

The equipment listed below shall be stored and inspected as per requirement mentioned in the table below.

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
<b>Raw material /mechanical items like pipes, plates, structure sections etc.)</b>				
1.	Steel pipes ( lined/unlined)	S	Damage , paint, corrosion, rubber lining peeling	Provide end cap
2.	MS Plates	S	Damage, paint, corrosion	
3.	SS Plates	S	Damage	
4.	Non-metallic pipes	S	Damage, cracks	Provide end cap
5.	Stainless steel pipes	S	Damage ,	Provide end cap
6.	MS sections, beams	S	Damage, paint, corrosion	
7.	Cable trays	S	Damage, condition of preservations	
8.	Insulation sheets	S	Damage	
9.	Insulation	C	Damage, packing	
10.	Hangers Rods	S	Damage, paint, packing	
11.	Tubes	S	Damage, paint , packing	Provide end cap
12.	Hume pipes	O	Damage	
13.	Castings	O	Damage, paint, corrosion	
<b>Fabricated mechanical items (pressure vessels, tanks etc.)</b>				
14.	Pressure vessels (unlined)	O	Damage, paint, corrosion,	Covered nozzles
15.	Atmospheric storage tanks (unlined)	O	Damage, paint, corrosion	Covered nozzles

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
16.	Pressure vessels (lined)	S	Damage, paint, corrosion, rubber lining	
17.	Atmospheric storage tanks(lined)	S	Damage, paint, corrosion, rubber lining	
18.	Support structures	O	Damage , paint, corrosion	
19.	Flanges	C	Damage , paint, corrosion	
20.	Fabricated pipes	S	Damage , paint, corrosion	Provide end cap
21.	Vessels internals	C	Damage , paint, corrosion ,packing	
22.	Grills	S	Damage , paint, corrosion	
23.	Angles	S	Damage , paint, corrosion	
24.	Bridge mechanism/clarifier mechanism	O	Damage , paint, corrosion	
25.	Cranes, rails	S	Damage , paint, corrosion	
26.	Stair cases	O	Damage , paint, corrosion	
27.	Ladders/handrails	O	Damage , paint, corrosion	
28.	Fabricated ducts	S	Damage , paint, corrosion	
29.	Isolation Gates	O	Damage , paint, corrosion	
30.	Fabricated boxes/panels	S	Damage , paint, corrosion	
<b>Mechanical components like valves, fittings, cables glands, spares etc.)</b>				
31.	Valves	S	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
32.	Fittings	S	Damage , packing	Provide end cap
33.	Cable glands	C	Damage , packing	
34.	Tools & tackles	C	Damage , packing	
35.	Nut , bolts, washers,	C	Damage , packing	
36.	Gasket & Packings	C	Damage , packing	
37.	Copper tubes	C	Damage , packing, corrosion	Provide end cap
38.	SS tubing	C	Damage , packing	Provide end cap
<b>Rotating assemblies (pumps, blowers, stirrers, fans, compressors etc.)</b>				
39.	Pumps	S	Damage , packing, corrosion	Shaft rotation
40.	Blowers/Compressors	S	Damage , packing, corrosion	Shaft rotation
41.	Agitators/stirrers/radial launders	C	Damage , packing, corrosion	Shaft rotation
42.	Rollers for chlorine tonner mounting	C	Damage , packing, corrosion	
43.	Centrifuge	S	Damage , packing,	
44.	Gear box	C	Damage , packing, corrosion	
45.	Bearings	C	Damage , packing, corrosion	
46.	Fans	S	Damage , packing, corrosion	
47.	Dosing skids	S	Damage , packing, corrosion	
48.	Pump assemblies	S	Damage , packing, corrosion	
49.	Air washers( INTERNALS)	S	Damage , packing	
50.	Air conditioners ( split)	C	Damage , packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
51.	Elevators( CONTAINERIZED)	O	Damage , packing, corrosion	
52.	Chillers/VA machines	S	Damage , packing	
53.	Air handling Unit/Package unit	S	Damage , packing	
54.	Chlorinators & Evaporators	C	Damage , packing	
55.	Ejectors	C	Damage , packing	
56.	Electrolyser	C	Damage , packing	
<b>Miscellaneous items like chain pulley blocks, hoists etc.</b>				
57.	Chain pulley blocks	S	Damage, Packing	
58.	Electric hoists	S	Damage, Packing	
59.	Fire extinguishers	C	Damage, expiry date	
60.	Fork Lift Truck	S	Damage, Packing	
61.	Hydraulic Mobile Crane	O	Damage, Packing	
62.	Mobile Pick Up & Carry Crane	O	Damage, Packing	
63.	Motor boats	O	Damage, Packing	
64.	Safety showers	S	Damage, Packing	
65.	Diffusers/dampers	S	Damage, Packing	
<b>Chemicals and consumables ( acid, alkali, paints, oils, reagents and special chemicals)</b>				
66.	Hydro Chloric Acid (HCl)	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical
67.	Sulphuric acid (H <sub>2</sub> SO <sub>4</sub> )	Store in canes/ storage tank in dyke area	Date of production/ leakage/fumes	hazardous chemical

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
68.	Sodium hydroxide (NaOH)	Store in canes/ storage tank in dyke area	Date of production/ leakage/ fumes/ breather	hazardous chemical ,breather to be checked for air ingress
69.	Sodium hypo chlorite	To be stored under shed	Date of production/ leakage/ fumes	hazardous chemical ,self-life normally 15-30 days after which strength of chemical decays
70.	Ammonia	S	Date of production/ leakage/ fumes	Store in closed storage tanks, hazardous chemical
71.	CW treatment chemicals	S	Date of production , Self-life	Store in closed canes
72.	RO/UF cleaning chemicals	S	Date of production , Self-life	Store in closed canes
73.	Lime	C	Damage to packing , seepage	Prevent moisture, rain
74.	Alum bricks	C	Damage to packing	Prevent moisture, rain
75.	Poly electrolyte	S		Store in closed storage tanks
76.	Laboratory chemicals( powder)	C	Damage, Packing self- life	
77.	Laboratory chemicals( liquid)	C	Damage, Packing self- life	
78.	Lubrication oils	C	Leakage	
79.	Paints	S	Leakage ,air tightness	
80.	Sand	O	Damage of packing	No hooks
81.	Salt (NaCl)	C	Damage of packing, water ingress	Prevent moisture, rain
82.	Anthracite	S	Damage of packing	
83.	Activated carbon	S	Damage of packing	

Sl. No.	Description of the equipment	Type of Storage	Check for	Remarks
84.	Thermal insulation	S	Damage of packing	
85.	Cement	C	Damage of packing	Prevent moisture, rain
86.	Gravels	O	Damage of packing	
87.	ION exchange resins	C	Damage , packing	Refer manufacturer guidelines
88.	RO membranes	C	Damage , packing	Refer manufacturer guidelines
89.	UF membranes	C	Damage , packing	Refer manufacturer guidelines
90.	Cleaning chemicals	C	Damage , packing	Refer manufacturer guidelines
91.	Chemicals for analysers/calibration	C	Damage , packing	Refer manufacturer guidelines
<b>Electrical and C &amp; I items (motors, cables etc.)</b>				
92.	Motors	C	Damage , packing	
93.	Cable drums	O	Damage	
94.	Control Panel /control desk, UPS ,JB	S	Damage, Packing	
95.	Instruments( gauges/analysers)	C	Damage	
<b>Special items</b>		As per Manufacturer's item, like Hydrogen cylinders, Ozonator, Analyser, Chlorine dioxide generators etc.		

## **5. CONCLUSION**

Concerned storage agency at site should make sure that loss in equipment performance and wear & tear are minimised through proper storage and preservation. The above are broad guidelines and cover major equipment / materials. However specific storage practices shall be followed as per manufacturer recommendation. All the necessary measures even in addition to the ones mentioned above, if found necessary, should be taken to achieve the objective.

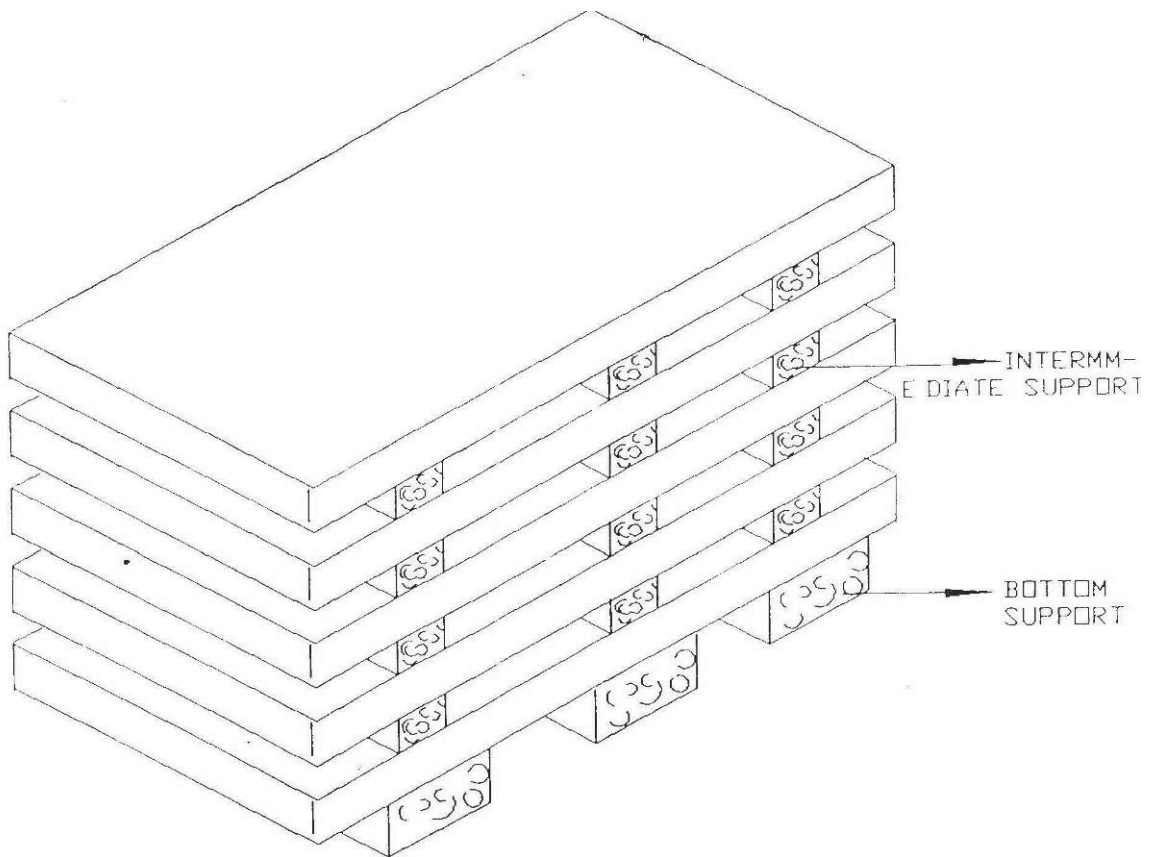


Figure - 1 - PLATE STACKING ARRANGEMENT

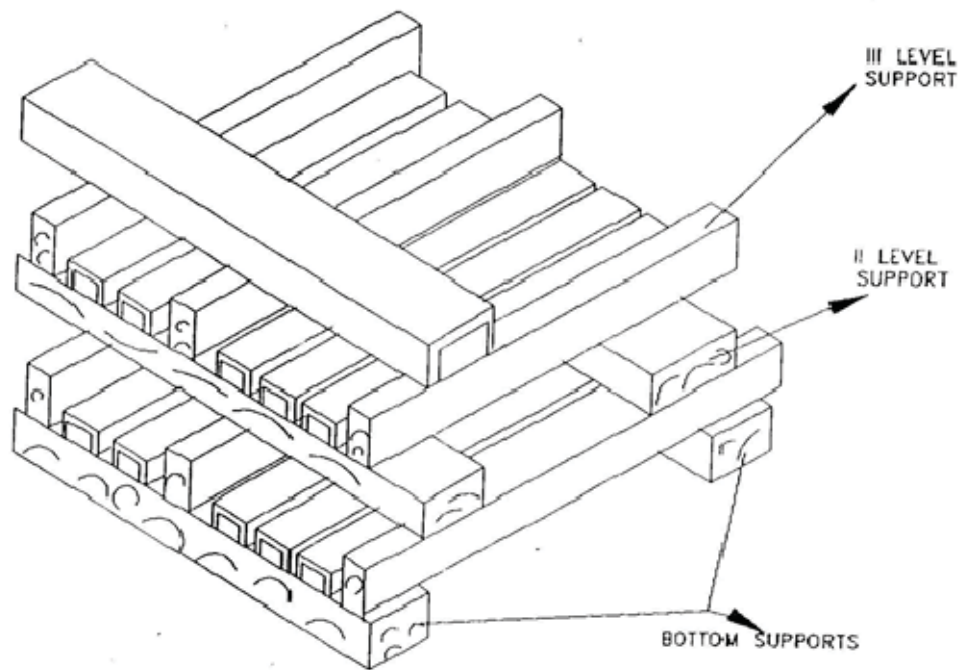


Figure - 2 - STRUCTURAL STEEL STACKING ARRANGEMENT



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME III

SECTION '1'

REVISION 00

DATE: 12/10/2015

PAGE 1 of 1

**DRAWING / DOCUMENTS TO BE SUBMITTED WITH THE BID**

Bidder should submit the signed and stamped copy of the following documents:

- a) Signed and stamped copy of Compliance cum Confirmation Certificate
- b) Signed and Stamped copy of pre-bid clarification
- c) Signed and stamped copy of Deviation Schedule strictly as per format
- d) Signed and stamped copy of Electrical Load Data for confirmation of loads.
- e) Unpriced-price format mentioning Quoted / Not Applicable as the case may be against each column and row.
- f) Signed and stamped copy of building drawings enclosed at the end of the specification for the confirmation of building sizes.
- g) List of Recommended Spares (Section-6, Volume-III, applicable spares to be indicated by bidder)
- h) List of Commissioning spares (Section-7, Volume-III, applicable spares to be indicated by bidder)

Offer will be considered as incomplete in absence of any of the above documents. Bidder to ensure that all above documents are available in their offer, failing to which bidder offer is liable to be rejected.

Please note that all the schedules shall be submitted even though they may not be applicable. Under such circumstances it shall be clearly mentioned across such schedules that these are not applicable.(e.g. in case of there are no technical deviation, it shall be mentioned in the deviation schedule that ' THERE ARE NO DEVIATIONES TO THE TECHNICAL SPECIFICATION').

Any other document apart from above submitted along with bid will not be taken cognizance off and will not make any part of the contract and accordingly will not be considered for bid evaluation.



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS  
(COMPLIANCE CUM CONFIRMATION CERTIFICATE)**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME III

SECTION '2'

REVISION 00

DATE: 12/10/2015

PAGE 1 of 2

**COMPLIANCE CUM CONFIRMATION CERTIFICATE**

The bidder shall confirm compliance with following by signing / stamping this compliance certificate (every sheet) and furnish same with the offer.

- a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions, other than those mentioned under "exclusion" and those resolved as per 'Schedule of Deviations', with regard to same.
- b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked in the QP at the contract stage. Inspection / testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This is within the contracted price without any extra implications to BHEL after award of the contract.
- d) All drawings/ data-sheets / calculations etc. submitted along with the offer shall not be taken cognizance off.
- e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified / intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre-bid discussions, otherwise BHEL / Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.

For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.

- f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.
- g) All sub vendors shall be subject to BHEL / CUSTOMER approval in the event of order.
- h) Guarantee for plant/equipment shall be as per relevant clause of GCC / SCC / Other Commercial Terms & Conditions
- i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities within the scope of work as tender specification. This clause will apply in case during site



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS  
(COMPLIANCE CUM CONFIRMATION CERTIFICATE)**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME III

SECTION '2'

REVISION 00

DATE: 12/10/2015

PAGE 2 of 2

commissioning, additional requirements emerges due to customer and / or consultant's comments. No extra claims shall be put on this account

- j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's / Customer's / Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.
- k) As built drawings shall be submitted as and when required during the project execution.
- l) The bidder has not tampered with this compliance cum confirmation certificate and if at any stage any tampering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.
- m) Successful bidder shall furnish detailed erection manual for each of the equipment supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.
- n) Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.
- o) In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor's account and shall not be used as a reason for extension in contract completion.

SIGNATURE : \_\_\_\_\_

NAME : \_\_\_\_\_

DESIGNATION : \_\_\_\_\_

COMPANY : \_\_\_\_\_

DATE : \_\_\_\_\_

COMPANY SEAL



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS  
(PRE-BID CLARIFICATION SCHEDULE)**

SPECIFICATION NO. PE-TS-408-166-A001  
VOLUME III SECTION '3'  
REVISION 00 DATE: 12/10/2015  
PAGE 1 of 1

**PRE-BID CLARIFICATION SCHEDULE**

S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED

The bidder hereby clarifies that above mentioned are the only clarifications required on the technical specification for the subject package.

Signature: \_\_\_\_\_  
Name: \_\_\_\_\_  
Designation: \_\_\_\_\_  
Company: \_\_\_\_\_  
Date: \_\_\_\_\_

Company Seal



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI TPS  
(SCHEDULE OF TECHNICAL DEVIATION)**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME – III

SECTION - 4

REVISION 00

DATE: 12/10/2015

PAGE 1 of 1

**SCHEDULE OF TECHNICAL DEVIATION**



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI TPS  
(SCHEDULE OF TECHNICAL DEVIATION)**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME – III

SECTION - 4

REVISION 00

DATE: 12/10/2015

PAGE 1 of 1

**SCHEDULE OF TECHNICAL DEVIATION****NAME OF VENDOR:-**

SL NO	VOULME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION / TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF DEVIATION	PORTION OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWL OF DEVIATION (POSITIVE/ NEGATIVE)	WHETHER COST OF DEVIATION INCLUDED/ EXCLUDED IN PRICE BID	REMARKS
-------	-----------------	----------	------------	---	-----------------------------------	-------------------	---	---	---	---------

**TECHNICAL DEVIATIONS**


**COMMERCIAL DEVIATIONS**


**PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE**

NAME	DESIGNATIONS	SIGN & DATE

**NOTES:**

- For self-manufactured items of bidder, cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
- For directly dispatchable items, cost of withdrawal of deviation will be applicable on the basic price including taxes, duties & freight.
- All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.
- Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
- Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable.
- Bidder shall furnish price copy of above format along with price bid.
- The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
- Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
- For deviations w.r.t. Payment terms, Liquidated damages, Firm prices and submission of E1/ E2 forms before claiming 10% payment, if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VIII of GCC, Rev-06 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL.
- Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
- All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
- Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.
- In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.
- In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME III

SECTION '5'

REVISION 00

DATE: 12/10/2015

PAGE 1 of 1

**SECTION 5  
ELECTRICAL LOAD DATA**

Sump Pumps in FO Transfer Pump House area (10 cum/hr.)	5.5 KW		S	2	2	D	U		I		FO Transfer Pump House area						
Sump Pumps in FO FO Dyke area (10 cum/hr.)	5.5 KW		S	1	1	D	U		I		FO day oil tank dyke area						
HFO Transfer Pumps (125 cum/hr.)	75 KW		S	1	1	D	U		I		FO Transfer Pump House						
LDO Transfer Pumps (125 cum/hr.)	75 KW		S	1	1	D	U		I								
Drain Oil Pumps (5 cum/hr.)	5.5 KW		S	1	1	D	U		I								
Sump Pumps in FO Transfer Pump House (10 cum/hr.)	5.5 KW		S	1	1	D	U		I								
Motor operated valve (transfer discharge) with open close push button	0.55 KW		S	2	2	D	S		I								Integral starter in vendor scope
Recovery Oil Pumps (OWS) (5 cum/hr.) (FOTPH area)	5.5 KW		S	1	1	D	U		I		FO Transfer Pump House area						
Motor operated valve (on tank) with open close push button	0.55 KW		S	2	1	D	S		I		Near Tank farm Area Transfer						Integral starter in vendor scope
Electrical Tracing for lines, pumps and other equipment's	100 KW		S	1	0	D	S		I		Transfer Pump House area.						

**Note:**

- 1. Bidder to confirm that the system provided by them would be catered by the above loads considered by BHEL. In case there is any variation; the same should be clearly stated in the technical offer. No changes would be admissible during detailed engineering stage.**
- 2. Bidder to note that for the system being supplied by them, only the above loads will be provided. In case any other load is required the same would be derived /multiplied by bidder on their own from these feeders only.**



**TECHNICAL SPECIFICATION FOR  
FUEL OIL HANDLING SYSTEM  
1X800 MW WANAKBORI STPS**

SPECIFICATION NO. PE-TS-408-166-A001

VOLUME III

SECTION '6'

REVISION 00

DATE: 12/10/2015

PAGE 1 of 1

**SECTION 6  
LIST OF RECOMMENDED SPARES**

