide a common base for the adequate VTS operation, the training has specifically been incorporated in the framework of the Soft Component and will be conducted in line with the aforementioned IALA model course.

The objectives of the Soft Component are:

- To provide the basic knowledge of VTS; understanding of system compositions, capability and limitation of functions, and utilization/application of VTS tools.
- To provide the basic knowledge of watchkeeping responsibility and routine/emergency procedures.
- To provide the basic knowledge of shipping traffic, regulations, topography and geography, marine traffic characteristics and nautical knowledge such as marine charts and aids to navigation facilities.
- To provide practical skill of VTS operation and equipment maintenance techniques.

## **2 SOFT COMPONENT IMPLEMENTATION SCHEDULE**

3. The Soft Component implementation plan consists of 2 stages; stage 1 for provision of the theoretical basic VTS study and stage 2 for practical trainings of VTS operation utilizing the equipment installed. The implementation schedule timeline Gantt chart is shown in Table 1. It is anticipated that the Soft Component will be completed by March 15, 2011 and the final report of the Soft Component will be submitted to the organizations concerned.

4. The Soft Component targets at 25 DGST personnel to be selected among those of who will be expected to assign to the VTS Center and Radar Sensor Stations.

### **2-1 STAGE 1: THEORITICAL BASIC VTS STUDY TRAINING**

*(July 19 – October 18, 2010, tentatively scheduled)*

*(Venue: Tanjung Priok Regional Hqs., or DGST Hqs., Jakarta)*

5. The theoretical basic VTS study training will be provided in a form of a lecture and reference notes.

The training shall include aspect on;

- Basic knowledge of VTS, role and responsibility, VTS environment, principle of waterway and traffic, traffic monitoring and organization.
- VTS system/equipment including AIS

### **2-2 STAGE 2: PRACTICAL TRAINING Utilizing the Equipment Installed at Batu Ampar VTS Center**

*(March 5 – March 15, 2011, tentatively scheduled)*

*(Venue: Batu Ampar VTS Center, Batam)*

6. Practical training, like the one similar to the on-the-job-training, will cover the practice of using the basic equipment of VTS including the equipment used for data collection and data analysis, audio and video recording and ship identification.

7. The trainees will also have been trained to use ship identification systems and will be familiar with methods of recording and displaying information.

The training shall cover the following subject areas;

- Radar, AIS systems
- Audio, video and other sensors
- VHF Radio
- Tracking systems
- Equipment performance monitoring system; normal operation expectation and trouble shooting.
- Other trainings necessary for VTS operators to be able to operate efficiently the basic equipment used in VTS Center.

### **3 TRAINING STAFF, TEACHING FACILITITE AND EQUIPMENT**

8. The Japan Aids to Navigation Association (JANA) will provide expertise in this field. Training staff currently planned are three trainers in each of stage1 and stage 2, who are professionally qualified in the task for which training is being conducted.

Training staff assigning to the task are planned as follows:

- For Stage 1 — For theoretical basic study
  - Equipment/Facilities
  - Operation and Management
  - Nautical Knowledge
- For Stage 2 - For practical training
  - Equipment/Facilities
  - Operation and Management
  - Marine Traffic Characters and Shipping Traffic

9. All the teaching materials including a text book and reference materials will be prepared by the training staff. For stage 1 implementation facilities other than an ordinary class room fitted with a blackboard or whiteboard, a computer - assisted

projector and screen are given by DGST.

For implementation of stage 2 DGST will prepare only a computer—assisted projector and screen.

10. Travel expenses, accommodation expenditures and other costs necessary for DGST trainees to participate in the training shall be borne by DGST.

**Table 1 Soft Component Implementation Plan**

	Time Line																					
	2010						2011															
	May	June	July	August	September	October	November	December	January	February	March											
Trainers to be assigned																						
Trainer on Equipment/Facilities																						
Trainer on Operation and Management																						
Trainer on Marine Traffic Characters and Shipping Traffic																						
Trainer on Natuical Knowledge																						



**Table 2 Detailed Sckedule for the Stage 1 (Theoretical Basic VTS Study)**

No. of days	Date	Trainer on Equipment/Facilities	Trainers on Operation and Management	Trainer on Marine Traffic Characteristics
1	July 19,2010		Travel ( Tokyo → Jakarta)	
2	20		Discussion with DGST	
3	21		Preparation for the Training	
4	22	● VTS System I (GpA)	● VTS Trend I (GpB)	
5	23	● " II (GpA)	● " II (GpB)	
6	24			
7	25			
8	26	● VTS System I (GpB)	● VTS Trend I (GpA)	
9	27	● " II (GpB)	● " II (GpA)	
10	28	● Radar (GpA)	● Audio, Video and Other Sensores (GpB)	
11	29	● " (GpB)	● " (GpA)	
12	30	● Tracking System I (GpA)	● VHF Radio and AIS (GpB)	
13	31			
14	August 1			
15	2	● Tracking System I (GpB)	● VHF Radio and AIS (GpA)	
16	3	● Tracking System II (GpA)	● Communication (GpB)	
17	4	● Tracking System II (GpB))	● Communication (GpA)	
18	5	● VTS Environmet I		
19	6			
20	7			
21	8			Travel (Tokyo → Jakarta)
22	9		● VTS Environmet III	● Shipping Traffic, Traffic Characteristics I
23	10		● Communication (GpB)	● " II
24	11	● Case Study (Emergencies and Special Situations I	● Case Study (Emergencies and Special Situations I	● Regulations I
25	12	● " II	● " II	● " II
26	13		Evaluation	● Questions and Answers
27	14			Travel (Jakarta → Tokyo)
28	15			Arrive at Tokyo
29	16		Repot to DGST	
30	17		Travel (Jakarta →Tokyo)	
31	18		Arrive at Tokyo	

Note: Trainees will be divided into two groups. GpA, GpB indicate the trainees Group

Table 3 Detailed Schedule for the Stage 2 (Practical Training)

No. of Days	Date	Trainer on Equipment/Facilities	Trainer on Nautical Knowledge
1	March 5, 2011		Travel to Batam
2	March 6	Preparation for the Training	Travel to Batam
3	7	● Practice on Radar, Tracking System, Audio, Video Sensors, Power Supply	● Marine Traffic Characters and shipping Traffic, Charts and Aids to Navigation
4	8	"	"
5	9	"	"
6	10		● Censor Site Training, Field Survey
7	11		● Questions and Answers, Evaluation
8	12	Travel (From Batam to Jakarta)	Travel to Japan
9	13		Arrive at Tokyo
10	14	Submission of Report to DGST, Travel to Japan	
11	15	Arrive at Tokyo	