

Inspection and Evaluation of Port Facilities

<i>No.17</i>	<i>Name of Jetty</i>	Kaingdan No.1			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	9 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 2
Bridge	Fair	Timber deck is broken	Need to be repair bridge decking timber lost	No	Photo 1,4
Pier	Fair	N	N	No	Photo 1,6
Sponson	Good	No damage		No	Photo 2

<Photograph>



Photo 1 - General



Photo 4 - Decking timbers lost



Photo 2 - Sponson



Photo 5- Pontoon



Photo 3 - Surface delaminated



Photo 6 - General

Inspection and Evaluation of Port Facilities

No.18	<i>Name of Jetty</i>	Kaingdan No.2			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	9 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 3
Bridge	Fair	N	N	No	Photo 2
Pier	good			No	Photo 5
Sponson	Good	No damage		No	Photo -6

<Photograph>



Photo 1 - General



Photo 4 - General



Photo 2



Photo 5 - Porterway



Photo 3 - Pontoon



Photo 6 - Sponson

Inspection and Evaluation of Port Facilities

No.19	<i>Name of Jetty</i>	Lan Thit Street Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		9 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Fair	No damage	Repair hole	No	Photo -3,4
Bridge	Fair	N	N	No	Photo 1,2,6
Pier	Fair	N	Repair edge of abutment	No	Photo 2,5
Sponson	Good	No damage	N	No	Photo -4,3

<Photograph>



Photo 1 - General



Photo 4 - General



Photo 2



Photo 5 - Timber decking loss



Photo 3 - Surface delaminated



Photo 6 - Hole at Pontoon surface

Inspection and Evaluation of Port Facilities

No.20	<i>Name of Jetty</i>	Hledan No.1 Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		9 Dec, 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Fair	Hole	Need to repair the hole	No	Photo 6
Bridge	Fair	N	Roller wheel is required	No	Photo1, 5
Pier	Fair	N	N	No	Photo 4,6
Sponson	Good	No damage		No	Photo 1,2

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Photo 1 - General



Photo 4 - General



Photo 2 - General



Photo 5 - Roller wheel is missing



Photo 3 - Decking timber loose



Photo 6 - General

Inspection and Evaluation of Port Facilities

No.21	<i>Name of Jetty</i>	Concrete Jetty No.4			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		8 March,2011	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	N	N		No	
Bridge	N	N	N	No	
Pier	Fair	N	N	No	Photo 1~3
Sponson	N	N		No	

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This is private Jetty, so this Jetty is out of scope.



Photo 1 - General



Photo 3



Photo 2

Inspection and Evaluation of Port Facilities

No.22	<i>Name of Jetty</i>	Hledan No.2 Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		9 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage	N	No	Photo 4
Bridge	Good	N	N	No	Photo 1,3,5
Pier	Bad	trace of crack on concrete column	To repair the column and bracing Immediately	No	Photo 2,6
Sponson	Good	No damage	N	No	Photo 3

<Photograph>



Photo 1 - General



Photo 4 - General

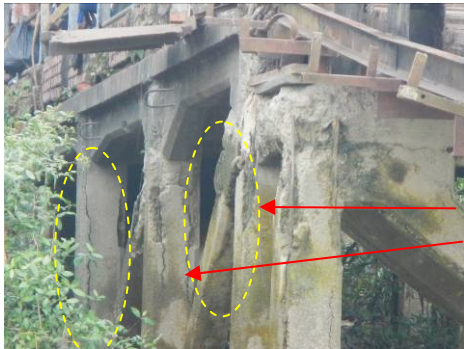


Photo 2

Bracing & Column damage



Photo 5 - Timber loose & damage



Photo 3



Photo 6

Inspection and Evaluation of Port Facilities

No.23	<i>Name of Jetty</i>	Concrete Jetty 5(Private) (Shwe Pyi Tan)			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		9 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 4
Bridge	Fair	Timber deck is broken	Need to be repair bridge deck timber lost	No	Photo 1,3,6
Pier	Bad	Reinforced bar is exposed and trace of crack by delaminated concrete.	Immediately repair the column and bracing	No	Photo 2,5
Sponson	Good	No damage		No	Photo 1,3

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Photo 1 - General



Photo 4 - concrete damage



Photo 2



Photo 5 - Bracing & Column damage



Photo 3



Photo 6 - Seriously damage the beams and bracing

Inspection and Evaluation of Port Facilities

No.24	<i>Name of Jetty</i>	Phoegyilan(1) Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	9 Dec, 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage	N	No	Photo 5
Bridge	Fair	Timber deck is broken	Need to repair the bridge decking timber lost	No	Photo 2, 5
Pier	Fair	Abutment concrete damage	Need to repair the Abutment concrete	No	Photo 2,3,5
Sponson	Good	No damage	House keeping	No	Photo 5

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Photo 1 - General



Photo 4



Photo 2



Photo 5



Photo 3



Photo 6 - Bridge facility damage

Inspection and Evaluation of Port Facilities

<i>No.25</i>	<i>Name of Jetty</i>	Phoegyilan (2) Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	8 March,2011	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo -6
Bridge	Fair	Timber deck is broken	Need to be repair bridge deck timber lost	No	Photo -3,5
Pier	Fair	N	Need to repair Abutment Column	Pier C. G.I roofing is added	Photo 2
Sponson	Good	N		No	Photo -3

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Photo 1 - Porter way C.G.I roofing is added



Photo 4 - General



Photo 2 - Abutment column damage

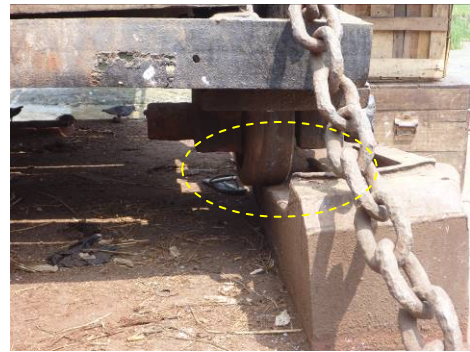


Photo 5 - Roller wheel is shifted



Photo 3



Photo 6

Inspection and Evaluation of Port Facilities

No.26	<i>Name of Jetty</i>	Shwe Taung Dan (1) Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>		5 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 6
Bridge	Fair	Roller wheel missing	Need to replace roller wheel	No	Photo 1,3
Pier	Fair	Defect, de laminated	Need to repair	No	Photo1, 4
Sponson	Good	No damage	N	No	Photo -8

<Photograph>



Photo 1 - General



Photo 4



Photo 2



Photo 5



Photo 3



Photo 6



Photo 7 - Bollard base damage



Photo 8 - Sponson

Inspection and Evaluation of Port Facilities

No.27	<i>Name of Jetty</i>	Shwe Taung Dan (2) Jetty			
<i>Dimension</i>	Pontoon: Length 120'x Width 20' (before Nargis)	<i>Date of Inspection</i>	5 Dec, 2014		
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage	N	No	Photo 1
Bridge	Fair	Timber deck is broken Roller wheel is missing	Need to be repair bridge deck timber lost, to replace roller wheel	No	Photo 1,3,5,6
Pier	Fair	N	N	No	Photo 1,2, 7
Sponson	Good	No damage	N	No	Photo 1,

<Photograph>



Photo 1 - General



Photo 7



Photo 2 - Abutment



Photo 8



Photo 3 - Timber decking loss & damage



Photo 9 - Roller wheel is missing



Photo 4 - Sponson



Photo 10 - Pier



Photo 5 - Pontoon



Photo 11 - Connection bridge



Photo 6 - Pier



Photo 12 - Revetment

Inspection and Evaluation of Port Facilities

No.28	<i>Name of Jetty</i>	Lanmadaw(1) Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)	<i>Date of Inspection</i>	5 Dec, 2014		
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage	N	No	Photo 2
Bridge	Fair	Roller wheel is missing	To replace the roller wheel	No	Photo 1,4,6
Pier	Fair	Rust	N	No	Photo 1,3,5
Sponson	Good	No damage	N	No	Photo 4

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Photo 1 - General



Photo 4 - General



Photo 2



Photo 5



Photo 3

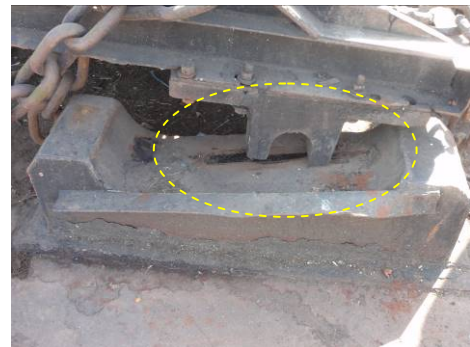


Photo 6 - Roller wheel is missing

Inspection and Evaluation of Port Facilities

No.29	<i>Name of Jetty</i>	Lanmadaw(2) Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	5 Dec, 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Bad	Water leaking	Need to replace new pontoon	No	Photo 5
Bridge	Fair	N	N	No	Photo 3,4
Pier	Fair	N	N	No	Photo 1, 2
Sponson	fair	No damage		No	Photo 6

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Photo 1 - General



Photo 4



Photo 2



Photo 5



Photo 3



Photo 6

Inspection and Evaluation of Port Facilities

No.30	<i>Name of Jetty</i>	Shi Oh Dan No.1 Jetty			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (before Nargis)		<i>Date of Inspection</i>	5 Dec, 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 6
Bridge	Fair	N	To replace Roller wheel	No	Photo 1,3 5
Pier	fair	Reinforced bar is exposed and trace of crack by delaminated concrete.	repair the column and bracing Immediately	No	Photo 2,4
Sponson	fair	No damage	N	No	Photo 1,3

<Photograph>



Photo 1 - General



Photo 4 - Abutment damage



Photo 2 - Sponson



Photo 5 - Roller wheel is missing



Photo 3 - General



Photo 6 - Pontoon

Inspection and Evaluation of Port Facilities

No.31	<i>Name of Jetty</i>	Shi Oh Dan No.2 Jetty			
<i>Dimension</i>	Pontoon: Length 120'x Width 20' (before Nargis)	<i>Date of Inspection</i>		5 Dec,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	No damage		No	Photo 5
Bridge	Fair	N	To replace roller wheel	No	Photo 1,3, 4
Pier	Bad	Reinforced bar is exposed and trace of crack by delaminated concrete.	Need to repair the column and bracing Immediately	No	Photo 1, 2, 7
Sponson	Good	No damage		No	Photo 3

<Photograph>



Photo 1 - General



Photo 4 - Porter way girder rust and damage



Photo 2 - Beam , slab rebar exposed and rusted



Photo 5 - Pontoon



Photo 3 - Roller wheel is missing



Photo 7 - Pier bracing defected

Inspection and Evaluation of Port Facilities

No.32	<i>Name of Jetty</i>	Port Health Jetty 2			
<i>Dimension</i>	Pontoon: Length 240' x Width 40' (tank p.) (after Nargis)	<i>Date of Inspection</i>	4-December 2014		
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Fair	Decking timber lost & loose	Need to repair deck timber lost	N	Photo 4,6
Bridge	Fair	N	N	N	Photo 3,5
Pier	Fair	N	N	N	Photo 1,2
Sponson	Fair	N	N	N	Photo 3

<Photograph>



Photo 1 – General



Photo 4 - Pontoon



Photo 2 - Corner damage



Photo 5 - Steel bridge



Photo 3 - Sponson

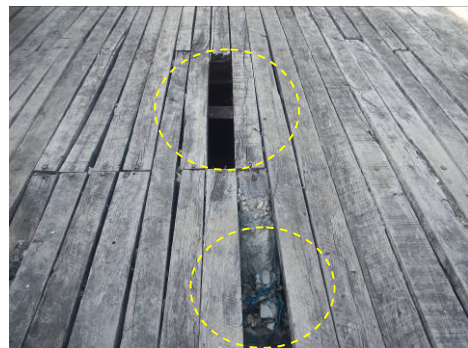


Photo 6 - Timber Decking damage

Inspection and Evaluation of Port Facilities

No.33	<i>Name of Jetty</i>	Port Health Jetty 3			
<i>Dimension</i>	-			<i>Date of Inspection</i>	4 December 2014
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N	N	N	N	
Pier	fair			N	Photo 1~3
Sponson	N	N		N	

<Photograph>



Photo 1 - General



Photo 2



Photo 3

Inspection and Evaluation of Port Facilities

No.34	<i>Name of Jetty</i>	Pansodan Jetty			
<i>Dimension</i>	Pontoon: Length 120'x Width 20' (after Nargis)	<i>Date of Inspection</i>	4 December 2014		
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	N	Rusted pontoon, steel deck need to be replaced the new	N	Photo 3,6
Bridge	Good	N	N	N	Photo 1,3,5
Pier	Fair	passenger way is damage, support is broken	Need to repair, Immediately	N	Photo 2,4
Sponson	Fair	N		N	Photo 3

<Photograph>



Photo 1 – General



Photo 4 - Passenger way is damage



Photo 2 - Support is rusted & broken



Photo 5



Photo 3 - General



Photo 6 - General

Inspection and Evaluation of Port Facilities

No.35	<i>Name of Jetty</i>	Nan Thi Da Jetty (3) Upper			
<i>Dimension</i>	Pontoon: Length 120' x Width 20' (after Nargis)	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N	N	N	N	
Pier	N	N	Need repairing		Photo 3,4
Sponson	N	N	N	N	

<Photograph>



Photo 1 - General



Photo 3



Photo 2 - Abutment slab corner damage



Photo 4 - Abutment slab corner damage

Inspection and Evaluation of Port Facilities

No.36	<i>Name of Jetty</i>	Nan Thi Da (3) Lower			
<i>Dimension</i>	Pontoon: Length 157' x Width 40' (tank p.) (after Nargis)	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Fair	N	N	N	
Bridge	Fair	Roller wheel is missing	To replace the wheel	N	Photo 4
Pier	Fair	N	N	N	Photo 1,6
Sponson	Fair	N	N	N	Photo 2,5,3

<Photograph>



Photo 1 – General



Photo 4 - Steel Bridge



Photo 2



Photo 5 - Roller wheel missing



Photo 3 - Roller wheel is missing



Photo 6 - Porterway & Revetment

Inspection and Evaluation of Port Facilities

No.37	<i>Name of Jetty</i>	Nan Thi Da (4) Upper			
<i>Dimension</i>	Pontoon : Length 240'xWidth 20'	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Fair		N	N	Photo-3 & 6
Bridge	Good	N	N	N	Photo 1,4
Pier	Bad	Abutment column damage,	Need to repair	N	Photo 2
Sponson	Fair	N	N	N	Photo 5

<Photograph>



Photo 1 – General



Photo 4 - General



Photo 2 - Abutment column damage



Photo 5 - Sponson



Photo 3 - Decking Damage



Photo 6 - Decking Timber

Inspection and Evaluation of Port Facilities

No.38	<i>Name of Jetty</i>	Nan Thi Da (4) Lower			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	N	N	N	Photo 3
Bridge	Fair	Roller wheel missing	Need to replace wheel	N	Photo 1,2
Pier	Fair	Abutment column damage	Need to repair	N	Photo 4
Sponson	Fair	N	N	N	Photo 2,5
Abutment		N	N		Photo 4

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Photo 1 - General



Photo 4 - Abutment Column Damage



Photo 2 - Roller wheel is missing





Photo 5 - Pontoon and sponson



Photo 3 - Pontoon timber floor

Inspection and Evaluation of Port Facilities

No.39	<i>Name of Jetty</i>	Workshop Pontoon Jetty			
<i>Dimension</i>	-			<i>Date of Inspection</i>	4 December 2014
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 20011</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N		N	N	
Pier	Bad	Totally broken		N	Photo 1,2
Sponson	N	N	N	N	
<Photograph>					
					
Photo 1 - General			Photo 2		

Inspection and Evaluation of Port Facilities

No.40	<i>Name of Jetty</i>	Thein Byu Jetty			
<i>Dimension</i>	Pontoon : Length100' x Width20' (2 Sets)	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Fair		N	N	
Bridge	Fair				Photo 1, 3
Pier	Good				
Sponson	Fair				Photo 2
Abutment	Fair				Photo 4

<Photograph>



Photo 1 – General



Photo 3 - Steel Bridge



Photo 2 - Sponson



Photo 4 - Bridge & Abutment

Inspection and Evaluation of Port Facilities

No.41	<i>Name of Jetty</i>	Botahtaung 2			
<i>Dimension</i>	-			<i>Date of Inspection</i>	4 December 2014
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	N-	N	N	No	
Bridge	Bad	Rust	Under construction	No	Photo 1,2
Pier	N-	N	N	No	
Sponson	N-	N	N	No	

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Photo 1 - General



Photo 2

Inspection and Evaluation of Port Facilities

No.42	<i>Name of Jetty</i>	Botahtaung 3 (upper)			
<i>Dimension</i>	Share the No.36-1 Jetty		<i>Date of Inspection</i>	28 February,2011	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	N	N	No	Photo -6
Bridge	Good	N	N	No	Photo 1,6
Pier	Bad	Abutment slab damage	Need to repair	No	Photo 2,3,4,5
Sponson	Fair	Rust, deficit		No	Photo 6

<Photograph>



Photo 1 - General



Photo 4 - Abutment column and bracing damage



Photo 2 - Abutment Slab concrete damage



Photo 5 - Abutment concrete damage



Photo 3- Abutment column damage



Photo 6 - General

Inspection and Evaluation of Port Facilities

No.43	<i>Name of Jetty</i>	Botahtaung 3 (Lower)			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Fair	N	N		Photo 7
Bridge	Fair	N	N		Photo 4,1,6,8
Pier	Fair	N	N		Photo 1,3,4
Sponson	Fair	N	N		Photo 8

<Photograph>



Photo 1 - General



Photo 4 - Hand rail post damage



Photo 2 - Slab corner damage



Photo 5 - Roller wheel missing



Photo 3 - Slab concrete surface



Photo 6 - Timber Decking damage



Photo 7 - Pontoon



Photo 8 - Steel bridge and sponson

Inspection and Evaluation of Port Facilities

No.44	<i>Name of Jetty</i>	Botahtaung 4 (Upper)			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>			4 December 2014
Result of Inspection and Evaluation of Port Facilities					
Facility	General Evaluation	Condition of Damage And/or Deterioration	Measures to be taken	Change from Last survey in 2011	Reference Photo
Pontoon	Fair	N	N	N	Photo 5
Bridge	Fair	Roller wheel is missing	Need to replace wheel	N	Photo 3,8
Pier	Fair	N	N	N	Photo 6
Sponson	Fair	N	N	N	Photo 3

<Photograph>



Photo 1 – General



Photo 4 - Pier



Photo 2 - Hand rail Post damage



Photo - 5 Pontoon



Photo 3 - Steel Bridge and Sponson



Photo 6 - Pier



Photo 7 - Timber decking damage



Photo 8 - Roller Wheel missing

Inspection and Evaluation of Port Facilities

No.45	<i>Name of Jetty</i>	Botahtaung 4 (Lower)			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>		4 December 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N	N	N	N	
Pier	Fair	Abutment damage, Rebar exposed	Need repair	N	Photo 1~4
Sponson	N	N	N	N	

<Photograph>



Photo 1 – General SSS



Photo 3 - Hand rail missing



Photo 2 - Edge of Concrete Slab damage



Photo 4 - General

Inspection and Evaluation of Port Facilities

No.46	Name of Jetty	Botahtaung 5 (Upper)			
<i>Dimension</i>	Share the No.36-1 Jetty	N			4 December 2014
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>		<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N	N	N	N	
Pier	Fair	N	N	N	Photo 1-4
Sponson	N	N	N	N	

<Photograph>



Photo 1 – General



Photo 3



Photo 2 - Abutment Corner damage

Inspection and Evaluation of Port Facilities

No.47	<i>Name of Jetty</i>	Botahtaung 5 (Upper)			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>			4 December,2014
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	Photo 8
Bridge	N	N	N	N	Photo 7,6
Pier	Fair	N	N	N	Photo1~5
Sponson	N	N	N	N	N

<Photograph>



Photo 1 – General



Photo 4 - Corner rebar expose



Photo 2



Photo 5 - Damage corner of Abutment



Photo 3 - Corner damage, Rebar expose



Photo 6 - Timber Decking Damage



Photo 7 - Steel bridge and Pier



Photo 8 - Pontoon



Photo 9 - Hand rail missing

Inspection and Evaluation of Port Facilities

No.48	<i>Name of Jetty</i>	Botahtaung 6 Upper (Hotel Vintage Luxury)			
<i>Dimension</i>	Share the No.36-1 Jetty		<i>Date of Inspection</i>	4 December,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	N	N	N	
Bridge	Good	N	N	N	Photo 2
Pier	Good	N	N	N	Photo 1,3,4
Sponson	Good	N	N	N	

<Photograph>



Photo 1 – General



Photo 4 - Pier



Photo 2 - Steel Bridge



Photo 3 – General

Inspection and Evaluation of Port Facilities

No.49	<i>Name of Jetty</i>	Botahtaung 6 Lower (Hotel Vintage Luxury)			
<i>Dimension</i>	Share the No.36-1 Jetty	<i>Date of Inspection</i>		4December ,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2011</i>	<i>Reference Photo</i>
Pontoon	Good	N	N	N	Photo 3
Bridge	Good	N	N	N	Photo 2
Pier	Good	N	N	N	Photo 1,5,4
Sponson	Good	N	N	N	

<Photograph>



Photo 1 - General



Photo 4



Photo 2



Photo 5

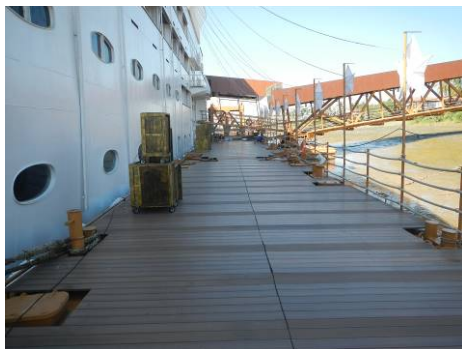


Photo 3

Inspection and Evaluation of Port Facilities

No.50	<i>Name of Jetty</i>	King's Bank Jetty			
<i>Dimension</i>	Pontoon : Length 80'x Width 20' (After Nargis)		<i>Date of Inspection</i>	14 March,2011	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Bad	Using old oil tanker as a pontoon	-Rusted pontoon, steel deck need to be replaced the new	N	Photo 1
Bridge	Fair	Roller wheel missing	To replace wheel, Painting	N	Photo 1,3,4,5
Pier	Fair			N	Photo 1
Sponson	Fair	Rust, deficit	painting	N	Photo -6

<Photograph>



Photo 1 – General



Photo 4 - Roller wheel is missing



Photo 2 - Roller wheel is missing,



Photo 5 - Member is rusted and damage



Photo 3

Inspection and Evaluation of Port Facilities

No.51	<i>Name of Jetty</i>	Crane Jetty in King's Bank			
<i>Dimension</i>	-				<i>Date of Inspection</i>
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	N	N	N	N	
Bridge	N	N	N	N	
Pier	Bad	Totally damage	Need to repair(if use)	N	Photo 1~5
Sponson	N	N	N	N	

<Photograph>



Photo 1 - General



Photo 4



Photo 2 - Beams and bracings are totally damage



Photo 5 - Column and bracing are totally damage

Inspection and Evaluation of Port Facilities

No.52	<i>Name of Jetty</i>	Ant Gyi Jetty (MPA Mechanical Engineering Department)			
<i>Dimension</i>	Sponson : Length 40'xWidth 20' (After Nargis)	<i>Date of Inspection</i>		12 December,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Fair	N	N	N	Photo 4,6
Bridge	bad	Roller Wheel is missing	Need to replace Wheel	N	Photo 2
Pier	bad	Rebar exposed, damage	Need to repair	N	Photo 1,2,5
Sponson	N	N	N	N	Photo

<Photograph>



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14

Inspection and Evaluation of Port Facilities

No.53	<i>Name of Jetty</i>	Dala Port Jetty			
<i>Dimension</i>	Pontoon : Length 120'xWidth 20'	<i>Date of Inspection</i>		10 December,2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Good	N	N	N	Photo 5
Bridge	Good	N	N	N	Photo 5
Pier	Good	N	N	N	Photo 1, 2
Sponson	Good	N		N	Photo 5

<Photograph>



Photo 1



Photo 4



Photo 2



Photo 5



Photo 3 - Revetment



Photo 6 - Small boat landing place

Inspection and Evaluation of Port Facilities

No.54	<i>Name of Jetty</i>	Dala RO/RO Jetty			
<i>Dimension</i>	N/A	<i>Date of Inspection</i>			10 Dec,2014
Result of Inspection and Evaluation of Port Facilities					
Facility	General Evaluation	Condition of Damage And/or Deterioration	Measures to be taken	Change from Last survey in 2011	Reference Photo
Pontoon	N	N	N	No	
Bridge	N	N	N	No	
Pier	N	N	N	No	
Sponson	N	N	N	No	

<Photograph>



Photo 1 - General



Photo 4 - Timber Bridge



Photo 2



Photo 5



Photo 3



Photo 6

Inspection and Evaluation of Port Facilities

No.55	<i>Name of Jetty</i>	Min Ye Kyaw Thu Jetty			
<i>Dimension</i>	Pontoon : Length 120' x Width 20' (After Nargis)	<i>Date of Inspection</i>		10 December, 2014	
Result of Inspection and Evaluation of Port Facilities					
<i>Facility</i>	<i>General Evaluation</i>	<i>Condition of Damage And/or Deterioration</i>	<i>Measures to be taken</i>	<i>Change from Last survey in 2009</i>	<i>Reference Photo</i>
Pontoon	Fair	N	Shop or hut shouldn't be on pontoon	N	Photo 7
Bridge	Fair	Roller , rusted frame	Need to replace roller wheel, Painting,	N	Photo 3,6,8
Pier	Fair	N	N	N	Photo 2,10
Sponson	Fair	N	N	N	Photo 9
Revetment	Fair	Damage	Need Repair	N	2,4,11, 12,13,14

<Photograph>



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 17



Photo 18

APPENDIX B

NAVIGATION SAFETY

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APPENDIX B NAVIGATION SAFETY

B.1 ON BOARD INSPECTION REPORT OF NAVIGATION SAFETY OF YANGON PORT AND CHANNELS

JICA Project Team carried out Ship on Board Inspection in order to confirm current condition for Navigation Safety of Yangon Port and Channels.

B.1.1 OUTLINE OF THE ON BOARD SURVEY

(1) **Purpose of the Inspection**

The purpose of the inspection is to confirm the current situation of Port/Channel Condition and Ship-Handling Condition entering to and sailing from the Yangon Port through the Yangon River.

(2) **Inspector (JICA Project Team):** Capt. Y. Sakae

(3) **Inspection matters:**

- Natural Condition
- Condition of Navigation Aids
- Communication between Port Tower, Pilot and Ship
- Vessel Movement
- Maneuvering Condition
 - Vessel's position • Vessel's course • Speed • Engine motion
 - Interview to Pilot and Captain

(4) **Schedule**

21 st March	2009 Sailing from Yangon Port to Outer Bar
22 nd March	2009 Sailing from Outer Bar and back to Yangon Port

B.1.2 RESULT OF INSPECTION

(1) **Date, Time and Place**

14:00 21 st Mar. 2009	On board M.S.T. MHAN AUNG at Yangon Port
18:51 21 st Mar.2009	Arrived at Outer Bar
09:02 22 nd Mar.2009	Sailed from Outer Bar for Yangon Port
13:00 22 nd Mar.2009	Arrived at Yangon Port

(2) **Ship's Particular**

Ship's Name	M.S.T. MHAN AUNG
Official No.	2034
Port of Registry	Yangon
Year of Build	1988

Built by	Shina Shipbuilding Co., Ltd. Korea
GRT	1,094.14
NRT	326.36
DWT	767.78
LOA/LBP	55m/47.6m
B (MLD)	13.7m
Depth (MLD)	5.3m
Max. Draft (Summer)	4.03m
Draft of 21 st March	3.50m
Air Draft	21.34m (70feet)
Crew	32 persons
Light House Keeper	34 persons

B.1.3 NATURAL CONDITION

(1) Wind and Wave

Time/Date	14:00 21 st Mar.	18:51 21 st Mar.	09:02 22 nd Mar.	13:00 22 nd Mar.
Place	Yangon	Outer Bar	Outer Bar	Yangon
Weather	Fine	Fine	Fine	Fine
Wind direction	SE	South	WSW	Calm
Wind force	5m/sec	7m/sec	5m/sec	Calm
Wave direction	SE	South	WSW	Nil
Wave Height	30cm	60cm	70cm	Nil
Visibility	Very good	Very good	Very good	Very good

(2) Tidal Range

	Yangon	Sinminn Point
21 st Mar	HWL 13:29 4.35m	12:20 4.54m
	LWL 19:32 1.92m	18:34 3.22m
22 nd Mar	HWL 01:43 4.55m	00:37 4.70m
	LWL 08:52 1.25m	07:35 2.55m
	HWL 14:31 4.69m	13:25 4.88m

B.1.4 CURRENT CONDITION OF THE YANGON PORT AND CHANNEL

B.1.4.1 INSPECTION OF ACCESS CHANNEL

(1) Outward Voyage

1) Vessel movement of the outward voyage from Yangon Port to Outer Bar

Detail of Vessel Movement

Navigation Data

as of 21st March 2009

Time	Ship's Position		Course (degree)	Speed (Knots)	Depth (m)
	Latitude	Longitude			
14:35	16-45.54N	96-10.55E	62.4	4.9	
14:45	16-45.831	96-11.054	81.6	5.7	4.2
15:00	16-45.060	96-12.748	142.9	8.4	10.1
15:15	16-43.002	96-13.342	187	9.2	10.1
15:30	16-40.715	96-13.333	175	9.1	7.47
15:45	16-38.989	96-15.171	141.5	9.6	13.6
16:00	16-37.051	96-15.285	202.3	10.1	15.4
16:15	16-34.674	96-14.670	184.2	9.3	9.34
16:30	16-32.380	96-15.416	159	10	11.6
16:45	16-30.217	96-16.570	144.3	10.2	9.46
17:00	16-28.336	96-16.885	119.7	10.8	9.91
17:15	16-29.91	96-20.644	171.4	10	10.7
17:30	16-24.394	96-20.288	193.7	10.4	7.39
17:45	16-21.917	96-19.468	202.7	10.2	6.2
18:00	16-19.533	96-18.864	193.4	9.8	5.25
18:15	16-17.311	96-18.110	199.0	9.4	5.50
18:30	16-15.189	96-17.367	198.3	9.1	5.87
18:45	16-13.004	96-16.471	206.9	7.8	6.02
19:00	16-12.591	96-16.367	141.3	0	5.33

Contents	
14:30	Up and down anchor left Yangon Port for Outer Bar
14:48	Passed Monkey Point Signal Station on Her Portside
14:51	Passed UMP B'y on her starb'dsite
14:54	Passed LMP B'y on her starb'dsite
15:01	Passed Kyartia B'y on her starb'dsite
15:30	Passed Upper Chokey B'y on her portside
15:52	Passed D'silva B'y on ther starb'd side
16:14	Passed Khing Kyaw San B'y on her portside and entered Middle Bank Channel
16:18	Passed Hmawun Lump B'y on her portside
16:56	Passed U.M.B.B'y on her portside
17:01	Passed C.M.B B'y on her portside
17:09	Passed Elephant Point on her starb'd side
17:10	Passed Lower Middle Bank B'y on her portside cleared out Middle Bank channel and entered Western Channel
17:31	Passed Intermediate B'y on her portside and cleared out Western Channel
17:46	Passed Upper Float B'y on her portside
18:12	Passed Lower Float B'y on her portside
18:40	Passed Pilot Vessel "May Kharal" on her portside distance of 0.64'
18:51	Let'go starb'd anchor into 5.33m of water and arrived at Outer Bar.

(2) Outline of the Navigation

1) Inner Harbour

a) Mooring Buoy

Confirmed No.6 ~ No.9 Buoy are in position of MPA's map but could not found No.10 Buoy.

b) Anchorage of Inner Harbour

RTA Anchorage: For foreign vessels

CCA (Country Craft Anchorage): For Local vessels

c) Navigation Aids

There is a CCA Buoy on the North west corner of the CCA (Country Craft Anchorage).

Large Size of vessels normally passing northern side of CCA Buoy and proceed to Monkey Point Channel.

d) Distance is 1,800m between No.9 Mooring Buoy near Bo Aung Gyaw Wharf No.3 and CCA Buoy



Photo B.4.1
Bo Aung Gyaw Container Terminal Semi-Container Vessels alongside to Portside



Photo B.4.2
View Monkey Point Channel from near No.9 Mooring Buoy



Photo B.4.3
Waiting berthing at RTA Anchorage

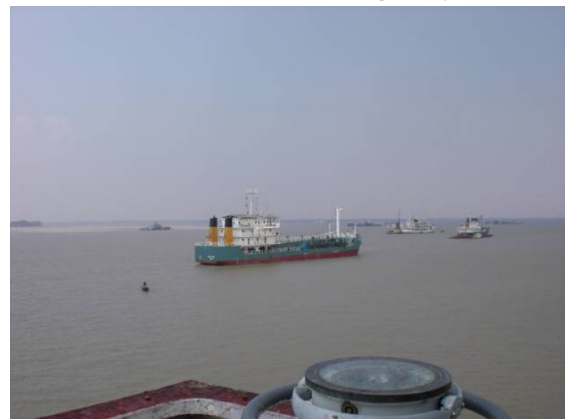


Photo B.4.4
Dredger anchored at Country Craft Anchorage

2) Inner Bar and Monkey Point Channel

a) Monkey Point Channel

Monkey Point Channel is located at the entrance of Yangon Port. Monkey Point Channel is very complicated flow due to two rivers and one creek flowed together, also the silt is extreme. In order to maintain the channel depth of 13.5 feet, MPA dredges here everyday with the dredger. Channel length is about 1mile (1,850m) and most narrow channel width is about 95m.

b) Navigation Buoy

When the vessel Sail from Yangon Port firstly passed CCA Buoy on her starboard side, secondly about 100m off from UMP Buoy on her starboard side, and then altered her course to toward to left side of LMP Buoy. Distance between CCA Buoy and LMP Buoy is 1.5 miles.

c) Leading Lights of Monkey Point Channel

Leading Lights are very important navigation aids to maintain navigation safety of passing narrow channels and dangerous area such as shallow water for vessels.

Leading Lights of the channel were installed 1 tower at Monkey Point, 2 towers at Thanlyin Point and contributed safe navigation for a long time.

Incredible strong wind of Nargis destroyed Leading Light towers and Lights.



Photo B.4.5
Passed Monkey Point Signal Station
on her portside



Photo B.4.6
Dredging at Monkey Point Channel
by MPA's Dredger



Photo B.4.7
Passed UMP Buoy on her starb'dside



Photo B.4.8
Passed LMP Buoy on her starb'dside



Photo B.4.9
Passed LMP Buoy her starb'dside



Photo B.4.10
Passed Assama Buoy on her portside

3) Yangon River (Cross Sands Shoal and Channel)

a) LMP Buoy ~ Lower Liffey Sand Buoy (LS Buoy) ~ Lower Chokey Buoy (LC Buoy)

After passing LMP Buoy, she proceeded to southward with her course <150>. She proceeded to southward seeing Upper Liffey Sand Buoy (U.L.S Buoy), Liffey Sand Buoy (L.S Buoy) on her starboard side.

On her portside, there were MOGE Passenger Jetty, LPG Jetty, MPA Mooring, NAVY Jetty. On west side (starboard side) of Navigation B' y there is Cross Sand Shoal which has Hasting Sand and Liffey Reach therefore cannot navigate the large-sized boat. There is OEA Anchorage off the Middle Point.

From near Lower Hasting B' y (LH B' y) she altered her course to 170~180 and forward to the west 0.16' of Middle Chokey Buoy.

Name of Point	Ship's course	Distance
LMP Buoy	150	0.93'
Kyartia Buoy	150	0.88'
Lower Hasting Buoy (LH Buoy)	170 ~ 180	0.47'
Upper Liffey Sand Buoy (U.L.S Buoy)	170 ~ 180	0.57'
Lower Liffey Sand Buoy (L.S Buoy)	170 ~ 180	2.27'
Upper Chokey Buoy (U.C Buoy)	170 ~ 180	0.49'
Middle Chokey Buoy (M.C Buoy)	110	1.15'
Lower Chokey Buoy (L.C Buoy)		
Total		6.76'



Photo B.4.11
Anchorage for Domestic Tanker



Photo B.4.12
Navy dockyard



Photo B.4.13
Ship's Radar (Maker: Furuno Japan)



Photo B.4.14
Upper Chokey Buoy (UC Buoy)



Photo B.4.15
Upper Chokey Buoy (UC Buoy)



Photo B.4.16
Middle Chokey Buoy (MC Buoy)

b) Lower Chokey Buoy(L.C Buoy)~D’silva Shoal~Hmawun Lumps

She passed Thilawa Port on her portside, away from D’silva Shoal on her starboard side, proceeding to southward. Near Hmawun Lumps Buoy, she altered her course heading to the Upper Middle Bank (U.M.B) Buoy. As for the Middle Bank, the dangerous water of route are shown with 4 Buoys i.e. Upper Middle Bank (U.M.B) Buoy, Center Middle Bank (C.M.B) Buoy, Lower Middle Bank (L.M.B) Buoy. The shore line of right side (west side) of the Middle Bank is sheered, to the shore line depth of water is deep last.

Usually, large-sized vessel goes south while maintaining the distance of 0.25’ from the shore line almost in parallel. This voyage, she proceeded toward southward keeping the distance of 0.54’ (1,000m). On the other hand, in the homeward (Northbound) voyage, she proceeded this area the distance of 0.14’ (255m).

Navigation of Middle Bank Channel, due to there are very shallow water on the Eastward of the channel, therefore, vessels should not navigate Eastward from transit line shown Leading Light Line.

Name of Point	Ship’s course	Distance
Lower Chokey Buoy (L.C Buoy)	110 ~ 130	2.0’
D’silva Buoy	190 ~ 200	3.5’
Khing Kyaw San Wk Buoy (KKS Buoy)	160 - 150	0.8’
Hmawun Lump Buoy	150 - 140 - 130 - 120	5.8’
Upper Middle Bank (U.M.B) Buoy	120	1.6’
Center Middle Bank (C.M.B) Buoy	120	1.4’
Lower Middle Bank (L.M.B) Buoy		
Total		15.1’



Photo B.4.17
Thilawa Port and Middle Chokey Buoy (MC Buoy)



Photo B.4.18
2 Vessels anchored and waiting berthing



Photo B.4.19
Passed Lower Chokey Buoy(LC Buoy)
on her portside 0.2'off



Photo B.4.20
5 vessels berthing at Thilawa Port



Photo B.4.21
Navigation duty on the Bridge



Photo B.4.22
Passed D'Silva Buoy
on her starb'dside 0.1'off



Photo B.4.23
Ship Breaking Yard



Photo B.4.24
Passed Khing Kyaw San Buoy (KKS Buoy) on her
portside 0.15' off



Photo B.4.25
Passed Hmawun Lump Buoy (HL Buoy)
on her Portside 0.15' off



Photo B.4.26
Looking at shore side near Hmawun
on her starb'dside



Photo B.4.27
Looking at Myet Seinn Kyun on her portside

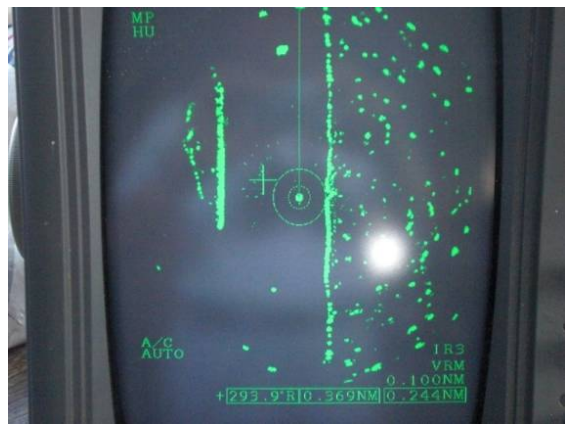


Photo B.4.28
Radar display portside is Myet Seinn Kyun and
Starb'dside is shore 0.24' off



Photo B.4.29
Passed Barge towed by tugboat
on her portside



Photo B.4.30
Passed U.M.B Buoy on her portside 0.39' off



Photo B.4.31
Passed C.M.B Buoy on her portside 0.39'off



Photo B.4.32
Looking at Elephant Point on her starb'dside



Photo B.4.33
Looking at Elephant Point on her starb'dside

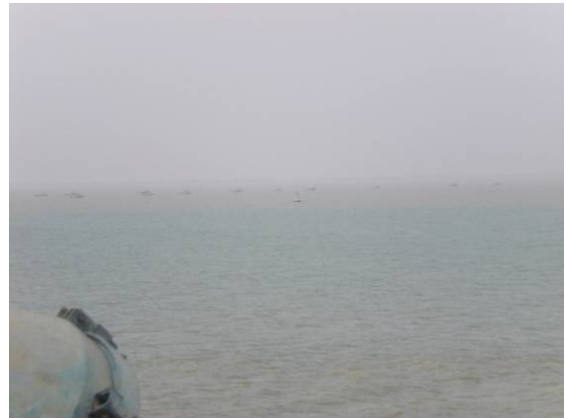


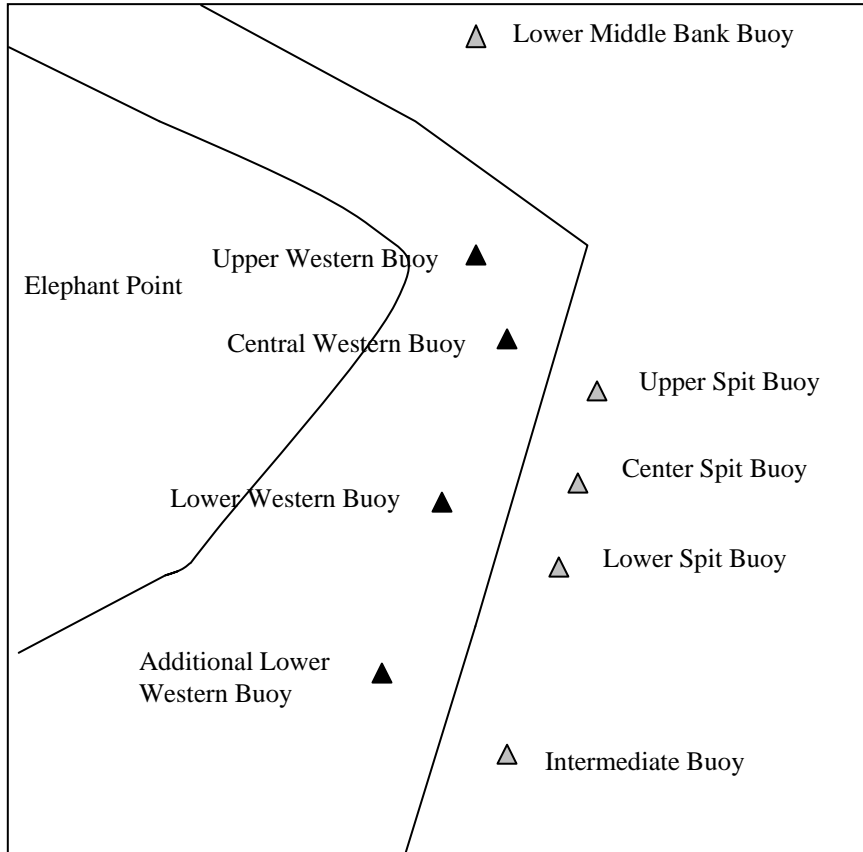
Photo B.4.34
Passed Lower Middle Bank Buoy on her portside 0.5'off and there are many fishing boats near the Buoy

c) Western Channel (Lower Middle Bank (L.M.B) Buoy ~ Upper Float Buoy)

Western Channel area of from Lower Middle Bank (L.M.B) Buoy to Upper Float Buoy is dangerous area next to Monkey Point Channel due to alter her course more than 70 degree at off Elephant Point. Navigation route from Upper Western Buoy to Additional Lower Western Buoy is bending channel. As for Western Channel, on the right the green light, the route buoy of the red light 4 is installed respectively on the left considered as estuary side, namely, facing toward the water source. Color of the light is opposite to Japan, in addition, paint of the buoy has come off, daytime, as for the identification of red/green do not understand.

As for navigable width between these buoys is narrow approximately 1,190m (0.64'), Western Channel introduced one-way Traffic Scheme same as Monkey Point Channel.

Name of Point	Ship's course	Distance
Lower Middle Bank (L.M.B) Buoy	130 - 180 - 198	3.3'
Intermediate Buoy		
Upper Float Buoy	198	2.6'
Total		5.9'



Navigation Buoys Arrangement of Western Channel



Photo B.4.35
Passed Upper Western Buoy
on her starb'dside 0.25' off



Photo B.4.36
Passed coastal vessel and Upper Spit Buoy on her
portside

4) Outer Bar (Upper Float Buoy ~ Dagon L't Vessel)

Generally, as for the estuary section where the rivers touch with the ocean, the depth of water becomes shallow by silt.

Estuary of the Yangon River is also very shallow and narrow, channel has been identified by 2 Buoys, one Buoy is Lower Float Buoy which located 4.5' south from Upper Float Buoy and next Buoy is Lanthaya Fairway Buoy located 5' southward from the Lower Float Buoy.

Pilot Vessel is drifting at nearby Lanthaya Fairway Buoy. Vessels of draft approximately 7m.

have to anchor near Lanthaya Fairway Buoy and wait Pilot boarding, more large size of vessels which draft about 8m have to anchor at nearby south of Dagon L't Ship 12' south from Lanthaya Fairway Buoy.

Dagon L't Ship is damaged by Nargis and at present under repair at Theinbyu Dock in Yangon Port.

Name of Point	Ship's course	Distance
Upper Float Buoy	185	4.5'
Lower Float Buoy	200 - 207	5'
Lanthaya Fairway Buoy	195	12'
Dagon L't Vessel		
Total		21.5'

(3) Homeward Voyage

1) Vessel movement and maneuvering condition of the outward voyage from Yangon Port to Outer Bar

Detail of Vessel Movement

as of 22nd March 2009

Time	Ship's Position		Course (degree)	Speed (Knots)	Depth (m)
	Latitude	Longitude			
9:00	16-12.590N	96-16.352E	270	1.3	
9:15	16-12.972	96-16.634	51.5	3.4	
9:30	16-13.527	96-17.375	54.2	3.4	
9:45	16-15.703	96-17.556	1.2	10.4	
10:00	16-18.389	96-17.725	3.5	10.6	6.3
10:15	16-20.985	96-18.745	32.4	11	6.02
10:30	16-23.407	96-19.925	18.5	11.5	7.69
10:45	16-26.584	96-20.687	10	12	9.24
11:00	16-28.485	96-18.652	296.8	12	9.44
11:15	16-30.4	96-16.26	327	11.2	10.3
11:30	16-32.7	96-15.13	339	11.7	11
11:45	16-35.49	96-14.74	14	11.2	5.94
12:00	16-38.44	96-15.522	355	11.8	10.9
12:15	16-40.5	96-13.374	342	11.8	7.66
12:30	16-43.336	96-13.39	357	12.4	10.3
12:45	16-45.776	96-12.07	285	10.3	4
13:00	16-45.493	96-10.641	185	0.7	

Contents	
9:00	Heave in anchor.
9:02	Up and down anchor, left Outer Bar for Yangon Port
9:11	Passed Lanthaya Fairway B'y on her starboard side.
9:52	Passed Lower Float B'y on her starboard side distance of 0.15'.
10:19	Passed Upper Float B'y on her starboard side distance of 0.15'.
10:34	Passed Intermediate B'y on her starboard side and entered Western Channel.
10:49	Passed Lower Middle Bank B'y on her starboard side cleared out Western Channel and entered Middle Bank Channel
10:49	Passed Elephant Point on her portside.
10:58	Passed C.M.B B'y on her starboard side.
11:03	Passed U.M.B B'y on her starboard side.
11:41	Passed Hmawun Lump B'y on her starboard side.
11:45	Passed Khing kyaw San B'y on her starboard side and cleared out Middle Bank Channel.
11:59	Passed D'silva B'y on her portside.
12:16	Passed Upper Chokey B'y on her starboard side.
12:39	Passed Kyartia B'y on her portside.
12:42	Passed LMP B'y on her portside.
12:47	Passed Monkey Point Signal Station on her starboard side.
12:50	Passed CCA B'y on her portside.
13:00	Doublebanked at small ship and arrived at Yangon Port.

2) Outer Bar (Lanthaya Fairway Buoy ~ Upper Float Buoy)

a) Lanthaya Fairway Buoy

M.S.T”MHAN AUNG” sailed Outer Bar for Yangon Port on 09:02 22nd Mar.2009.

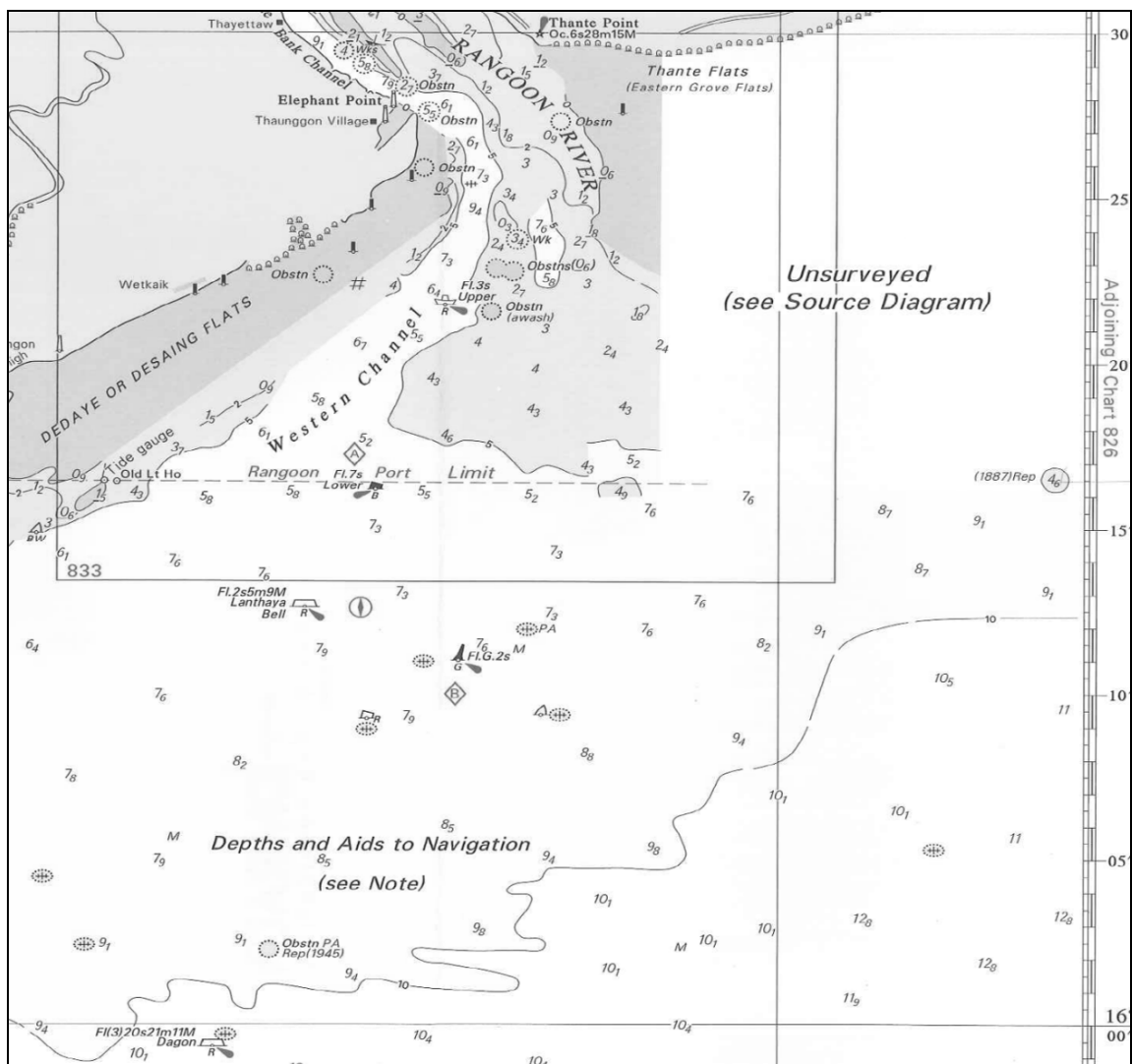
She altered her course at nearby Lanthaya Fairway Buoy and proceeded to Yangon Port.

Pilot Vessel “MAYKHARAL” approached to “MHAN AUNG” and transferred one passenger.

According to explanation of Captain of “MHAN AUNG”, normally, 5 Pilots are boarding on the Pilot Vessel.

Normal Pattern of Pilotage is as follows:

One Pilot onboard sailing vessel from Yangon Port and lead the vessel to Outer Bar and disembark the vessel. He stays one night at the Pilot Vessel and next day onboard again entering vessel from Outer Bar to Yangon Port.



Pilot Station at Outer Bar

b) Wrecks

Captain of “MHAN AUNG” says though there are 2 Wrecks nearby Pilot Station Mark (one wreck is shown 4’ southward from the Pilot Station Mark, another wreck is about 2’ southeastward from the Pilot Station Mark and wreck buoy is withdrawn already.

c) Lower Float Buoy and Upper Float Buoy

09:52 Passed Lower Float Buoy and 10:19 passed Upper Float Buoy both 0.15’ off on her starb’ dside.



Photo B.4.37
Lanhaya Fairway Buoy



Photo B.4.38
Pilot Vessel “MAYKHARAL” and Pilot boat



Photo B.4.39
Pilot boat approaching to “MHAN AUNG”



Photo B.4.40
Pilot boat back to mother vessel



Photo B.4.41
Passed Lower Float Buoy
on her starb’ dside 0.15’ off



Photo B.4.42
Passed fishing boat and Upper Float Buoy
on Her starb’ dside 0.15’ off

3) Western Channel and Middle Bank Channel



Photo B.4.44
Upper Western Buoy and Elephant Point



Photo B.4.43
Upper Western Buoy and Elephant Point



Photo B.4.46
Middle Bank Channel
Distance 0.14' from the shore edge to her



Photo B.4.45
Middle Bank Channel
Scene of Shore from portside



Photo B.4.48
Nearby Hmawun Lump
Passing outbound vessel with starb'dside too



Photo B.4.47
Nearby Hmawun Lump
Passing outbound vessel with starb'dside too

4) D'Silva Shoal ~ Chookey Shoal ~ Cross Sand Shoal ~ Monkey Point Channel



**Photo B.4.49
Thilawa Port
5 vessels alongside to Thilawa Port Pier**



**Photo B.4.50
Thilawa Port
View right ahead of her Traffic and
there are a few ships**



**Photo B.4.51
Monkey Point Signal Station**



**Photo B.4.52
Passed UMP Buoy on her portside**

B.1.4.2 INSPECTION OF SHIP MANEUVERS AT YANGON PORT

Station	Yangon
Time & Date	07:00 hr Mar.18th 2009
Name of Jetty	Lanthit Street Jetty
Natural Condition (Tide, Current, Wind, Visibility)	Weather Cloudy Wind ESE 3m Tide LW 03:31 1.18m HW 09:18 4.58m Current Flood Visibility Very good
Drawing Map of the Station Lanthit Street Jetty	
Drawing Chart of Maneuvering Area Maneuvering Method (Pattern) /Time	
Navigation Aids, Obstacles	07:03 Let' go all shore line. Left Yangon for Kyelkhtaw. 07:05 Swung her round clockwise, and proceed to Twante Canal. Both navigation aids and Obstacles are nothing near Lanthit Street Jetty.
Depth of Water / Under Keel Clearance	Depth of water: Approx.35feet(10.7m) Under keel clearance: $10.7\text{m} - 0.91\text{m} = 9.79\text{m}$
Issues or Requirement from IWT	<ul style="list-style-type: none"> • Jetty 4 Jetties in total 7 Jetties of Yangon Port were damaged. Currently, only 3 Jetties are available. These 3 Jetties are very congested due to lack of Jetty. • Mooring Buoy 7 Mooring Buoys were damaged. Currently, 8 Buoys can use for mooring. IWT need 10 buoys. Due to lack of the buoys, IWT ferries anchoring in the Yangon river which always very strong current. In order to avoid these dangerous situation, IWT wish to early rehabilitation.

B.2 EVALUATION FOR NAVIGATION AIDS

Many port facilities and the navigation aids were damaged by Cyclone “Nargis”.

Currently, though many facilities were restored, but IWT Jetties and navigation aids are still remain without repair. Based on the site reconnaissance of the port and onboard inspection, Navigation Aids was evaluated from the viewpoint of navigation safety by JICA team.

Method of the evaluation is 5 levels rating by Captain of JICA team as shown below.

Rating level-1	Very bad condition
Rating level-2	Bad condition
Rating level-3	Normal condition
Rating level-4	Good condition
Rating level-5	Excellent condition

Evaluation for Navigation Aids

No.	Location	Navigation Facilities/Aids/Software	Nos./ Particular	Rating	Remark
1	Inner Harbour	Mooring Buoy for MPA	4 Buoys	3	
2		Mooring Buoy for IWT	7 Buoys	2	IWT needs 10 B'ys
3		Maneuvering Area for MPA		3	
4		Maneuvering Area for IWT		3	
5		Anchorage		3	
6		RTA Anchorage	1	3	
7		CCA Anchorage	1	3	
8		Dredger	4	3	
9		Tug boat	6	2	200HP-1100HP
10		Pilot boat		2	
11		Communication (VHF) (Port Tower)	1	2	
12		Pilotage Criteria (Cyclone/Emergency)	Nil	1	
13		Guidelines for Maneuvering	Nil	1	
14		Pilot Training		2	
15		Tugmaster Training	Nil	1	
16	Monkey Point Channel	Channel Depth	13.5feet	3	
17		Channel Width	95m	2	
18		Dredging	everyday	3	
19		Signal Station	1	3	
20		Leading Light	4	1	damaged
21		Navigation Buoy	1	2	UMP : Upper Monkey Point
22			1	2	LMP : Lower Monkey Point
23	Cross Sands Shoal and Channel	Navigation Buoy	1	2	Kvartia
24			1	2	LH : Lower Hasting
25			1	2	ULD : Upper Liffey Sand
26			1	2	LS : Lower Liffey Sand
27	Chokey Shoal		1	2	UC : Upper Chokey
28			1	2	MC : Middle Chokey
29			1	2	LC : Lower Chokey
30		Leading Light WT Front,Pivot,ST Front	3	1	damaged
31	D'Silva Shoal	Navigation Buoy	1	2	D'Silva
32		Leading Light D'Silva Front/Back	2	1	damaged
33	Hmawun Lumps	Navigation Buoy	1	2	Khing Kyaw San
34			1	2	Hmawun Lump
35		Leading Light Hmawun Front/Back	2	1	damaged
36	Middle Bank Channel	Navigation Buoy	UMB	2	UMB : Upper Middle Bank
37			CMB	2	CMB : Center Middle Bank
38			LMB	2	LMB : Lower Middle Bank
39		Leading Post Back South Post	1	1	damaged
40	Western Channel	Elephant Point Tower	1	1	damaged
41		Navigation Buoy	1	2	UW : Upper Western
42			1	2	CW : Central Western
43			1	2	US : Upper Spit
44			1	2	LW : Lower Western
45			1	2	CS : Center Spit
46			1	2	LS : Lower Spit
47			1	2	ALW : Additional Lower Western
48			1	2	Intermediate
49	Outer Bar	Navigation Buoy	1	2	UF : Upper float
50			1	2	LF : Lower float
51		Pilot Vessel	1	2	
52		Dagon Light Ship	1	3	Damaged but already repaired

B.3 COMMENT FOR THE RATING

1) Wharf/Jetty

Facility: All Wharves and Jetties for Ocean Going Vessel were small damaged by Nargis and currently, cargo work is operating with normal condition same as before Nargis, but many Jetties for Coastal Vessels, IWT Ferries are broken and still 10 Berths are waiting to restore.

As far IWT Jetties, 4 Jetties of total 7 Jetties were damaged by Nargis and only 3 Jetties can use. (Rating 3 for MPA Berths, Rating 2 for IWT Jetties)

2) Mooring Buoy

Facility: 4 Mooring Buoys of MPA are used as normal condition.

IWT leases 10 Mooring Buoys from MPA before Nargis, 7 Buoys were damaged by Nargis. At present, 8 Buoys are restored but due to shortage of Mooring Buoys, many ferries waiting at anchor, this is very dangerous situation in the Yangon River. (Rating 3 for MPA Berths, Rating 2 for IWT Jetties)

3) Maneuvering Area nearby Berth

Space of Maneuvering Area: Though it is not enough area as Vessel's Maneuvering Area nearby Berth but it is seemed to keep minimum space for both MOT vessels and IWT vessels. (Rating 3 for MPA Berths, Rating 3 for IWT Jetties)

4) RTA Anchorage and CCA Anchorage

RTA Anchorage located off Botahtaung Jetties is utilized for Foreign Vessels and CCA (Country Craft Anchorage) is utilized only for Local vessels.

Both Anchorage are not so congestion while our Inspection period from March to May 2009. (Rating 3 for MPA Berths, Rating 3 for IWT Jetties)

5) Monkey Point Channel (depth, width, dredging)

Monkey Point Channel is located at the entrance of Yangon Port. Monkey Point Channel is very complicated flow due to two rivers and one Creek flowed together, also the silt is extreme. In order to maintain the channel depth of 13.5 feet, MPA dredges here everyday with the dredger. Channel length is about 1mile (1,850m) and most narrow channel width is about 95m. (Rating 3 for Channel depth, Rating 2 for Channel width, Rating 3 for dredging)

6) Monkey Point Channel (Leading Lights)

Leading Lights are very important navigation aids to maintain navigation safety of passing narrow channels and dangerous area such as shallow water for vessels.

Leading Lights were damaged by Nargis, ever since a state of no working and still remain without repair. Due to damage of Leading Lights it causes an obstacle to the vessel to the time entry into Yangon Port. (Rating 1 for Leading Lights)

7) Monkey Point Channel (Navigation Buoys)

There are 2 navigation buoys i.e. UMP Buoy and LMP Buoy in the Monkey Point Channel to indicate southern limit of narrow channel. These buoys are very significant to avoid grounding of passing vessels. It is seemed both buoys are good condition but coloring of the buoys are same color. It is preferable to paint to Red color which means portside for entering vessels, in addition color of light introduce Red Light signal in night time. (Rating 2 for navigation buoys)

8) Cross Sand Shoal, Chokey Shoal, D’silva Shoal, Hmawun Lumps, Middle Bank Shoal, Western Channel (Navigation Buoys)

It is preferable to distinguish all navigation buoys by painting and lighting with Red or Green color in addition to install Top Mark on the top of the buoy following to recommendation of IALA. (Rating 2 for navigation buoys)

9) Chokey Shoal, D’silva Shoal, Hmawun Lumps, Middle Bank Shoal (Leading Lights)

Vessels entering Yangon Port from Outer Bar must pass narrow channels Western Channel, Middle Bank Channel and Monkey Point Channel.

In order to keep safe navigation at these channels, MPA had installed 6 places Leading Light between these 35 miles, but all Leading Lights were damaged by Nargis , ever since a state of no working and still remain without repair. (Rating 1 for Leading Lights)

10) Pilot Vessel at Outer Bar

We met with Pilot Vessel “MAY KHARL” at Outer Bar on 22nd March 2009. As far as checking out side condition of the vessel from bridge of our vessel “MHAN AUNG”, hull of the Pilot Vessel seemed very rusty. (Rating 2 for Pilot Vessel)

11) Dagon Light Vessel

Dagon Light Vessel was damaged by Nargis and under repair at Dockyard in Yangon. We rated Level- 1 due to no working present. (Rating 1 for Dagon Light Vessel)

B.4 INTERVIEW OF CAPTAIN OF M.S.T. MHAN AUNG AND HARBOR MASTER

Question-1:	Where do you feel danger area in the navigation aspect from the Yangon port to Outer Bar?
Answer-1:	Especially, there are no waters where I feel danger, but I have been take precaution near Monkey Point Channel because of narrow channel width and West Channel near Elephant Point.
Question-2	What is the most careful point regarding navigation safety from the Yangon Port to Outer Bar?
Answer-2	As for largest notice, keeping under keel clearance of the depth of water which can do navigation safely, accordingly, I pay attention to the tide and tidal current.
Question-3	When is the most bad weather condition through 1 year at the Outer Bar?
Answer-3	Southwest monsoon season between May and October is very bad weather

	condition, in these period, it is the worst conditions from June to September.
Question-4	How is Communication system between Port Tower /Pilot/ Ship?
Answer-4	<p>Usually, exchanging berthing information and navigation information between vessels and MPA is done via VHF. As for communication, first, shifting/berthing information is verified between Pilot Vessel and Port Tower in the MPA Office. Secondly, Pilot Vessel pass these information to waiting and or approaching vessels to the Outer Bar.</p> <p>Information Flow by VHF</p> <pre> graph LR A[MPA (Harbour Master)] <--> B[MPA (Port Tower)] B <--> C[MPA (Pilot Vessel)] C <--> D[Ship (Enter/Sail)] D --> B </pre>
Question-5	Role and responsibility of Marine Department of MPA?
Answer-5	<ol style="list-style-type: none"> 1) Harbour Master (Marine Dept.) <ul style="list-style-type: none"> - To make/modify Policy, Rule, Regulation for Port Operation and - Navigation Safety - To fix Anchoring and Berth allotment - Scheduling for next day's vessel movement (Anchoring, Shifting, - Berthing/Unberthing etc.) 2) Port Tower (Marine Dept.) <ul style="list-style-type: none"> - To pass Berthing/Unberthing/Emergency information to the Pilot Vessel and vessels in the Port. - To obtain following information from Pilot Vessel and Entering vessels - Ship's Name - ETA Outer Bar Anchorage <ul style="list-style-type: none"> · Draft · Planed Berth · Ship's Particular · Last port · Cargo (Kind of cargo, Cargo volume) 3) Pilot Vessel <ul style="list-style-type: none"> - To exchange following information approaching vessels to Outer Bar <ul style="list-style-type: none"> · information of entering vessel (same as above items) · Anchoring, Sifting, Berthing information

B.5 THE OBSTRUCTIONS IN FAIRWAYS ACT AMENDING LAW 1963

(The Union of Burma Revolutionary Council Law No. 2 of 1963)

The Chairman of the Union of Burma Revolutionary Council makes the following Law.

1. (1) This Law may be called the Obstructions in Fairways Act Amending Law, 1963.

(2) It shall come into force at once.

2. For section 2 of the Obstructions in Fairways Act hereinafter referred to as the said Act, the following shall be substituted as section 2, namely :-

(1) Power to remove or destroy obstruction in fairway.

Whenever, in any fairway, any vessel is sunk, stranded or abandoned or any fishing stake, timber or other thing is placed or left, the Revolutionary Government of the Union of Burma may, if in its opinion such thing is or is likely to become, an obstruction or danger to navigation, issue an order to the owner of such thing to remove it or any part thereof within one year from the date of the order, and if after the receipt of the order, the owner does not, within the said period, remove it to the satisfaction of the Government, it may declare it to be the property of the Government and take necessary action to have it removed or destroyed as it deems appropriate.

(2) Where the person entitled to the possession of such thing is unknown, the Government may publish in the Gazette a notification containing a description of such thing and the place where it is sunk, stranded, abandoned or left, and direct any person who has any claim thereto to remove it within one year from the date of notification. If such person fails to comply with the direction it shall be declared to be the property of the Government to be disposed of such manner as the Government may deem fit.

(3) Notwithstanding anything contained in sub – section (1) and (2), in cases where the Government considers that immediate action should be taken, it may –

(a) cause such thing or any part thereof to be removed; or

(b) if such thing is of such a description or so situated that, in its opinion, it is not worth removing cause the same or any part thereof to be destroyed.

(4) Wherever any property is recovered as a result of action under sub-section No. (3) any officer authorized by the Government in this behalf shall publish in the Gazette a notice containing the description of such property and the time at which and the place from which the same was recovered and requiring any person who has any claim thereto to appear and establish his right to the same within three months from the date of such notice.

(5) If any person entitled to the possession of such property appears and establishes his right thereto and pays the amount due for the expenses and any customs-duties or other charges properly incurred by the Government in respect thereof it shall be made

over to him; but if within three months from the date of such notice such property is unclaimed or if the person claiming the same fails to pay the amount due for expenses and charges as aforesaid, any officer authorized by the Government in this behalf may sell such property by public auction, if it is of a perishable nature, forthwith, and, if it is not of a perishable nature, at any time after three months from the date of such notice.

- (6) On realizing the proceeds of such sale, the amount due for expenses and charges as aforesaid, together with the expenses of the said sale, shall be deducted there from, and the surplus (if any) shall be paid to the owner of the property sold, or, if no such person appears and claims such surplus, shall be held in deposit for payment, without interest, to any person thereafter establishing his right to the same; provided that such person makes the claim within one year from the date of the sale.”
3. Sections 3, 4, 5 and 6 of the said Act shall be deleted.
4. In section 7 of the said Act –
 - (a) for the semi-colon (:) after the expression “stores or ballast of a vessel”, a period (.) shall be substituted; and
 - (b) the expression “ and any proceeds arising from the sale of a vessel, and of the cargo thereof, or of any other property recovered there from, shall be regarded as a common fund” shall be deleted.
5. In section 8 of the said Act, after the expression “in any fairway”, the expression “leading to a port in the Union of Burma shall be deleted.

NE WIN
The Revolutionary Council of the Union of Burma.

RANGOON, the 16th January 1963.

APPENDIX C

INLAND WATER TRANSPORT

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APPENDIX C INLAND WATER TRANSPORT

C.1 ON BOARD INSPECTION REPORT OF NAVIGATION SAFETY IN MAIN INLAND WATERWAYS

Objective is to study navigation safety on the Channel and Stations

- (1) **Time and Date** 18th March 2009 ~ 19th March 2009
- (2) **Route:** Yangon → Kyelkhtaw → Kyeiklat → Phyarpon → Mawkhyun → Bogalay
- (3) **Distance:** From Yangon to Bogalay 87 Miles
- (4) **Ship' Principal Particular (Condition of the Ferry boat)**

Name of Ferry boat	“Taing Kho”
Type of Ferry boat	Passenger/Cum Cargo, Double Decker
Dimension	Length 28.5m×Breadth 6.6m×Depth 2.2m
Draft	3 feet (0.91m)
Max. draft	5 feet (1.52m)
Average Speed	7.5Knots
Engine	KELVIN, Engine Power = 195 Hp, Nos of Engine = 1
Nos of Passengers	max 280 Persons
Cargo	6 tons (max 50tons)
Crew	Total Nos. of Crew 8 ~ 9persons
Detail	Captain, 3 Engineers, 1 ~ 2 Helmsman, 3 Hands

(5) Ship Maneuvers for Berthing/Unberthing (Yangon)

Station	Yangon
Time & Date	07:00 hr Mar.18 th 2009
Name of Jetty	Lanthit Street Jetty
Natural Condition (Tide, Current, Wind, Visibility)	<p>Weather Cloudy</p> <p>Wind ESE 3m</p> <p>Tide LW 03:31 1.18m HW 09:18 4.58m</p> <p>Current Flood</p> <p>Visibility Very good</p>
Drawing map of the Station Lanthit Street Jetty	
Drawing chart of maneuvering area Maneuvering method (Pattern) /Time	
Navigation Aids, Obstacles	<p>07:03 Let' go all shore line. Left Yangon for Kyelkhtaw.</p> <p>07:05 Swung her round clockwise, and proceed to Twante Canal.</p> <p>Both navigation aids and Obstacles are nothing near Lanthit Street Jetty.</p>
Depth of water / Under keel clearance	<p>Depth of water: Approx.35feet(10.7m)</p> <p>Under keel clearance: 10.7m-0.91m=9.79m</p>
Issues or requirement from IWT	<ul style="list-style-type: none"> • Jetty 4 Jetties in total 7 Jetties of Yangon Port were damaged. Currently, only 3 Jetties are available. These 3 Jetties are very congested due to lack of Jetty. • Mooring Buoy 7 Mooring Buoys were damaged. Currently, 8 Buoys can use for mooring. IWT need 10 buoys. <p>Due to lack of the buoys, IWT ferries anchoring in the Yangon river which always very strong current.</p> <p>In order to avoid dangerous situation, IWT wish to early rehabilitation.</p>

(6) Station to Station (From Yangon to Kyeikhtaw)

Item	Yangon —————> Kyeikhtaw
Date and Time	Left Yangon 07:00 hr Mar.18 th Arrived Kyeikhtaw 11:00 hr Mar.18 th
Natural Condition (Tide, Current, Wind, Visibility)	Tide (Yangon) HW 09:18 4.58m Current Flood Wind Calm Visibility Very good
Navigation Chart or Map of the route	Nil
Navigation Aids	<ul style="list-style-type: none"> • Signal stations 2 Signal stations both end of Twan Te Canal Signal Station is located 3.5' Point and 21' Point of the Canal and managed DWIR • Mile Post Mile Post installed every 0.5mile of the channel. • Other Navigation Aids There are no Channel Buoys, Leading Lights, Light Houses in this route.
Obstruction of the route	1 Wreck mark buoy
Attention Water Area/Point	Twan Te Canal
Point of Shallow water / Under keel clearance	No data
Issues or requirement from IWT	<p>Narrow Channels and restricted maneuvering space The narrow river channels and restricted maneuvering space, and strong tidal current make maneuvering of IWT ferries very difficult.</p> <ul style="list-style-type: none"> • Navigational Tools and Instruments There are no Navigational Tool and Instruments such as Charts, Radar, Compass, Echo-Sounder, GPS, VHF, HF, Anemometer, Barometer etc. It is very dangerous situation for navigation safety that Captain maneuvers the ferry without those Navigational Tools and Instruments. • Education and Training It is required to keep high level of maneuvering skill to the captain due to environment of navigation are very difficult condition. Therefore, Education and Training for captains and other crew is very important. • Navigation Aids Any Navigation Aids such as Light House, Leading Light, Channel Buoy could not find in the navigation route of this voyage. <p>Notice to Mariner Generally, Notice to Mariner which is written navigational warnings was informed to Captains from IWT, but there are no Notice Systems in the parties concerned of IWT.</p>

(7) Photograph (Left Yangon for Kyelkhtaw)



**Photo C.1.1
Berthing IWT Ferry "Taing Kho"
to Lan Thit Jetty, Yangon**



**Photo C.1.2
Lan Thit Jetty ,Yangon Bridge and Sponcer**



**Photo C.1.3
Berthing IWT Ferry "Taing Kho"
to Lan Thit Jetty, Yangon**



**Photo C.1.4
Entrance of Twan Te Canal**



**Photo C.1.5
Coastal Ships anchored in the entrance
of Twan Te Canal**



**Photo C.1.6
Jetty of private company
in the entrance of Twan Te Canal**



Photo C.1.7
RO/RO vessel in Canal



Photo C.1.8
Signal Station of Canal
In case dangerous situation by low tide, Black Ball in daytime, Red Light in night is hoisted the poll.



Photo C.1.9
Narrow passage of Canal



Photo C.1.10
Signal Station of Canal
Signal Station is operated by IWIR



Photo C.1.11
Signal Station of Canal



Photo C.1.12
Passing cargo ship in Canal



Photo C.1.13
Passed cargo ship portside too



Photo C.1.14
Wreck mark buoy



Photo C.1.15
View Pagoda from Ferry



Photo C.1.16
Bridge



Photo C.1.17
Helmsman and Steering Room of the Ferry



Photo C.1.18
Captain of the Ferry in the Bridge



**Photo C.1.19
Twan Tay Station (Small Jetty)**



**Photo C.1.20
Twan Tay Station (Small Jetty)**



**Photo C.1.21
Twan Tay Station
Sent mooring line to Station**



**Photo C.1.22
Sister Ferry passed**

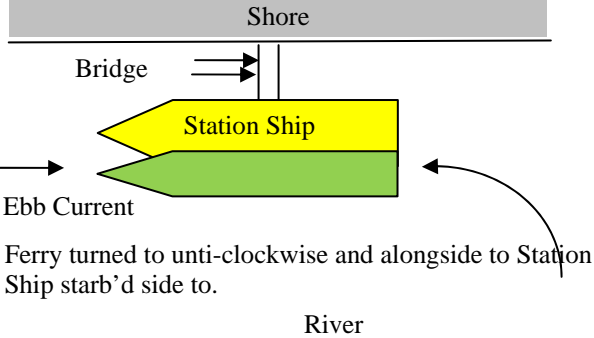
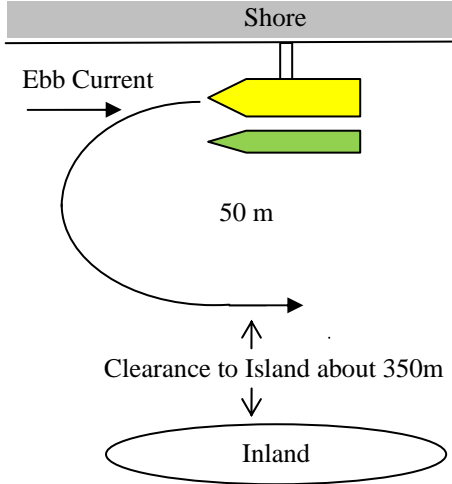


**Photo C.1.23
Ferry of Private Company**



**Photo C.1.24
IWT Ferry (built in China) Equipped Radar**

(8) Ship Maneuvers for Berthing/Unberthing (Kyelkhtaw)

Station	Kyelkhtaw
Time & Date	Arrived time 11:00 hr Left time 11:25 hr 18 th Mar.
Natural Condition (Tide, Current, Wind, Visibility)	Weather Fine Wind Calm Tide(Yangon) HW 09:18 4.58m LW 15:34 1.34m Current Ebb Visibility Very good
Drawing map of the Station	 <p>Ferry turned to anti-clockwise and alongside to Station Ship starb'd side to.</p>
Drawing chart of maneuvering area	
Maneuvering method (Pattern) /Time	
Navigation Aids, Obstacles	11:25 Let' go all shore lines. Left Kyelkhtaw for Kyeikat. 11:27 Swung her round anti-clockwise. Both navigation aids and Obstacles are nothing near Kyelkhtaw Station ship.
Depth of water / Under keel clearance	Unknown
Issues or requirement from IWT	<ul style="list-style-type: none"> Station Pontoon Station Pontoon was sunk by the flood tide on Nargis. This Station Pontoon is under repair in the Dock. The size of the pontoon is 110' x 22' x 7'6". Currently, small ship is moored and used as the Station.

(9) Photograph (Left Kyeikhtaw for Kyeiklat)



Photo C.1.25
Kyeihtaw Small ship is used as Station instead of pontoon.



Photo C.1.26
Kyeihtaw Ferry approaching the Station ship



Photo C.1.27
Station Ship



Photo C.1.28
View Riverside Maneuvering space in the river is enough

(10) Station to Station (From Kyeikhtaw to Kyeiklat)

Station	Kyeikhtaw —————> Kyeiklat
Natural Condition (Tide, Current, Wind, Visibility)	Tide (Yangon) HW 09:18 4.58m LW 15:34 1.34m Current Ebb Wind Calm Visibility Very good
Navigation Chart or Map of the route	Nil
Navigation Aids	Nil
Obstructions of the route	Unknown
Attention Water Area/Point	Photoke Creek This creek is Shallow, narrow and sharp bend
Point of Shallow water / Under keel clearance	No data
Issues or requirement from IWT	



Photo C.1.29
Maneuvering unberthing
from Kyeikhtaw Station



Photo C.1.30
Photoke Creek Bending part of narrow
channel, nothing any navigation aids



Photo C.1.31
Photoke Creek DWIR order to stop large size
of ships traffic in case dangerous situation
such as low water and strong current



Photo C.1.32
Photoke Creek Bending part of narrow
channel, nothing any navigation aids



Photo C.1.33
Approaching to Kyeiklat



Photo C.1.34
Ships traffic situation around Kyeiklat



Photo C.1.35
Approaching to Kyeiklat Station



Photo C.1.36
Approaching to Kyeiklat Station

(11) Ship Maneuvers for Berthing/Unberthing (Kyeiklat)

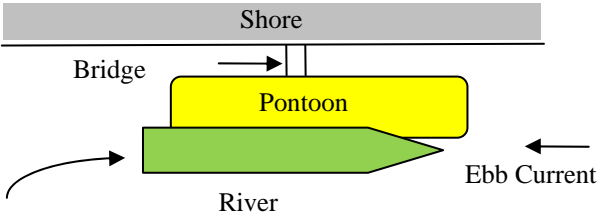
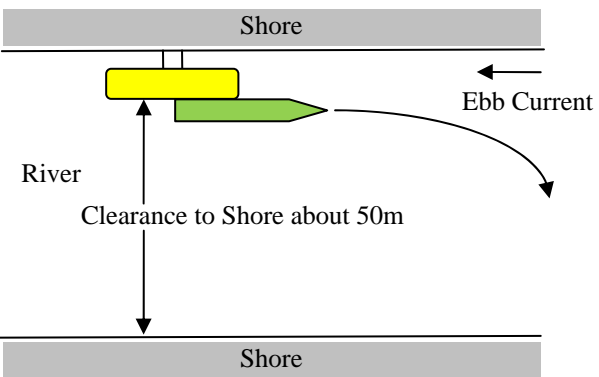
Station	Kyeiklat
Time & Date	Arrived time 13:04 hr Left time 13:15 hr 18 th Mar.
Natural Condition (Tide, Current, Wind, Visibility)	Weather Fine Wind Calm Tide(Yangon) HW 09:18 4.58m LW 15:34 1.34m Current Ebb current slightly Visibility Very good
Drawing map of the Station	 <p>Ferry approached to Station Pontoon and alongside to port side to.</p>
Drawing chart of maneuvering area Maneuvering method (Pattern)	
Navigation Aids, Obstacles	Both navigation aids and Obstacles are nothing near Kyeiklat Station Pontoon.
Depth of water / Under keel clearance	Unknown
Influence of Nargis	<ul style="list-style-type: none"> Station Pontoon Station Pontoon which was replaced in 2007 was drifted by the flood tide and strong wind of Nargis. Fortunately, Station Pontoon was slightly damaged and removed original position of the station. Terminal Building Roof of the Terminal Building was destroyed by Strong wind of Nargis, damaged roof was Repaired already.



Photo C.1.37
Mooring to the Station Pontoon

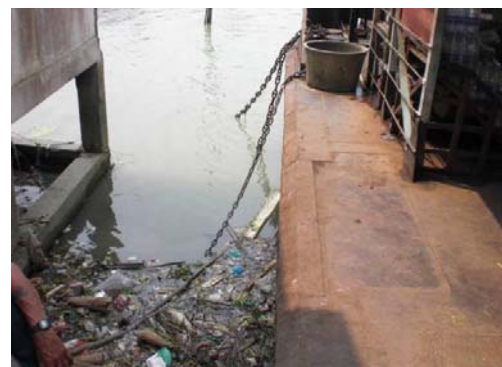


Photo C.1.38
Station Pontoon is moored by chain from Concrete Jetty and anchor

(12) Ship Maneuvers for Berthing/Unberthing (Phyarpon)

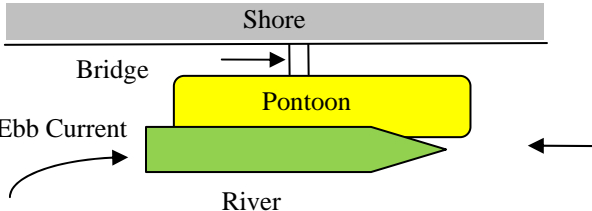
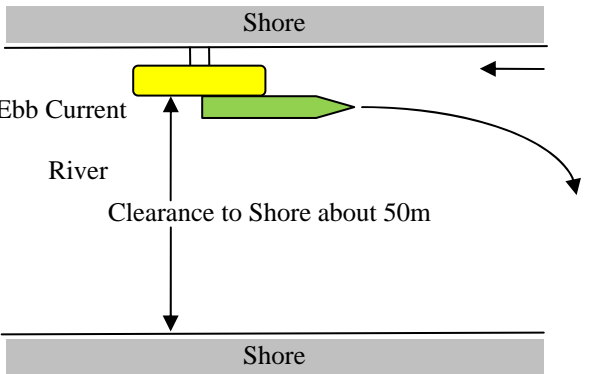
Station	Phyarpon
Time & Date	Arrived time 14:00 hr Left time 14:15 hr 18 th Mar.
Natural Condition (Tide, Current, Wind, Visibility)	Weather Fine Wind Calm Tide(Yangon) HW 09:18 4.58m LW 15:34 1.34m Current Ebb current slightly Visibility Very good
Drawing map of the Station	
Drawing chart of maneuvering area Maneuvering method (Pattern)	
Navigation Aids, Obstacles	Both navigation aids and Obstacles are nothing near Phyarpon Station Pontoon.
Depth of water / Under keel clearance	Unknown
Influence of Nargis	<ul style="list-style-type: none"> Ferry "MINHLA" IWT 3 Decker Ferry "MINHLA" alongsided to Phyarpon Station Pontoon when Nargis approached to this area. "MINHLA" was drifted to the river by strong wind of Nargis and collided with drifting fishing boat. This collision made hole to hull of "MINHLA" and water flew into "MINHLA" and then she sunk in the river about 60 foot of depth. Fortunately, no passenger on board while this big accident. Salvage work spend about 4 months and "MINHLA" is under repair at Dalla Dockyard Yangon. <ul style="list-style-type: none"> Pontoon Though due to water level rose about 6 feet more than normal condition and city was damaged by flood, but pontoon was no damage.



Photo C.1.39
Terminal building and Bridge are under construction



Photo C.1.40
View Bridge from Station



Photo C.1.41
Station Pontoon



Photo C.1.42
IWT Ferry moored at Station Pontoon



Photo C.1.43
Maneuvering Area is enough space near the Station



Photo C.1.44
Maneuvering Area is enough space near the Station

(13) Ship Maneuvers for Berthing/Unberthing (Mawkhyun)

Station	Mawkhyun
Time & Date	Arrived time 16:40 hr Left time 17:00 hr 18 th Mar.
Natural Condition (Tide, Current, Wind, Visibility)	Weather Fine Wind East 2m/sec Tide (Yangon) LW 15:34 1.34m Current Ebb current slightly Visibility Very good
Drawing map of the Station	<p>The diagram shows a cross-section of the river with two shores. A bridge connects the top shore to a new yellow pontoon. Below it is an old green pontoon. An arrow labeled 'Ebb Current (approx. 2 knots)' points from right to left. A curved arrow on the left indicates a distance of '70m to shore' from the bottom shore to the new pontoon.</p>
Drawing chart of maneuvering area Maneuvering method (Pattern)	<p>This diagram shows the yellow pontoon and the ebb current. A curved arrow indicates the maneuvering path. A vertical double-headed arrow between the shore and the pontoon is labeled 'Clearance to Shore about 70m'.</p>
Navigation Aids, Obstacles	<p>Both navigation aids and Obstacles are nothing near Mawkhyun Station Pontoon. Though many fishing boat moving near Station Pontoon, but it is seemed don't disturb Ferry maneuvering.</p>
Depth of water / Under keel clearance	Unknown
Influence of Nargis	<ul style="list-style-type: none"> Ferry IWT ferry moored at pontoon station while Nargis, due to immediately left from pontoon and escaped to river, she was without accident. Pontoon Former old pontoon was replaced new pontoon. This replacement is not concern with Nargis. Flood Though water level rose about 7 feet with spring tide another, direction of strong wind was opposite side and then damage was few by flood.



Photo C.1.45
Bogalay Station Approaching
to Bogalay Station



Photo C.1.46
Bogalay Station Approaching
to Bogalay Station



Photo C.1.47
Bogalay Station Maneuvering area
near Bogalay Station pontoon



Photo C.1.48
Bogalay Station Terminal house and bridge



Photo C.1.49
Bogalay Station Station Pontoon



Photo C.1.50
Bogalay Station Station Pontoon
and Bridge

(14) Ship Maneuvers for Berthing/Unberthing (Bogalay)

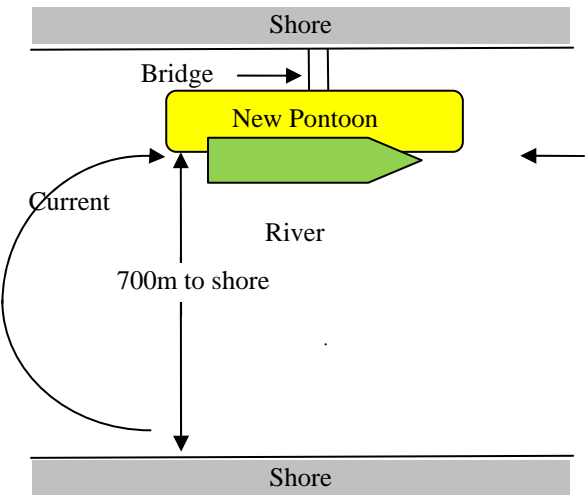
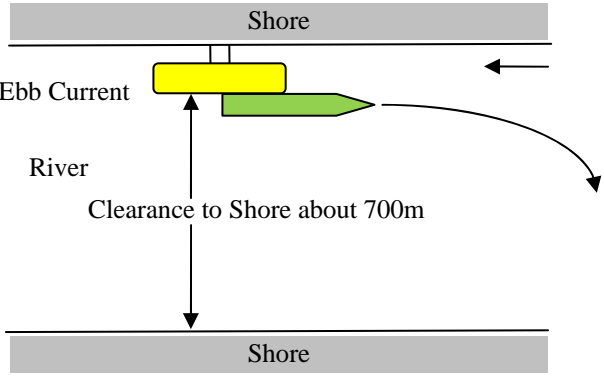
Station	Bogalay
Time & Date	Arrived time 08:00 hr Left time 08:20 hr 19 th Mar.
Natural Condition (Tide,Current,Wind,Visibility)	Weather Fine Wind West 1m/sec Tide(Yangon) LW 04:19 1.37m HW10:46 4.23m Current Flood current slightly Visibility Good
Drawing map of the Station (Image Map)	
Drawing chart of maneuvering area Maneuvering method (Pattern)	 <p>Maneuvering space is very wide. Both navigation aids and Obstructions are nothing near Bogalay Station Pontoon.</p>
Depth of water / Under keel clearance	Unknown
Influence of Nargis	<ul style="list-style-type: none"> • Ferry IWT ferry “MAYKHA” moored at the pontoon when Nargis attached, ferry unberthed quickly and drifted in the river without accident. After passed Nargis, “MAYKHA” played an active part in rescue. • Pontoon Present pontoon was replaced at June 2007. • IWT Terminal Roof of Terminal building was blew off by Nargis. • Flood Flood by Nargis rose water level over 1.3m above road.



Photo C.1.51
Bogalay Station Pontoon



Photo C.1.52
Bogalay Station Pontoon



Photo C.1.53
Moored Barge at the Station Pontoon



Photo C.1.54
Moored Barge at the Station Pontoon



Photo C.1.55
Moored IWT Ferry at the Station Pontoon



Photo C.1.56
View the river from the station

C.2 DETAILS OF DOCKYARDS

C.2.1 DALLA DOCKYARD



Photo C.2.1
Repair ships on No.1-3 Slipways



Photo C.2.2
Damaged Wooden Cradle



Photo C.2.3
No.3 Slipway and Cradle



Photo C.2.4
No.2.3 Hauling Winch



Photo C.2.5
Graving Dock



Photo C.2.6
No.7-12 Slipway



Photo C.2.7
No.7-12 Docking Operation



Photo C.2.8
No.7-12 Hauling Winch



**Photo C.2.9
No.13 Slipway**



**Photo C.2.10
No.14 Slipway**



**Photo C.2.11
Plating and angle shop**



**Photo C.2.12
Machine Shop**



**Photo C.2.13
NC Shop**



**Photo C.2.14
Afloat Repair Vessels**

C.2.2 HULL REPAIR FACILITIES AND MACHINE WORKSHOP OF DALLA DOCKYARD

Hull Repair Facility					
No.	Name	Capacity	Qty	Year Built	Remarks
1	Sheering Machine	Plate thickness = Max. 12 mm Width = 3,200 mm	1	1995	China
2	CNC Cutting Machine	Rail Length = 15,000 mm Rail span = 3,100 mm	1	2003	China
3	Plate Bending Roller	Plate thickness = Max. mm Width = 5,000 mm	1	Unknown	
4	Hydraulic Press Brake	3,000 KN Width = 5,000 mm	1	1995	China
5	Angle Bending Machine	8 HP	1	Unknown	England
6	Welding Generator	300A , 400A	60	-	400A China 300A Myanmar
7	Hydraulic Press Machine	Gantry Type	1	Unknown	England
8	Vertical Drilling Machine		2	Unknown	England
9	Overhead Crane	5 ton	1	Unknown	
Machine Workshop					
No.	Name	Capacity	Qty	Year Built	Remarks
1	Lathe Machine	Max. 32ft 4in	24	Unknown	England, 9 units out of order
2	Milling Machine	Vertical	3	Unknown	England x 2 USA x 1
3	Shaper		1	Unknown	Out of order
4	Radial Drilling Machine	HP 7.5	2	Unknown	USA, one out of order
5	Boring Machine	Bed length = 17ft 7in	2	Unknown	England, one out of order
6	Drilling Machine	Bed length = 9ft 5in	2	Unknown	England
7	Crank Shaft Grinding Machine		1	Unknown	England
8	Hacksaw, Plainer and Others		12	Unknown	England etc., 10 units out of order
9	Overhead Crane	10 ton	2	Unknown	
		Total	49		22 units out of order

C.2.3 LIST OF DAMAGED VESSELS BY NARGIS AND REPAIR PROGRESS

Sr.	Ship Name	Type	Dimension LxBxd in meter	Kind of Damage A=Sunk B=Stranded C=Collided D=Others	Present Repair Situation 1=Completed 2=Under Repair 3 =Waiting 4=Be Scrapped
1	Tabin Shwe Htee	Z/Ro Ro Ferry	41.3x9.3x1.8	C	1
2	Anaw Ya Htar	Z/Ro Ro Ferry	40.6x9.1x1.8	C	1
3	BaLa Yar Zar	Passenger/Cargo	44.6x8.7x2.2	C	1
4	Bandula	Passenger/Cargo	39.4x8.5x2.2	C	1
5	Moe Kyaw	Cargo	34.5x6.7x2.2	C	1
6	BaLa Kyaw Thu	Passenger/Cargo	44.6x8.7x2.2	C	1
7	Pyi Thar Yar	Passenger/Cargo	48.2x9.6x1.7	C	1
8	Z-107	Cargo	40.6x9.1x1.8	C	1
9	Bana Ka	Passenger/Cargo	39.4x8.5x2.2	C	1
10	Pan Daw	Passenger/Cargo	39.4x10.5x1.7	C	1
11	Z-110	Cargo	40.6x9.0x1.8	C	1
12	We Za Ya	Passenger/Cargo	34.8x7.9x2.2	C	1
13	CB-49	Barge	26.7x5.6x2.4	C	1
14	Pontoon	Pontoon	12.1x6.1x1.4	C	1
15	Kyant-20	Cargo	27.5x6.3x2.1	C	1
16	Yay Ba We - 2	Powered Tug	33.9x7.1x1.6	C	1
17	Yan Shin	Powered Tug	33.3x6.1x2.4	C	1
18	Kyant-21	Powered Tug	27.5x6.3x2.1	C	1
19	Ta Kha-10	Barge	24.8x6.1x2.1	C	1
20	CB-33	Barge	26.7x5.6x2.4	C	1
21	Moe Sa Bal	Cargo	36.8x6.3x2.6	C	1
22	BaLa Kyaw Swar	Passenger/Cargo	44.6x8.7x2.2	C	1
23	Z-116	Cargo	46.6x9.4x1.8	C	1
24	Ta-1009	Barge	34.8x5.9x1.4	C	1
25	Ta-1008	Barge	34.8x5.9x1.4	C	1
26	Moe Pyan	Cargo	34.5x6.7x2.2	C	1
27	Moe Oo	Cargo	34.5x6.7x2.2	C	1
28	BaLa Min Htin	Passenger/Cargo	44.7x8.4x2.2	C	1
29	Kyant-16	Powered Tug	25.4x6.1x2.1	C	1
30	Ba-825	Barge	56.0x10.3x2.6	C	1
31	BaLa Kyaw Khaung	Passenger/Cargo	44.6x8.7x2.2	C	1
32	Ta-009	Barge	34.8x5.9x1.4	C	1
33	Wai Than Da Yar	Passenger/Cargo	34.8x7.9x2.2	C	1
34	Ba Nyar Oo	Passenger/Cargo	44.7x8.7x2.2	C	1
35	Taung Gyun	Passenger/Cargo	28.5x6.6x2.2	C	1
36	Sha Ka - 12	Powered Tug	32.8x6.1x1.8	C	1
37	Sha Ka - 13	Powered Tug	32.8x6.1x1.8	C	1
38	Wa Ra Zain	Passenger/Cargo	34.8x7.9x2.2	C	1
39	Tain Koe	Passenger/Cargo	28.6x6.6x2.3	C	1

Sr.	Ship Name	Type	Dimension LxBxD in meter	Kind of Damage A=Sunk B=Stranded C=Collided D=Others	Present Repair Situation 1=Completed 2=Under Repair 3 =Waiting 4=Be Scrapped
40	Wi Du Ra	Passenger/Cargo	34.8x7.9x2.2	C	1
41	Tain Ni	Passenger/Cargo	28.5x6.6x2.3	C	1
42	Tan Latt	Passenger/Cargo	28.5x6.6x2.3	C	1
43	Sin Haing - 4	Powered Tug	27.9x7.6x2.9	C	1
44	Ba Yint Naung	Passenger/Cargo	34.9x8.5x2.2	C	1
45	San Thaw Dar	Passenger/Cargo	28.5x6.6x2.2	C	1
46	Taw Hay Wun	Passenger/Cargo	28.5x6.6x2.2	C	1
47	Ta Taing Mwe	Passenger/Cargo	28.5x6.6x2.2	C	1
48	Taung thar	Passenger/Cargo	28.5x6.6x2.2	C	1
49	Ka Tha-010	Barge	24.6x6.6x2.2	C	1
1	Kyant-19	Powered Tug	27.5x6.3x2.1	A	1
2	FB -34	Barge	33.9x7.3x2.4	A	1
3	Bala kyaw Htin	Passenger/Cargo	44.6x8.7x2.2	A	2
4	Ye Aye	Work Boat	17.9x3.5x1.6	A	2
5	Kyant - 4	Powered Tug	25.4x6.1x2.1	A	3
6	Kyant -18	Powered Tug	27.5x6.3x2.1	A	2
7	Myat Than Dar	Passenger/Cargo	61.1x10.9x2.2	A	2
8	Ta Kha - 5	Barge	24.8x6.1x2.1	A	1
9	Yu Gan	Powered Tug	33.3x6.1x2.4	A	2
10	Ba Nyar Latt	Passenger/Cargo	44.7x8.4x2.2	A	3
11	Si Pin -1	Pontoon	24.7x6.2x1.9	A	1
12	Ba - 6080	Barge	48.5x8.8x2.2	A	1
13	Mya Thidar	Passenger/Cargo	60.6x9.7x2.2	A	2
14	Moe Kaung	Cargo	34.5x6.7x2.2	A	2
15	Ro Ro - 1	Z/Ro Ro Ferry	44.2x9.1x1.8	A	2
16	Kyant - 17	Powered Tug	27.5x6.3x2.1	A	2
17	Moe Kyo	Powered Tug	34.5x6.7x2.2	A	3
18	Kyant - 2	Powered Tug	25.4x6.1x2.1	A	2
19	Saine - 214	Powered Tug	19.5x4.9x2.4	A	3
20	Sha - 6023	Oil barge	48.5x8.8x2.2	A	2
21	Tain War	Passenger/Cargo	28.5x6.6x2.2	A	2
22	Sha - 6014	Oil barge	48.5x8.8x2.2	A	2
23	Sha - 6027	Oil barge	48.5x8.8x2.2	A	1
24	Saw Mar Lar	Passenger/Cargo	28.5x6.6x2.2	A	2
25	Kyan Sit Tar	Z/Ro Ro Ferry	40.6x9.1x1.8	A	2
26	Ka Tha - 009	Barge	24.6x6.2x2.2	A	3
27	Min Hla	Passenger/Cargo	44.2x9.1x1.8	A	2
28	Lin Ta	Pontoon	33.3x6.7x2.3	A	3
29	Toe Aung	Passenger/Cargo	28.5x6.6x2.2	A	4
30	Tain Yin Thar	Passenger/Cargo	28.5x6.6x2.2	A	4
31	Taw Lay Wa	Passenger/Cargo	28.5x6.6x2.2	A	4
32	CB - 13	Barge	26.7x5.6x2.4	A	4

Sr.	Ship Name	Type	Dimension LxBxD in meter	Kind of Damage A=Sunk B=Stranded C=Collided D=Others	Present Repair Situation 1=Completed 2=Under Repair 3 =Waiting 4=Be Scrapped
33	Sha Kha - 3	Powered Tug	32.8x6.1x1.8	A	4
34	Saing - 103	Powered Tug	29.5x4.9x2.2	A	4
35	Taine Yin Maung	Passenger/Cargo	28.5x6.6x2.2	A	4
36	Taw Thar Lay	Passenger/Cargo	28.5x6.6x2.2	A	4
37	Ba - 806	Cargo	5.6x10.3x2.5	A	4
38	Tat Nay Win	Passenger/Cargo	28.5x6.6x2.2	A	4
39	Tain Pyan	Passenger/Cargo	28.5x6.6x2.2	A	4
40	Taw Win Thu	Passenger/Cargo	28.5x6.6x2.2	A	4
1	Pan Ma Waddy -1	Passenger/Cargo	45.4x9.1x2.7	B	1
2	Yay Kywe	Powered Tug	26.9x6.9x2.3	B	1
3	RO RO - 2	Z/Ro Ro Ferry	44.2x9.1x1.8	B	1
4	RO RO - 4	Z/Ro Ro Ferry	44.2x9.1x1.8	B	1
5	Wai Pon La	Passenger/Cargo	34.8x7.9x2.2	B	1
6	Aung Ta Khon - 7	Passenger/Cargo	37.6x6.9x2.3	B	1
7	Ta Ka - 13	Barge	24.8x6.1x2.1	B	1
8	Pyi Myanmar - 1	Passenger/Cargo	48.2x9.6x1.7	B	1
9	Yay Ba We - 2	Powered Tug	33.9x7.1x1.6	B	1
10	Yan Shin	Powered Tug	33.3x6.1x2.4	B	1
11	Ba - 3027	Barge	37.6x6.9x2.2	B	1
12	Ba - 816	Barge	5.6x10.3x2.5	B	1
13	Ta - 2503	Barge	39.2x6.9x2.2	B	1
14	Sha Ka - 5	Powered Tug	32.8x6.1x1.8	B	1
15	Sha Ka - 6	Powered Tug	32.8x6.1x1.8	B	1
16	Sha Ka - 9	Powered Tug	32.8x6.1x1.8	B	1
17	Ka Ta - 001	Barge	24.6x6.2x2.2	B	1
18	Z - 111	Cargo	40.6x9x1.8	B	1
19	Sin Ka Lauk	Passenger/Cargo	28.5x6.6x2.2	B	1
20	Z - 105	Cargo	40.3x9x1.8	B	1
21	Sin Haing - 5	Powered Tug	27.9x7.6x2.9	B	1
22	Nga Tan	Powered Tug	30.3x6.1x2.1	B	1
23	Ta Kha - 6	Barge	24.8x6.1x2.1	B	1
24	Pan Ma Waddy - 2	Passenger/Cargo	48.5x9.1x1.8	B	1
25	Ro Ro - 3	Z/Ro Ro Ferry	44.2x9.1x1.8	B	1
26	Z - 112	Cargo	41.3x9x1.8	B	1
27	Z - 109	Cargo	41.3x9x1.8	B	1
28	Ta-2508	Barge	39.2x6.9x2.2	B	1
29	Ka Ta-005	Barge	24.6x6.2x2.2	B	2
30	JR-83	Barge	24.2x6.1x2.1	B	2
31	Myo Kaung	Powered Tug	30.3x6.1x1.9	B	2
32	Z-114	Powered Tug	41.3x9x1.8	B	1

C.2.4 AHLONE DOCKYARD



**Photo C.2.15
No.4 Slipway**



**Photo C.2.16
No. 5 & No. 7 Slipway**



**Photo C.2.17
No.6 Hauling Winch**



**Photo C.2.18
No.6 Side Slipway**





**Photo C.2.19
No.7 Hauling Winch**







**Photo C.2.20
Renewed Bottom Shell Plates**


C.2.5 EVALUATION OF VULNERABILITY OF DOCKYARD FACILITY

A: Dalla Dockyard



No. 1 Slipway (Year built: 1908)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=180m Max.ton=274	Operational, but too old	Wooden cradles are breakable and unstable.
Hauling Winch	Pull 38ton, Built in 1931	Operational, but aged	
Cradle	Wooden	Operational, but heavily damaged	
			
<p>Damaged wooden cradle</p>			
No. 2 Slipway (Year built: 1898)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=148m Max ton=205	Operational, but too old	Wooden cradles are breakable and unstable.
Hauling Winch	Pull 15.5ton, Built in 1932	Operational, but aged	
Cradle	Wooden	Operational, but unstable	
No. 3 Slipway (Year built: 1898)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=140m Max.ton=205	Operational, but too old	Wooden cradles are breakable and unstable.
Hauling Winch	Pull 15.5ton, Built in 1932	Operational, but aged	
Cradle	Wooden	Operational, but unstable	
			
<p>Unstable wooden cradle</p>			

No. 4 Graving Dock (year built: 2001)			
Component	Particulars	Present Condition	Evaluation
Dock	L=90m,B=15m,D=5.4m Max ton=1400DWT	Operational	
Gate	Flap type	Damaged by Nargis, Some leakage found	Water tightness is not normal condition.
Pump	Centrifugal Pump, Dia.12"	Operational	
Gantry Crane	Not applicable	Construction suspended	Erection is expedited
<p>Some water remains on the bottom</p> 			
No. 5 Slipway (Year built: 1892)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=112m Max.ton=125	Rails, under Repair	Wooden cradles are breakable and unstable.
Hauling Winch	Pull 10ton, Built in 1932	Operational, but aged	
Cradle	Wooden	Under Repair	
No. 6 Slipway (Year built: 1892)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=112m Max.ton=125	Operational, but too old	Wooden cradles are breakable and unstable.
Hauling Winch	Pull 10ton, Built in 1932	Operational, but aged	
Cradle	Wooden	Operational, but aged	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Wooden Cradle</p> </div> <div style="text-align: center;">  <p>Winch house</p> </div> </div>			

No. 7 – No. 12 Slipway (Year built: 1900)			
Component	Particulars	Present Condition	Evaluation
Side Slipway	L=83m Max.ton=468	Operational, but 2 rails missing	Some more berths required
Hauling Winch	Pull 58ton, Built in 1931	Operational, but aged, one drum disconnected	To be renewed into powered ones
Cradle	Wooden	Damaged by Nargis, now very unstable	Wooden cradles are breakable and unstable.
 <p>Wooden Cradle</p>			
No. 13 Slipway (Year built: 1963)			
Component	Particulars	Present Condition	Evaluation
Side Slipway	L=60m Max ton=125	Operational	No.14 winch is now utilized, but very unsafely.
Hauling Winch	Not Fitted	No hauling winch	
Cradle	Steel	In good condition	
Repair Berth	44m x 35 m Concreted	In good condition	
No. 14 Slipway (Year built: 1920)			
Component	Particulars	Present Condition	Evaluation
Slipway	L=183m Max.ton=274	Operational, but too old	–
Hauling Winch	Pull 36ton	Operational, but aged	–
Cradle	Steel and Wooden	Operational	To replace wooden cradle to steel ones
Repair Berth	Traverse system	In good condition	–

Shop Machinery			
Name	Particulars	Present Condition	Evaluation
Sheering Machine Hydr. Press Brake	12t x 3,200mm 300tons	China made in 1995, In operation	To be utilized more widely
NC Cutting Machine	Rail Length = 15m Rail Width = 3.1m	China made in 2003, In operation	To be utilized more widely
Arc Welding Generator	400A 300A	Serviceable 52 units Unserviceable 19 units	Quantity is not enough to improve work efficiency
Machining	Lath, Milling. Drilling mach. etc.	Serviceable 27 units, Out of use 22units	All machines aged, built year unknown
			
Welding Generator			

B. Ahlone Dockyard

No. 1 & No. 2 Slipway			
Component	Particulars	Present Condition	Evaluation
Slipway	Not applicable	Space is utilized for new construction	To be recovered, incl. new winches
Hauling Winch	Not applicable	Out of use due to aging	
Cradle	Not applicable	Not applicable	
 <p>Rotten winches</p>			
No. 3 Slipway			
Component	Particulars	Present Condition	Evaluation
Slipway	2 vsls	Hauling winch is damaged, then out of use now	Winch be repaired
Hauling Winch	150 DWT		
Cradle	Wooden		
 <p>Destroyed winch house by Nargis</p>			

No. 4 Slipway			
Component	Particulars	Present Condition	Evaluation
Slipway	2 vsls	Operational, but winch house damaged by Nargis, Old fashioned belt driven winch	Aged winch be renewed, cradle be replaced to steel ones
Hauling Winch	150 DWT		
Cradle	Wooden		



Belt Driven Winch

No. 5 Slipway			
Component	Particulars	Present Condition	Evaluation
Slipway	4 vsls	Operational, used for mainly ship repair	Rigid steel carriage be fitted
Hauling Winch	150 DWT		
Cradle	Wooden		



No. 6 Slipway			
Component	Particulars	Present Condition	Evaluation
Slipway	6 vsls, Traverse System	In operation, Age of winch is over 40 years, Made in Japan	Winch pull capacity be increased for larger vessels docking.
Hauling Winch	150 DWT		
Cradle	Steel(main) and Wooden(side)		



Slipway



Winch

No. 7 Slipway (Year built: 2003)			
Component	Particulars	Present Condition	Evaluation
Slipway	2 vsls	Operated in good condition	Winch made in Chine is relatively new, wooden cradle has newly been introduced
Hauling Winch	250 DWT		
Cradle	Wooden		
Shop Machinery			
Name	Particulars	Present Condition	Evaluation
Press Brake Sheering Machine	300tonx5,000mm 12x3,200mm	In Operation, made in china 1994-95	Good condition
Welding Generator	400A	26 units in operation	Quantity is not enough.
Lath etc.	30 units	Operational, but aged Some out of use	All machines aged, built year unknown
			
Sheering Machine		Machine shop	