Appendix 2

A.2 Container Handling Equipment in MBP

1. Principal Particulars of Container Crane

Description	Container crane No.1	Container crane No.2
Location	Ballard Pier Station Berth	Ballard Pier Station Berth
Name of the manufacturer	Sumitomo Heavy Industries, JPN	Braithwaite , INDIA in collaboration with Krupp, WG
Date of commissioning	August, 1984	January, 1987
Rated load below spreader	35.5 MT	35.5 MT
Maximum hoisting load including spreader	46 MT	46 MT
Span of the crane track	20.0 m	20.0 m
Lift above the top of seaside rail	26.0 m	26.0 m
Lift below the top of seaside rail	14.0 m	14.0 m
Outreach	38.0 m	38.0 m
Backreach	10.0 m	10.0 m
Inside clearance between legs	15.5 m	15.2 m
Height below the boom from rail	32.77 m	30.25 m
Overall height with boom raised	Approx. 74 m	Approx. 78 m
Overall width from buffer to buffer	27.5 m	25.894 m
Speed : Hoist with load	45 m/min	45 m/min
Hoist without load	90 m/min	90 m/min
Trolley traverse	125 m/min	127.7 m/min
Gantry travel	45 m/min	44.76 m/min
Boom hoist	5 min/one way	5 min/one way
Number of wheels	8 wheels/corner x 4 corners	8 wheels/corner x 4 corners
Overall gantry travel length	218 m	218 m
Size of crane rail	51.8 kg/m	51.8 kg/m
Maximum wheel load : Landward	35 t/wheel	350 KN/wheel
Seaward	29 t/wheel	27KN/wheel
Spreader	Telescopic type	Telescopic type
Electric power source	6.6kV, 50Hz, 3-phase	6.6kV, 50Hz, 3-phase
Distance between seaward rail and coping	2.0 m	2.0 m

(Source : MBPT)

2. Principal Particulars of Transfer Crane

Description	Leading Parameters
Location	Ballard Pier Station Stacking Yard
Name of the manufacturer	Hitachi, JAPAN
Date of commissioning	Feb., Oct. and Nov., 1982 (Respectively)
Type of Transfer crane	6 rows and 1 over 4-high stacking
Number of units available	3 units
Rated load below spreader	35.5 MT
Span (6 rows with an additional lane for chassis)	23.470 m
Lift (1 over 4-high stacking of 9'6" high containers)	15.855 m
Wheel base	6.4 m
Number of wheels	2 wheels/side
Maximum wheel load : Under operating condition	37 MT
Under stormy condition	47 MT
Operating speed : Hoist with full load	12.0 m/min
Hoist without load	24.0 m/min
Trolley traverse	54.0 m/min
Gantry travel without load	135.0 m/min
Type of spreader	Fully automatic hydraulic
Power source	Diesel engine and generator with 312 BHP

(Source : MBPT)

3. Principal Particulars of Reach Stacker

Description	Leading Parameters
Location	Rail Container Depot
Name of the manufacturer	Belotti, ITALY
Date of commissioning	October, 1996
Type of machine	B91
Number of units available	2 units
Maximum lifting capacity for 9'6" containers	42 MT (1st Row : 4-high stacking) at 1,800mm 27 MT (2nd Row : 3-high stacking) at 3,800mm 12 MT (3rd Row : 2-high stacking) at 6,500mm
Spreader	Telescopic hydraulically operated suitable for 20', 30', 35' and 40' containers. Rotation of 120 deg. (90 deg. + 30 deg.) Total lateral shifting of 1,600mm
Total weight (Tare)	Approx. 68 MT
Turning radius	8,000mm
Maximum height of machine	14,600mm
Engine	Diesel engine with 250HP x 2,500rpm
Transmission	Torque converter and gear box
Tires	4 Nos. at the front and 2 Nos. at the rear

(Source : MBPT)

Appendix 3

A.3 Principal Particulars of Electric Wharf Cranes installed in Indira Dock, manufactured by M/s JESSOP & Co. Ltd.

(1/4)

Location	Crane No.	Rated load (t)	Lift (m)	Working radius Max/Min (ft)	Span (m)	No. of wheels	Wheel Load (t)	Year of built	Present states
Ballard Pier Extension	6T/1	6/3	25/15	23m/7m	4.27	4x2 : 2	20	1970	In service
ditto	6T/2	6/3	ditto	ditto	ditto	4x2 : 2	ditto	1970	ditto
ditto	BP-2	3	ditto	75/22	ditto	2x2 : 2	ditto	1962	Laid-up
ditto	BP-4	3	ditto	ditto	ditto	2x2 : 2	ditto	1962	In service
Indira Dock Berth No.7-8	#25	3	ditto	63/20	3.66	2x2 : 2	ditto	1962	To be removed.
Berth No.7-8	37	3	ditto	ditto	ditto	ditto	ditto	1962	In service
Berth No.7-8	M	6/3	ditto	63/20	ditto	ditto	ditto	1963	ditto
Berth No.7-8	33	3	ditto	63/20	ditto	ditto	ditto	1962	ditto
Berth No.7-8	O	6/3	ditto	63/20	ditto	ditto	ditto	1963	ditto
Berth No.8-9	34	3	ditto	63/20	ditto	ditto	ditto	1962	ditto
Berth No.8-9	K	6/3	ditto	63/20	ditto	ditto	ditto	1963	ditto
Berth No.8-9	#35	3	ditto	63/20	ditto	ditto	ditto	1962	To be removed.
Berth No.8-9	#36	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Berth No.10-11	#38	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Berth No.10-11	39	3	ditto	ditto	ditto	ditto	ditto	ditto	In service
Berth No.10-11	40	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.10-11	41	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.10-11	#42	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Berth No.11-12	43	3	ditto	ditto	ditto	ditto	ditto	ditto	In service
Berth No.11-12	44	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto

(2/4)

Location	Crane No.	Rated Load (t)	Lift (m)	Working Radius (ft)	Span (m)	No. of wheels	Wheel load (t)	Year of built	Present states
Indira Dock Berth No.11-12	N	6/3	25/15	63/20	3.66	2x2 : 2	20	1963	In service
Berth No.11-12	45	3	ditto	63/20	ditto	2x2 : 2	ditto	1962	ditto
Berth No.12-12A	46	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.12-12A	H	6/3	ditto	63/20	ditto	2x2 : 2	ditto	1963	ditto
Berth No.12-12A	G	6/3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.12A-12B	26	3	ditto	63/20	ditto	2x2 : 2	ditto	1962	ditto
Berth No.12A-12B	#27	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Berth No.12A-12B	#28	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Indira Dock Berth No.13B-13A	#29	3	ditto	63/20	3.66	2x2 : 2	ditto	1962	To be removed.
Berth No.13B-13A	30	3	ditto	ditto	ditto	ditto	ditto	ditto	In service
Berth No.13B-13A	L	6/3	ditto	63/20	3.66	2x2 : 2	ditto	1963	ditto
Berth No.13B-13A	31	3	ditto	63/20	3.66	2x2 : 2	ditto	1962	ditto
Berth No.13B-13A	32	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.13B-13A	47	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.13B-13A	48	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.13A-13	49	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.13A-13	2063	13/21	15.2/13.7	22.5m/6m	7.00	4x2 : 2	20	1976	ditto
Berth No.13A-13	2064	13/21	ditto	22.5m/6m	7.00	4x2 : 2	ditto	1976	ditto
Berth No.13A-13	2066	13/21	ditto	22.5m/6m	7.00	4x2 : 2	ditto	1976	ditto
Berth No.13A-13	2065	13/21	ditto	22.5m/6m	7.00	4x2 :2	ditto	1976	ditto

(3/4)

Location	Crane No.	Rate load (t)	Lift (m)	Working radius (ft)	Span (m)	No. of wheels	Wheel load (t)	Year of built	Present states
Indira Dock Berth No.13-14	#54	3	25/15	63/20	3.66	2x2 : 2	20	1962	To be removed.
Berth No.13-14	#50	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Berth No.13-14	51	3	ditto	ditto	ditto	ditto	ditto	ditto	In service
Berth No.13-14	55	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.14-15	56	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.14-15	57	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.15-16	R	6/3	ditto	63/20	3.66	2x2 : 2	ditto	1963	ditto
Berth No.16-17	58	3	ditto	63/20	3.66	2x2 : 2	ditto	1962	ditto
Berth No.16-17	60	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.16-17	61	3	ditto	ditto	ditto	ditto	ditto	ditto	ditto
Berth No.16-17	S	6/3	ditto	63/20	3.66	2x2 : 2	ditto	1963	ditto
Berth No.16-17	62	3	ditto	63/20	3.66	2x2 : 2	ditto	1962	ditto
Berth No.16-17	#63	3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
Indira Dock Berth No.18-19	HW6	3	ditto	75/22	4.27	2x2 : 2	ditto	1963	In service
Berth No.18-19	T	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1970	ditto
Berth No.18-19	HW1	3	ditto	75/22	4.27	2x2 : 2	ditto	1961	ditto
Berth No.18-19	U	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1970	ditto
Berth No.20-21	HW2	3	ditto	75/22	4.27	2x2 : 2	ditto	1961	ditto
Berth No.20-21	V	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1970	ditto
Berth No.20-21	W	6/3	ditto	ditto	ditto	ditto	ditto	ditto	ditto

(4/4)

Location		Crane No.	Rated load (t)	Lift (m)	Working radius (ft)	Span (m)	No. of wheels	Wheel load (t)	Year of built	Present states
Indira Dock	Berth No.20-21	HW3	3	25/15	75/22	4.27	2x2 : 2	20	1961	In service
	Berth No.20-21	X	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1970	ditto
	Berth No.20-21	#Y	6/3	ditto	ditto	ditto	ditto	ditto	ditto	To be removed.
	BerthNo.20-21	HW5	3	ditto	75/22	4.27	2x2 : 2	ditto	1963	In service
	Berth No.20-21	#Z	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1970	To be removed.
	Berth No.21-22	#Z-1	6/3	ditto	ditto	ditto	ditto	ditto	1973	To be removed.
	Berth No.21-22	HW4	3	ditto	75/22	4.27	2x2 : 2	ditto	1961	In service
	Berth No.21-22	#Z-2	6/3	ditto	23m/7m	4.27	4x2 : 2	ditto	1973	To be removed.

(Source : MBPT)

NOTE: 1) As of March 29, 1997.

2) Year of built is based on the manufacturer's plate on each crane.

3) 15 Nos. of cranes are out of operation due to lack of spare parts, being damaged, etc. and to be disposed.

4) Lift indicates lift above rail / lift below rail.

Appendix 4

A.4 Mobile Type Cargo Handling Equipment

1. Mobile Cranes

Type of crane	Capacity (Rated load)	No. of units available	Year of purchase	Name of manufacturer	Remarks
Crawler crane	30T at min. radius of 6m 5.3T at max. radius of 21.3m	2	1965-66	M/s TATA P & H	Diesel engine with 210HP
Port tower crane	20T at min. radius of 6m 4.15T at max. radius of 24m	2	1981-83	M/s Tractor India	Diesel engine with 160HP
Mobile crane	14T at min. radius of 3m 3.25T at max. radius of 9m	15	1983-84	M/s Tractor India	Diesel engine with 54HP
ditto	ditto	10	1991-92	ditto	ditto

(Source : MBPT)

2. Forklift Trucks

Type	Capacity	No. of units available	Year of purchase	Name of Manufacturer	Remarks
Forklift truck	3T at L.C. of 500mm with lifting height of 3,660mm	5	1988-89	M/s Voltas	Diesel engine with 43.5HP
ditto	ditto	8	1989-90	ditto	ditto
Forklift truck	3T at L.C. of 500mm with lifting height of 3,660mm	5	1992-93	M/s Voltas	Diesel engine with 48HP
Forklift truck	3T at L.C. of 500mm with lifting height of 3,660mm	5	1992-93	M/s Godrej & Boyce Mfg.	Ditto
Forklift truck	3T at L.C. of 500mm with lifting height of 3,660mm	4	1993-94	M/s Voltas	ditto
ditto	ditto	16	1994-95	ditto	ditto
Battery operated Forklift truck	1.5T at L.C. of 500mm with lifting height of 3,300mm	4	1993-94	M/s Macneill Engineering	Electromotor with 10HP
Battery operated Forklift truck	1T at L.C. of 500mm with lifting height of 2,700mm	6	1993-94	M/s Macneill Engineering	Electromotor with 3.8HP
Heavy duty Forklift truck	16T at L.C. of 900mm with lifting height of 5,200mm	4	1995-96	M/s Voltas	Diesel engine with 123BHPx2000rpm

(Source : MBPT)

3. Tractors

Type	Capacity (Draw bar pull)	No. of units available	Year of purchase	Name of manufacturer	Remarks
Tractor	2,800kgs	12	1980-81	M/s Gujrat Tractor Corp.	Diesel engine with 50HP
ditto	ditto	10	1983-84	ditto	ditto
ditto	ditto	10	1991-92	ditto	ditto

(Source : MBPT)

Appendix 5

A.5 Workvessels and Port Service Vessels of MBPT

1. Tug boat

(1/2)

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Static bollard pull (t)	Type of propulsion	Year of built	Remarks
	Length	Breadth	Depth	Draft						
AAKASH	33.10	9.50	4.60			12	32.5	Diesel Voith Tractor	1984	Harbour tug
ABHIMAN	33.10	9.50	4.60			12	32.5	ditto	1984	ditto
VS ANUKOOL	32.95	10.00	4.25	4.5	1,500BHP x 2	11	30	Twin Voith Schneider	1985	ditto
VS AMIT	32.95	10.00	4.25	4.5	ditto	11	30	ditto	1986	ditto
VS ARUL	32.95	10.00	4.25	4.5	ditto	11	30	ditto	1986	ditto
D.T.RAJIV	23.50	6.50	3.90	3.5	453BHP x 2	10	10	ditto	1987	Dock tug
D.T.DAULAT	22.20	6.50	2.70		270BHP x 2	9.5	6.5	Diesel twin screw	1988	ditto
RAJESH	22.35	7.40	3.25	2.50	496BHP x 2	11.07	12.4	Diesel twin screw	1991	
RUDRA	22.86	6.73	3.58	2.84	450BHP x 2	9.75	10	ditto	1959	Dock tug
RAHUL	22.86	6.73	3.58	2.84	450BHP x 2	9.75	10	Diesel twin screw	1959	Dock tug
MT DHANANJAYA	21.50	5.50	3.00	2.00	496BHP x 2	9.50	7	ditto	1987	Dredging tug
ANKUSH	33.65	8.90	4.25	3.39	700HP x 2	12	22.5	ditto	1966	Harbour tug
ATUL	33.65	8.90	4.25	3.39	ditto	12	22.5	ditto	1966	ditto
AMOL	33.70	8.92	3.92		ditto	12	22.5	ditto	1967	ditto
ARVIND	33.70	8.92	3.92		ditto	12	22.5	ditto	1967	ditto
BHARAT	20.40	5.60	2.96	2.80	358HP	8.5	6.5	Diesel single screw	1967	Dock tug
BRAHMA	20.40	5.60	2.96	2.80	ditto	8.5	6.5	ditto	1967	ditto
BAHADUR	20.40	5.60	2.96	2.80	358HP	8.5	6.5	Diesel single screw	1967	Dock tug
RAMESH	23.00	6.40	3.80	3.30	525HP	9.75	10.5	ditto	1968	ditto

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Static bollard pull (t)	Type of propulsion	Year of built	Remarks
	Length	Breadth	Depth	Draft						
RANJIT	23.00	6.40	3.80	3.30	525HP	9.75	10.5	ditto	1968	Dock tug
DHRUVA	21.20	5.50	2.60	1.52	272BHP	9.5	3.5	ditto	1972	ditto
DHARMA	21.20	5.50	2.60	1.52	272BHP	9.5	3.5	ditto	1972	ditto
SUSHIL	21.00	5.50	2.40	1.80	488HP	11.46	4	ditto	1983	ditto
BHASKAR	21.00	5.60	3.40	2.40	488HP	8.5	7	ditto	1983	ditto
BHISHMA	20.95	5.59	2.87		488HP	8.5	7	ditto	1983	ditto
D.T. RAGHU	23.50	6.50	3.90	3.50	453BHP x 2	10	10	Twin Voith Schneider	1987	ditto
RAJAN	22.40	7.40	3.30		496BHP x 2	12.4	11	Diesel twin screw	1991	Dock tug

(Source : MBPT)

2. Floating crane

Name of vessel	Hull dimensions (m)				Main engine	Max. lifting capacity (t)	Max. working radius (m)	Speed (kt)	Year of built
	Length	Breadth	Depth	Draft					
SHRAVAN	40.37	22.00	4.23	2.30	275BHP x 2	125	Approx. 46	5	1962
SHRESTHA	45.60	18.00	3.57	1.80	426HP x 2	60	Approx. 23	5	1982

(Source : MBPT)

3. Survey launch / Survey boat

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Year of built	Remarks
	Length	Breadth	Depth	Draft				
SUJATA	17.5	4.5	2.1	1.5	185BHP x 2	10.5	1976	

(Source : MBPT)

4. Pilot vessel / Pilot launch

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Year of built	Remarks
	Length	Breadth	Depth	Draft				
BOMBAY	13.72	3.54	1.72	1.06	84BHP	8.1	1949	
PRABHA	13.7	4.00	1.33	1.10	234HP x 2	16	1983	Twin screw
PRUTHVI	13.7	4.00	1.33	1.10	234HP x 2	16	1984	Twin screw
PUSHPA	ditto	ditto	ditto	ditto	ditto	ditto	ditto	ditto
PRAGNYA	13.7	4.10		0.99	235HP x 2	15	1983	Twin screw
PURNIMA	ditto	ditto		ditto	ditto	ditto	ditto	ditto

(Source : MBPT)

5. Mooring launch

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Year of built	Remarks
	Length	Breadth	Depth	Draft				
MEENA	12.19	3.35	1.67	0.99	90BHP	9	1955	
USHA	ditto	ditto	ditto	ditto	ditto	ditto	ditto	
SHOBHA	12.19	3.35	1.44		90BHP	9	1957	
SUDHA	ditto	ditto	ditto		ditto	ditto	ditto	
SHARDA	12.09	3.65	1.50	1.00	92BHP		1970	
SUSHAMA	ditto	ditto	ditto	ditto	ditto		ditto	
SAROJ	ditto	ditto	ditto	ditto	ditto		ditto	
SAVITRI	ditto	ditto	ditto	ditto	ditto		ditto	
SONALI	11.90	3.20	1.65	1.00	108BHP	10.5	1985	
SHRADDHA	ditto	ditto	ditto	ditto	ditto	ditto	ditto	
SUNITA	11.90	3.20	1.65	1.00	108BHP	10.5	1986	
SHAILA	ditto	ditto	ditto	ditto	ditto	ditto	ditto	

(Source : MBPT)

6. Self-propelled water barge / Ferry cum water boat

Name of vessel	Hull dimensions (m)				Main engine	Capacity F/W (t)	Year of built	Remarks
	Length	Breadth	Depth	Draft				
KUMKUM	28.10	6.50	2.75	1.29	191BHP x 2	100	1969	
KALPANA	32.00	7.00	3.00		276HP x 2		1990	

(Source : MBPT)

7. Hopper barge / Flat barge / Coal barge

Name of vessel	Hull dimensions (m)				Capacity (m3 or t)	Year of built	Remarks
	Length	Breadth	Depth	Draft			
Hopper barge No.4	36.50	8.00	2.50	1.80	300m3		Non-propelled
Hopper barge No.11	36.50	8.00	2.50	1.80	225m3	1984	ditto
Hopper barge No.12	43.50	7.50	2.70		300m3	1989	ditto
Hopper barge No.13	ditto	ditto	ditto		ditto	ditto	ditto
Hopper barge No.14	ditto	ditto	ditto		ditto	ditto	ditto
Flat barge No.135	36.57	11.58	2.89	1.82	400t	1926	Non-propelled
Flat barge No.136	ditto	ditto	ditto	ditto	ditto	ditto	ditto

(Source : MBPT)

8. General purpose cargo and inspection launch

Name of vessel	Hull dimensions (m)				Main engine	Speed (kt)	Year of built	Remarks
	Length	Breadth	Depth	Draft				
TARANGANI	12.19	3.04	1.52	0.82	90BHP	10.0	1953	
KAMINI	16.76	3.96	1.82	1.11	90BHP x 2	11.3	1955	Twin screw
SHALINI	16.76	3.96	1.98	1.10	90BHP x 2	11.0	1958	ditto

(Source : MBPT)

Appendix 6

A.6 Present Conditions of Ship Repair Dry Docks in MBP

1. Geometric dimensions of ship repair dry docks

Name of Dry Dock		Hughes Dry Dock	Merewether Dry Dock
Length	Top level	304.8 m	160.13 m
	Bottom level	304.8 m	152.44 m
Width	Top level	40.84 m	27.44 m
	Bottom level	31.09 m	19.57 m
Depth		14.33 m	10.37 m
Maximum capacity of dock		40,000/25,000 GRT	15,000 GRT
Year of built		1913/14	1891
Material of dock wall		Granite	

(Source : MBPT)

2. Number of vessels docked by size-wise

(Unit : ship)

Name of Dry Dock		Hughes Dry Dock		Merewether Dry Dock	
Year		1994-95	1995-96	1994-95	1995-96
Total number of vessels dry docked		36(3)	38(1)	43(13)	34(15)
Total tonnage of vessels dry docked (GRT)		139,551	93,520	13,771	24,126
No. of vessels :	less than 500	--	1(--)	24	22
(unit : GRT) :	500 - 1000	10(1)	16(1)	6	4
:	1000 - 3000	11(2)	11(--)	13	7
:	3000 - 5000	5	3	--	1
:	5000 - 10000	6	6	--	--
:	10000-20000	4	1	--	--
:	Greater than 20000	--	--	--	--

Note : MBPT vessels written in parenthesis, but included in the total number. (Source : MBPT)

3. Occupation of dry docks

According to the Administration Report, the Dry Docks occupation is as follows.

(Unit : day)

Name of Dry Dock	Hughes Dry Dock		Merewether Dry	
Year	1994-95	1995-96	1994-95	1995-96
Occupied by vessels	331	346	323	349
Vacant for laying/removing special blocks for docking vessels and re-aligning center line blocks, etc.	20	12	16	8
Vacant due to Sundays and Holidays	4	8	11	6
Vacant due to				
1) Repairs and maintenance of sluice valve, capstan, etc.	--	--	--	2
2) Docking/Undocking at H.D.D.	--	--	13	--
3) Fixing Docking Programme	--	--	--	--
Vacant due to cancellation of programme	10	--	2	1

(Source : Administration Report, MBPT)

An analysis of the ship size and number of ships dry docked at the Hughes Dry Dock during 1995-96 revealed the followings.

Size of vessel dry docked	:	490 - 11,895 GRT	Average = 2,468 GRT
Number of days dry docked	:	4 - 29 days	Average = 16 days

4. Staff strength

The sanctioned staff strength of the Hughes Dry Dock is 128 persons. The sanctioned staff strength of the Merewether Dry Dock is 97 persons plus 25 persons in the Merewether pumping station, excluding Class-I staff.

Appendix 7

A.7 List of Major Dock Machinery of MBP

1. Details of Dock Machinery under the Control of Indira Dock Section

(1) Details of outer lock gate

Name	:	Outer Lock Gate for entrance lock of Indira Dock
Make	:	Larsen and Toubro Ltd.
Quantity	:	1 No. Gate (2 leaves)
Dimensions	:	Length=17.85m, Width=2.45m, Height=14.02m
Weight	:	218 tons steel and 3 tons water ballast
Date of Installation	:	1994
Mode of Operation	:	Oil Hydraulic

(2) Details of inner Lock Gate

Name	:	Inner Lock Gate for entrance lock of Indira Dock
Quantity	:	1 No. Gate (2 leaves)
Dimensions	:	Length=18.14m, Width=2.28m, Height=13.72m
Weight	:	240 tons steel
Date of Installation	:	1912
Mode of operation	:	Oil Hydraulic
Program of replacement	:	To be replaced in the ninth 5 year Plan.

(3) Details of Storm Gate

Name	:	Storm Gate for entrance lock of Indira Dock
Quantity	:	1 No. Gate (2 leaves)
Dimensions	:	Length=18.14m, Width=2.28m, Height=14.94m
Weight	:	260 tons
Date of Installation	:	1912
Mode of operation	:	Oil Hydraulic
Program of replacement	:	To be replaced in the ninth 5 year plan.

2. Details of Hydraulic Power Packs installed in Indira Dock

(For the operation of inner and outer lock gates, storm gates and sluice valves.)

(1) General Details

Name	:	Hydraulic Power Pack
Make	:	Van Riet Schoten and Houwens, Netherlands
Quantity	:	15 Nos.

(2) Details of Electrical Motor

Quantity	:	1 No. per Power Pack
Rating	:	37 kW, 415V, 3 ϕ, 50Hz, 1,460 RPM
Year of Manufacture	:	1994

(3) Details of Hydraulic Pump

Make	:	Vickers
Quantity	:	1 No. per Power Pack
Capacity	:	98 cc / revolution
Type	:	Variable axial piston
Pressure	:	150 Bar
Year of Manufacture	:	1994

3. Details of Capstans in Indira Dock

(Under the control of Cranes and Dock Machinery, Indira Dock Section)

Quantity	:	3 Nos. at BPS / BPX and 4 Nos. at entrance lock
Capacity	:	11 tons each
Type of Drive	:	Water Hydraulic, Water pressure is supplied from any of the three hydraulic pumping stations at Carnac Bunder, Indira Dock or Prince's Dock.
Date of Installation	:	1913
Program of replacement	:	3 Nos. near BPS/BPX not required to be replaced. 4 Nos. near entrance lock are under replacement. Offers have already been invited.

4. Details of Capstans at HDD under SRF

Quantity	:	5 Nos. + 8 Nos. + 1 No. =14 Nos.
Capacity	:	5 Nos. 11 tons each

		8 Nos. 2½ tons each
		1 No. 1½ ton
Type of Drive	:	Water Hydraulic
Date of Installation	:	1913
Location	:	HDD Indira Dock
Program of Replacement	:	These capstans are being replaced under ship Repair Facility Project funded by ADB. 9 Nos. capstans are being provided in place of existing 14 Nos. Capacities are as 5 Nos./10 ton and 4 Nos./6 ton.

5. Details of Capstans at Jetty Nos. 1, 2 and 3, MOT, J.D.

(1) General Details

Make	:	Stathert and Pitt Ltd.,Bath U.K.
Quantity	:	6 Nos. (2 Nos. for each jetty)
Capacity (Pull)	:	10 tons at 8 RPM
Type of Drive	:	Electric Motor Driven
Date of Installation	:	1954

(2) Details of Electric Motor for the above Capstans

Make	:	Laurance Scott and Electromotor Ltd., U.K.
Capacity	:	50 HP, 415 V, 3 ϕ, 50 Hz, 985 RPM
Type	:	FLP Squirrel Cage
Date of Installation	:	1954

6. Details of Capstans at Fourth Oil Berth, MOT, J.D.

(1) General Details

Make	:	Geeta Engineering Works Pvt. Ltd.
Quantity	:	8 Nos.
Capacity (Pull)	:	3 tons
Type of Drive	:	Electric Motor Driven
Date of Installation	:	1984

(2) Electric Motor Details for the above Capstans

Make	:	Crompton Greaves Ltd.
Capacity	:	7.5 HP, 415 v, 3 ϕ, 50 Hz
Type	:	FLP Squirrel Cage
Date of Installation	:	1984

7. Details of Capstans at New Pir Pau Pier

(1) General Details

Make	:	Innovative Technonics P. Ltd.
Quantity	:	4 Nos.
Capacity(Pull)	:	10 tons at 15 m/min
Type of Drive	:	Electric Motor Driven
Date of Installation	:	1996

(2) Details of Electric Motor

Make	:	Crompton Greaves Ltd.
Capacity	:	50 HP, 415 V, 3 ϕ, 50 Hz
Type	:	FLP Squirrel Cage
Date of Installation	:	1996

8. Details of Dock Machinery Under Prince's and Victoria Dock Section

(1) Details of Victoria Dock Gate

Name	:	Victoria Dock Gate
Make	:	Armstrong Mitchel & Co.Ltd.
Quantity	:	1 Gate (2 leaves)
Dimensions	:	Length = 44 ft 11 in., Height = 33 ft 11¾ in., Width=4 ft 5½ in. of each leaf
Date of Installation	:	1888
Mode of operation	:	Water hydraulic system
Program of replacement	:	This gate is being replaced. Order for new bridge placed with U.T. Ltd., Delhi. Work likely to be completed by June 1998.

(2) Details of Prince's Dock Gate

Name	:	Price's Dock Gate
Make	:	Sir W.G. Armstrong & Co. Ltd.
Quantity	:	1 Gate (2 leaves)
Dimensions	:	33 ft each leaf
Date of installation	:	1888
Mode of operation	:	Water hydraulic system

Appendix 8

A.8 Container Handling Equipment in JNP

1. Principal Particulars of Container Crane

(1/2)

Description			Gantry crane No.1	Gantry crane No.2	Gantry crane No.3
Location (Birth No.)			Container Berth	Container Berth	Container Berth
Name of the manufacturer			KHIC	KHIC	KHIC
Date of commissioning			26 May, 1989	26 May, 1989	26 May 1989
Rated load below spreader		(MT)	35.5	35.5	35.5
Maximum hoisting load incl. Spreader		(MT)	- do -	- do -	- do -
Span of the crane track		(m)	20.0	20.0	20.0
Lift above the top of seaside rail		(m)	28.0	28.0	28.0
Lift below the top of seaside rail		(m)	15.0	15.0	15.0
Outreach		(m)	39.0	39.0	39.0
Backreach		(m)	14.0	14.0	15.0
Inside clearance between legs		(m)	16.0	16.0	16.0
Height below the boom from rail		(m)	35.5	35.5	35.5
Overall height with boom raised		(m)	Approx. 85	Approx. 85	Approx. 85
Overall width from buffer to buffer		(m)	30.4	30.4	30.4
Speed :	Hoist with load	(m/min)	42	42	42
	Hoist without load	(m/min)	84	84	84
	Trolley traverse	(m/min)	150	150	150
	Gantry travel	(m/min)	45	45	45
	Boom hoist	(min/one way)	5	5	5
Number of wheels		(wheels/corner)	8 x 4 corners	8 x 4 corners	8 x 4 corners
Overall gantry travel length		(m)	225	310	225
Size of crane rail		(kg/m)	CR100	CR100	CR100
Maximum wheel load	Land side	(t/wheel)	35/44	35/44	35/44
	Sea side	(t/wheel)	35/44	35/44	35/44
Spreader			Telescopic	Telescopic	Telescopic
Electric power source			3.3kV,50Hz,3-phase	3.3kV,50Hz,3-phase	3.3kV,50Hz,3-phase
Distance between seaward rail and coping (m)			6.53	6.53	6.53

(Source : JNPT)

(2/2)

Description			Q-105	Q-106	B.N. TITAN
Location (Birth No.)			Container Berth	Container Berth	Container Berth
Name of the manufacturer			HANJUNG	HANJUNG	B.N.TITAN
Date of commissioning			15 June, 1995	09 Jan., 1997	19 Jan., 1997
Rated load below spreader		(MT)	40.0	40.0	40.0
Maximum hoisting load incl. spreader		(MT)	- do -	- do -	- do -
Span of the crane track		(m)	20.0	20.0	20.0
Lift above the top of seaside rail		(m)	30.0	30.0	30.0
Lift below the top of seaside rail		(m)	17.0	17.0	17.0
Outreach		(m)	39.0	39.0	39.0
Backreach		(m)	15.0	15.0	15.0
Inside clearance between legs		(m)	16.0	16.0	16.0
Height below the boom from rail		(m)	37.5	37.5	37.5
Overall height with boom raised		(m)	Approx. 85	Approx. 85	Approx. 85
Overall width from buffer to buffer		(m)	30.4	30.4	30.2
Speed :	Hoist with load	(m/min)	40	40	40
	Hoist without load	(m/min)	80	80	80
	Trolley traverse	(m/min)	150	150	150
	Gantry travel	(m/min)	45	45	45
	Boom hoist	(min/one way)	5	5	8
Number of wheels		(wheels/corner)	8 x 4 corners	8 x 4 corners	8 x 4 corners
Overall gantry travel length		(m)	225	225	225
Size of crane rail		(kg/m)	CR100	CR100	CR100
Maximum wheel load	Land side	(t/wheel)	45/55	45/55	40/50
	Sea side	(t/wheel)	45/55	45/55	40/50
Spreader			Telescopic	Telescopic	Telescopic
Electric power source			3.3kV,50Hz,3-phase	3.3kV,50Hz,3-phase	3.3kV,50Hz,3-phase
Distance between seaward rail and coping (m)			6.53	6.53	6.53

(Source : JNPT)

2. Transfer Crane

Description	RTGC No.1 to No.8	RTGC No. 1 to No. 6
Owner	JNP	Leased from ABG
Location	JNPT	JNPT
Name of the manufacturer	KHIC	HANJUNG
Date of commissioning	26 May, 1989	30 Mar., '95 for Nos.1-5 24 Jan, '97 for No.6
Type of Transfer crane	6 rows with 1 over 4 -high stacking	6 rows and 1 over 4 - high stacking
Number of units available	8 units	6 units
Rated load below spreader	35.5 MT	40.0 MT
Span (6 rows with an additional lane for chassis)	23.47 m	23.47 m
Lift (1 over 4-high stacking of 9'6" high containers)	14.8 m	14.8 m
Wheel base	7.5 m	7.5 m
Number of wheels	2 wheels/side	2 wheel/side
Maximum wheel load : Under operating condition	40 t/wheel	28.5 t/wheel
Under stormy condition	48 t/wheel	32.5 t/wheel
Operating speed : Hoist (with full load)	21 m/min	18 m/min
Hoist (without load)	42 m/min	36 m/min
Trolley traverse	50 m/min	52 m/min
Gantry travel (without load)	134 m/min	134 m/min
Type of spreader	Telescopic 20'/40'	Telescopic 20'/40'
Power source	Diesel engine and generator with 540BHP	Diesel engine and generator with 540BHP

(Source : JNPT)

3. Rail-mounted Transfer Crane

Description		Leading particulars	
Owner		JNPT	Leased from ABG
Location		JNPT Railway Yard	JNPT Railway Yard
Name of the manufacturer		KHIC	HANJUNG
Date of commissioning		26 May, 1989	27 May, 1995/1997
Type of Transfer crane		Rail-mounted transfer crane 2 rows of containers on the rail tracks	
Number of units available		1 unit	2 unit
Rated load below spreader		35.5 MT	35.5 MT
Span		25.5 m	25.5 m
Lift		9.2 m	9.2 m
Wheel base		6.4 m	6.4 m
Number of wheels		2 wheels/c x 4 corners	2 wheels/c x 4 corners
Size of rail		CR80	CR80
Maximum wheel load :	Under operating condition	50 t/wheel	50 t/wheel
	Under stormy condition	62 t/wheel	62 t/wheel
Operating speed :	Hoist (with full load)	11 m/min	10.67 m/min
	Hoist (without load)	22 m/min	22 m/min
	Trolley traverse	51.8 m/min	51.8 m/min
	Gantry travel (without load)	45 m/min	45 m/min
Type of spreader		Telescopic 20'40'	Telescopic 20'/40'
Power source		3.3kV, 50Hz, 3-phase	3kV, 50Hz, 3-phase

(Source : JNPT)

Appendix 9

A.9 Dry Bulk Cargo Handling Equipment in JNP

1. Principal Particulars of Continuous Unloader

Description	ULC No.1	ULC No.2
Location (Birth No.)	JNPT No.2	JNPT No.2
Type of unloader	Continuous	continuous
Name of the manufacturer	Buhler	Buhler
Date of commissioning	May 1989	May 1989
Rated unloading capacity	450 m^3/h	450 m^3/h
Maximum size of vessel berthed	75,000 DWT	75,000 DWT
Outreach (From the center of seaside rail)	Approx. 28 m	Approx. 28 m
Lift : Above the top of seaside rail	16.6 m	16.6 m
Below the top of seaside rail	16 m	16.0 m
Span of the crane track	15.0 m	15.0 m
Number of wheels : Seaside	6 x 2 corners	6 x 2 corners
Land side	5 x 2 corners	5 x 2 corners
Overall gantry travel length	250 m	250 m
Size of crane rail	CR 100	CR 100
Maximum wheel load Seaside	120 KN/wheel	120 KN/wheel
Land side	117 KN/wheel	117 KN/whee
Electric power source	3.3kV, 50Hz, 3-phase	3.3kV, 50Hz, 3-phase
Distance between seaward rail and coping	15 m	15 m

(Source : JNPT)