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Fig. A.2-7 (4/4) Chantaburi Dredging Center Deployment Plan during the 7th National Five Year Plan with Project (Plan 2)

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Fig. A. 2-8 (1/4) Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

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Fig. A.2-8 (2/4) Trang Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

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Fig. A.2-8 (3/4) Songkhla Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

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Fig. A.2-8 (4/4) Chantaburi Dredging Center Deployment Plan during the 8th National Five Year Plan with Project (Plan 2)

## Notes for Fig. A.2-6, Fig. A.2-7, and Fig. A.2-8

- (1) All notes for Fig. A.2-3, Fig. A.2-4, and Fig. A.2-5 also apply to these figures.
- (2) Average sailing speed of new trailing hopper dredgers is estimated based on their service speed.
- (3) As for the maintenance dredging for Chao Phraya Second Channel, 75 percent of hopper capacity is estimated to be the dredged volume instead of 80 percent, because most of the bottom sediment is composed of very fine soft silt.

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	APPENDIX 3	Material for Mai	ntenance and f	Repair Facilities	
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Table A.3-1 (1/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Unit: Baht Price: In 1985

2	1 ( 4 +	11.		Unit Price			Amount
2		7110	dament cy	Baht	Total	Foreign Currency	Local Currency
	Civil Engineering work				5,423,000	0	5,423,000
	1. Land Acquisition	a 2	34,600		2,460,000		2,460,000
	2. Land Readjustment	7 <sub>8</sub>	21,600	2.6	26,000	0	56,000
	3. Bank Protection	, e	140	4,390	614,000	0	614,000
	4. Crane Foundation	S Cum			423,000	0	423,000
	5. Pavement	~* #	2,320	500	1,160,000	0	1,160,000
	6. Drainage	ន	355	2,000	710,000	0	710,000
7	Building work				18,913,000	0	13,239,000
	1. Machine Shop & Office	۵ ا	2,340	000,9	14,040,000	5,674,000	8,366,000
	2. Attached Facility	wn s			244,000	0	244,000
	3. Dock House	, H	450	6,000	2,700,000	0	2,700,000
	4. Attached Facility	Sum		<b>-</b>	\$3,000	0	53,000
	5. Power Substation Housing	7 <sub>2</sub>	200	000*9	1,200,000	0	1,200,000
	6. Attached Facility	Sum	~		21,000	٥	21,000
	7. Guard House	д 2	16	6,000	000,96	0	000,96
	8. Attached Facility	Sum			000*5	0	4,000
	9. Fence	B	525	1,000	525,000	0	525,000
	10. Gate	Sum			30,000	0	30,000
3	Slipway & related equipment				65,681,000	19,355,000	48,326,000
	1. Earth work						
	(I) Excavation at water	ੀ ਬ 	11,032	396	4,369,000	0	4,369,000
	(2) Finished excavation on land	٤	1,019	270	275,000	0	275,000
	(3) General excavation on land	=	10,583	95	1,005,000	0	1,005,000
	(4) Back-fill at retaining wall	=	5,345	159	850,000	0	850,000

Table A.3-1 (2/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

Quantity Un	Unit Price Baht		Foreign Currency	Local Currency
	6,421	3,211,000		3,211,000
· · ·	1,744	3,401,000		3,401,000
	1,142	4,644,000		4,644,000
	1,189	1,784,000	555,000	1,229,000
	920	2,974,000		2,974,000
· 	476	1,676,000		1,676,000
			•	
	2,886	759,000		759,000
· 	6,818	7,718,000		7,718,000
<del>-</del>	3,488	5,633,000		5,633,000
<del></del>	3,488	1,155,000		1,155,000
	8,720	2,564,000	895,000	1,669,000
	4,534	2,204,000	770,000	1,434,000
		1,455,000		1,455,000
	-	423,000		423,000
<u>.</u>				
		5,630,000	5,630,000	
3,0	1,054,000	2,108,000	2,108,000	
1,55	1,555,000	7,775,000	7,775,000	0
2,0	2,093,000	2,093,000	1,622,000	471,000
· · · · · · · · · · · · · · · · · · ·	21,820	1,309,000	0	1,309,000
	666 000	666.000	0	666,000

Table A.3-1 (3/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

,2	1	1		Unit Price		Amount	
2	mart	777	Quedicacy	Baht	Total	Foreign Currency	Local Currency
4	Crane				9,378,000	9,378,000	O
	1. Overhead crane	Set	~	2,178,000	2,178,000	2,178,000	0
	2. Jib crane	=	F-4	7,200,000	7,200,000	7,200,000	0
S	Utility Equipment & Pipe Lines				2,830,000	2,331,000	000,667
	1. Water supply equipment	Sum	1		555,000	36,000	000,667
	2. Air compresser, vessel, etc.	=	Ħ		000,669	000,669	0
	3. High pressure water pump	:	-		677,000	677,000	۵
	4. Sandblast equipment	=			455,000	455,000	0
	5. Painting equipment	ŧ	H		444,000	444,000	
9	Electric equipment				11,854,000	555,000	11,299,000
	1. Power sub-station						
	(1) Transformer	set	p-4	2,885,000	2,885,000	2,885,000	0
	(2) Switch panel	<u>-</u>	7	2,775,000	2,775,000	2,775,000	0
	2. Machine shop power SW panel	:	2	243,000	486,000	486,000	Ó
	3. Machine shop light SW panel	s 	2	122,000	244,000	244,000	O
	4. Office light switch panel	=	7	110,000	220,000	220,000	0
	5. Dock house light SW panel	:	m	78,000	78,000	78,000	0
	6. Floating dock switch panel	£	7	374,000	748,000	748,000	0
	7. Electric cable & wiring	S CERT			3,530,000	2,975,000	555,000
	8. Lighting fitting	=			888,000	888,000	0.
1~	Vehicles & Work Boat				2,841,000	2,230,000	611,000
,_	1. Forklife	set	7	577,000	577,000	577,000	0
	2. Truck crane	=		1,376,000	1,376,000	1,376,000	0
	3. Small boat	=	н	888,000	888,000	277,000	611,000
J	Warrington 1991 - 1991						

Table A.3-1 (4/4) Detailed Construction Cost Estimate of Proposed Bandon Mechanical Center with Slipway and Yard Facilities

· • •	ļ				-			Unic : Bahc Price: In 1985
	Ş	Item	Unit	Origin	Unit Price		Amount	
				(	Baht	Total	Foreign Currency	Local Currency
	α)	Factory Machines & Installation	•		:	21,499,000	19,834,000	1,665,000
	1	1. Lathe (4m)	set	ы	2,525,000	2,525,000	2,525,000	0
		2. Lathe (lm)	ŧ	-	1,552,000	1,552,000	1,552,000	0
	<del></del> -	3. Radial drilling machine	<b>.</b>	- 1-1	1,990,000	1,990,000	1,990,000	Ö
		4. Willing machine	=	е <b>н</b>	2,613,000	2,613,000	2,613,000	a
			=	-1	492,000	492,000	492,000	0
. :		6. Bench drilling machine	=	<b>-</b> 1	159,000	159,000	159,000	0
		7. Bending roller	=	<u>1</u>	483,000	483,000	783,000	0
			<b>*</b>		6,123,000	6,123,000	6,123,000	0
	-	9. Pipe bender	=	<b>-</b> -1	182,000	182,000	182,000	0
		10. Pipe cutter	£	F-1	325,000	325,000	325,000	0
		11. Tool grinder	=	<u>-</u>	175,000	175,000	175,000	0
<u> </u>		12. Sawing machine	£	<b>н</b>	415,000	415,000	415,000	0
		13. Centering surface table	=	pad.	478,000	478,000	478,000	0
	<u> </u>	14. Honeycomb surface table	=	; pd	000,024	450,000	450,000	0
	-	15. Iron work table	2	, r-1	354,000	354,000	354,000	0
		16. Welding unit & tools	.=	p-4	1,518,000	1,518,000	1,518,000	0
		17. Machine Installation cost	Sum			1,665,000	0	1,665,000
	ο.	Furniture Telephone & Others for Office	S UE			1,276,000	488,000	783,000
ន្ធ		Freight	Sum			8,007,000	8,007,000	0
		Sub Total 1 to 10				147,702,000	78,596,000	69,106,000
Ξ.		Engineering Fee	Sum			20,033,000	18,416,000	1,617,000
						18,416,000	18,416,000	0
		Overseas Airplane Fare Training expense	Sum					
		Travel Expense	:					
	7	2. Boring test cost	Stiff			1,617,000	0	1,617,000
	[2]	Contingency	Sum			2,593,000	О	2,593,000
ل_		Grand Total 1 to 12				170,328,000	97,012,000	73,316,000

Table A.3-2 (1/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

Unit : Baht Price : In 1985

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	6,424,000	0	6,424,000
	Land purchasing	2,497,000	0	2,497,000
	Land readjustment	56,000	. 0	56,000
	Bank protection	1,282,000	0	1,282,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
	Jetty	630,000	0	630,000
2.	Building work	18,913,000	5,674,000	13,239,000
	Machine shop & office	14,284,000	5,674,000	8,610,000
	Dock house	2,753,000	0	2,753,000
	Power substation housing etc.	1,221,000	0	1,221,000
	Guard house	100,000	. 0	100,000
	Fence & gate	555,000	0	555,000
3.	Floating dock and related equipment	70,699,000	70,699,000	0
	Floating dock pontoon	40,677,000	40,677,000	0 ·
	Jib-crane (2 unit)	9,001,000	9,001,000	0
	Mooring winch (4 unit)	5,283,000	5,283,000	o
	Pumps & pipe line	4,151,000	4,151,000	0.
-	Electric Fittings	4,173,000	4,173,000	0
	Blocks	1,310,000	1,310,000	0
		6,104,000	6,104,000	0
4.	Cranes	2,164,000	2,164,000	0
	Overhead crane	2,164,000	2,164,000	0

Table A.3-2 (2/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

			·	-
No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
5.	Utilities, equipment & pipe lines	2,830,000	2,331,000	499,000
	Water supply equipment	555,000	56,000	499,000
	Compressors & air vessel	699,000	699,000	0
	High pressure water pump	677,000	677,000	0
	Sandblasting equipment	455,000	455,000	0
	Painting equipment	444,000	444,000	0
6.	Electric equipment	11,854,000	11,299,000	555,000
	Power substation, distribution panel etc.	7,436,000	7,436,000	0
	Electric cables & wiring	3,530,000	2,975,000	555,000
	Lighting apparatus	888,000	888,000	0
7.	Vehicles	2,841,000	2,230,000	611,000
	Forklift	577,000	577,000	0
	Truck-crane	1,376,000	1,376,000	0
	Small Boat	888,000	277,000	611,000
8.	Factory machines	21,499,000	19,834,000	1,665,000
	Lathe (4m) 1			
	Lathe (1m) 1			
	Radial drilling machine 1			1.
	Milling machine 1			
	Shaping machine 1			
	Bench-drilling machine 1			
	Bending roller 1			
	Oil pressure press 1	19,834,000	19,834,000	0
	Pipe bender 1			
	Pipe cutter 1			
	Tool grinder			
	Sawing machine 1			
	Centering surface table 1			
	Honeycomb surface table 1			
	Iron work table 1			
	Welding units & tools 1			
	Machine installation cost		0	1,665,000
-				

Table A.3-2 (3/3) Detailed Construction Cost Estimate for Proposed Bandon Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
9.	Telephone, furniture, etc. for office	1,276,000	488,000	788,000
10.	Freightage	10,866,000	10,866,000	0
	Sub Total 1 to 10	149,366,000	125,585,000	23,781,000
11.	Engineering fee	19,038,000	18,416,000	622,000
	Remuneration Overseas airplane fare Training expense etc.	18,416,000	18,416,000	0
	Inland transportation expense in Thailand Civil engineering boring cost etc.	622,000	0	622,000
12.	Contingency	321,000		321,000
	Grand Total 1 to 12	168,725,000	144,001,000	24,724,000

Table A.3-3 (1/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

Unit: Baht Price: In 1985

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	18,643,000	0	18,643,000
	Shore protection & reclamation	12,328,000	0	12,328,000
	Land-fill	3,878,000	0	3,878,000
·	Land readjustment	55,000	0.	55,000
:	Crane foundation	423,000	0	423,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
2.	Building Work	18,913,000	5,674,000	13,239,000
	Machine shop & Office	14,284,000	5,674,000	8,610,000
	Dock House	2,753,000	0.	2,753,000
	Power substation housing and so on	1,221,000	0	1,221,000
	Guard house	100,000	0	100,000
	Fence & gate	555,000	0	555,000
3.	Slipway and related equipment	65,681,000	19,355,000	46,326,000
	Civil engineering work of slipway	46,100,000	2,220,000	43,880,000
	Slipway winch	7,738,000	7,738,000	0
	(Hauling & Transferring)			or a
	Cradle equipment	7,775,000	7,775,000	0
	Sheave blocks, wire rope etc.	2,093,000	1,622,000	471,000
	Blocks	1,309,000	0	1,309,000
	Pontoon	666,000	0	666,000
4.	Cranes	9,378,000	9,378,000	0
	Overhead crane	2,178,000	2,178,000	0
	Jib-crane	7,200,000	7,200,000	0

Table A.3-3 (2/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

No.	Description	Estimate Cost	Foreign Gurrency Portion	Local Currency Portion
5.	Utilities equipment & pipe lines	2,830,000	2,331,000	499,000
	Water supply equipment	555,000	56,000	499,000
	Compressors & air vessel	699,000	699,000	0
ν.	High pressure water pump	677,000	677,000	0
	Sandblasting equipment	455,000	455,000	0
	Painting equipment	444,000	444,000	. 0
6.	Electric equipment	11,854,000	11,299,000	555,000
	Power sub-station, distribution panel etc.	7,436,000	7,436,000	0
	Electric cables & Wiring	3,530,000	2,975,000	555,000
	Lighting apparatus	888,000	888,000	0
7.	Vehicles	2,841,000	2,230,000	611,000
	Fork-lift	577,000	577,000	0
	Truck-crane	1,376,000	1,376,000	0
	Small boat	888,000	888,000	0
8.	Factory machines	21,499,000	19,834,000	1,665,000
	Lathe (4m) 1  Lathe (1m) 1  Radial drilling 1  machine			·
	Milling machine 1			·
	Shaping machine 1			
	Bench-drilling 1 machine			
14. s	Bending roller 1			
	Oil pressure press 1	19,834,000	19,834,000	0
	Pipe bender 1			
٠.	Pipe cutter 1			
	Tool grinder 1			
:	Sawing machine 1			
	Centering surface 1 table			

Table A.3-3 (3/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Slipway and Yard Facilities

No.	Description	Estimate Cost	Foreign Currency Portion	Local Currency Portion
	Honeycomb surface 1 table			
	Iron work table l Welding units & tools l			
·	Machine installation cost	1,665,000	0	1,665,000
9.	Telephone, furnitures, etc. for office	1,276,000	488,000	788,000
10.	Freightage	8,007,000	8,007,000	0
	Sub Total 1 to 10	160,922,000	78,596,000	82,326,000
11.	Engineering fee	20,033,000	18,416,000	1,617,000
	Remuneration overseas airplane fare training expense etc.	18,416,000	18,416,000	
	Inland transportation expense in Thailand civil engineering boring cost etc.	1,617,000	<b></b>	1,617,000
12.	Contingency	3,192,000	0	3,192,000
	Grand Total 1 to 12	184,147,000	97,012,000	87,135,000

Table A.3-4 (1/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

Unit: Baht Price: In 1985

			LLICC	THE TAGS
No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
1.	Civil engineering work	18,220,000	0	18,220,000
	Shore protection & reclamation	12,328,000	0	12,328,000
	Land-fill	3,878,000	0	3,878,000
	Land readjustment	55,000	0	55,000
	Pavement	1,249,000	0	1,249,000
	Drainage	710,000	0	710,000
2.	Building work	18,913,000	5,675,000	13,239,000
	Machine shop & office	14,284,000	5,674,000	8,610,000
	Dock house	2,753,000	0	2,753,000
	Power substation housing etc.	1,221,000	0	1,221,000
	Guard house	100,000	0	100,000
	Fence & gate	555,000	0	555,000
3.	Floating dock and its related equipment	70,699,000	70,699,000	0
	Floating dock pontoon	40,677,000	40,677,000	0
	Jib-crane (2 unit)	9,001,000	9,001,000	0
	Mooring winch (4 unit)	5,283,000	5,283,000	0
	Pumps & pipe line	4,151,000	4,151,000	0
	Electric Fittings	4,173,000	4,173,000	0
	Blocks	1,310,000	1,310,000	0
	Pontoon & anchoring equipment	6,104,000	6,104,000	0
4.	Cranes	2,164,000	2,164,000	0
	Overhead crane	2,164,000	2,164,000	0

Table A.3-4 (2/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
5.	Utilities equipment & pipe lines	2,830,000	2,331,000	499,000
	Water supply equipment	555,000	56,000	499,000
.	Compressors & air vessel	699,000	699,000	0
.	High pressure water pump	677,000	677,000	0
	Sandblasting equipment	455,000	455,000	0
	Painting equipment	444,000	444,000	0
6.	Electric equipment	11,854,000	11,299,000	555,000
	Power sub-station distribution panel etc.	7,436,000	7,436,000	0
	Electric cables & wiring	3,530,000	2,975,000	555,000
	Lighting apparatus	888,000	888,000	
7.	Vehicles	2,841,000	2,230,000	611,000
	Fork-lift	577,000	577,000	0
	Truck-crane	1,376,000	1,376,000	0
	Small Boat	888,000	277,000	611,000
8.	Factory machines	21,499,000	19,834,000	1,665,000
	Lathe (4m)			
	Lathe (1m 1			
	Radial drilling machine 1			
	Milling machine 1	•		
	Shaping machine 1			<u> </u>
	Bench-drilling machine 1			
	Bending roller 1	19,834,000	19,834,000	0
	Oil pressure press 1			
	Pipe bender 1			
	Pipe cutter 1			
	Tool grinder 1			
	Sawing machine 1			
	Centering surface table 1			
	Honeycomb surface table 1			
	Iron work table 1			
	Welding unuts & tools 1	J		1 645 000
	Machine installation cost		0	1,665,000

Table A.3-4 (3/3) Detailed Construction Cost Estimate for Proposed Songkhla Mechanical Center with Floating Dock and Yard Facilities

No.	Description	Estimated Cost	Foreign Currency Portion	Local Currency Portion
9.	Telephone, furniture, etc. for office	1,276,000	488,000	788,000
10.	Freightage	10,866,000	10,866,000	0
	Sub Total 1 to 10	161,162,000	125,583,000	35,577,000
11.	Engineering fee	19,038,000	18,416,000	622,000
	Remuneration overseas airplane fare training expense etc.	18,416,000	18,416,000	0
	Inland transportation expense in Thailand Civil engineering boring cost etc.	622,000	0	622,000
12.	Contingency	1,048,000	0	1,048,000
<del>-</del>	Grand Total 1 to 12	181,248,000	144,001,000	37,247,000

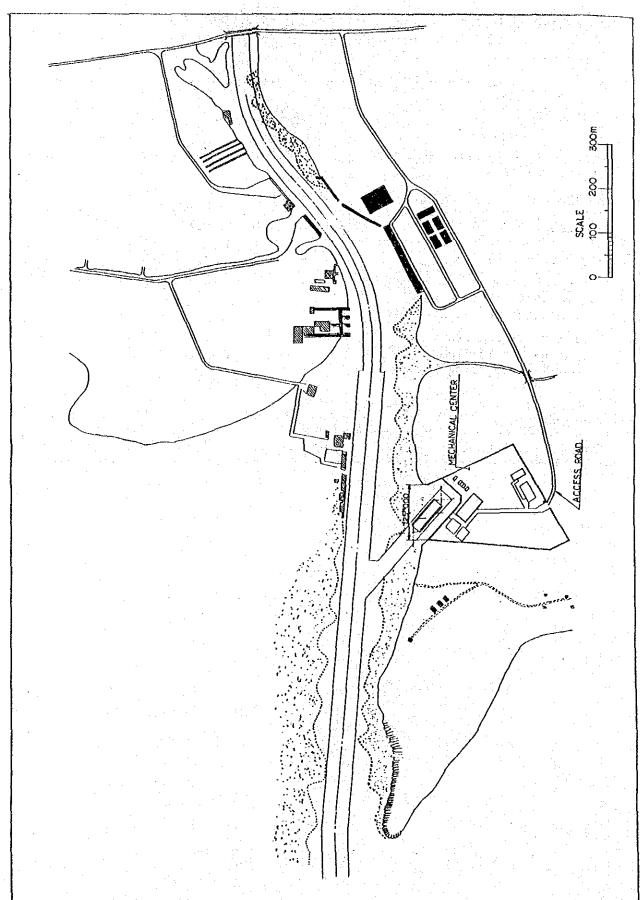


Fig. A-3-1 Site of the Phuket Mechanical Center (Floating Dock)

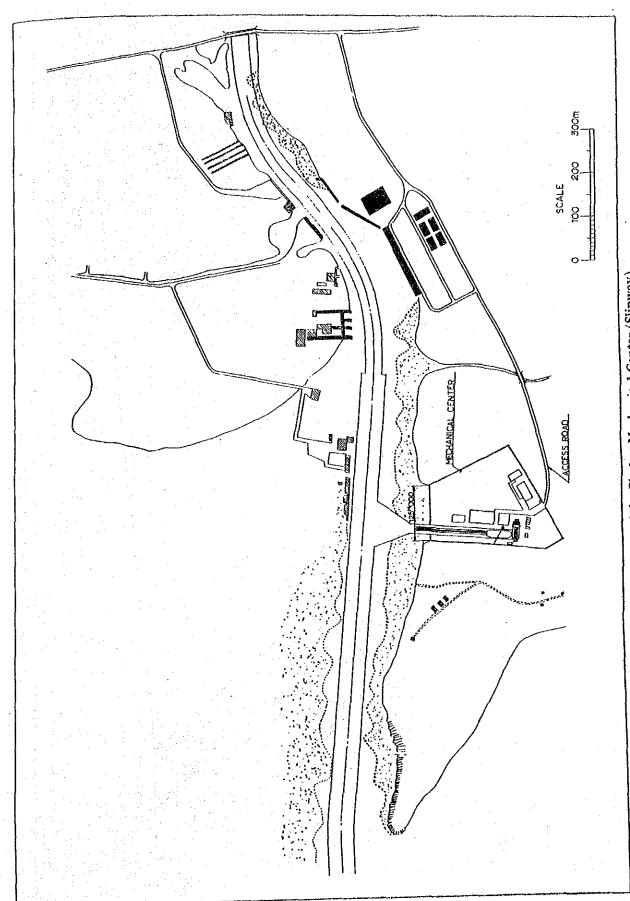
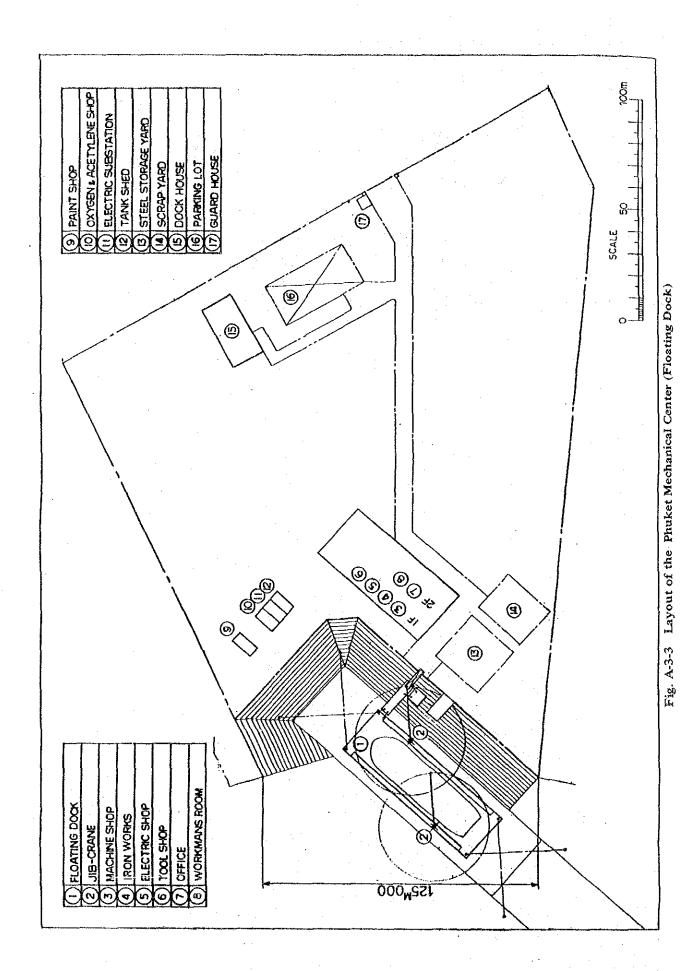
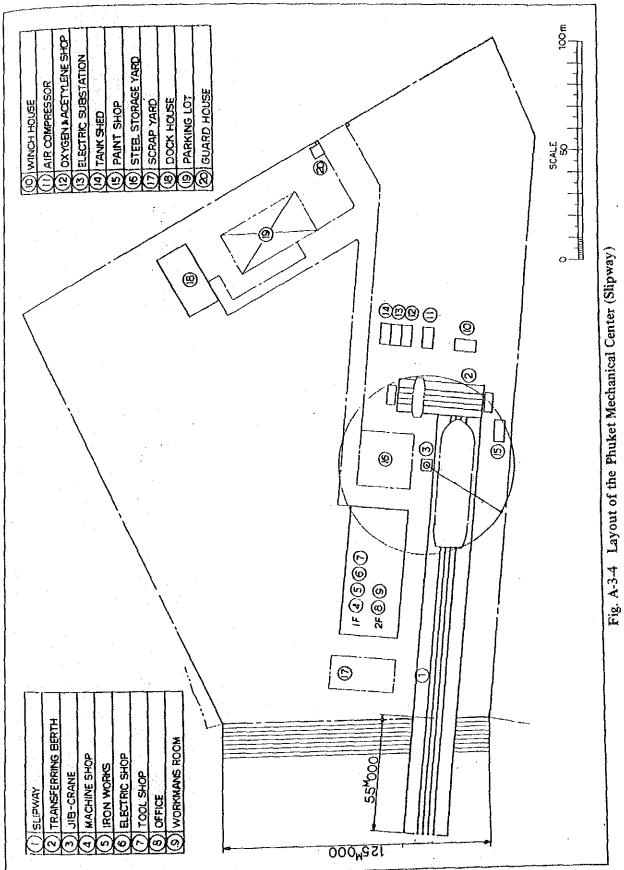


Fig. A-3-2 Site of the Phuket Mechanical Center (Slipway)



A-84



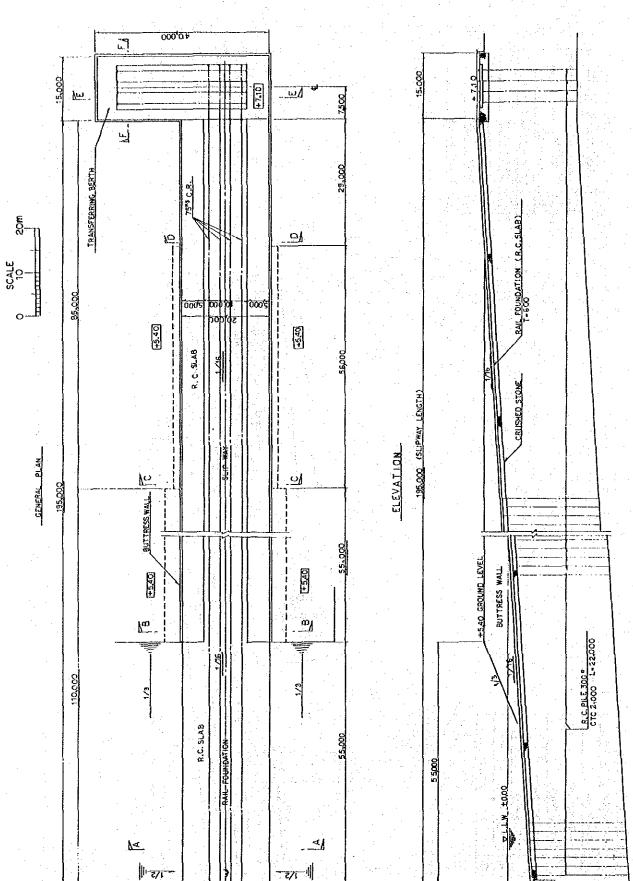


Fig. A-3-5 (1/3) Drawings of Slipway at the Phuket Mechanical Center

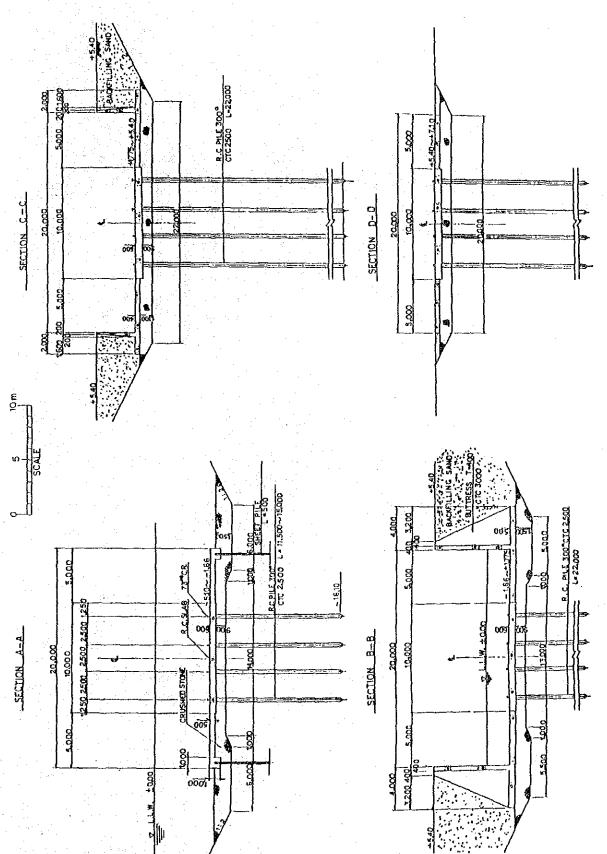


Fig. A-3-5 (2/3) Drawings of Slipway at the Phuket Mechanical Center

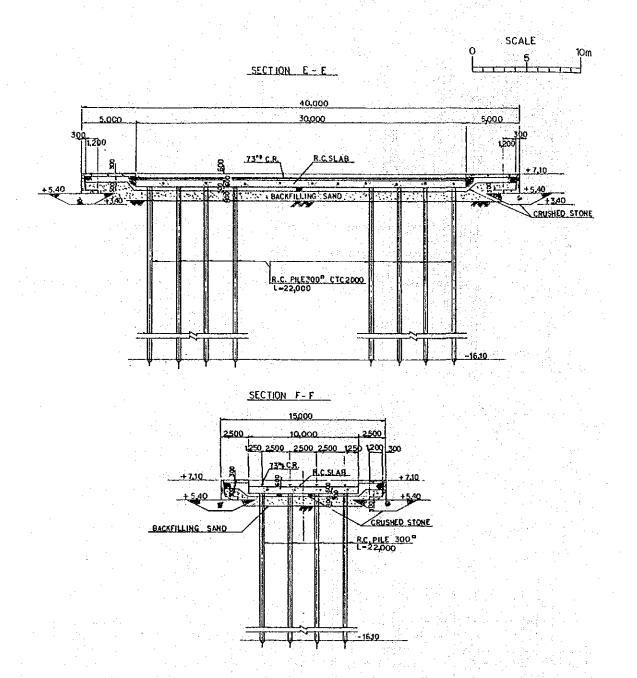


Fig. A-3-5 (3/3) Drawings of Slipway at the Phuket Mechanical Center

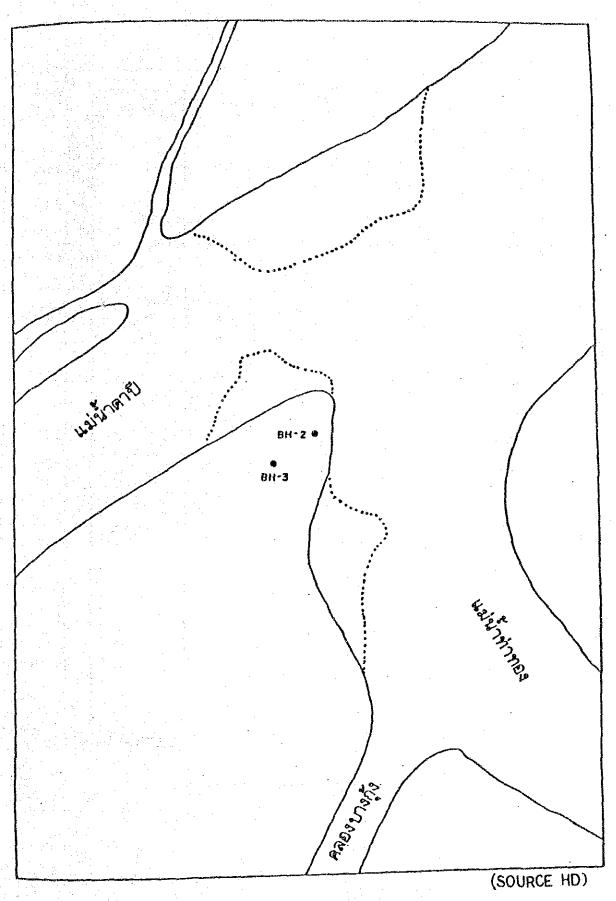


Fig. A-3-6 Boring Position in Bandon

	-					
SCALE	1	LOCATION SURAT THAN	neco	อเกพร	micom me o	III SITU VAIIE
36766	LEGIND	BONING No. BH-2	MOISTIME	1137	STHENGIN	SHEAR STREET
			12 (A) (A) 40	10 5005 12	ho/cin2	02.94.90.98
M PT	7,7,213	GROUND ELEVATION	المتشتشات	المالياتيات	علنلنلد	والمتلانكين
	7	Organic sand.				
	***					
2 *	11.		4.17			
_	· 2. V			* .	• • • • • • • • • • • • • • • • • • • •	34 0.219
_		Soll to medium, greenth gr				
4	** ****				er in e	069 0.219
	7.72	ship CLAY with his of shell,	40	0126	1 0.259	
<b>. .</b> .	ع بند		"/	9	C	100 0.279
-		trace of sporse sand at 2.00	35	0.118	0141	
· -	ke misa.				1/1	1 0.219
. 6	*******		32		H	M
	7:::7:		<b>/</b>		11	. A 0.115
10	نئك		30	0.1	944 1.013	1 \
-, 01		Still to vary stilf- grey-yello			\	139 0.384
		and and to alter or av time	32	<b>9</b>	1.630	,
. 12 - <sup>-</sup>		and brown, silly CLAY, iline			1.5.4	
•	4	binder with pocket of fine	1 20	۹ 🖟	∮ 1.614	
	÷:\$4		1 1 1 1 1	$\lambda$	1	
14		rand and sandy clay of some o	pth. 25	9 19	4,1.394	
	<i>7</i> . ***				> 2.653	
-16	2314		/ 21	fir	2.030	
			/		o nio	- \$4
-	200		15	~~	<.0.9i0	
18	٠٠٠٠	Hard, yellowish fight grey wit	15		5.017	
•	5	some mollied brown, fine to		40		
	4		16		1 2.779	
. 30		medium sandy CLAY.	/ "	75	/	
	عني نيات		1 13	33	2,339	*
- 22 -		Bottom of bore hate 21.45 m		33	*	
			100			
24	]					
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28						
•						,
-						
- 30 -						
-		*;		# J		
	I		L	<u> </u>	SOURCE HD	

Fig. A-3-7 (1/2) Boring Log in Bandon

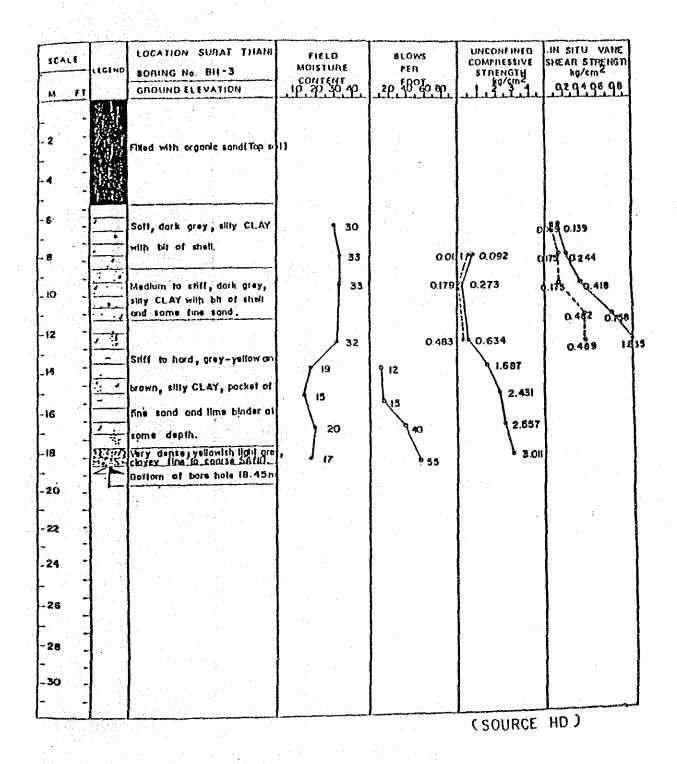


Fig. A-3-7 (2/2) Boring Log in Bandon

ŞCALE	LEGENIO	LOCATION SONGKILA BORING No. BH-2 GROUND ELEVATION	SO 40 EO BO CONTENT WOISTONE LIETO	BLOWS PER FOOT 10 20 30 40	UNCONFINED COMPRESSIVE STRENGTH	
H FT		A	1111111	<u>. I I B I B B B</u> B.		
. 2 -		Sand Filled 3.00 m.				
4	× •	Very soft greenish grey silty clay				
- 6	<u></u>	with bit of shell.	53.12	0	0.09	
8 -	<u></u>	Soft to medium preenish grey silty	75 80	•	0.30	
.10	<del></del>	clay Stiff to very stiff	36 59	B	0.92	
.12	0 0	reddish grey and	1482	18	2.56	
-14		clay ., some	2158	17	1.78	
-16		loterife				
-18	D 23	Silli grey clay,	10 21		1.78	
-20	3-6	Very sliff reddish grey stay, some	14.29	13	4.51	
. 22 ·	4	Bottom of hole 22.00m	24.33	29	4.14	
	\ <u></u>					
-						
•						
•						
· •						
• •						

(SOUNCE HD

Fig. A-3-8 Boring Log in Songhkhla

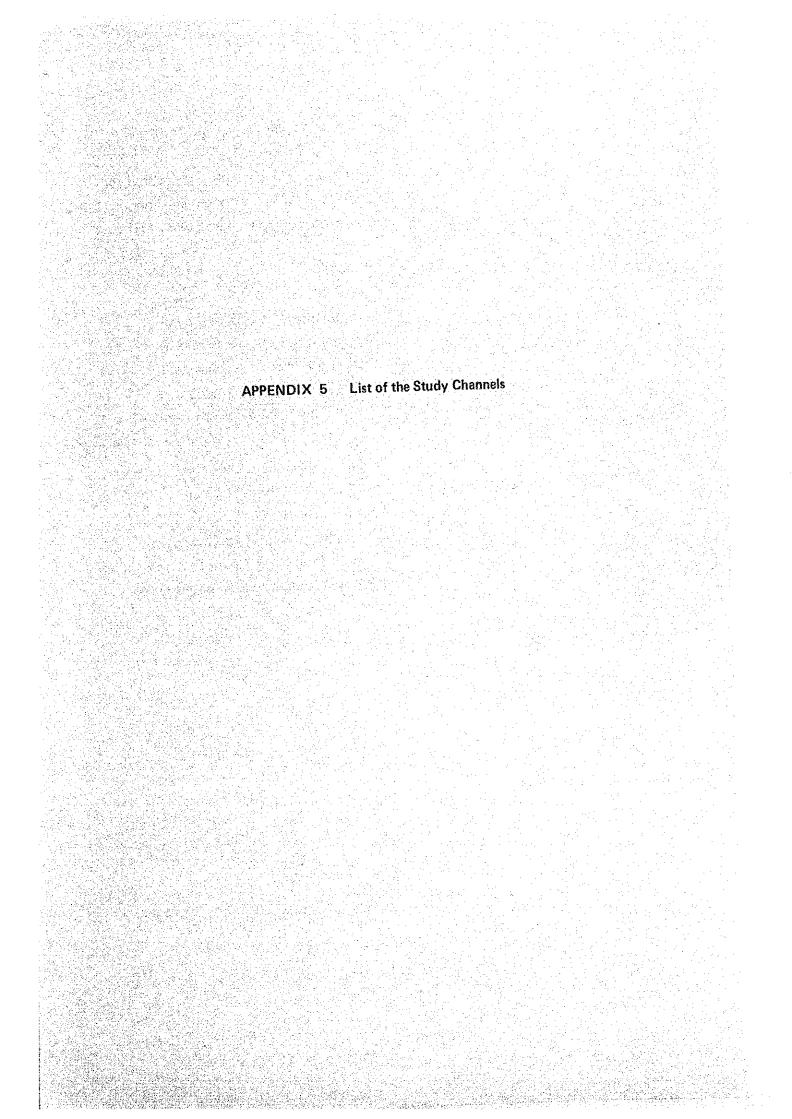
		建设在企业资本的基础设施。 网络几点	
		존화적 하고 하고 하는 것 같아.	
	화화를 하셨는 것이 없는 소문이	흥분수 가는 시스글라일이 되었습니다.	
		연결됐었는데 이 회사 없는 결심하다고 있다.	
		[14] [15] [16] [16] [16] [16] [16] [16] [16]	
		[[송] 회 [[[송] [[송] [[송] [[송] [[송] [[송] [[	역시 발표 시간 발표 보고 수는 없는 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그
		살이 하다 보지 않는 동네 학과 라이 모습다.	
		화를 가득하는 것이 말을 가지 않다.	는 하는 장면 이 사실 문에 살 보고 있습니다. 그런 것 그 이 문제를 받는 것들이 그 것을 하는 것이 되었다.
			사람들 이 물건이 되고 있다.
		물건하다 보급한 제작을 다리 모습을 받다.	경기 회사를 가고살았다. 하면 회사
			경제 10년 14일 회사 10년 1
	D. Halann of	Building Cost for Dredgers	
	APPENDIX 4 Breakdown of		
		되었으면 얼마로 얼마 중에게 되다	하는 마을 하고 한 종합이 되고 있다.
		보다 살림 선물들은 아이를 감독하고 있다.	
		그 말을 보는 날이 보면 하는 경기의	
			(1987년 1일 - 1984년 1987년 - 1984년 1일 개최 1984년 1982년 1982년 1983년 - 1982년
			하는
	경우 경우 그 사람이 있는데 가는데 있다면 되었다.	음악(의 발표) 이 그림 회육으로 결혼	
		1. 1일 : 1일 : 1일 : 1일 : 1일 : 1 : 1 : 1 : 1	
		공통 그리가 보고 있는데 이번 생각이	경로로 하시 않았습니다. 돌고면
		원 교통 한 교실 교회, 교실 중 하는데 심장을 바	
		하루(현유하막이 다음으로 하는 모일).	
		교육의 발하는 경기에서 보고 하고 있는 것이 되었다. 현교 등이 하는 것은 회사이 생각을 보고 있다.	작가 많은 사람이 있다면 함께 Hand
	발표하다. 	보통 살이 있습니다 경기가 되는 것은	
	경찰사 경험 결정 시원 교육이 되는다.		
	강화 경화 이렇게 가는 그 것 같아.	도울병하는 이렇게 하는 하고 있다.	
		용하다는 경기를 가장하는 것으로 보냈다. [설명하는 500년 개요 - 100년 1982년	
		(설명한 일일 사용 나는 그리다 다른	
		기는 살아가게 하는 것이 없는 것이 없어 없다.	
		[[[[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [	
		연극성원회사회에 대한 시간 시간 사람이 되었다면 하는데 되었다.	利力 医二甲酰胺酚 医眼内侧膜 医皮肤病
	왕이라는 경우 전환 경우는 아이들은 경우는 그 나는 이 이 사람이 있다. 본 1985년 - 현대 1987년 중국 기원 1987년	현물을 몰았다. 하는 사람은 이 경험 경기	
		아내 이 지원 및 소프라고 아무를 가는데 가득히 받아요?	
		[발발표] 등 [기계] [기계] [기계] [기계] [기계] [기계] [기계]	
TO SEE SEE SEE			

Table A.4-1 Breakdown of Building Cost for Dredger NH-6

	Weekle Market and The State of	Baht
A.	Materials, Machinery and Equipment	33,465,000
	(1) Hull Construction	5,439,000
	Plate, angle, etc.	3,330,000
	Other material	2,109,000
	(2) Hull Fitting	6,215,000
	Deck machinery and mooring equip.	746,000
	Accommodation facilities	2,859,000
	Life saving, etc.	2,610,000
	(3) Machinery Part	10,798,000
	Main engine and shafting	8,638,000
	Auxiliary engine, etc.	2,160,000
	(4) Electrical Part	1,226,000
	Switchboard and light	491,000
	Other equipment	735,000
	(5) Dredging Part	9,787,000
	Pump, pipe, etc.	4,573,000
	Dredging hold equipment	5,214,000
B.	Labour Cost	23,549,000
	(1) Hull Construction	11,238,000
	(2) Hull Fitting	4,528,000
	(3) Machinery Part	4,576,000
	(4) Electrical Part	1,415,000
	(5) Dredging Part	1,792,000
C.	Indirect Cost	2,961,000
D.	Designing Cost	5,472,000
E.	Direct Expense	2,586,000
NET BUILDING COST		68,033,000
Overhead and Profit		5,996,000
Contingency		5,549,000
(inclusive of transportation charge and cost of additional spare parts)		
Total		79,578,000

Table A. 4-2 Breakdown of Building Cost for Dredger NH-8

	Baht
A. Materials, Machinery and Equipment	81,911,000
(1) Hull Construction	17,558,000
Plate, angle, etc.	9,589,000
Other material	7,969,000
(2) Hull Fitting	17,950,000
Deck machinery and mooring equip.	1,616,000
Accommodation facilities	10,411,000
Life saving, etc.	5,923,000
(3) Machinery Part	19,678,000
Main engine and shafting	14,562,000
Auxiliary engine, etc.	5,116,000
(4) Electrical Part	3,949,000
Switchboard and light	2,093,000
Other equipment	1,856,000
(5) Dredging Part	22,776,000
Pump, pipe, etc.	8,979,000
Dredging hold equipment	13,797,000
B. Labour Cost	54,562,000
(1) Hull Construction	32,364,000
(2) Hull Fitting	7,214,000
(3) Machinery Part	10,877,000
(4) Electrical Part	1,887,000
(5) Dredging Part	2,220,000
C. Indirect Cost	7,112,000
D. Designing Cost	6,659,000
E. Direct Expense	6,493,000
NET BUILDING COST	156,737,000
Overhead and Profit	13,629,000
Contigency (inclusive of transportation charge and cost of additional spare parts)	7,436,000
cost of additional sparo party	
Total	177,802,000



## Appendix 5 List of the Study Channels

The lists are prepared for the 43 study channels on the basis of the review of various sources and the field interviews.

The lists set forth the following items for each of the channels individually.

- I. Characteristics of the channel
- II. Past Record of Dredging
- III. Meteorology, River & Marine Conditions
- IV. Maintenance Volume of Dredging

The information given in the lists is obtained from the following governmental agencies:

- 1 Harbour Department (HD)
- 2 Port Authority of Thailand (PAT)
- 3 Royal Irrigation Department (RID)
- 4 Asian Institute of Technology (AIT)
- 5 Meteorological Department (MD)
- 6 Royal Thai Survey Department (RTSD)

No. 1	Z	ne of the	Name of the Channel: RANONG	NONG			Dredging Center: KANTANG
I. Characteristics of the Channel		II.	II. Past Record of Dredging	f Dredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
1) Dimensions of the Channel	=	Capital Dredging	dging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m <sup>3</sup> p.a.)
Width Depth Length (Km)		Year	Volume (m³)	Length (Km)	Dredger	- Wind	0000
8		FY78	526,148		27	Predominant Monsoon: SW Prevailing Wind: W	
						Max, Wind Spead (Knots): 60 W	2) Silt Rate (m p.a.)
below I.I.W						- Annual Rainfall (mm) 4,275.4	U.3 (Assumption)
							3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	2	2) Maintenance	ce Dredging			2) River Conditions	River: Siltation
300		Year	Volume (m³)	Length (Km)	Dredger	Name of the River Ranone River & Klone Ranone	4) Sumby Source of Channel Choaline
3) Type of the Port		FY 67				- Drainage Area (Km²)	River-borne Sediment, especially, a major
Div. D.		89				186	source of sedimentation is mining waste.
101 150		69				- Mean River Discharge (m <sup>3</sup> /s)	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the		112				- Annual Suspended Sediment Discharge (t)	- River Bed Material
River		72				47,000	Upper Stream: Clayey Silt
Estuary Bar		73					
		74				3) Murine Conditions  — Wave	Midstream: - do -
5) Seasonal Influences		75			•	ailing Wave: W	
The port approaches are well protected.		76		-		Wave Height (m) H = max. 2.0	Lower Reaches: do
		77					
6) Dumping Area		78				– Tidal Level (m)	- Estuary
South side of the channel from the		79					Very Fine to Medium Sand
mouth of the river		80	21,297	1.0	3	MHRW T3.00 (MDWS)	
7) Others		8				•	Coast
The whole length of the channel is		8.2				MLW - MITW +1.20 (MLWS)	6) Others
completely sheltered against the SW	1	83	211,050	1.95	ુ		- The maintenance dredging has been
monsoon.		48				- Current	carried out mainly at the mouth of the
		88	(250,000)	(2.0)	(5.7)		River
		] stands	stands for months worked.	worked.	ramane		<ul> <li>The river shows high suspended solids.</li> </ul>
		,					

Dredging Center: KANTANG	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)	20,000	2) Silt Race (m p.a.)	0.25 (Assumption)	2) Main Course of Charactel Shooting	Silation		4) Supply Source of Channel Shoaling	Vicionile Seminari		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream: Latelitic Fine to Coarse	DURC	Midstream: - do -		Lower Reaches: do		- Estuary	רומפ וכן הסקואפ סקואם		+ Coast	- CD -	o) oners			
ā	III. Meteorology, River & Marine	1) Meteorological Conditions.	- Wind Predominant Monsoon: SW	Prevailing Wind: W Max. Wind Spead (Khots): 45 SW	- Annual Rainfall (mm)	2,337.5	2) River Canditions	- Name of the River	Khlong Phang-nga	- Oralnage Area (Rm*)		- Menn River Discharge (m³/s)	- Annual Suspended Sediment Discharge (t)		2 Musica Conditions	Wave Wave	Prevailing Wave: S	Wave Height (m) H = max, 1.0 . Wave Period (see) T = 6.7	Wave Length (m) L =	Tidal Level (m)		MHW +3.50 (MHWS)	MSL	MLW - MLW		- Current		
Name of the Channel: PHANG-NGA	II. Past Record of Dredging	1) Capital Dredging	Volume Length D (Km)	1.85 202,500* [.8 C.7		*including the special area near the mouth of the river at the request of the local government,	2) Maintenance Dredging	Year Volume Length Dredger		89	69	077	31	72	73	74	75	76	77	78	79	08	81	23	83	88	8.5	( ) stands for months worked. ( ) stands for HD's Dredging Programme.
No. 2	I. Characteristics of the Channel	1) Dimonsions of the Channel	Width Depth Length	-		below LLW	2) Maximum Size of Vessels (GRT)	1,00		3) Type of the Port	River Port		4) Geographical Features at the mouth of the	Rocky Hendland			5) Seasonal Influences	The channel is well protected.		6) Dumping Area	Both banks of the River.		23 Others	Total danced at the second by the second by	the incubility work has occurrently be hecause of occasional gust,			

Dredging Center: KANTANG	IV. Maintenance Volume of Dredging	1) Estimuted Maintenance Volume (m² p.a.)	100,000		2) Silt Rate (m p.a.)	U.4 (Assumption)	:	3) Main Cause of Channel Shoaling	Suration	4) Grander Sources of Chounces Shorting	River-borne Sediment			5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Clayery Sift or silty sand		- Estuary	- op -		- Coast	1 001	or Others	Channel shoaling occurs at the entrance	(by cutters) as well as the inner part (by hoopers).	
	III. Meteorology, River & Marine	1) Meteorological Conditions	pulM	Predominant Monsoon: 5 W Prevailing Wind: W	Max. Wind Spead (Knots): 45 SW	- Annual Rainfall (mm)	7: 77:4		2) River Conditions	- Name of the River	Ċ	- Didinago Alca (Anii )	Man Dinas Dischoose (m.) (s.)	(c) up a mission is the interest of the intere	- Annual Suspended Sediment Discharge (t)		•	3) Marine Conditions	Prevailing Wave: SE		Wave Feriod (sec) $1 = 5 - 7$ Wave Length (m) $L = 1$	- Tidal Level (m)		MHW +3.04 (MHWS) MHW -	WSL +1.85	MLW - MINES	MLLW +0.00 (MLT) / 10.00	,		
NIE			Dredger	C-7	H-4 & H-2					Dredger						<del>ن</del>	H.	## 4#	კ		5.5	C.S		H-2 C-7		H-2 C-5		ડ	(C-2)	gramme.
ING THAC	f Dredging		Length (Km)	ł	[12]					Length (Km)						(3)	[7]	[4]	[9]	1	[2]	[5]		3.0		3.0		1,65	(4.0)	for months worked. for HD's Dredging Programme.
Name of the Channel: KLONG THACHIN	II. Past Record of Dredging	guigpa	Volume (m³)	404,604	1,287,840				ice Dredging	Volume (m <sup>3</sup> )						102,875	513,906	216,435	587,160		229,660	268,085		34,600 87,010		65,550	*	213,275	(50,400)	stands for months worked stands for HD's Dredging I
Name of the	ii	) Capital Dredging	Year	FY70	FX71				2) Maintenance Dredging	Year	FY 67	89	69	70	71	72	73	7.4	75	2/2	77	78	79	08	8	ដ្ឋ	83	28	85	( ) star
No. 3	I. Characteristics of the Channel.	1) Dimensions of the Channel	Width Depth Length (Km)	60 3 4.0		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	WILL WILL		2) Maximum Size of Vessels (GRT)	300		3) Type of the Port	Estuary Port		4) Geographical Features at the mouth of the	River	Estuary Bar		5) Seasonal Influences	Not significant		6) Dumping Area	Both banks of the river mouth		C. C. S.	() charts				

No. 4			Name	of the C	Name of the Channel: KRABI	81		Dr	Dredging Center: KANTANG
i. Characteristics of the Channel	re Channel			H L	Past Record of Dredging	Dredging		III. Metcorology, River & Marine	IV. Maintenance Volume of Dredging
1) Dimensions of the Channel	V	·	Cap	Capital Dredging	lging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m² p.a.)
Width D (m)	Depth (m)	Length (Km)	<u> </u>	Year	Volume (m <sup>3</sup> )	Length (Km)	Dredger	- Wind	333,000
Old Port 60	3	12.0	Ē	FY 74	170,272	ı	ري 1	Predominant Monsoon: SW Prevailing Wind: W	
New Port 60	4.5	14.0		7.5	537,807	[6]	C-5 & C-7	Max. Wind Spead (Knots); 50 W	2) Silt Rate (m p.a.)
			<u> </u>	FY 81	281,595	1.32	C-7	- Annual Rainfall (mm)	0.3 (Assumption)
belo	below LLW		<u> </u>	82	582,200	1.88	C-7	2,327.4	
		·		83	656,400	1.46	C-7		3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	SKT)		2) Ma	intenanc	2) Maintenance Dredging			2) River Conditions	Siltation
Old Port: 300 New Port: 1,000			_>_	Year	Volume (m³)	Length (Km)	Dredger	- Name of the River	
			<u></u>	FY 67				Fraul Kiyet, Klouik Ciliat	Aller borne Sediment
3) Type of the Port				89				Drainage Area (Nm.) 195 & 37	מינים
Old Port: River Port				69				2	
New Core, Louising Fort				70				5.30 & 1.01	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the	hè mouth o	f the		116				- Annual Suspended Sediment Discharge (t)	- River Bed Material
Kiver		]		72				17,554 & 2,116	Upper Stream:
·				7.3					
				7.				3) Marine Conditions	Midstream:
5) Seusonal Influences				75				- wave Prevailing Wave: W	
		•		92	472,650	[5]	ટ		Lower Reaches: Silty clay $D_{50} = 5 \sim 20 \mu$
				11	615,805	(8)	C:3	Wave Period (sec) T = 6 - 7 Wave Length (m) L =	
6) Dumping Area				78	723,700	(8)	C-7	- Tidai Level (m)	- Estuary
North bank near KO NU at the river mouth	J at the rive	r mouth		52					Clayey or Silty sand
				08	72,868	3.0	53	MHW +3.26	
i i			ļ	83					- Coast
Octobers			<u>L</u> .	82				MLW +1.07	
during SW monsoon is difficult.	oy means c lifficult.	ouner caner		83	165,690	.6.0	<del>7</del>	MLLW +0.24	The printed maintenance draduing has
		_		28	395,220	1.93	િં	Ave, Tidal Range 2.08	mainly been executed around the Ko Nu.
			L	85	(84,000)	(14.0)	(C-7)	- Current Max, ebbing and flooding current	*Or during the spring tides  *Bo during the spring tides  * = 0.9 m/s (with the same direction of the neap
<b>-</b>			)	) stands ) stands		for months worked. for HD's Dredging Progrumme.	grumme.	v = 0.6 ~ 0.6 g m/s (at the mouth of Khion Do during neap tides"	g ChilLat and Khlong Krabi Yai) udes)
				Ì				v = 0.5 m/s (oaraitel to the dignment of the navigation channe)	navigation channel)

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Dredging Center: KANTANG

I. Characteristics of the Channel		Ħ	II. Past Record o	Record of Dredging		III. Metcorology, River & Marine	IV. Maintenance Volume of Dredging
1) Dimensions of the Channel	=		The second secon			1 16 00 00 00 00 00 00 00 00 00 00 00 00 00	S. Corinate Maintenant Line Contract Co
1) Ciliciandia of the Charles	1	) Capital Dreugh	*urgau			1) Meteorological Conditions	7) ENIMACO MAINEDAINE VOLUME (III p.a.)
Width Depth Length (m) (Km)		Year	Volume (m³)	Length (Km)	Dredger	- Wind	000001
60 4 27.0		FY66	1,611,804	ţ	C-1.3 & H-2	Fredominant Monsoon; 5W Prevailing Wind: W	
		FY67	1,184,476	[9]	- op -	Max. Wind Spead (Knots): 50 W	2) Sitt Rate (m p.a.)
		FY68	319,850	[4]	1	- Annual Rainfall (mm)	0.25 (Assumption)
Delow LLW						2,327,4	
	J. ,						3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)		faintena	2) Maintenance Dredging	The state of the s		2) River Conditions	Inner: Siltation Outer: Littoral Drift
009		Year	Volume (m³)	Length (Km)	Dredger	- Name of the River	
	l	FY 67				Kantang River, Klong Palian	4) Supply Source of Channel Shoaling Inner: River-borne Sediment
3) Type of the Port		89				ייי עומוופגע אייים ואיוו	
River Port	L.—	69	301,375	[4]	H-2	Moun Divar Discharse (m) (c)	
	· · · · · · · · · · · · · · · · · · ·	5	1,112,766	[9]	0.Ŧ	יאנקון יצייני בייניות פר יווי (פי	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the		1.1	1,546,621	[9]	C-5 H-2	- Annual Suspended Sediment Discharge (1)	- River Bed Material
River		72	744,044	[5]	2.7. 2.4		Upper Stream:
		73	767,570	[7]	C-5 H-2		
	l	74		:		5) Marine Conditions  - Wasse	Midstream:
5) Seasonal Influences		75.	168,750	[4]	H.4	Prevailing Wave: W	
		76.	168,750	[4]	H.4	Wave Height (m) H = max, 2.0	Lower Reaches: Muddy sand
		77	96,750	[3]	2 <u>7</u>	wave reflod (sec) $I = 6 \dots I$ Wave Length (m) $L = I$	
6) Dumping Area	l	78	50,125	[0.3]	H-2	- Tidal Level (m)	– Estuary
Outer Part: Offshore		79	119,150	[6]	H-4		Fine sand
Inner Part: Deeper area		08 .	107,825	9.0	H-2	MHHW +3.39 (MHWS)	
D. Debane	L	8	119,183	15.0	H.4	MSL +2.23	- Coast
county L		82	103,925	10.0	H-2	MLW + MLY	
		83	92,250	7.5	# 4 -		The sections which source a great volume
		84	55,650	0.9	H-2	- Current	of maintenance dredging are a bend in the
		88	(200,000)	in front of wharf	(C-15)		river and the estuary bar.
		sta A sta	stands for months worked.	worked.	grandme		

Dredging Center: KANTANG	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m² p.a.)	38,000		2) Silt Rate (m p.a.)	0.25 (Assumption)		3) Main Cause of Channel Shoaling	Littoral Drift out of the entrance.		Card heart meeth, cost	ביים כימיני וייבו כי כימיני		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Silty sand		- Estuary	Fine to Medium sand		Coust	1 00 1	of Course			
	III. Meteorology, River & Marine	1) Meteorological Conditions	Wind	Predominant Monsoon; SW Prevailing Wind: W	Max, Wind Spead (Knots): 50W	- Annual Rainfall (mm)	2,327,4		2) River Conditions	- Name of the River	Kak Bafu Kiver	- Dramage Area (Kin-)	- Meen River Dischares (m <sup>3</sup> /c)		- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	- wave Prevailing Wave: W		Wave Length (m) L = 0 = 7	Tidal Level (m)	нн	MHW	WSL.	WLW	וורא דרא	Current		
Name of the Channel: PAK BARA	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (Km)						2) Maintenance Dredging	Year Volume Length Dredger (Km)	FY 67	89	69	0.2	71		73	7.4	7.5	26	2	78	79	80	180	8.2	83	78	N. 30	i stands for months worked. ( ) stands for HD's Dredging Programme.
No. 6	1. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length (m) (Km)	40 2 3.8			below LLW		2) Maximum Size of Vessels (GRT)	0001	\$	3) Type of the Port			4) Geographical Features at the mouth of the	KIVCI			5) Seasonal Influences	The port is usable all the year round.		6) Dumping Area	Inner: in front of right bank	Outer: left side		Chies	ine fiver mouth is kept deep enough due to the self-flushing action.			

Dredging Center: KANTANG	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)	210,000		2) Silt Rate (m p.a.)	0.25 (Assumption)		3) Main Cause of Channel Shoaling	Inner: Siltation Outer: Littoral Drift		River-borne Sediment and	Materials transported by wave action		5) Bottom Sediment (Kind of soil & grain size)	– River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Clay 15 ~ 175µ		- Estuary	Silty sand		- Coast	Fine to Coarse sand		of maintenance dredging are Temarang near	the river mouth and Laem Puju at the mouth of the bay:	Recent maintenance dredging has been carried out only for these two areas.
	III. Meteorology, River & Marine	1) Meteorological Conditions	Wind	Predominant Monsoon: SW Prevailing Wind: W	Max. Wind Spead (Knots): 50 W	- Annual Rainfall (mm)	2,327.4		2) River Conditions	Name of the River	Salun Kayer	2 Diamage Area (Ann. )	- Mean Bluer Discharce (m3/s)	7.64	- Annual Suspended Sediment Discharge (t)	250,000		3) Marine Conditions	- wave Prevailing Wave: W - SW	Wave Height (m) H = 0.5 ~ 1.5	Wave Period (sec) $I = 2 \sim 5$ Wave Length (m) $L = 1$	1 Tidal (evel (m)	ннм	MHHW +3.50 (MHWS)	MSL +2.53	MIW	•	Current		
			Dredger	ı	ı	S	3			Dredger																H-2	H-4	H-2	(C-7)	gramme.
Z.	f Dredging		Length (Km)	1	[110]	2.59	6.27			Length (Km)																8.0	6.0	4.5	(14.0)	s worked. redging Pro
Channel: SATUN	Past Record of Dredging	redging	Volume (m³)	426,325	554,910	274,450	446,550		nce Dredging	Volume (m³)												-			. ·	30,825	68,250	76,400	(67.200)	stands for months worked.  stands for HD's Dredging Programme.
Name of the C	11.	1) Capital Dredging	Year	FY78	FY79	FY80	FY81		2) Maintenance Dredging	Year	FY 67	89	69	70	71	72	73	74	75	76	77	78	79	08	81	82	83	84	8.5	{ } sta ( ) sta
No. 7	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	60 3 (4.0			below LLW		2) Maximum Size of Vessels (GRT)	300		3) Type of the Port	River Port		4) Geographical Features at the mouth of the	River			5) Seasonal Influences	Winds and waves during SW Monsoon	(May - Sept.) prohibit the use of cutter	suction dredgers.	North of Ka Yao		7) Officers					

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	000'051			2) Silt Rate (m p.a.)	0.5 (Assumption)		3) Main Cause of Channel Shoaling		Outer: Littoral Dritt	4) Supply Source of Channel Shozling		Material Transported by wave action		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Sifty sand		- Estuary	Fine to Coarse sand		Coast		o) Ones			
0	III. Meteorology, River & Marine	1) Meteorological Conditions		Prodominus Monecons	Prevailing Wind: E	Max. Wind Spead (Knots): 47 E	- Annual Rainfall (mm)	2,029.3		2) River Conditions	- Name of the River	Khlong The Thapso	- Drainage Area (Km²)	1,916	- Manual Blone Dischages (red fee)	49.7	- Annual Suspended Sediment Discharge (1)	\$36,000		3) Marine Conditions	- Wave Prevailing Wave: E NE	Wave Height (m) $H = 1 \sim 2$	Wave Period (sec) $T \approx 6 - 7$	ŧ		MHHW +2.10 (MHWS)	MSL +1.0	MLW - MLW	M.L.W ±0.0 (M.C.#3)	de constant		
I: CHUMPORN	Record of Dredging		Length	(Km) Dredger	335 - C-1					ging.	Length	╁										The statement of the st		149,755 (2) C-1		262,834 2.5 C-15	The state of the s	A CALL THE PARTY OF THE PARTY O	269,726 2.02 C-28		( 8,400) (5.0) (H-6) (70,000) (1.7) (C-23)	stands for months worked.  stands for HD's Dredsing Programme.
Nume of the Channel: CHUMPORN	II. Past Re	1) Capital Dredging	-	rear (m³)	FY77 322,635					2) Maintenance Dredging	Volume	_ _	FY 67	89	639	70	1,2	7.2)	73	7.1	2.8	70	77	78 140	7.9	80 262.	38.1	85	83 269	33		( ) stands for ( ) stands for
No. 8	I, Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	(m)	60 3.5 5.0			pelow LLW		2) Maximum Size of Vessels (GRT)	300		3) Tone of the Pari	Estuary Dark			4) Geographical Features at the mouth of the	River	North side: Bar Nouth side: Tombolo		5) Servonal Influences	The mouth of the river is exposed to NE	Monsoon, therefore, navigable difficulties	in the period of Nov. and Dec. are found.  6) Dumping Area	East side at the entrance and west side	of the outer channel		) Curers				

Dredging Center: SONCKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m <sup>3</sup> p.a.)	non'os		2) Silt Rate (m p.a.)	0,5 (Assumption)		3) Main Cause of Channel Shoaling	Littoral Drift	:	Materials transported by wave action		The state of the s	of potton Scanner (Ning of Son & grant Size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Silty or clayey sand		- Estuary	Fine to Medium sand		~ Coast		O CIUELO			
Q	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Prevailing Wind: E	Max, Wind Spead (Knots): 47 E	- Annual Ruinfall (mm)	2,029.3		2) River Conditions	- Name of the River	Aako Kiver Druinane Area (Km²)		- Mean River Discharge (m³ /s)		- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	Prevailing Wave: E - NE	Wave Height (m) $H = 1.2 \sim 2.0$		- Tidal Level (m)	нн	MHW	MSL (+1.0)	MLW	MLLW	d Constant	777	
Name of the Channel: PAK TAKO	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (Km)	FY83 251,000 0.8 C-17					2) Maintenance Dredging	Year Volume Length Drodger	+ 1	89	69	. 01		72	73	74	75	76	77	78	79	08	139	82	83	84	85	stands for months worked.   stands for HD's Dredging Programme.
No. 9	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	40 2 1.5			Pelow ILW		2) Maximum Size of Vessels (GRT)	100		3) Type of the Port	Kiver Port		4) Geographical Features at the mouth of the	Kiver	Estuary Bars		5) Seasonal Influences	The mouth of the river is exposed to NE	Monsoon, Navigable difficulties are found over the period of Oct. — March	6) Dumping Area	South side of the channel		7. Others		remarkable change has been occured	after capital dredging.	The depth at the mouth of the river is deep enough due to the self-flushing	action.

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m² p.a.)	130,000		2) Silt Rate (ni p.a.)	0.8 (Assumption)		3) Main Cause of Channel Shoaling	River Mouth: Littoral Drift		4) Supply Source of Channel Shoaling River-home cachinent and	Materials transported by wave action.	5) Bottom Sediment (Kind of soil & grain size)	- River Rad Marenia	DETACHE PAR CALL	Upper Stream:		Midstream:		Lower Reaches: Muddy sand		- Estuary	Clayey or Silty sand		- Coast	(A) Orbani	o charles			
	III Meteorology, River & Marine	1) Meteorological Conditions	- Wind	rredominant Monsoon: NE Prevailing Wind: E	Max. Wind Spead (Knots): 47 E	- Annual Rainfail (mm)	2,029.3		2) River Conditions	Name of the River	Lungsuan Kiver		- Mean River Discharge (m³/s)		- Annual Suspended Sediment Discharge (t)		3) Marion Conditions	- Wave	Prevailing Wave:	Wave Height (m) H =	wave Length (m) L =	- Tidal Level (m)		MHHW +2.0 (MHWS)	MSC +0,9	MLW	MLLW +0.6 (MLWS) LLW ±0.0	- Current		
Name of the Channel: LUNG SUAN	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	FY70 475,785 - C-3					2) Maintenance Dredging	Year Volume Length Dredger		89	69	70	71	72	73	74 272,442 [3] C-1	75	76 284,750 [4] C-1	77	78 294,689 [5] C-1	79	80 1.500 1.5 C-1	81 210,160 6.67 C-3	82	83 327,784 1.06 C-1	84	85 (188,000) (4,0) (C-19, 21)	( ) stands for months worked. ( ) stands for HD's Dredging Programme.
No. 10	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length (m) (Km)	40 3 4.0			below LLW		2) Maximum Size of Vessels (GRT)	300		S) type-of the Fort			4) Geographical Features at the mouth of the River	Estuary Bars			5) Seasonal Influences	The port is unusable from Nov. to Feb.		6) Dumping Area	Inner: near the right bank	Outer: north side	2) Orbest	The channel entrance is nearly closed.	Moreover, the inner part is very shallow.			

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	000,582		2) Silt Kate (m p.a.)	0.15 (Assumption)		3) Main Cause of Channel Shoaling	Siltation		4) Supply Source of Channel Shoaling	skallow sea		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream: Clay		Lower Reaches: Clay and Fine sand		- Estuary	Clayey or Silty sand $10 \sim 120\mu$		- Coast		o) Chers			
Ω	III. Meteorology, River & Marine	1) Meteorological Conditions	~ Wind Predominant Monsoon: NF	Prevailing Wind: E	Max. Wind Spead (Knots): 40 NE	- Annual Rainfall (mm)	1,710		2) River Conditions	- Name of the River	lapi River, Khlong Tha Thong	- Drainage Area (Km²)		300	- Annual Suspended Sediment Discharge (t)	1,311,000		5) Marine Conditions	Prevailing Wave: E - NE	Wave Height (m) H = 0.5	wave fenod (sec) $I = 4 - 7$ Wave length (m) $I = 7$	- Tidal Favel (m)	ннж	*	M.T.W	:	MLLW +0.3 (MLWS)	- Current		
			Dredger	C-3 & H-2	C.3 & E.4	C-3 & H-2,4	H-2, 4	H-2, 4		Dredger											ਹ	53	다. H2 4	Ŧ.	H-2	3	H.6	Contract	- op -	ogramme.
NOON	f Dredging		Length (Km)		112	Ξ	[10]	[01]		Length (Km)										٠.	[5]	[3] [0.5]	[6]	13.5	11.0	0.46	0.6			s worked. redging Pr
Name of the Channel: BANDON	Past Record of Dredging	redging	Volume (m³)	1,070,475	914 503	854,808	1,569,335	1,069,390	2) Maintenance Dredging	Volume											1,261,865	155,723 * 73,380	1,002,997	148,154	174,020	1190,061	30,225	(2,882,000)		stands for months worked.  stands for HD's Dredging Programme.
Name of the	II.	1) Capital Dredging	Year	FY 7.1	7, 2,	74	75	9/	2) Maintena	Year	FY 67	89	69	70	7.1	72	73	74	7.5	192	77	78	42	08	81	82	83	84	85	[ ] sta ( ) sta
No. 11, 12	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	Outer 60 4 25.0	Inner 40 2 10.0		below LLW		2) Maximum Size of Vessels (GRT)	Outer: 600 Inner: 100		Type of the Port	Old Port: River Port		4) Geographical Features at the mouth of the	River	Estuary Bars		Seasonal Influences	The port is usable all the year round because	wave actions during NE Monsoon is not	Severe due to surrounding Manua and die Dumping Area shallowness.	East side of the outer channel		Others	- The contract dredging is being carried out	for maintaining the outer channel.	The new port at the confluence of the Tapi     Diver and Whlong Tra Thomas complience	accommodating 1000 GRT vessels (*)	

No. 13	Name of the	Name of the Channel: DORNSAK	RNSAK		Q	Dredging Center: SONGKHLA
1. Characteristics of the Channel	11.	Past Record of Oredging	f Oredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
1) Dimensions of the Channel	1) Capital Dredging	redging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m² p.a.)
Width Depth Length	Year	Volume (m³)	Length (Km)	Dredger	– Wind	20005
40 2 1.5	FY79	263,674		3	Predominant Monsoon: NE Prevailing Wind: E	
					Max. Wind Spead (Knots): 40 NE	2) Silt Rate (m p.a.)
below LLW					Annual Rainfall (mm) 1,710	0.8 (Assumption)
				T		3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	2) Maintena	2) Maintenance Dredging			2) River Conditions	Littoral Drift & Siltation
90	Year	Volume (m³)	Length (Km)	Dredger	- Name of the River	
	FY 67					4) Supply Source of Channel Shoaling
3) Type of the Port	85				Drainage Area (w.m.)	Surrounding snallow sea and River-borne sediment
	69				Meun River Discharge (m <sup>3</sup> /s)	S. Bottom Spalinast (Vind of roil B. main vins.)
	2			-		Concern Services (Ning of Son & Brail 1965)
4) Geographical Features at the mouth of the	-				- Annual Suspended Sediment Discharge (t)	River Bed Material
Estuary Rer	5,					Upper Stream:
county bat	7.3					-
	74				3) Marine Conditions	Midstream:
5) Seasonal Influences	\$2				Prevailing Wave: E - NE	
	76				Wave Height (m) H = 1.0	Lower Reaches:
	77				wave Period (sec.) I = Wave Length (m) L =	
6) Dumping Area	7.8				- Tidal Level (m)	- Estuary
Left bank of the river mouth	2					Partially Mud and Fine to Medium sand
(behind the Bar)	SO	164,854	1.5	៊	MHHW +2.5 (MHWS)	
Society C.	is.				. +	- Coast
Carrie	8.3	147,300	1.09	g	MLW - MLW	S) Others
	83					
	3	31,300	2.5	H.6	- Current	
	8					
	st	istands for months worked, stands for HD's Dredging !	months worked; r HD's Dredging Programme,	granme,	:	
	,					

Dimensions of the Channel			1) Capita	Capital Dredging			1) Meteorological Conditions	i) Estimated Maintenance Volume (m³ p.a.)
Width L	Depth Ler (m) (K	Length (Km)	Year	Volume (m³)	Length (Km)	Dredger	- Wind	000,000
80	\$ 0.	0.745	FY80	0 114,720	)	ဗ	Prevoiting Wind: E	<del></del>
180	4.5 0.	0.382					Max. Wind Spead (Knots): 50 E	2) Silt Rate (m p.a.)
140	l	0.237					Annual Rainfall (mm)	0.4 (Assumption)
pek	below LLW						1,934.7	
			<u>-</u>	! 				3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	SRT)		2) Maint	2) Maintenance Dredging			2) River Conditions	Outer: Littoral Drift Inner: Siltation
			Year	Volume (m <sup>3</sup> )	Length (Km)	Dredger	- Name of the River	
			FY 67	L				4) Supply Source of Channel Shoaing
3) Type of the Port			Ľ	89			— Drainage Area (Km²)	
River Port		-	,	69				
				70			- Mean River Discharge (m²/s)	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the	e mouth of the	ຍ		11			Annual Suspended Sediment Discharge (t)	- River Bed Material
		1		72				Upper Stream:
Pocket Beach			-	73				
				74			3) Murine Conditions	Midstream: Muddy sand
5) Seasonal Influences			,	75			Prevailing Wave: E - NE	
Not significant				76			Wave Height (m) H = 1 - 1.5	Lower Reaches: Silty sand with partial
	٠		7	77			Wave Period (sec.) I == Wave Length (m) L ==	mud
6) Dumping Area			7	78			- Tidal Level (m)	- Estuary
Approx. I sea mile east from the end of	rom the end o	•	7	64			ннм -	Fine to Coarse sand
the channel.				80				
·.	* .			81			MIN + 1.9	- Coast
- The inner part of the river is fairly stable	r is fairly stabl	نه		82 97,000	1,4	# # # # # # # # # # # # # # # # # # #		rine to Coarse sand
- The gust occurs occasionally.	ally			83			MLLW ±0.0	6) Uthers
- The river training wall are found at the mouth	e found at the	mouth		84 13,500	2.7	H-6		has been carried out for the outer and
				85 (132,000)	(1.3)	(H-2)		middle part only.
			֓֞֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֡֓֓֓֡֓֡	. 1 '4	is worked.			
					:			

Dredging Center: SONGKHLA

Name of the Channel: KHANORM

No. 14

Characteristics of the Chunnel	II. Past Record of Dre	II. Past Record of Dredging	f Dredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
	1) Capital Dredging	edging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m3 p.a.)
Length (Km)	Year FY80	Volume (m²)	Length (Km) 0.48	Dredger C-1	Wind Predominant Monsoon; NE Prevailing Wind; E Max. Wind Spead (Knots): 50 E	32,000 2) Silt Rate (m p.a.)
below LLW					- Annual Rainfall (mm) 1,934,7	0.8 (Assumption)
	2) Muintenance Dredging	ice Dredging			2) River Conditions	3) Main Cause of Channel Shoaling Littoral Drift
	Year	Volume (m³)	Length (Km)	Dredger	- Name of the River	The state of the s
	FY 67				Along Stellor  Drainage Area (Km²)	River-borne sediment and
	889					Surrounding beach
	0,				- Mean River Discharge (m³/s)	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the	12				- Annual Suspended Sediment Discharge (t)	River Bed Material
	11					Upper Stream:
	73				2 Marian Condition	
	7.				Ware Conditions	Midstream:
	32			,	Prevailing Wave: 'E	
	76				a 1	Lower Reaches: Silty sand
	7.2				Wave Length (m) L = Wave Length (m) L =	
	78		-		Tidal Level (m)	- Estuary
	20					Fine to Medium sand
	08				MHHW +1.23 (MHWS)	
	8				+	- Coast
	8.2				;	Fine to Coatse sand
	83				MLLW ±0.00	Si Others
	**	16,200	0.5	φ±		
	S.8	(3.500)	(0.5)	(6.53)	Called	
	ats [	stands for months worked	s worked.			

Dredging Center: SONGKHLA	
Name of the Channel: THA SALA	
No. 16	

The state of the s		II Duct Decord of Deedeing	Of Pundaing		III Meteorology Diver & Marine	IV Maintenance Volume of Dredoing
1. Character period of the Committee					- 1	0.0
1) Dimensions of the Channel	1) Capita	1) Capital Dredging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m³ p.a.)
Width Depth Length	Year	Volume (m³)	Length (Km)	Dredger	Wind .	23,000
40 2 0.8	FY80	152,404	8.0	C-1,3	Predominant Monsoon: NE Prevailing Wind: E	
					Max. Wind Spead (Knots): 50 E	2) Sult Kate (m p.a.)
					- Annual Rainfall (mm)	O.s (Assumption)
below LLW					1,734.1	
						3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	2) Maintenance	nance Dredging			2) River Conditions	Littoral Drift
100	Year	Volume (m <sup>3</sup> )	Length (Km)	Dredger	- Name of the River	A) Stranger Courses of Phonons of Charelling
	FY 67				Ominana brea (Km²)	Surrounding Beach
3) Type of the Port	89					
Estuary Port	69					
	70	0			– Mean Kiver Discharge (m./s)	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the	71				- Annual Suspended Sediment Discharge (t)	- River Bed Material
River	72					Upper Stream:
Estuary, Bar	73					
	74				3) Marine Conditions	Midstream:
5) Seasonal Influences	75				- wave. Prevailing Wave: E - NE	
	76					Lower Reaches:
	77				wave Period (sec) $1 = 6 - 7$ Wave Length (m) $L = 6 - 7$	
6) Dumping Area	78	1			- Tidal Level (m)	- Estuary
South side of the channel	79.				нн	Medium to Coarse sand
	. 80				МННИ	
7) Others	8				MSL (+0.8)	- Coast
	82				MLW	Medium to Coarse sand
	83	158,215	0.4	៊ូ	M.L.W LLW	O) Cuters
	84				- Current	
	85	(9,800)	. (0.8)	(C-1, 21)		
		stands for month stands for HD's	for months worked. for HD's Dredging Programme.	gramme.		

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Name of the Channel: PAK NAKORN

Dredging Center: SONGKHLA

IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)	40,000		2) Suf Kate (m p.a.)		3) Main Cause of Channel Shoaling	Siltation		River-house endiment and	Surrounding shallow bay		5) Bollom Sediment (Kind of soil & grain size)	River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Muddy clay		Coast	6) Others	2000			
III. Metcorology, River & Marine	1) Metrorological Conditions	- Wind	Predominant Monsoon: NE Prevailing Wind: SW	Max. Wind Spead (Knots): 55 WSW	Annual Rainfall (mm)		2) River Conditions	- Nume of the River	Pak Friandik Niver	C III S PART SECTION OF	- Mean River Discharge (m <sup>3</sup> /s)		- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	Prevailing Wave:	Wave Height (m) H = Calm	Wave Period (see) 1 = Wave Length (m) L =	~ Tidal Level (m)		MHHW +1.4 (MHWS)	MSL +0.8	MLW - MLW		· Current		
II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	FY84 434,910 3.4 C-21				2) Muintenance Dredging	Year Volume Length Dredger	FY 67	89	69	70	71		73	7.7	7.5	76	11	32	79	08	18	138	83	75	58	f stands for months worked. ( ) stands for HD's Dredging Programme.
I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	40 2 5.0		below LLW		2) Muximum Size of Vessels (GRT)	100		Norman Pour	and America		4) Geographical Features at the mouth of the	Court Oxio managed I name (Plantamenter)	Same opn named Laten thandupink.		5) Seasonal Influences	The port is protected by the long sand spit.		6) Dumping Area	Both sides of the channel		2) Others					

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	250,000	2) Siit Race (m p.a.)	0,15 (Assumption)		3) Main Cause of Channel Shoaling	Siltation		4) Supply Source of Channel Shoaling	River-borne sediment and Surrounding shallow sea		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstram:		Lower Reaches:		- Estuary	Muddy clay 1-20µ		- Coast		6) Others			
	III. Metcorology, River & Marine	1) Meteorological Conditions	- Wind Predominant Monsoon: NE	Prevailing Wind: SW Max. Wind Spead (Knots): 55 WSW	- Annual Rainfall (mm)	2,429,4		2) River Conditions	- Name of the River	Pak Phanang River	- Drainage Area (Km²) 1,071 & 757	Manne Direct Nicobeans (m. 3 fr.)	52.78 & 37.27	- Annual Suspended Sediment Discharge (1)	1,330,000 & 1,010,000	:	3) Marine Conditions	Wave Prevailing Wave:	Wave Height (m) H = Calm	Wave Period (sec) T =	Tidal Jane ( Didal )	HHW	MHHW +1,4 (MHWS)	MHW +0.8		MLLW +0.2 (MLWS) LLW ±0.0			
Name of the Channel: PAK PHANANG	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (m³) (Km) Dredger	1,016,670 6.96	FY84 1,806,557 12.50 C-1,23			2) Maintenance Dredging	Year Volume Length Dredger		89	69	02	71	72	73	74	75	76	77	282	6L	80		60	83	84	88	stands for months worked. ( ) stands for HD's Dredging Programme.
No. 18	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length (m) (m) (Km)			below LLW		2) Maximum Size of Vessels (GRT)	300		3) Type of the Port	River Port		4) Geographical Features at the mouth of the	River	Sand spit named Laem Thalumphuk		5) Seasonal Influences		the long sand spit.	6) Dumping Area	Both sides of the channel		7) Orthons	The inner nort of the river is relatively	stable and no deposition occur.			
													A	<b>— 1</b>	12								· · · · · ·						

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ 9.2.)	000'000		2) Siit Rate (m p.a.)	0.5 ~ 0.8 (Assumption)		3) Main Cause of Channel Shoaling	Outer: Littoral Drift Inner: Sitation		4) Supply Source of Channel Shoating	Materials transported by wave action		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Silty clay or clayey silt		- Coart	Fine to Medium sand	005/1 - 007/1	bottom stope 1/200		
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Predominant Monsoon: NE Prevailing Wind: E	Max. Wind Spead (Kngts): 76 E	- Annual Rainfall (mm)	2,093.8		2) River Conditions	Name of the River	•	- Drainage Area (Km²)		- mean river discharge (m <sup>7</sup> /5)	- Annual Suspended Sediment Discharge (t)			3) Murine Conditions	Prevailing Wave: E - NE		Wave Fernod (sec)   = 4 - 10  Wave Length (m) L =	$-$ Tidal $\{eye\}$ ( $m$ )		MHHW +1.37 (MHWS)	WSL +0.97	MLW +0.30	LLW ±0.00 (CD)			
жнга	Dredging		Length Dredger	3	(12) C-1.3	[12] — do —	[7] C.1.3	private contractor.		(Km) Dredger					[8] C-1	[11] C-1	[12] -do-	[9] C-1	(10) C-1	- op - [9]	(7) H-2, 4	[1] H-2			3.5 H-2	6.5 H-4	4,0 H.4	4.57 C-19		months worked. HD's Dredging Programme.
Name of the Channel: SONGKHLA	II. Past Record of Dredging	1) Capital Dredging	Year Volume (m <sup>3</sup> )	FY67 337,531	FY68 2,125,892	FY69 1,939,300	FY70 840.176	(*) Under dredging by private contractor.	2) Maintenance Dredging	Year Volume	FY 67	89	69	70	71 685,508	72 582,489	73 1,248,216	74 637,720	75 296,061	76 258,188	77 492,000	78 34,375	79	80	81 102,650	82 140,000	83 134,728	84 154,268	85 (130,000)	stands for months worked
No. 19, 20	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	Outer* 120 9 5	Outer 100 5 3	Inner 250 5 4	below LLW		of Vessels (GRT)	2,000 DWT (*) Decp-sca port 20,000 DWT		3) Type of the Port	Cuter: Recisimed land Inner: Estuary port		4) Geographical Features at the mouth of the	River			5) Sensonal Influences			6) Dumping Area	North of KO HNU for hoppers		f	Breakwater at the Outlet of the Lake				

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)	25,000	2) Silt Rate (m p.a.)	0.8 (Assumption)		5) Main Cause of Channel Shoaling	Littoral Drift		4) Surrounding Beach		And the second of the second o	District Section (Child of State Sta	- Kiver Bed Material	Upper Stream:		Midstream:		Lower Reaches:		Estuary	Silty Sand		- Coast		course of			
<u> </u>	III. Meteorology, River & Marine	i) Meteorological Conditions	Wind	Precominant Monsoon: NE Prevailing Wind: E	Max. wing Speak (Kilots): 70 E.  — Annual Rainfall (mm)	2,093.8		2) River Conditions	- Name of the River	Khlong Natab Decision Appa (Km2)	Liamage Area (Aria)	- Mean River Discharge (m³/s)		- Annual Suspended Sediment Discharge (t)		William Condition	Wave - Wave	Prevailing Wave: E NE	13	wave Feriod (sec) $I = 4 - 10$ Wave Length (m) $L = 4 - 10$	Tidal ( eve (m)	няж	MHHW	MSL (+0.5)	MLW	TLW	Transition .		
			Dredger	C-23					Dredger																				угатте.
(AB	f Dredging		Length (Km)	0.68					Length (Km)										·					<del> </del>	~~~				for months worked. for HD's Dredging Programme.
Name of the Channel: NATAB	Past Record of Dredging	edging	Volume (m <sup>3</sup> )	202,130				ce Dredging	Volume (m <sup>3</sup> )																				stands for months worked.) stands for HD's Dredging P
Name of the	11	1) Capital Dredging	Year	FY83				2) Maintenance	Year	FY 67	89	69	70	71	22	73	74	75	16	7.4	78	79	08	81	8.7	83	84	85	[ ] stands ( ) stands
21	Characteristics of the Channel	Dimensions of the Channel	Width Depth Length	40 2 0.8		below LLW		2) Maximum Size of Vessels (GRT)			3) Type of the Port	Estuary Fort		4) Geographical Features at the mouth of the	Estuary Bar			Seasonal Influences			6) Dumping Area	North side							

Capital Dredging  Year Volum (m)
241,073 0.64
2) Maintenance Dredging
Volume Length (Km)
The state of the s
stands for months worked.

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	32,000	2) Silt Rate (m p.a.)	0.8 (Assumption)	3) Main Cause of Channel Shoaling	Littoral Drift	4) Sumb Source of Channel Shading	Surrounding Beach		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Silty or Fine sand		- Coast	Title to coaise saint	Church Church			
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind Predominant Monsoon: NE	Prevailing Wind: 15. Max. Wind Spead (Knots): 40 W	– Annual Rainfall (mm) 1,816.3		2) River Conditions	- Name of the River	- Drainage Area (Km²)		- Mean Kiver Discharge (m*/s)	- Annual Suspended Sediment Discharge (t)		A Marie Company	Warm	Prevailing Wave: E - NE		Wave Period (sec) 1 = 4 10 Wave Length (m) L =	- Tidai Level (m)	ННЖ	MHEW	MSL (+0.5) Assumption	MLW	LLW	- Current		
Name of the Channel: NONG JIK	fl. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (m³) (Km) Dredger Expected 1986 onward to 2,000				2) Maintenance Dredging	Year Volume Length Dredger (Km)	FY 67	89	02	1.1	72	73	74	7.5	76	77	78.	79	. 80	81	82	83	84	88	stands for months worked. ( ) stands for HD's Dredging Programme.
No. 23	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length (m) (m) (Km) 40 2 1.0		below LLW		2) Maximum Size of Vessels (GRT)	100	3) Tyrus of the Port	Estuary Port		4) Geographical Features at the mouth of the	River	Estuary Bar		5) Seasonal Influences			6) Dumping Area	North side		7) Others					

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	120,000		2) Siit Rate (m p.a.)	0.5 (Assumption)		3) Main Cause of Channel Shoaling	Siltation		4) Supply Source of Channel Shoaling	River-borne sediment and		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	clay	$\gamma = 1.62 \sim 1.86 \text{ t/m}^3$	- Coast		Name (o			
Q	III. Meteorology, River & Marine	1) Meteorological Conditions	Wind	Predominant Monsoon: NE Prevailing Wind: E	Max, Wind Spead (Knots): 40 W	- Annual Rainfall (ram)	1,816.3		2) River Conditions	- Name of the River	Pattani River	- Drainage Area (Km²)		Mean River Discharge (m <sup>3</sup> /s) 53	Astrono Secure dad Sadionare Dicohomos (c)	48,635		3) Marine Conditions	Prevailing Wave: E NE	Wave Height (m) H = Calm	Wave Period (sec) T = Wave Length (m) L =	Tital and (m)	HHW +5.3	*	MHW +2.63 MSL +2.43		MELW +2.12 (2.W +1.18	Ave, Tidal Range	$\sim \text{Current}$ $\text{v max.} = 0.42 \sim 0.70 \text{ m/s}$	ebb and flood tide at the river mouth
PATTANI	II. Past Record of Dredging		Length Dredger	101 C-1	[7] CI				81	Length Dredger							(2)		3 (3)		2 [5] C-3	t (71 C-3	The state of the s	5 0.0 C.3					Ontract Contract	ا قُ
Name of the Channel: PATTANI	II. Past Reco	1) Capital Dredging	Year Volume	FY69 1,044,939	FY70 600,957	-			2) Maintenance Dreuging	Year Volume	FY 67	89	69	02	1.6	72	73 164,331	74	75 205,228	76	77 603,812	78 479,204	82	80 232,745	18	C.A.	83	72	85 (380,000)	stands for months worked ( ) stands for HD's Dredging F
No. 24	1. Characteristics of the Channel	1) Dimensions of the Chunnel	Width Depth Length (m) (Km)	60 3 4.0			below LLW		2) Maximum Size of Vessels (GRT)	300		3) Type of the Port	River Port		4) Geographical Features at the mouth of the	Siver	Sand spit named Laem Ta Chi.		S) Seasonal Influences	The channel is protected from NE Monsoon	by the long sand spit.	A) Dumping Area				The contrast dredgine is being carried our	for mainfuiring the charnel.	- The new port at the river mouth is capable	of accommodating Loud on the South	

Dredging Center: SONCKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)	32,000	2) Silt Rate (m p.a.)	0.8 (Assumption)	3) Main Cause of Channel Shoaling	Littoral Drift	(A) County of manual Parties	Surrounding Sandy Beach		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Medium to Coarse sae		- Coast		o) Others			
0	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind Predominant Monsoom NE	Prevailing Wind: E Max. Wind Spead (Knots): 60 NE	- Annusl Rainfall (mm) 2,618.8		2) River Conditions	- Name of the River	- Drainage Area (Km²)		- Mean River Discharge (m³/s)	- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	- wave Prevailing Wave: E - NE		Wave Period (sec) $I = 4 - 10$ Wave Length (m) $L = 4$	- Tidal Level (m.)		MHHW +0.74 (MHWS)	MSL +0.35		TTM ±0.0	Corrent		
Name of the Channel: SAI BURI	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (m³)	FY77 603,812 - C-3			2) Maintenance Dredging	Year Volume Length Dredger (m)	FY 67	200	60	1.7	72	73	74	75	76	77	78 114,100 [2] C-3	19	80 16,838 0.2 C-3	8.	82	83 99,060 0.54 C-19	84 17,200 0.5 H-6	85 (40,000) (2.0) (C-1)	( ) stands for months worked. ( ) stands for HD's Dredging Programme.
No. 25	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	40 3 2.0	below LLW		2) Maximum Size of Vessels (GRT)	300	3) Type of the Port			4) Geographical Features at the mouth of the	River			5) Seasonal Influences			6) Dumping Area			7) Orbert	- The mouth of the river is kept deep due to	strong flush current.			

Dredging Center: SONCKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	100,000		2) Siit Rate (m p.a.)	1.25 (Assumption)	3) Main Cause of Channel Shoaling	Littoral Drift		4) Supply Source of Channel Shoating	ספוס ספוסט הפשכוו	S) Bottom Sediment / Kind of soil & assis size.	Care treats of the Court of the	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Fine to Coarse Sand		- Coast	1001	of Ciners			
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Predominant Monsoon: NE Prevaitne Wind: B	Max, Wind Spend (Knots): 60 NE	- Annval Rainfail (mm). 2,618.8		2) River Conditions	- Name of the River	Anion instantiwat	- Orbinage Area (Kurt.)	- Mean River Discharge (m <sup>3</sup> /s)		- Annual Suspended Sediment Discharge (t)		3) Machie Conditions	Wave	vailing Wave: E + 1	Wave Height (m) H = max, 2,5	Wave Length (m) L **	- Tidal Level (m)	MHH	MHW +0.88 (MHWS)	ŧ	MLW	MLLW #0.0			
Name of the Channel: NARATHIWAT	II, Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	├				2) Maintenance Dredging	Year Volume Length Dredger	FY 67	81		70	12		the state of the s	74	\$1	A C	77	78	07	80 189.524 0.9 C-3	81 164.575 2.6 C-1	138	83 162,780 0.69 C-19	0.8	tands for months worked.  ( ) stands for HD's Dredging Programme.	
No. 26	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	8		pelow LLW		2) Maximum Size of Vessels (GRT)	300		3) Type of the fort	Kiver Port		4) Geographical Features at the mouth of the River	Extuary Bar			3) Seasonal Influences			6) Dumping Area	Approx. 300 m west from the end of the	channel.	200400	C) CHICLE				والمرابعة والمرابعة والمساولة والمرابعة والمرا

Dredging Center: CHANTABURI	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.) 48,060 2) Silt Rate (m p.a.) 0.6 (Assumption)	3) Main Cause of Channel Shoaling Littoral Drift/Siltation	4) Supply Source of Channel Shoaling River-borne sediment and Surrounding shallow sea	5) Bottom Sediment (Kind of soil & grain size) River Bed Material	Upper Stream: Midstream:	Lower Reaches:	~ Estuary Fine to Medium sand	- Coast	o) Others
u .	III. Meteorology, River & Marine	Meteorological Conditions     Wind     Predominant Monsoon: NE     Prevailing Wind: SW     Max. Wind Spead (Knots): 50 W     Annual Rainfall (mm)     1,031.4	2) River Conditions	– Name of the River Pran-buri River – Drainage Area (Km²)	Mean River Discharge (m³/s)  Annual Suspended Sediment Discharge (t)	3) Marine Conditions	- wave  Prevailing Wave: E - NE  Wave Height (m) H = max. 1.5	ngth (n   (m)	MHW +3.95 (MHWS) MHW	MLLW - LLW ±0.00
Name of the Channel: PRAN BURI	II. Past Record of Dredging	Capital Dredging   Year	2) Maintenance Dredging	Year (m³)         Volume (Km)         Length (Km)         Dredger           FY 67         68         68         68	69 70 71	73 74	75	77 78 79	82 82	84 85 85   stands for months worked. ( ) stands for HD's Dredging Programme.
No. 27	I. Characteristics of the Channel	1) Dimensions of the Channel    Width   Depth   Length   (m) (Km)   (Km)	2) Maximum Size of Vessels (GRT)	100 3) Type of the Port	4) Geographical Features at the mouth of the	Kiver Estuary Bar	5) Seasonal Influences The port is usable all the year round	because the channel is sheltered from NE Monsoon by the cape.  6) Dumping Area Left bank of the river.	7) Others	

										1
1. Characteristics of the Channel	the Channel			J.C. Pust	nst Record o	Record of Dredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging	
Dimensions of the Channel	Ter s		اً ا	i) Capital Oredging	Kink			1) Meteorological Conditions	1) Estimated Maintenance Volume (m) p.a.)	
Width (m)	Depth (m)	Length (Km)		Year	Volume (in3)	Length (Kin)	Dredger	- Wind	98,000	
	-	2.0	1	FY80	285,991	2,0	C-17	Predominant Monsoon: NE Prevailine Wind: SW		
		-						Max. Wind Spead (Knots): 50 W	2) Silt Rate (m p.a.)	
			L.,					- Annual Rainfall (mm)	0.7 (Assumption)	<del></del>
<b>ુ</b>	below LLW							1,301.4		
					_				3) Main Cause of Channel Shoaling	
2) Maximum Size of Vessels (GRT)	(GRT)		2) M3	intenane	2) Maintenance Dredging			2) River Conditions	Siltation	
1.00			<u></u>	Year	Volume (m3)	Cengith (Km)	Dredger	- Name of the River		
			<u>L</u> a	FY 67					4) Supply Source of Channel Shoaling	
3) Type of the Port			(	82				- Drainage Area (Kni*)	Alverting School Average	
		- · <del>-</del>		69				Mone Distan Dicohomos (m.) (c)		
				01				The state of the last	5) Bottom Sediment (Kind of soil & grain size)	
4) Geographical Features at the mouth of the	the mevith o	fthe		11				- Annual Suspended Sediment Discharge (1)	- River Bed Material	
Kiver Estrant Bac		-	1	7.2					Upper Stream:	
categia per				7.3						
				75				3) Marine Conditions	Midstream:	
5) Seasonal Influences				7.5				- wave Prevailing Wave:		
				76				Wave Height (m) H ≈ Calm	Lower Reaches:	<u>-</u>
				7.7				Wave Period (sec) T = Wave Length (m) L =		
6) Dumping Area				78				Tidal Level (m)	- Estuary	·
				- 66				ннм	Muddy sand	
			L	38		-		WHEW		
		-	1	18	195.775	16.1	C-17	WHW WS:	- Coast	
7) Others			İ	8.7				MLW		
			L	83	327,247	2,34	C-17	WIL WILL	o) Others	
			<u></u>	4				in a control of	of maintenance dredging are a bend part	
			i	538			(6-17)		out of the entrance.	
			J_	stan	stands for months worked	worked,				
			_	spings (	is for the Contract the programme.	Country run	erningic.		-	

MAEKLONG
Name of the Channel: (SAMUT SONGKRAM)

Dredging Center: CHANTABURI

5) Bottom Sediment (Kind of soil & grain size) IV. Maintenance Volume of Dredging 1) Estimated Maintenance Volume (m3 p.a.) out mainly at the mouth of the river. - The maintenance dredging is carried 4) Supply Source of Channel Shoaling 3) Main Cause of Channel Shoaling River-borne Sediment and Surrounding shallow sea - River Bed Material Lower Reaches: Upper Stream: 0.7 (Assumption) Midstream: Muddy sand 2) Silt Rate (m p.a.) - Estuary Siltation 70,000 - Coast 6) Others - Annual Suspended Sediment Discharge (t) III. Meteorology, River & Marine Max. Wind Spead (Knots): 56 E +2.99 (MHWS) +0.1 (MLWS) Wave Height (m) H = Calm Predominant Monsoon: SW - Mean River Discharge (m3/s) +1.64 Prevailing Wind: S - W 6,840,000 - 9,570,000 Wave Period (sec) T = Wave Length (m) L = 1) Meteorological Conditions - Annual Rainfall (mm) - Druinage Area (Km2) Prevailing Wave: - Name of the River Mae Nam Klong - Tidal Level (m) HHW 3) Marine Conditions 2) River Conditions мннw мнw MSL MLW MLLW 1,458.2 32,609 LLW - Current - Wave - Wind Dredger Dredger C-17 <u>S</u> Η̈́ stands for months worked.

stands for HD's Dredging Programme. II. Past Record of Dredging Length (Km) Length (Km) 2.6 3.0 2) Maintenance Dredging 297,835 7,700 381,537 Volume (m³) Volume (m³) 1) Capital Dredging FY 67 68 69 2 72 82 Year FY79 7 73 4 75 76 11 38 2 85 Year 8 ≅ **%** 8 Length (Km) 2.5 4) Geographical Features at the mouth of the I. Characteristics of the Channel below LLW Depth (m) 2) Maximum Size of Vessels (GRT) Both sides of the channel 1) Dimensions of the Channel Width (m) 6 5) Seasonal Influences 3) Type of the Port Estuary Bar 6) Dumping Area River Port 30 7) Others

Dredging Center: CHANTABURI	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m² p.a.)	140,000		2) Silt Rate (m p.a.)	0.7 (Assumption)		3) Main Cause of Channel Shoaling	Silation		4) Supply Source of Channel Shoaling	Kiver-borne secument and Surrounding shallow sea		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		- Estuary	Muddy sand or	Fine cohesive clay $2-150\mu$	- Coast	Š	o) Others			
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Predominant Monsoon: SW	Prevailing Wind: S – W Max, Wind Spead (Knots): 56 E	- Annual Rainfall (mm)	1,458.2		2) River Conditions	- Name of the River	Thachin River	<ul> <li>Drainage Area (Km²)</li> <li>6,300</li> </ul>		- mean river Discharge (m*/s) 59	- Annual Suspended Sediment Discharge (t)	615,000		3) Marine Conditions	rave Prevailing Wave:	Wave Height (m) H = Calm	Wave Period (sec) T = Wave Length (m) L =	. Tidal Level (m)		+	MHW ~ MSL +1.65	-	MLL* ~ ~			
Name of the Channel: (SAMUT SAKORN)	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	-	237,294 [2]				2) Maintenance Dredging	Year Volume Length Dredger (Km)	-	89	69	70	7.1	7.2	73	74	75	76	1.1	78	79	80	81	82 3,078 0.03 C-17	83 385,390 3.0 C-17	48	85 (25,200) (6.7) (H-6)	j stands for months worked. ( ) stands for HD's Dredging Programme.
No. 30	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	2			below LLW		2) Maximum Size of Vessels (GRT)	100	. 1	3) Type of the Port			4) Geographical Features at the mouth of the	Return Bar	THE STRAIGH		5) Seasonal Influences	The post is usable all the year round.		6) Dumping Area	Both banks of the channel		) Others	(1)				

IV. Maintenance Volume of Drodging	1) Estimated Maintenance Volume (m3 p.a.)	150,000		2) Silt Rate (m p.a.)	0.45 (Assumption)		3) Main Cause of Channel Shoaling	Siltation		Piver-home sediment and	Materials transported by wave actions	:	5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Mud		- Estuary	Mud		- Coast	Mud	6) Others	- The maintenance dredging has been carried	mouth	- Because the inner part is deep enough,	there is no need to dredge there.
III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Predominant Monsoon: SW Prevailing Wind: S – W	Max. Wind Spead (Knots): 56 E	- Annual Rainfall (mm)	1,458.2		2) River Conditions	Name of the River	isang rakong kiver	- Drainage Area (Km <sup>-</sup> ) 4,160		- Mean River Discharge (m³/s)	- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	Wave Prevailing Wave:	Wave Height (m) H = max. 1.0	Wave Period (sec) T = Wave Length (m) L =	- Tidal (evel (m)		MHHW +2.98 (MHWS)	MHW +2.07		≥	00.04 **********************************	- Current		
		Dredger	C-15,17	C-17					Dredger																	H-6	575		(\$-12)	ramme.
f Dredging		Length (Km)	8.5	4.2					Length (Km)																	8.5			(8.5)	for HD's Dredging Programme,
II. Past Record of Dredging	Suisp	Volume (m³)	474,298	218,242				ce Dredging	Volume (m³.)																-	27,999		1000	(20,200)	stands for MONThs worked.  stands for HD's Dredging P
11.	1) Capital Dredging	Year	FY80	FY81				2) Maintenance Dredging	Year	FY 67	89	69	70	71	72	73	47	75	76	7.7	78	79	8	8	% 62	83	84	, ,		stands ( )
		Length (Km)	8.5			]								fthe	1						<u>-</u>	 ਵਿ								
the Channel	<u></u>	Depth (m)	3			below LLW		(GRT)						the mouth o								inel (Outer pa				 				
Characteristics of the Channel	of the Chan	Width (m)	40					Size of Vessels			Port	Į,		al Features at		Bar		Juences	` 		<u> </u>	South-east of the channel (Outer part)								
I. Cha	1) Dimensions of the Channel							2) Maximum Size of Vessels (GRT)	300		3) Type of the Port	River Port		4) Geographical Features at the mouth of the	River	Estuary Bar		5) Seasonal Influences			6) Dumping Area	South-ea		ć	Others					

No. 32	Name o	f the Chan	Name of the Channel: RAYONG	NC		ā]	Dredging Center: CHANTABURI
I. Characteristics of the Channel		II. Past	Past Record of Dredging	redging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
1) Dimensions of the Channel	1) Capi	1) Capital Dredging	-co			1) Meteorological Conditions	1) Estimated Maintenance Volume (m² p.a.)
Width Depth Length	Year	ļ	Volume	Length (Km)	Dredger	- Wind	000'001
2	FY79		8	,	C-15	Predominant Monsoon: SW Prevailing Wind: SW	
						Max. Wind Spead (Knots): 73 NNW	2) Silt Rate (m p.a.)
						- Annual Rainfall (mm)	0.8 (Assumption)
MT/I pelow I/I/W						1,321.6	
							3) Main Cause of Channel Shoaling
2) Maximum Size of Vessels (GRT)	2) Mair	2) Maintenance Dredging	guidpa	· .		2) River Conditions	Litroral Drift
001	Year	<b> </b>	Volume (m³)	Length (Km)	Dredger	- Name of the River	
	FY 67	67				•	4) Supply Source of Channel Shoaling
3) Type of the Port		89		-		Druinage Area (Km²)	Sand Beach nearby coast.
River Port	L	69					
	L.	5		-		- mean Kiver Discharge (m <sup>2</sup> /s)	5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the		7.1		-		- Annual Suspended Sediment Discharge (t)	River Bed Material
Kiver Estrong Pos		72					Upper Stream;
Estuary Bai		73			-		
		4.				3) Murine Conditions	Midstream:
5) Seasonal Influences		75				– wave Prevailing Wave: SW	
		2,6		-		Wave Height (m) H = 1.0 - 1.5	Lower Reaches:
		7.7				Wave Period (sec) $T = W$ ave Length $(m) L =$	
6) Dumping Area		78.					- Estuary
East side		62		}·			Fine to Coarse Sand
		08	94.810	0.	C17	мннw +0.23	
2000		81 16	107,349	10	C.15	MSL ±0.00	- Coast
- The inner part of the river is fairly stable.		82 1.	23.521	1.6	C-1S	MLW	Fine to Coarse Sand D50 = 0.45 ~ 0.57 (Beach Sand)
- The breakwater to prevent the littoral		83   16	167,030	0.35	C-23		or courts
drift was constructed at the mouth of the		\$4 4	484,849	3.0	C-25	- Current	
river in 1983.		35 (2	(250,000)	(3.0)	(C-25)		
		stands f	stands for months worked.	vorked.	ramme.		
	-						

Dredging Center: CHANTAGURI	IV, Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m <sup>3</sup> p.a.)	30,000	2) Silt Rate (m p.a.)	0.5 (Assumption)	3) Main Cause of Channel Shoaling	Littoral Drift	and Comment of the comment of the contract of	Sand Beach nearby coast	· .	6) Bottom Codiment (Vind of only B. moin site)	5) Detroit Seament (Alice of Soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches: Clayey or Sitty sand		- Estuary	Silty or Fine sand		- Coast	; ;	O) Ciners	and maintenance dredging is not necessary.		
Ω	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	rredominant Monsoon: SW Prevailing Wind: SW Max. Wind Spead (Knots): 73 NNW	- Annual Rainfall (mm) 1,321.6		2) River Conditions	- Name of the River	rasse Aver — Drainage Area (Km²)	2,700	- Mean River Discharge (m <sup>3</sup> /s)		- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	- wave Prevailing Wave: SW	Wave Height (m) $H = 1.0 - 1.5$	Wave Period (sec) I = Wave Length (m) L ≈	(m) [ave] [ave]		+	MSE +1.1		LLW ±0.00			
Name of the Channel: PRASAE	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (m³)	FY79 64,370 (0.7) C-15			2) Maintenance Dredging	Year Volume Length Dredger (Km)	FY 67	89	69	70	71	72	73	74	75	76	77	78	19	08	81 123,185 2.0 C-15	82	83 18,100 2.0 H-6	84	85 (16,800) (2.0) (H-6)	[ ] stands for months worked. ( ) stands for HD's Dredging Programme.
No. 33	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	40 2 2.0	below LLW		um Size of Vessels (GRT)	100		3) 1ype of the Port			4) Geographical Features at the mouth of the	Kiver .	Estuary Dat		5) Seasonal Influences	The port is usable all the year round.		6) Dumping Area	East of the channel.		7) Orhers	Company (				

Dredging Center: CHANTABURI	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m² p.a.)	30,000	2) Silt Rate (m p.a.)	0.4 (Assumption)	3) Main Cause of Channel Shoaling	Littoral Drift		4) Supply Source of Channel Shoaling Sand Beach nearby coast.			5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:	-	- Estuary			- Coast		o) Chiers	- I ne inner pair of the fiver need not be dredged.		
	III. Meteorology, River & Marine	l) Meteorological Conditions	- Wind	Predominant Monsoon: SW Prevailing Wind: SW Max. Wind Spead (Knots): 73 NNW	~ Annual Rainfall (mm) 1,321.6		2) River Conditions	- Name of the River	- Drainage Area (Km²)		Moun Bluer Discharce (m3/6)	the state of the s	- Annual Suspended Sediment Discharge (t)			3) Murine Conditions	- Wave Prevailing Wave: SW	Wave Height (m) $H = 1 - 1.5$	Wave Period (sec) T == Wave Longth (m) T ==	į	HHW	МЕНЖ	MHW MSL (+1.1)		MLLW	T. record		
Name of the Channel: PHANG RAD	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger (m³) (Km)	FY80 76,025 1.8 C.17			2) Maintenance Dredging	Year Volume Length Dredger		89	69	70	71	72	73	74	75	76	11	8	64	08	700	20 C1	83	84 19.880 - C.25	85 (135,000) (2.0) (C-17)	hs worked. Dredging Progra
No. 34	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	40 2 1.8	below LLW		2) Maximum Size of Vessels (GRT)	001	3) Type of the Port	River Port			4) Geographical Features at the mouth of the	Fotune Bor	PG (Prints)		5) Seasonal Influences	The port is usable all the year round.		6) Dumping Area				() Chiefs				

Dredging Center: CHANTABURI	ine IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m³ p.a.)			2) Silt Rate (m p.a.)	ſ		3) Main Cause of Channel Shoaling	Siltation	A) Clinally Course of Chanal Chanline	River-borne Sediment and a major	cause is jewel mining waste.	A) Barton Cadimunt (Vind afred) & main since	o) porton seminari (X) id o) son o glani sice)	harge (t) — Kiver Beg Malerial	Upper Stream:		Midstream:		Lower Reaches; Clay to silt		- Estuary	Silty Sand		- Coast		The mirrore of dead aim in 5V 1081 was	to reclaim the land for the dredging center.	$V = 143,645 \text{ m}^3$	T # 0.52 cm
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind	Predominant Monsoon: SW Prevailing Wind: SW	Max. Wind Spead (Knots): 65 S	- Annuai Rainfall (mm)	2977.2		2) River Conditions	Name of the River	Chantaburi Kiver  — Draingos Area (Km²)	7,390	- Mean River Discharge (m <sup>3</sup> /s)		- Annual Suspended Sediment Discharge (t)			3) Marine Conditions	- Wave Prevailing Wave:	Wave Height (m) H ≈	Wave Period (sec) $T = Wave Length (m) L =$	- Tidal Lovel (m)	мнн	MHHW +2.65 (MHWS)	MSL +1,81	MIW WITH	1.1.W ±0.00	***************************************		
Name of the Channel: CHANTABURI	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	+					2) Maintenance Dredging	Year Volume Length Dredger	FY 67	89	69	70	- 12	72	73	74	75	7.6	77	78	62	08	82	82	83	84	85	
No. 35	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	2			below LLW		2) Maximum Size of Vessels (GRT)	100		s) type of the York	KUVET POIL		4) Geographical Features at the mouth of the	River			5) Seasonal Influences			6) Dumping Area			7) Others	The inner part of the river is fairly stable.	- There is no navigational difficulty at	present		

A CONTRACTOR OF THE CONTRACTOR							
I. Characteristics of the Channel	11.	Past	Record of Dredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging	
1) Dimensions of the Channel	1) Capital Dredging	)redging			1) Meteorological Conditions	1) Estimated Maintenance Volume (m³ p.a.)	<del> </del>
Width Depth Longth	Year	Volume (m²)	Length (Km)	Dredger	Wind	200,000	
40 2 17.5	FY83	20,600	5.0	9-H	Predominant Monsoon: SW Prevailing Wind: SW		
	FY84	481,644	2.64	C-17	Max. Wind Spead (Knots): 65 S	2) Silt Rate (m p.a.)	
	(FY85	450,000	2~3	C-17)	- Annual Rainfall (mm)	0.3 (Assumption)	
below LLW					2,977.2		
						3) Main Cause of Channel Shoaling	
2) Maximum Size of Vessels (GRT)	2) Mainten	2) Maintenance Dredging			2) River Conditions	Siltation due to the river-borne sediment.	
100	Year	Volume (m <sup>3</sup> )	Length (Km)	Dredger	Name of the River		
•	FY 67				Irat Kiver	4) Supply Source of Channel Shoaling	
3) Type of the Port	89				Drainage Area (Mir.)	One of the major sources is jewel mining waste.	·
Niver Fort	69						
	0۷				16.0	5) Bottom Sediment (Kind of soil & grain size)	••••••
4) Geographical Features at the mouth of the	1,				- Annual Suspended Sediment Discharge (t)	- River Bed Material	
Estuary Ray	72				12,000	Upper Stream:	
ind finite.	7.3						
	74				3) Marine Conditions	Midstream: Latelite clay	· <del>-</del>
5) Seasonal Influences	7.5				- wave Prevailing Wave: SW		
	76				Wave Height (m) H = 1 - 1.5	Lower Reaches: Clay to silt	
	77			-	Wave Fenod (sec) 1 = Wave Length (m) L =		
6) Dumping Area	78				- Tidal Level (m)	Estuary	
	62				нн		····
	28				MHHW +2.1 (MHWS)		
	8	Andreas and the second			T + TSW	Coast	<u>-</u>
2) Offices  - The inner part is rather stable and deep	82						· · ·
enough, therefore, there is no need to	28				MLLW +0.15 (MLWS)	6) Others	
dredge.	84					- The critical section is the entrance and it is expected that maintenance deadning	
	88				100170	is necessary for only the estuary bar.	
	<del> </del>	stands for months worked	ıs worked.	7			
		The state of the state of the state of	1				_

F	Name of (	의	ONG YAI			Dredging Center: CHANTABURI
Characteristics of the Channel	II	I. Past Record of Dredging	of Dredging		III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
	1) Capital	Dredging	·		1) Metcorological Conditions	1) Estimated Maintenance Volume (m3 p.a.)
Length (Km)	Year	Volume (m³)	Length (Km)	Dredger	- Wind	20,000
1.0	(FY85)		(1.0)	(C-25)	Predominant Monsoon: SW Prevailing Wind: W Max Wind Swap Kenter: 63 NNW	2) Silt Rate (m p.a.)
					- Annual Rainfall (mm)	0.5 (Assumption)
below LLW					4,763.9	
						3) Main Cause of Channel Shoaling
***************************************	2) Mainte	2) Maintenance Dredging	-		2) River Conditions	Siltation due to density current.
	Year	Volume (m <sup>3</sup> )	Length (Km)	Dredger	- Name of the River	4) Cumair Courses of Channel Chanities
	FY 67				Designate Area (Km2)	Surrounding shallow sea
	89		i		Litatioge from (Not)	
_	69				- Mean River Discharge (m <sup>3</sup> /s)	
	70					5) Bottom Sediment (Kind of soil & grain size)
4) Geographical Features at the mouth of the	71				- Annual Suspended Sediment Discharge (t)	- River Bed Material
	72					Upper Stream:
	73					
	74				3) Marine Conditions	Midstream:
<del></del> :-	7.5				- wave Prevailing Wave., SW	
	76				Wave Height (m) $H = 1 - 1.5$	Lower Reaches:
	77				Wave Period (sec) T == Wave Length (m) L ==	
<u> </u>	78				- Tidal Level (m)	- Estuary
	79				нн	Mud to clay
					MHHW	
	8 8				MSL	- Coast
	82				MLW	
-:	83				MECW	e) Others
<u> </u>	8					
	85		_		, in the state of	
		stands for months worked,	s worked.	Tamme		
	, ,	a o arrivor contrato		0		

Characteristics of the Channel				
	II. Past Record	Past Record of Dredging	III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
Dimensions of the Channel	1) Capital Dredging		1) Meteorological Conditions	1) Estimated Maintenance Volume (m3 p.a.)
(m) (m) (km) (120 9 1.5	Year Volume (m²) (FY86)	Length. Dredger (Km)	Predominant Monsoon: SW Prevailing Wind: W Max. Wind Spead (Knots): 45 SW	2) Silt Rate (m p.a.)
below LLW			- Annual Rainfall (mm) 2,337,5	·
2) Maximum Size of Vessels (GRT)	2) Maintenance Dredging	5.1	2) River Conditions	3) Main Cause of Channel Shoaling Littoral Drift but not significant
20,000 DWT	Year Volume	Length Dredger		
3) Type of the Port	FY 67 68		No River - Drainage Area (Km²)	4) Supply Source of Channel Shoaling
Reclamed Land	69			
4) Geographical Features at the mouth of the	70		- Mean Kiver Discharge (m²/s)	5) Bottom Sediment (Kind of soil & grain size)  - River Bed Material
	72			Upper Stream:
************	73		3) Marino Conditions	
	74		- Wave	Midstream:
Seasonal influences	75		Prevailing Wave: SE Wave Height (m) H = max 10	F. Constitution Of State Constitution of Sta
	71			· carrant party
6) Dumping Area	78		wave Length (III) L =	- Estuary
	7.9		нн	
	80		MHHW +3.40 (MHWS)	
	81			- Coast
	82		MLW +1.70 (MLWN)	rine to Coarse sand
	83			O Contago
	78		- Current	
	85			
	stands for mor	stands for months worked.		

II. Past Record of Dredging Capital Dredging
Year Volume Length Dredger
3,700,000 m³ Computed on the basis of the sounding
survey of the year 1983.  where, side slope: 1 in 10
depth allowance: 0.5 m
2) Maintenance Dredging
Year Volume Length Dredger
FY 67
89
69
70
7.1
72
73
74
75
76
11
78
94
80
180
r ox
63
84
88
stands for months worked.
stands for HD's Dredging Programme.

Dredging Center: CHANTABURI

Name of the Channel: CHAO PHRAYA SECOND

No. 2'

Dredging Center: SONGKHLA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m² p.a.)	16,000		2) Silt Rate (m p.a.)	0.2 (Assumption)		3) Main Cause of Channel Shoaling	Siltation		4) Supply Source of Channel Shoaling River-home sediment and	Surrounding shallow bay		5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		Midstream:		Lower Reaches:		Estuary	Mud		- Coast	<b>?</b>	o) Orners			
	III. Meteorology, River & Marine	1) Meteorological Conditions	briw -	Predominant Monsoon: NE	Prevailing Wind: SW Max. Wind Spead (Knots): 55 WSW	- Annual Rainfall (mm)	t 57 t 7		2) River Conditions	- Name of the River	Drainage Area (Km²)	( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (	Mann Birne Discharas (m. ) (c)	Tical Civel Discharge (III 75)	- Annual Suspended Sediment Discharge (1)			3) Marine Conditions	- Wave Prevailing Wave:	Wave Height (m) $H = Calm$	Wave Period (sec) $T = Wave [eneth (m)] =$	two leaves the first in	HHW -	+	MHW – MSL +0.80	MLW -	MLLW =- LLW ±0.00			
Name of the Channel: PAK POON	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Dredger	(m²) (km)					2) Maintenance Dredging	Year Volume Length Dredger (Km)	FY 67	89	69	70	7.1	72	73	74	75	76	7.7	000	79	80	8	82	83	84	88	j stands for months worked. ( ) stands for HD's Dredging Programme.
No. 3'	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length	2		With the state of	MTT MOIDO		2) Maximum Size of Vessels (GRT)	100	The Date	S) Appe of the Fold			4) Geographical Features at the mouth of the	Kiver			5) Seasonal Influences			6) Dumping Area			7) Cohomo	, directs				

Dredging Center: SONGKULA	IV. Maintenance Volume of Dredging	1) Estimated Maintenance Volume (m3 p.a.)	32,000	2) Silt Rate (m p.a.)	0.2 (Assumption)	3) Main Cause of Channel Shoaling	Sitation	4) Summiv Course of Channel Chostine	River-borne sediment and	Surrounding shallow sea	5) Bottom Sediment (Kind of soil & grain size)	- River Bed Material	Upper Stream:		MidStream:		Lower Reaches:		- Estuary	Mud		- Coast	A) Orhans	60000			
	III. Meteorology, River & Marine	1) Meteorological Conditions	- Wind Predominant Monsoon; NE	Prevailing Wind: E Max. Wind Spead (Knots): 40 NE	- Annual Rainfall (mm) 1,710		2) River Conditions	- Name of the River	- Drainage Area (Km²)		- Mean River Discharge (m³/s)	- Annual Suspended Sediment Discharge (t)		3) Marine Conditions	- Wave		Wave Height (m) H = Calm	Wave Period (sec) I = Wave Length (m) L =	- Tidal Level (m)	МНН	MHHW	W.C.W.	MLW	MILW	- Current		
Name of the Channel: PUMRIENG	II. Past Record of Dredging	1) Capital Dredging	Year Volume Length Drodger				2) Maintenance Dredging	Year Volume Length Dredger (m)		89	20	11	72	73	74	75	76	77	788	64	08 .	81	83	83	84	85	( ) stands for months worked. ( ) stands for HD's Dredging Programme.
No. 4'	I. Characteristics of the Channel	1) Dimensions of the Channel	Width Depth Length (m) (m) (Km) 40, 2 40		Pelow LLW		2) Maximum Size of Vessels (GRT)	100	3) Tyme of the Port	Estuary Port		4) Geographical Features at the mouth of the	Hettiers, Ren	יייין ממני		5) Seasonal Influences			A) Dumping Ares	Sunding (o	· .		() Ones				

II. Past Record of Dredging	III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
i) Capital Dredging	1) Meteorological Conditions	1) Estimated Maintenance Volume (m <sup>3</sup> p.a.)
Volume Length Dr (m <sup>3</sup> ) (Km) Dr	Dredger - Wind Predominant Monsoon: SW	12,000
	Prevailing Wind: S Max. Wind Spead (Knots): 60 W	2) Silt Rate (m p.a.)
	- Annual Rainfall (mm) 4,275,4	0.2 (Assumption)
		3) Mein Cause of Channel Shoaling
2) Maintenance Dredging	2) River Conditions	Littoral Drift
Volume Length Dr (m <sup>3</sup> ) (Km) Dr	Dredger - Name of the River	6
	- Drainace Area (\$m²)	4) Supply Source of Channel Shoating River-borne sediment and
		Surrounding shallow sea
	- Mean River Discharge (m <sup>2</sup> /s)	5) Bottom Sediment (Kind of soil & grain size)
	- Annual Susended Sediment Discharge (1)	- River Bed Material
		Upper Stream:
	3) Marine Conditions	Midstream:
	Prevailing Wave:	
	Wave Height (m) H = 0.5 - 1.0	Lower Reacties:
	Wave Length (m) L ≈	
	- Tidai Level (m)	- Estuary
	МНН	Silty sand
	MHHW	
	WSL	~ Coast
	MLW	Fine to medium sand
	WLLW LLW	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
	- Curront	
stands for months worked.	•	

Dredging Center: KANTANG

Name of the Channel: KUMPUAN

1 Characteristics of the Channel   1 Characteristics   1 Ch	No. 6'	Name of the Channel: KLONGWAL	L D	Dredging Center: CHANTABURI
1 Capital Dividing   1 Capit		Past	III. Meteorology, River & Marine	IV. Maintenance Volume of Dredging
Width   Depth   Langth   Decident   Canal	1) Dimensions of the Channel	1) Capital Dredging	1) Meteorological Conditions	i) Estimated Maintenance Volume (m³ p.a.)
Pelow LLW	Depth (m)	Volume Length (m³) (Km)	- Wind Predominant Monsoon: NE	10,000
Maximum Size of Vissels (GR7)   2. Maintenance Dredging   2. River Conclitions   1.03 i.4			revalling wind: Sw Max, Wind Spead (Knots): 50W	2) Silt Rate (m p.a.)
100   2) Maintenance Dredging   2) River Conditions   100   2) Maintenance Dredging   2) River Conditions   100   2   2   2   2   2   2   2   2   2	below LLW		- Annual Rainfall (mm) 1,031.4	0.25 (Assumption)
100   Tested (GRT)   2) Maintenance Dredging   2) River Conditions   100   Test   Tested (GRT)   100   Tested (G	:			3) Main Cause of Channel Shoaling
100   Vest   Volume   Largeth   Dredger   Small River	2) Maximum Size of Vessels (GRT)	2) Maintenance Dredging	2) River Conditions	Littoral Drift
Type of the Port   68   69   69	100	Volume Length (Km)	- Name of the River	4) Supply Source of Channel Shoaling
Geographical Features at the mouth of the   71   20   20     Sand Bar   72   31   44   47     Sand Bar   74   74   74   74     No seasonal Influence   77   74   74   77   74   77   77   7	3) Type of the Port	FY 67 68	– Drainage Area (Km²)	Surrounding shallow sea
Coographical Features at the mouth of the   71		69	- Mean River Discharee (m <sup>3</sup> /s)	
Sand Bar		70		5) Bottom Scontient (Kind of Soli & grain Size)
2   2   2   2   2   2   2   2   2   2	4) Geographical Features at the mouth of the	. 12	- Annual Suspended Sediment Discharge (t)	- Kiver Bed Material
13   Marine Conditions   13   Marine Conditions   15   Marine Conditions   15   Marine Conditions   15   Marine Conditions   16   Marine Conditions   17   Marine Conditions   17   Marine Conditions   18   Marine Conditi	ביים אייניט	72		Upper Stream:
74   29   waithe Columniance   75	Said Dai	73	2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	
No seasonal influences   75   Prevailing Wave:		74	Marine Conditions     Wave	Midstream:
No seasonal influence   76   Wave Helight (m)   F = 1 - 1.5     Dumping Area	5) Seasonal Influences	75	Prevailing Wave:	
Dumping Area   77	No seasonal influence	76	-	Lower Reaches:
78   - Tidal Level (m)   - E		. 77	wave renod (sec) i = Wave Length (m) L =	
Others  Others  Others  81  82  MLW  MRHW  MHW  MHW  MLW  83  LLW  LLW  LLW  1 stands for months worked.  5 stands for HD's Dredging Programme.	6) Dumping Area	78	- Tidal Level (m)	- Estuary
Sa   MHW   MHW   MHW   MSL   MLW		79	мнн	Silty Sand
S1   MSL   MSL   MLW     83   MLW   MLW     84   LLW     1 stands for months worked.		08	менw	
MLW   MLW   MLLW   Stands for months worked.   Stands for HD's Dredging Programme.   Stands for HD's Dredg	2) Others	81	WST	Coast
MLLW LLW Current ands for months worked. stands for HD's Dredging Programme.	) Outries	82	MLW	
tands for months worked.		83		اة ــــــ
tands for months worked.		84	- Current	
[ ] stands for months worked. ( ) stands for HD's Dredging Programme.		85		
		[ ] stands for months worked. ( ) stands for HD's Dredging Programme.		