SCOPE OF WORK – MAINTENANCE OF CRANES

I. Maintenance of Cranes is mainly divided into two categories

a) Breakdown Maintenance(BD maintenance)
b) Preventive Maintenance (P Maintenance / PM)

Details of Cranes by capacity are as below.

Type	By Capacity	No. of cranes	Total
EOT	≥250T	1	256
	≥150T and <250T	4	
	≥50T and <150T	28	
	≥20T and <50T	37	
	≥5T and <20T	82	
	<5T	21	
Gantry, S.Gantry	<40T	40	
Bracket	3T	1	
JIB	<5T	40	
Sand Grab Equipment		2	

A. BREAKDOWN MAINTENANCE

1. Breakdown Maintenance of all cranes (mentioned in the 'List of Cranes') as per the call received (Telephone, Verbal, or thru Breakdown report). Attending to breakdown maintenance calls in such a way the crane is put back into operation in best possible minimal time.
2. For every activity (s)/ job (s) performed, a registration number (in the form of running serial number) shall be clearly mentioned in daily log-book or online system by the supervisor/ Contractor.
3. Critical cranes/ emergency requests shall be attended timely by redirecting manpower as per priority and instructions of the Engineer In-charge Crane Maintenance.
4. In case of urgent breakdown, the contractor shall have to retain his staff on working days, and call back on Sundays and holidays as per requirement and as and when instructed by the Engineer In-charge crane maintenance, for completion of urgent breakdowns. However any compensation on this account shall not be paid by BHEL outside the conditions specified in the payment terms.
5. When repair/ maintenance/ modification work gets completed, the actual time (in hours), material consumed, total down time and other information shall be reported to the Engineer In-charge crane maintenance in the daily report.
6. All complaints received shall be reported by the contractor to the Engineer In-charge crane maintenance and completed at the earliest.

B. PREVENTIVE MAINTENANCE:

Preventive maintenance of all cranes mentioned in the 'List of Cranes'.

B.1 MECHANICAL:

1. General checking of the Crane. Checking cranes for any loose fasteners/ bolts etc., vibration, oil leakage and missing parts/ guards during preventive maintenance and rectifying the same.
2. Topping oil in the gear boxes, EHT thrusters.
3. Checking lubrication of crane. Ensuring good lubrication using grease gun at points specified in manual / PM check sheet.
4. Lubrication of wire ropes (Eg. Dorsa or Vitalife spray etc.,)
5. Checking of LT/CT wheels including bearings, wheel shafts, couplings, pedestals, gears, etc. for any abnormal sound.
6. Drive mechanisms - Checking of LT, CT and hoist motions, replacement of gear boxes, bearings, oil seals, gaskets, gears, input/output shafts, couplings, coupling bolts, drive shafts, pulleys, etc. for any play or abnormal sound.
7. Wire Ropes - Replacement of worn out/broken/crushed/damaged wire ropes, arranging for wire rope clamps.
8. Hook block of hoists - Replacement of damaged / worn out hooks. Replacement of damaged / defective pulleys and any other damaged components of the hook blocks.
9. Checking and replacement of crane end stoppers on LT and CT motion.
10. Restoration of trolleys at the time of derailment.
11. Checking and repairing bogie system on end carriages and repairing damages to structures.
12. Checking and replacement of brake units / brake liners, replacement of springs, adjustment of studs etc.
13. During Preventive Maintenance, a report of defects / condition requiring repairing/maintenance should be generated. Based on this, suitable action plan should be made for rectification in consultation with Engineer In-charge Crane Maintenance.
14. If the Crane is not spared for preventive Maintenance by the production as per schedule, contractor should intimate the same to the Engineer In-charge Crane maintenance and preventive will be done in next month / in that PM Cycle.
15. The contractor shall inform well in advance in writing the requirement of various items which are to be supplied by BHEL.
16. During lean period – take up works like repair of thrusters, Capacity painting on hook block with template, ..etc

B.2 ELECTRICAL:

1. Attending breakdown of electrical nature.
2. Replacement / minor repair of motors.
3. Replacement of fuses / fuse holders in electrical panels.
4. Cleaning of Contact points of contactors. Replacement of contactors or contact points, if necessary.
5. Replacement of cables.
6. Repair / replacement of incoming mains switches on panel.
7. Replacement / checking of brake units.
8. Maintenance of junction boxes of CT, LT, MH, AH, Pendent, etc.

9. Repair / Replacement of cable trolleys.
10. Repairs / Replacement of floor operation push button pendent including push buttons
11. Repair / Replacement of master control switches.
12. Topping / Replacement of oils in brake units.
13. Tightening loose connection on terminal boards.
14. Checking / Repair / Replacement of CT, LT rotary and counter weight limit switches.

B.3 ELECTRONICS:

1. Checking of Radio Remote Control System.
2. Minor repair / Replacement of remote control transmitter and receiver
3. Replacement of PCB or push buttons of RRC in case of faults.
4. Replacement / Adjustment / Tuning of variable frequency drives (VVVFD), Entering parameters when drive is changed.

B.4 CLEANING OF CRANES:

1. All cranes to be cleaned 2 times in a year at regular intervals to remove any kind of waste materials, dust, oils, grease, unused cables, etc.. Foreign materials need to be brought down.
2. While cleaning practise 5S techniques (Cleaning with meaning, check for any loose parts) and rectify them accordingly.

B.5 DSL MAINTENANCE:

1. Cleaning of DSL lines.
2. Tightening of Porcelain insulators and replacement.
3. Replacing / checking of current collectors.
4. Alignment of DSL lines and welding back, where ever L-angle is broken / bend, as part of maintenance.
5. Checking of power supply connections and DSL lines (Power feeding).
6. Repair / Replacement of power cables for DSL lines.
7. Repair / Replacement of Safetrack.

B.6 GANTRY MAINTENANCE:

1. Checking of end stoppers and welding / bolting rectification.
2. Cleaning of gantry walkways for removal of any unused / waste material.
3. Keeping handrails provided on walkway platforms in good condition.

B.7 EXECUTION OF WORK:

1. Contractor has to deploy manpower in such a way that breakdown percentage is maintained less than 2% always and meet all other requirements specified in the scope of work.
2. Contractor will receive breakdown through phone / in person/ online from Production Departments located across the plant. It should be attended promptly.
3. Efforts shall be made for promptly attending all types of breakdowns. However support related to major diagnostic related to VFD's & electronics shall be provided by dept. free of cost.

B.8 SKILL SET REQUIRED:

The job requires the following skills

1. Engineers: Engineering degree with 1 year work experience in Machine Tools / Cranes maintenance or Diploma with 5 Year work experience in Machine Tools / Cranes maintenance (or) ITI with 10 year experience in Cranes maintenance.
2. Supervisors: Diploma with 1 year work experience or ITI with 3year work experience in cranes maintenance or Machine tool maintenance
3. Fitters & Electrician (Skilled Worker): ITI with work 1 year experience or with 3 year work experience in Cranes maintenance.
4. Unskilled Workers / Helpers: Able male person of 18 years and above who can read and write.

II. OTHERS:

1. A daily breakdown and monthly breakdown report (including downtime data of each crane) and report of major work shall be submitted to the In-charge of Cranes section after endorsement from concerned block maintenance In-charge. For every complaint received a registration number (in the form of running serial number) shall be clearly mentioned in daily log-book or online system by the supervisor of Vendor.
2. The contractor shall adhere to the priority fixed by the Block Maintenance / Cranes In-Charge for taking urgent repair work. Critical cranes/ emergency requests shall be attended timely by redirecting manpower as per priority and instructions of the Engineer In-charge Crane Maintenance.
3. Emergency breakdown during the third shift of all working days and second shift of Sundays shall also be attended, for which skeleton staff shall be available in the factory premises.
4. Total number of cranes (EOT, Gantry Semi-Gantry and Jib Cranes) is 256 Nos. the number of Cranes may vary by plus 2% and these should be covered automatically under the purview of this contract, without any increase in the price.
5. Preventive Maintenance work of the cranes shall be done twice in a year as per the Checklist provided by BHEL. PM Check sheets prepared by BHEL-Cranes incharge has to be followed and filled up while carrying out PM. Completed forms need to be submitted in-time to Supervisor in-charge.
6. When repair/ maintenance/ modification work gets completed, the actual time (in hours), material consumed, total down time and other information shall be reported to the Engineer In-charge crane maintenance in the daily report.
7. The Cranes, DSL/Safetrack and gantry shall be periodically cleaned as part of Preventive Maintenance and other works like Limit switch checking, ..etc should be carried out as and when assigned by Engineer / In-charge of Cranes Maintenance department.
8. As BHEL has been accorded with ISO-9001, ISO-14001, ISO 45001, ISO 50001 & API certifications, the Contractor shall carry out qualitative work to meet these standards. Necessary documentation / paper work shall also be maintained. Future standards acquired by BHEL (If any) need to be adhered.
9. Contractor shall arrange his own tools for removal, dismantling, assembling and re installation of hoist/motors/gearboxes, etc. However, all spares including consumables like gear oil, electrodes, grease, cotton waste, etc., and facilities like gas cutting, welding, machining facility, repair, rewinding of motors, coils etc., shall be provided by BHEL free of cost at ground level. However, to minimize the break-down time, the contractor, shall adopt vigilant action for better parts / methods voluntarily.
10. Contractor shall supply tools, tackles and necessary measuring instruments (Eg. Multimeter) to his employees for smooth working on day to day basis. However in special circumstances tools

and other measuring instruments if available and if can be spared may be provided by us free of cost by BHEL on returnable basis.

11. Contractor should necessarily arrange one welder as part of his crew for carrying out minor welding works.
12. Contractor shall maintain all records like breakdown forms, spares list, all other records pertaining to his work, and should be shown to Cranes Engineer in charge.
13. For working at heights, Work Permit System as prescribed by BHEL-Safety dept. shall be followed and records maintained, to meet HSE audits / guidelines.
14. Medical fitness certificates of all workmen (fit to work at ground and heights) should be submitted as per HSE dept. guidelines before commencement of work and every year.
15. No foreign/used or unused/scrapped/broken parts shall be left on the crane/gantry / bridges so that likely accidents due to their falling are avoided.
16. All used/worn out/scrapped/ replaced spares/ parts shall remain the property of BHEL.
17. The contractor and their employees will observe all the laws/enactments, rules and regulations of BHEL and also the statutory and legal requirements of Central and State government.
18. Utmost care should be taken by the contractor to repair the cranes in a proper way and with quality workmanship so as to adhere to the safety requirements as per the latest revision of Factories Act and Telangana state rules.
19. All the contractor's personnel shall use PPEs (Personnel Protection Equipment).
20. The contractor shall engage experienced personnel for the maintenance of cranes as per the job requirement as indicated below.
21. Collection of spares/ material from various stores and blocks to work place/ site shall be carried out by contractor.
22. Cleaning, stacking, sorting, handling and upkeep of crane maintenance stores, work center stores (including 5S activities) shall be carried out by contractor.
23. Contractor has to carry out stock taking in all stores (Electrical store, Mechanical store and Bearings store, Drives and RRC store, ..etc) on a quarterly basis and submit the updated report to In-charge of Cranes section. To be updated into computer in Inventory report.
24. Salvaging/repair work of crane spares & other crane items shall be carried out by contractor.
25. Drawing for major assemblies & component shall be prepared by the drawing section of BHEL or shall be arranged by Dept. However in case of emergency and for small jobs, hand sketch shall be prepared by the contractor.
26. Contractor shall carry out the work at his own risk, finance, human resources and supervision.
27. Payment of work shall be made to the contractor on the basis of work carried out on measurement basis.
28. Contractor shall have supervision on the conduct of his employees. Any violation of safety norms and misconduct by any of his employees/contractor may result in cancellation of Gate pass of that employee/contractor.
29. Parties may visit the site for actual site conditions, and all other relevant details related to Cranes.
30. Contractor should take feedback from supervisor on work performed, taking corrective/ preventive measures and reporting status to Engineer/ In-charge crane maintenance.
31. All the information (About cranes, Check sheets, Data on cranes, ..etc) is the sole property of BHEL and no such information is taken out by contractor or his workmen.
32. Certification of Lifting Machines by third party is statutory requirement. During such certification and checking, Contractor and his workmen should assist (attend to problems reported by third party during protocol inspection) the third party competent person. A separate contract will be given for certification of Lifting machines by Competent Person.

33. Reasonable size room with telephone facility will be provided within the Factory premises to service staff for attending breakdowns/ complaints. The office space shall not be utilized for residential purpose by the Contractor's staff.
34. Check list need to be filled up at Crane itself while carrying out Preventive Maintenance and submit such filled in check list to Supervisor.
35. BHEL reserves the right to cancel the tender at any stage of tendering till signing of agreement without assigning any reason(s) thereof. The tender cost in that event shall not be refunded.
36. After performing PM on crane, A-schedule forms (Mechanical and Electrical) shall be filled in as per the work carried out and shall be submitted to supervisor/Engineer-in-Charge. PM cycle will be performed as per the SAP-PM module (as and when implemented) Contract supervisor shall take responsibility to use Tablet/ipad/Tough Pad/touch pad to fill A-schedule forms as per SAP system.
37. After major repair, load test will be carried out on cranes and Vendor need to assist during load test.
38. Contractor shall maintain sufficient maintenance staff for the said work, which will not be less than the nos. as mentioned below:
    i. Site Engineer/ In-charge
    ii. Supervisors
    iii. Workmen
39. Nature of work includes working at heights (which is above 6m height). Hence
    a) Vendor should pay additional allowance (Height work allowance) for each contract worker for each day present. Such allowance can be included in monthly salaries being paid by vendor to his workmen.
    b) Vendor should take additional insurance coverage (workmen compensation policy covering life or any untoward incident) for an amount of Rs2 lakhs per person per working year as per PO, before start of work

III. *DEFINITION OF ONE OPERATION*:

BD Maintenance Operation: Carrying out Breakdown maintenance as and when necessary in such a way that BD is maintained less than 2% on monthly overall basis. There will be 12 such operations in a year.

P Maintenance Operation: Carrying out PM on all 256 no. of cranes once in 6 months, as per the schedule given by Cranes engineer. There will be 2 such operations in a year.

IV. *DEFINITION OF CATEGORY OF BREAKDOWN*:

1. Minor Repair
   Eg. a) Cleaning and repair of contactors, over load relays, servicing of the unit, Resetting of overload realy, etc. b) Adjusting of Brake unit, etc
2. Medium Repair
   Eg. a) Changing Half Gear coupling including, making necessary holes on PCD of flange. b) Changing wire rope, c) Drive parameter setting including changing new drive, etc.) Wheel bearing change, Wheel shaft changing (assuming spares are available readily)
3. Major Repair

Eg. a) Replacing new motor including drive tuning (ID run) and entering new parameters into new drive, assuming spare drive, DBR and Motor are available. b)Motor bed changing due to replacing with new motor of different frame size.

Note:

- Above is guideline and category need to be decided in consultation with engineer in charge of cranes section. Any other complex breakdowns will be treated separately and calculation of days for penalty will be decided by engineer in charge of Cranes section
- Cause of Breakdown is not assignable to contractor or his workmen in carrying out maintenance. (Eg. Time taken in procuring spare) is not counted in breakdown time.

V. PENALTY CLAUSE:

1. As this contract is Works Contract, Supplier's Performance is measured based on Break down percentage of Cranes.

Parameter	Criteria	Penalty
a)Breakdown percentage of all Cranes (Overall bd percentage) calculated on monthly basis	Should be less than 2%	5% of contract value as penalty will be applied. After 2% BD% - for every increase of BD percentage by 0.1%, Penalty of 0.1% will be increased. up to max of 10% of overall contract value
b)Max Number of days allowed for closing Break down. ***Note:*** Type of breakdown (Major or others) is decided by M&S executive in consultation with Contractor Engineer. Any other	Major Breakdown – $\geq$ 4 to $\leq$ 10 days Medium breakdown – 1 to $\leq$ 3 days Minor Breakdown – same day or less than 1 day.	BD Maintenance cost per day per crane * No of days delayed * No. of Cranes* **10 times.**
c)Preventive Maintenance – Penalty: Carrying out PM in 6 months covering all 256 cranes = one operation.	Two such operations need to be completed in a year, as per the schedule given by Cranes engineer.	PM cost per crane* No. of Cranes* **2 times**

2. Non completion of preventive Maintenance as per schedule for the reason attributable to contractor will attract non-refundable penalties. However the contractor has to complete the left out Preventive Maintenance in the next month or as directed by Engineer In-Charge Crane Maintenance. The left out crane shall automatically be kept as pending crane in the next month or in the month as per the direction of Engineer In-charge , Preventive Maintenance schedule and the afore said penalty clause shall be applicable on it.

3. Breakdown time for the reason not attributable to contractor (Eg. non availability of spare) will not be included while calculating break down time, break down percentage or Penalty.

4. Contractor should deploy manpower within 10 days(max) on receipt of work order/ PO. Otherwise EMD will be forfeited

5. Penalty will be calculated on

    a. a monthly basis for BD maintenance
    b. on half yearly for Preventive maintenance.

Example of Penalty Calculations:

Example of Penalty Calculations: (As per previous PO)

Contract Value : ₹ 75,92,956 (Say)
Breakdown maintenance cost (85%) : ₹ 60,74,365
Preventive maintenance cost (15%) : ₹ 15,18,591
Total number of cranes as per contract : 256
No. of working days in a year : 302

Breakdown Maintenance cost per day per crane
: BD Contract value /(No. of Cranes*No. of days)
: 60,74,365 / (256*302)
: ₹ 78.56/-

Preventive Maintenance cost per crane
: PM Contract value /(No. of Cranes*2 times in a year)
: 15,18,591.00 / (256*2)
: ₹ 2966/-

a) If 'Breakdown percentage' is more than 2% in a particular month, Penalty will be 5% of value of one month.
Value of one month – (60,74,365)/12 =₹ 506197
Penalty will be - 5% of ₹ 506197= ₹ 25,310/- (Base amount)

b) If 2 cranes are having medium breakdown and took 6 days to close the issue.
Exceeded by 3 days
Penalty = BD Maintenance cost per day per crane *No of days delayed * No. of Cranes* 10 times.
=₹ 78.56/- * 3 days delayed* 2 (No. of cranes) * 10 times
= ₹ 4714/-

c) If PM is not done for two cranes in specified time,
Penalty = PM cost per crane*No. of Cranes* 2 times
Penalty = ₹ 2966 *2 nos.* 2 times = ₹ 11864 /- penalty will be applied.

d) BD percentage is 2.5% in a month and one major breakdown has exceeded 5 days (total 15 days), penalty will be
After 2%, for every increase of BD by 0.1%, penalty of 0.1% will be increased, up to max of 10% of value of overall cost of Contract.
1) Penalty for BD = 5% of BD value per month + Increase accordingly
= 5% of ₹ 506197 + 0.5% of ₹ 506197
= 25310 + 2531 = ₹ 27841/-

List of Cranes

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
1	4030399	03	03 CROSS BAY TESTING	0.5T	JIB	**POWER LIFE**
2	4011730	01	01 COMP. BAY(OFF BAY)	0.5T	JIB	-
3	4011731	01	CROSS BAY	3T	S.GANTRY	BHEL
4	4011732	01	CROSS BAY	3T	S.GANTRY	GARLICK
5	4011733	01	BC BAY	30/5T	EOT	LITOSTROJ
6	4011734	01	BC BAY	20/5T	EOT	B.WAITE
7	4011737	06	HP HEATERS A1A2	80/15T	EOT	LITOSTROJ
8	4011751	01	COMP BAY	20/5T	EOT	B.WAITE
9	4011752	01	COMP BAY	15T	EOT	HIND
10	4011755	01	DE BAY	30/5T	EOT	LITOSTROJ
11	4011757	01	GH BAY	15	EOT	HIND
12	4011762	02	02 BC BAY	0.5T	JIB	**CISCO**
13	4031763	03	03 DE BAY	0.5T	JIB	**CISCO**
14	4011764	01	BC BAY	80/15T	EOT	W.M.I
15	4011771	01	FG BAY	15T	EOT	HIND
16	4011772	01	FG BAY	10T	EOT	HIND
17	4011773	01	EF BAY	5T	EOT	B.WAITE
18	4011783	01	CROSS BAY	30/5T	EOT	LITOSTROJ
19	4011784	02	DE BAY	20/5T	EOT	B.WAITE
20	4011789	01	CROSS BAY	80/15T	EOT	LITOSTROJ
21	4011790	01	GH BAY	30/5T	EOT	W.M.I
22	4011791	01	DE BAY	30/5T	EOT	MUKAND
23	4011793	01	GH BAY	10T	EOT	HOIST-O-MECH
24	4011794	01	AB BAY	50/10T	EOT	W.M.I
25	4011797	01	AAO BAY	15T	EOT	MUKAND
26	4011798	01	AB BAY	5T	S.GANTRY	MUKAND
27	4011805	01	FG BAY	5T	EOT	B.WAITE
28	4011960	01	AB BAY	30/5T	EOT	LITOSTROJ
29	4011962	51	54 LOGISTICS BOWL MILL	2T	JIB	-
30	4012173	01	CROSS BAY	120/30T	EOT	GREAVES
31	4012175	01	5 AXES M/C	5T	EOT	GREAVES
32	4012186	54	54 YARD	5T	GANTRY	GREAVES
33	4012212	01	AAO BAY	120/30T	EOT	W.M.I
34	4012228	01	CROSS BAY	80/25T	EOT	W.M.I
35	4012229	01	BUCKETS & NOZZLES	10T	EOT	SHIVPRA
36	2012274	01	AB BAY	80/20T	EOT	DEMAG
37	2012275	01	AAO BAY	80/20T	EOT	DEMAG
38	2012307	01	NEW BLADE SHOP	10T	EOT	SHIVPRA
39	2012308	01	NEW BLADE SHOP	10T	EOT	SHIVPRA
40	2012325	01	NEW BLADE SHOP	5T	GANTRY	SHIVPRA
41	4012765	01	EF BAY	20/5T	EOT	B.WAITE
42	4013001	GT COMPLEX	9FA ASSY	175/75T	EOT	W.M.I

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
43	4013002	GT COMPLEX	9FA ASSY	175/75T	EOT	W.M.I
44	4013003	GT COMPLEX	9FA ASSY	20/5T	EOT	SHIVPRA
45	4013004	01	CROSS BAY	50/15T	EOT	SHIVPRA
46	4110196	11 ST	11 ST LOGISTICS	1T	JIB	**GREAVES**
47	4011741	51	DE BAY	15T	EOT	HIND
48	4011747	01	NEW BAL. TUNNEL	30/5T	EOT	LITOSTROJ
49	4011792	01	COMP BAY	30/5T	EOT	MUKAND
50	2013061	GT COMPLEX	G.T M/C SHOP	10T	S.GANTRY	SHREE ENGG
51	2013050	GT COMPLEX	9FA TESTING	80/20T	EOT	DEMAG
52	2013051	GT COMPLEX	9E ASSEMBLY	120/30T	EOT	UNIQUE
53	2013052	GT COMPLEX	GT R ASSEMBLY	120/30T	EOT	UNIQUE
54	2013057	GT COMPLEX	GT R ASSEMBLY	30/10T	EOT	CRANEX
55	2013058	GT COMPLEX	G.T M/C SHOP	30/10T	EOT	CRANEX
56	2013059	GT COMPLEX	GT OPEN YARD	30/5T	GANTRY	SHREE ENGG
57	2013048	GT COMPLEX	G.T M/C SHOP	80/20T	EOT	DEMAG
58	2013049	GT COMPLEX	G.T M/C SHOP	80/20T	EOT	DEMAG
59	4021608	02	15/83 BLDG	5T	EOT	N.S.E
60	4021766	09	CDC(outside)	15T	GANTRY	GARLICK
61	4021950	02	AB BAY	5T	EOT	B.WAITE
62	4021951	03	CROSS BAY	5T	EOT	B.WAITE
63	4021952	02	AB BAY	5T	EOT	B.WAITE
64	4021953	02	BC BAY	5T	EOT	B.WAITE
65	4021956	02	CD BAY	15T	EOT	HIND
66	4021957	02	CD BAY	30/5T	EOT	LITOSTROJ
67	4021962	02	CROSS BAY	5T	EOT	B.WAITE
68	4021966	01	CROSS BAY	5T	S.GANTRY	GARLICK
69	4021990	02	DE BAY	100/20T	EOT	B.WAITE
70	4021993	02	DE BAY	120/30T	EOT	B.WAITE
71	4021994	02	COIL SHOP	3T	EOT	GREAVES
72	4022016	02	COILSHOP STORE	5T	EOT	W.M.I
73	4022027	02	AA1 BAY	5T	EOT	ROCKWELL
74	4022033	02	02 SUPER BAY	50/15T	EOT	GRIP
75	4022034	02	02 SUPER BAY	250/50T	EOT	MUKAND
76	2022087	02	COIL SHOP	1T	EOT	N.R Engg
77	2022091	02	VPI PLANT BAY	10T	EOT	SHIVPRA
78	4022727	02	DE BAY	50/8T	EOT	LITOSTROJ
79	4022955	02	BC BAY	30/5T	EOT	LITOSTROJ
80	4022959	02	CD BAY	50/8T	EOT	LITOSTROJ
81	4022960	02	DE BAY	3T	BRACKET	GARLICK
82	4024661	01	COMP BAY	20T	EOT	KHANDELWAL
83	4021992	17 BLDG.	SRL COMP HOUSE	1T	EOT	BHEL
84	4022024	70	AA1 BAY	5T	S.GANTRY	SHIVPRA
85	2022119	02	CD BAY(Rotor Winding)	3T	EOT	CRANEX

ANNEXURE-I

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
86	4031191	03	DE BAY	2T	EOT	N.S.E
87	4031454	03	AB BAY	5T	EOT	GREAVES
88	4031473	03	OUTSIDE	3T	GANTRY	S.STRUCT
89	4031475	03	CROSS BAY	7.5T	EOT	MUKAND
90	4031503	03	BC Bay	5T	EOT	B.WAITE
91	4031911	03	03 BC BAY	0.5T	JIB	-
92	4031912	03	03 BC BAY	0.5T	JIB	-
93	4031913	03	03 BC BAY	0.5T	JIB	-
94	4031914	03	03 AB BAY	0.5T	JIB	-
95	4031915	03	03 AB BAY	0.5T	JIB	-
96	4031916	03	DE BAY	5T	EOT	VOLTAS
97	4031917	03	CD BAY	2T	EOT	TECH SERVICES
98	4031920	03	CNC	2T	EOT	BHEL
99	4031921	03	CROSS BAY	2.5T	EOT	GARLICK
100	4041013	04	27 BLDG (SCRAP)	15T	EOT	HIND
101	4041019	04	CUPOLA	3.2T	EOT	CZECH
102	4041901	04	CROSS BAY	10T	EOT	HIND
103	4041902	04	CD BAY	15/5T	EOT	S.STRUCT
104	4041904	04	HIGH BAY	30/5T	EOT	LITOSTROJ
105	4041906	04	CD BAY	5T	EOT	B.WAITE
106	4041908	04	FG BAY	5T	EOT	B.WAITE
107	4041910	04	DE BAY	30/5T	EOT	LITOSTROJ
108	4041913	04	EF BAY	10/5T	EOT	W.M.I
109	4041915	DPH	Old DPH	5T	EOT	SHIVPRA
110	4041916	04	CROSS BAY	10T	EOT	HIND
111	4041921	51	RIG UP YARD	5T	GANTRY	SWIFT
112	4041950	04	PATTERN SHOP	3T	EOT	SWIFT
113	4041951	DPH	NEW DPH	5T	EOT	BHEL
114	4041952	01	GH BAY	2T	S.GANTRY	SHIVPRA
115	4041953	04	FG BAY	5T	S.GANTRY	GREAVES
116	4041954	04	FG BAY	5T	S.GANTRY	GREAVES
117	4042764	04	HIGH BAY	30/5T	EOT	LITOSTROJ
118	4042901	04	DE BAY	25/5T	EOT	LITOSTROJ
119	2042903	04	CD BAY	10T	S.GANTRY	ACCESS
120	2042904	04	FG BAY	15T	EOT	SHIVPRA
121	4051616	05	AB BAY	7.5T	EOT	HIND
122	4051900	05	CD BAY	10T	EOT	HIND
123	4051908	01	COMP BAY	50/8T	EOT	LITOSTROJ
124	4051909	05	EF BAY	5T	EOT	GREAVES
125	4051917	05	CROSS BAY	5T	EOT	B.WAITE
126	4051929	05	CROSS BAY	5T	EOT	B.WAITE
127	2052072	05	BC BAY	30/5T	EOT	AMT INT

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
128	4052748	05	DE BAY	50/8T	EOT	LITOSTROJ
129	4052912	05	DE BAY	15T	EOT	HIND
130	4061240	06	AA1 BAY	50/10T	EOT	MUKAND
131	4061241	06	HP HEATERS AA1	20/5T	EOT	W.M.I
132	4061248	06	HP HEATERS A1A2	60/15T	EOT	B.WAITE
133	4061612	06	AB BAY	20/5T	EOT	B.WAITE
134	4061613	06	CD BAY	15T	EOT	HIND
135	4061615	06	DE BAY	10T	EOT	HIND
136	4061617	06	CD BAY	7.5T	EOT	HIND
137	4061618	06	AB BAY	7.5T	EOT	HIND
138	4061619	06	CD BAY	5T	EOT	B.WAITE
139	4061620	06	DE BAY	5T	EOT	B.WAITE
140	4061623	06	BC BAY	40/5T	EOT	LITOSTROJ
141	4061624	06	AB BAY	50/8T	EOT	LITOSTROJ
142	4061625	GT COMPLEX	GT-9E ASSEMBLY	120/30T	EOT	B.WAITE
143	4061629	01	CROSS BAY	5T	S.GANTRY	SHIVPRA
144	4061630	06	HP HEATERS A1A2	30/5T	EOT	W.M.I
145	4511789	51	51 AB BAY	2T	JIB	-
146	4061741	06	BC BAY	2T	S.GANTRY	MEE
147	4061744	06	X RAY ROOM	15T	EOT	HOIST-O-MECH
148	4061750	06	PIPE YARD	1T	GANTRY	INDEF
149	4061740	02	86-BLDG (02 testing)	15T	GANTRY	N.S.E
150	2061901	06	BC BAY	30/5T	EOT	LITOSTROJ
151	2062255	06	06-X-RAY ROOM(NEW)	15T	EOT	SHIVPRA
152	4062624	06	AB BAY	5T	EOT	B.WAITE
153	4062625	06	DE BAY	5T	EOT	B.WAITE
154	4062900	06	BC BAY	10T	EOT	HIND
155	2061905	12 ST	12-ST SHED(shot blasting)	10T	GANTRY	MEE
156	2062225	06	06-NEW BAY	200/60T	EOT	DEMAG
157	2062226	06	06-NEW BAY	150/40T	EOT	DEMAG
158	4071801	07	DE BAY	15T	EOT	HIND
159	4071802	07	DE BAY	7.5T	EOT	HIND
160	4071803	07	CD BAY	7.5T	EOT	HIND
161	4071804	08	CD BAY	5T	EOT	B.WAITE
162	4071806	07	BC BAY	5T	EOT	B.WAITE
163	4071807	07	AB BAY	3T	EOT	N.S.E
164	4071808	07	AB BAY	3T	EOT	N.S.E
165	4071813	07	07 DE BAY	0.5T	JIB	-
166	4061751	17 BLDG.	SRL COMP HOUSE	3T	EOT	BHEL
167	4081501	08	AB BAY	3T	EOT	GREAVES
168	4081601	07	CD BAY	3T	EOT	N.S.E
169	4081609	08	AB BAY	2T	EOT	SHIVPRA
170	4082315	08	BC BAY	5T	EOT	B.WAITE

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
171	2091024	09	CDC BAY	10T	GANTRY	ACCESS
172	4091191	09	AB BAY	2T	EOT	N.S.E
173	4091192	09	BC BAY	2T	EOT	N.S.E
174	4091193	09	CD BAY	2T	EOT	N.S.E
175	2091207	09	CDC SHED	10T	EOT	SHIVAFERROUS
176	4111022	11 ST	YARD 11- STORE	5T	GANTRY	W.M.I
177	4111024	12 ST	PLATE YARD	10T	GANTRY	GREAVES
178	2111026	12 ST	NPP YARD	20T	GANTRY	SHREE ENGG
179	2111027	11 ST	BC BAY	5T	EOT	SHREE ENGG
180	4111036	11 ST	AB BAY	5T	EOT	B.WAITE
181	4111038	11 ST	AB BAY	5T	EOT	KHANDELWAL
182	4111039	11 ST	CD BAY	5T	EOT	KHANDELWAL
183	4111040	11 ST	CD BAY	5T	EOT	KHANDELWAL
184	4121021	01	01 STORES YARD	10T	GANTRY	S.STRUCT
185	4121023	12 ST	PLATE YARD	10T	GANTRY	CHITRAM
186	4121029	12 ST	NPP YARD	30/10T	GANTRY	CHITRAM
187	4126047	12 ST	12-STORE	40/10T	GANTRY	MUKAND
188	2126049	12 ST	12-STORE	40/10T	GANTRY	ANUPAM
189	4511985	70	70 BLK BAY 4	2T	JIB	INDEF
190	4071819	07	AB BAY	2T	EOT	CONSOLID. ENG
191	4171011	17 BLDG.	COMP HOUSE	5T	EOT	N.S.E
192	4516101	51	51 AB BAY	3T	JIB	HOIST-O-MECH
193	4516102	51	51 BC BAY	2T	JIB	HOIST-O-MECH
194	4516100	51	51 BC BAY	2T	JIB	HOIST-O-MECH
195	4516043	51	BC BAY	40/10T	EOT	W.M.I
196	4516044	51	CD BAY	30/5T	EOT	W.M.I
197	4516045	51	CD BAY	20/5T	EOT	W.M.I
198	4516046	51	BC BAY	75/15T	EOT	W.M.I
199	4516051	51	DE BAY	5T	EOT	W.M.I
200	4516052	51	CD BAY	5T	EOT	W.M.I
201	4516053	01	CD BAY	10T	EOT	W.M.I
202	4516093	06	AA1 BAY	15T	EOT	W.M.I
203	4516103	51	BC BAY	40/10T	EOT	W.M.I
204	2516155	51	NEW BAY	80/20T	EOT	ANUPAM
205	2516157	51	NEW BAY	20/5T	EOT	SHIVPRA
206	2516158	51	NEW BAY	40/10T	EOT	SHIVPRA
207	2510004	51	RIG UP YARD	20T	GANTRY	BHEL
208	2516184	51	NEW BAY (DE BAY)	5T	S.GANTRY	PEDVAK
209	2516185	51	NEW BAY (DE BAY)	5T	S.GANTRY	PEDVAK
210	2516199	51	NEW BAY (DE BAY)	15T	EOT	ROCKWELL
211	2516206	51	CD BAY	5T	S.GANTRY	SWIFT
212	2516207	51	CD BAY	5T	S.GANTRY	SWIFT
213	2516208	51	CD BAY	5T	S.GANTRY	SWIFT

Sl.No.	Asset No.(SAP)	BLOCK	LOCATION	CAPACTY	TYPE OF CRANE	MAKE
214	2516209	51	CD BAY	5T	S.GANTRY	SWIFT
215	2701220	70	AA1 BAY	40/10T	EOT	CRANEX
216	2701221	70	AA1 BAY	40/10T	EOT	CRANEX
217	4701501	70	CD BAY	15T	EOT	HIND
218	4701502	51	DE BAY	10T	EOT	HIND
219	4701510	70	CD BAY	15/5T	EOT	FAFECO
220	4701513	70	BC BAY	5T	EOT	W.M.I
221	4701514	70	BC BAY	15/5T	EOT	W.M.I
222	4701515	70	BC BAY	5T	EOT	W.M.I
223	4701516	70	CD BAY	2T	S.GANTRY	GREAVES
224	4701517	70	CD BAY	30/10T	EOT	GREAVES
225	4701542	70	AB BAY	15T	EOT	SHIVPRA
226	4714551	02	71-old BAL TUNNEL	15T	EOT	KHANDELWAL
227	4714552	02	71-old BAL TUNNEL	15T	EOT	KHANDELWAL
228	4714579	02	71-new BAL TUNNEL	10T	EOT	W.M.I
229	4714902	02	71 BALANCING TUNNEL (02)	2T	JIB	**CISCO**
230	4901501	02	90-BLDG	0.5T	EOT	CONSOLID. ENG
231	4030234	03	03 AB BAY	2T	JIB	-
232	4030235	03	03 AB BAY	2T	JIB	-
233	4011795	02	WORKS CANTEEN	0.5T	JIB	**CISCO**
234	4040038	DPH	NEW DPH	0.5T	JIB	-
235	4011796	01	01 NEW BALANCING TUNNEL	3T	JIB	-
236	4041914	04	04 FG BAY	1T	JIB	INDEF
237	4041030	04	04 FG BAY	0.5T	JIB	INDEF
238	4041917	04	04 FG BAY	1T	JIB	INDEF
239	4041941	04	04 HIGH BAY	5T	JIB	-
240	4021964	02	71 BLDG NBT	1T	JIB	-
241	4041942	05	05 DE Bay Pillar-5	2T	JIB	-
242	4052000	05	05 MOULDING	0.5T	JIB	-
243	4052001	05	05 MOULDING	0.5T	JIB	-
244	4040039	DPH	NEW DPH	5T	JIB	-
245	4021999	06	WORKS CANTEEN	0.5T	JIB	-
246	4051961	05	05 EF Bay pillar-11	0.5T	JIB	-
247	4051919	05	05 CROSS BAY C12-C13	0.5T	JIB	-
248	4050197	05	05 DE Bay Pillar-11	2T	JIB	-
249	4011745	01	01 FG Bay Pillar-13	0.5T	JIB	-
250	4071813	07	07 DE BAY Pillar-9	0.5T	JIB	-
251	4701556	70	AA1 BAY	5T	S.GANTRY	-
252	4701557	70	AA1 BAY	5T	S.GANTRY	-
253	Sand-1*	04	04 Sand Bay		Sand Grab	-
254	Sand-2*	04	04 Sand Bay		Sand Grab	-
255	4052074	05	DE BAY	4T	Mono rail Hoist	SHIVPRA
256	--	GT COMPLEX	DFE in 9FA assembly	1T	JIB	DB Impex & Trade