



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

**BHARAT HEAVY ELECTRICALS LIMITED**

(A Govt. of India Undertaking)

**TCN - 03**

Ref: PSER:SCT:VIZ-M1235:TCN-03

Date: 06/09/2011

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| Sub | Tender change notice (TCN) - 03  |  |
| Job | Design, engineering, manufacturing, testing, transportation to site, receipt, unloading, storage, erection, testing, commissioning, handing over etc of Fuel Oil System Package for 2x520 MW units at HNPCL Vizag TPS, Andhra Pradesh. |  |
| Ref | 1.0  | BHEL's NIT, vide ref no : PSER:SCT:VIZ-M1235:2481 dated 09/08/2011       |
|     | 2.0  | BHEL's TCN-01, vide ref. no. PSER:SCT:VIZ-M1235:TCN-01 dated 23/08/2011. |
|     | 3.0  | BHEL's TCN-02, vide ref. no. PSER:SCT:VIZ-M1235:TCN-02 dated 24/08/2011  |
|     | 4.0  | Other references (if any).   |

With reference to above, following points, relevant to tender, may please be noted and complied with while submitting offer.

- 1.0 Due date of submission of offer is extended from 09/09/2011 to **16/09/2011 at 1400 hrs.**
- 2.0 BHEL clarifications to Bidder's query attached vide **Annexure-A** to TCN-03.
- 3.0 Addendum to Vol-IC (Supply) is attached vide **Annexure-B** to TCN-03.
- 4.0 **Order of Precedence:**  
In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:
  - a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
  - b. Notice Inviting Tender (NIT)
  - c. Price Bid- Volume-III A
  - d. Special Conditions of Contract (SCC) —Volume-IC & ID
  - e. General Conditions of Contract (GCC) —Volume-IA & IB
  - f. Forms and Procedures —Volume-IE
- 5.0 Revised 'No deviation certificate' is attached. Bidder to submit 'No deviation certificate' as per attached Format only.
- 6.0 All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,  
for BHARAT HEAVY ELECTRICALS LTD

**ENGR (SCT)**

Encl

- 1.0 BHEL's clarifications to bidder's query attached vide **Annexure-A** to TCN-03
- 2.0 Addendum to Vol-IC (Supply) is attached vide **Annexure-B** to TCN-03
- 3.0 Revised 'No deviation certificate' format.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211798/ 1691

**FORMAT FOR NO DEVIATION CERTIFICATE**  
**(To be submitted in the bidder's letter head)**

BHARAT HEAVY ELECTRICALS LIMITED,  
Power Sector - Eastern Region,  
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,  
Kolkata – 700 091

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|-----|--|--|
| Sub | No Deviation Certificate.  |  |
| Job | Design, engineering, manufacturing, testing, transportation to site, receipt, unloading, storage, erection, testing, commissioning, handing over etc of Fuel Oil System Package for 2x520 MW units at HNPCL Vizag TPS, Andhra Pradesh. |  |
| Ref | 1.0  | BHEL's NIT, vide ref no : PSER:SCT:VIZ-M1235:2481 dated 09/08/2011       |
|     | 2.0  | BHEL's TCN-01, vide ref. no. PSER:SCT:VIZ-M1235:TCN-01 dated 23/08/2011. |
|     | 3.0  | BHEL's TCN-02, vide ref. no. PSER:SCT:VIZ-M1235:TCN-02 dated 24/08/2011  |
|     | 4.0  | BHEL's TCN-03, vide ref. no. PSER:SCT:VIZ-M1235:TCN-03 dated 06/09/2011  |

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, Integrity Pact (If applicable) and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized  
representative of the bidder)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

POWER SECTOR EASTERN REGION, DJ-9/1, SALT LAKE CITY, KOLKATA - 700 091

फैक्स/Fax : (033) 23211960

फोन/Phone : बोर्ड/EPABX : 23211798/ 1691

| Sl. No.  | Reference clause of tender document | Existing provision   | Bidder's query  | BHEL's clarification   |
|--|-------------------------------------|--|---|--|
| <b>Document No. PE-TS-361-166-A001 VOLUME II-B/SECTION 'C'</b> |                                     |  |   |  |
| 1.   | 1.1.0 SCOPE OF SUPPLY               | <b>c)</b> 11 Nos. neoprene rubber hoses for HFO unloading through road tanker, 11 nos. flexible hoses for Steam heating, 11 Nos. flexible hoses for Condensate collection and 6 Nos. neoprene rubber hoses for LDO unloading through road tanker. Length of each hose shall be 8 M   | Hose for oil application will be confirming to BS 1435<br><br>Hoses for steam & condensate application to IS 10655<br>Please confirm. | Confirmed for oil application in line with Specification requirement.<br><br>For Steam and condensate application hose shall be cold rolled steel strip (electro galvanized), rubber hose shall not be accepted. |
| 2.   | 1.1.0 SCOPE OF SUPPLY               | <b>q)</b> One (1) no. oil water separator pit to separate oil and water from the effluents. The oil water separator shall be provided with necessary piping, valves, heating arrangements, skimmer pipe and butterfly valves, etc to meet complete system requirement.   | We note that Oil Water Separator is API Gravity type. Please clarify scope of civil work of Oil water separator pit.                  | Scope of Civil work is excluded from Bidder's scope as per clause 2.0.0 of scope of work.  |
| 3.   | 1.1.0 SCOPE OF SUPPLY               | <b>u)</b> Complete Fuel oil piping, auxiliary steam piping, drain piping, vent piping, condensate piping, instrument air piping and valves etc. as applicable to Fuel oil unloading & storage system. Buried MS (or suitable) pipe as required, along with their wrapping & coating and /or cathodic protection as required. | Please confirm the requirement of cathodic protection for tank bottom. Please furnish oil data for design of cathodic protection.     | Cathodic protection for tank bottom is not envisaged.  |
| 4.   | 1.2.0 SCOPE OF SERVICES             | <b>o)</b> Preparation of all necessary drawings/data / documents for obtaining necessary Approval of statutory authorities like CCE and IBR on behalf of the customer. The necessary fee for such approval   | Please clarify if Local NOC will be provided by client.   | Shall be arranged by bidder.   |

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|   |   | shall also be borne by the successful bidder.  |  |   |
| 5.  | 6.0.2 Functional Guarantees at site:                                    | <b>g.</b> HFO Storage tank maintenance temperature at two places 180 °C apart as per system description  | We presume °C is a typographical error.  | The same is to be read as 180 <sup>0</sup> .  |
| 6.  | 13.0.0 SUB-VENDOR ITEMS   | Dealers are not acceptable for any item of the package. Bidder shall procure all items including plates, structurals, flanges, counter flanges etc. from approved sub vendor only. No argument on this account shall be entertained.   | In view of small quantities of plates and other items manufacturer do not accept order directly so we have to place the order with dealers. However materials will be from approved sub-vendor.<br><br>Please confirm acceptability. | Bidder to follow specification requirement. No deviation is acceptable in this regard.  |
| <b>SPECIFICATION NO. : PE-TS-361-166-A001</b> |   |  |  |   |
| 7.  | SPECIFICATION FOR MEASURING INSTRUMENTS, CONTROL VALVES & FLOW ELEMENTS | <b>4. LEVEL TRANSMITTERS</b><br><br>Differential-pressure-type devices with constant head chamber for high pressure and temperature applications where installation of a float cage becomes impractical.<br><br>Displacer type / Guided wave Radar type level transmitter shall be used for Vacuum service.<br><br>Conductivity Type Level Transmitter | Please confirm which type to be considered for FOHS.   | Bidder to also refer to clause 1.4 of Specific Technical Requirement (C &I) for type of level transmitter.                    |
| 8.  | ANNEXURE-I<br><br>1.1.0 Heavy Fuel Oil System                           | Each HFO storage tank shall also be provided with one no. of suction heater with capacity suitable to meet requirement of pressurizing pumps for both units simultaneously.  | Please furnish us the capacity of forwarding pumps for sizing the outflow heater   | Bidder to refer Annexure III , Equipment Selection and Design Criteria wherein heater capacity has been mentioned as 104T/hr. |

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| <p>9.</p>  | <p>ANNEXURE-I<br/>3.1.0 Light Diesel Oil System</p> | <p><b>3.1.0 Light Diesel Oil System</b><br/>LDO shall be delivered to power station site in road tankers. Four (4) nos. of LDO road tankers will be unloaded simultaneously through one (1) no. unloading header of adequate size.<br/><br/>This unloading header will be connected to LDO unloading pump suction. The LDO unloading header will have four (4) nos. unloading points consisting of unloading hoses and valves.<br/><br/><b>1.1.0 SCOPE OF SUPPLY</b><br/><br/><b>c)</b> 11 Nos. neoprene rubber hoses for HFO unloading through road tanker, 11 nos. flexible hoses for Steam heating, 11 Nos. flexible hoses for Condensate collection and 6 Nos. neoprene rubber hoses for LDO unloading through road tanker.</p> | <p>Flow Diagram indicates 4 nos. Unloading Hoses. Clause 1.1.0 (c) indicates six nos. of hoses.<br/><br/>Please Clarify.</p>  | <p>LDO shall be unloaded through Six (6) road tankers. Bidder to provide six (6) no unloading hoses.</p>  |
| <p>10.</p> |   |   | <p>The Steam Heating regin will be as follows :</p> <ol style="list-style-type: none"> <li>1. Heating of 10 nos. road tanks in 2 hours.</li> <li>2. 1 no. HFO Tank under heating.</li> <li>3. 1 no. HFO Tank under maintenance.</li> <li>4. Steam for Outflow Heater.</li> <li>5. Steam for HFO Pump and Strainer Jacketing.</li> </ol> | <p>Bidder to note that the same shall be reviewed/evaluated during detail engineering.<br/><br/>Bidder to note that over and above the areas indicated by the Bidder, the following shall also be suitably considered.<br/><br/>*Drain oil tank &amp; OWS heating.<br/><br/>*Complete steam tracing including pipes for HFO system.</p> |

|     |   |  | Please Confirm.  |  |
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| 11. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>SCOPE OF SUPPLY<br>1.1.0 (d) & (e) | Two (2) nos. of vertical cylindrical,<br>fixed roof type M.S storage tanks for<br>storage of HFO.....<br>Two (2) nos. of vertical cylindrical,<br>fixed roof type M.S storage tanks for<br>storage of LDO..... | The min. plate thickness<br>specified in API 650 is 8 mm<br>whereas in IS 803 it is 6 mm.<br>BHEL is requested to review<br>the specification requirement<br>and specify only one code.<br>Since the job is to be<br>executed in India, the code to<br>be followed should be IS 803.<br>The stability calculations<br>which are not available in IS,<br>only those clauses will be<br>referred from API 650. | Bidder to comply with specification<br>requirement.  |
| 12. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>SCOPE OF SUPPLY<br>1.1.0 (f)       | Platform, staircase, monkey ladder<br>inside the tank, hand railing, knee-<br>guard, toe guard.....etc. as per<br>API 650.   | Please confirm whether this<br>should be IS 803 or not?  | Stipulation is clear. Bidder to quote<br>as per system requirement   |
| 13. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>SCOPE OF SUPPLY<br>1.1.0 (g)       | Insulation and cladding of all HFO<br>storage tank on shell only up to 2M<br>from the bottom plate.  | If the complete shell is not<br>insulated, there will be huge<br>loss of steam and that also<br>throughout the plant life. It is<br>suggested that the insulation<br>shall be provided for the<br>complete shell portion.  | The clause is to be read as<br>"Insulation and cladding of all HFO<br>storage tanks on complete shell".  |
| 14. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>TERMINAL POINT<br>4.0.0            | Aux. Steam : At around 5-10 m<br>from P&H pump house @<br>approx.....  | BHEL shall furnish the road<br>tanker details including heater<br>size, length and temperature<br>of oil to be expected during<br>unloading etc. for calculation<br>of steam requirement at road<br>tanker. Further, since<br>insulation is not provided in<br>the HFO tank, it is expected  | Relevant details of tanker as<br>available with BHEL shall be<br>furnished during detailed<br>engineering. Also refer reply at sl<br>no 13 above in connection with<br>insulation. |

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|     |   |   | that heat loss will be more.  |   |
| 15. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>TERMINAL POINT<br>4.0.0                              | Effluent from Oil Water Separator<br>: Shall be terminated within 3m of ETP .....<br>.....                                  | BHEL shall check the requirement as the outlet quality of water is less than 10 ppm, it can be discharged into the plant drain. Alternatively, it can be used in Ash handling system. Please check and confirm.               | Bidder to comply with specification requirement.                                      |
| 16. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>Functional<br>Guarantees at site:<br>6.0.2 (h) & (i) | Tank dimensions as per specification with allowable tolerances... ..<br>Erection and commissioning of tanks as per API 650. | Please check whether tank shall be designed, erected and commissioned as per IS 803 or API 650.   | Bidder to comply with specification requirement.                                      |
| 17. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC<br>TECHNICAL<br>REQUIREMENTS<br>LAYOUT<br>REQUIREMENTS<br>7.0.0 (c)                  | The layout for Fuel Oil handling System enclosed with the specification is tentative.....                                   | Any change in layout from the tender stage layout shall be accepted with commercial implication. It may be noted that that the pipe lengths, pressure drops, motor rating etc. all are dependent on the layout of the system. | Specification stipulation is clear. Bidder to comply/quote accordingly.               |
| 18. | VOLUME II-B<br>SECTION 'C'<br>LAYOUT<br>REQUIREMENTS<br>7.0.0 (g)   | Vendor shall provide suitable arrangement to recover the oil spillage ...   | RCC drains shall be provided by BHEL which will be led to the OWS.  | Specification stipulation in clause (g) is clear. Bidder to comply/quote accordingly. |
| 19. | VOLUME II-B<br>SECTION 'C'<br>LAYOUT<br>REQUIREMENTS<br>11.0.0 (c)  | If the bidder wishes to apply.....  | It is not understood how Syrian Embassy is related with this job, please clarify.   | Word " Syrian " is to be deleted from the clause.                                     |
| 20. | VOLUME II-B<br>SECTION 'C'<br>SPECIFIC  | Rebate in case bidder wishes to use plate fabricated pipes for pipe sizes over 400 NB .....                                 | The requirement is not clear. BHEL is requested to specify the location where they intend   | Stipulation is clear. Bidder to quote as per system requirement.                      |

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|     | TECHNICAL REQUIREMENTS<br>OPTIONAL ITEMS<br>18.0.0 (c)  |   | to use more than 400 NB pipe. In our opinion, it is absolutely not required.                                     |  |
| 21. | BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations MOM Resolution SI No. 50       | Noted. To be discussed during detailed engg.....  | Pl. confirm either duplex strainer is required or not?   | Bidder to note that duplex type strainer shall not be applicable.  |
| 22. | BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations As per specification SI No. 51 | One condensate flash tank with all accessories  | Pl confirm whether this is part of bidders scope of work or not?<br>Pl. specify the capacity?                    | Condensate flash tank shall be part of bidders' scope of work.<br><br>Bidder to refer Annexure III of Specification. |
| 23. | BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations As per specification SI No. 52 | Noted. To be discussed during detailed engg.....  | Pl. confirm either duplex strainer is required or not?   | Bidder to note that duplex type strainer shall not be applicable.  |
| 24. | BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations MOM Resolution SI No. 53       | Noted. To be discussed during detailed engg.....  | Pl. confirm whether separate drain system to be provided or common system will be sufficient?                    | One no DOT common for HFO/LDO shall be provided.   |
| 25. | BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations MOM Resolution SI No. 54       | As per IS803 / API 650  | Please specify only one either IS803 or API650 as the thickness of plates will be different for different codes. | Bidder to comply specification requirement.  |
| 26. | VOLUME II-B<br>SECTION 'C'<br>ANNEXURE-I<br>Heavy Fuel Oil  | Heavy Fuel Oil (HFO) shall be delivered to power station site by 10 no. road tankers..... | In BHEL'S Technical offer Dt. 22.09. 2009 - Schedule for Technical Deviations MOM Resolution                     | Please note that 11 (10W + 1SB) nos HFO unloading connections shall be in bidders scope.                             |

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|     | System<br>1.1.0   |   | SI No. 57(a) It is mention as 11 nos. Pls clarify?   |  |
| 27. | VOLUME II-B<br>SECTION 'C'<br>ANNEXURE-I<br>Light Diesel Oil<br>System<br>3.1.0   | LDO shall be delivered to power station site in road tankers. Four (4) nos. of LDO road tankers will... | Pl. check as the same contradicts the requirement spelt out in deviation schedule agreed with HNPCL. Further, to avoid contractual problem during detail engineering, it is requested BHEL shall prepare a consolidated scope of work which they intend to include in bidder's scope of work and compliance shall be taken from all the bidders. | Bidder to note that there shall be Six (6) unloading points for LDO.   |
| 28. | VOLUME II-B<br>SECTION 'C'<br>ANNEXURE-III FOR<br>HFO STORAGE, LDO<br>STORAGE, DRAIN<br>OIL AND FLASH<br>TANKS<br>Notes: 2. | The tank heights indicated are minimum. Increase in height, if .....                                    | BHEL specifies tank capacity as nominal in one place, in other place it is mentioned that gross. Further, BHEL has specified tank dimensions as well as capacity. It is requested, to make all parties at par, please indicate tank dimensions only which will remove all confusions.  | Tank capacity shall be gross capacity. However minimum dimensions, mentioned in the specs are to be adhered to.  |
| 29. | Flow diagram for steam and Instrument Air vide drg no: PE-DG-361-166-A003   | In Each HFO strainers, two inlets and two outlets are shown.  | Please clarify that only one inlet and one outlet is required.   | Bidders' understanding is correct.   |
|     |   | Heating time for PRV sizing for provision of same for Road tankers.                                     | For PRV sizing kindly indicate heating time provision for Road tankers to considered.  | This shall be taken up during detailed engineering to suitably meet system requirement. Alternative bidder may consider steam requirement of 200kg/hr. for one tanker. |
|     |   | Number of heating coils for HFO storage tanks as shown.   | Please clarify if we can reduce the number of coils as shown subject to meeting the design conditions as per specifications  | Bidder to quote suitably to meet specification requirement and note that drg/doc shall be subject to review/approval during detailed engineering.                      |

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|     |   | Inlet and outlet valves for Oil Storage tanks.                                     | Please check and confirm that the inlet/ outlet valves are Pneumatically Operated or Motorized. Since Specification does not specify these valves as pneumatically operated. In case these valves are with Pneumatic Operation then please specify the type of Pneumatic Operation desired | Inlet and outlet valves shall be pneumatically operated.  |
| 30. | Flow diagram for LDO & HFO vide drg no: PE-DG-361-166-A002 & A001         | Please refer Note 5 and 9 respectively.,   | Indicates Operations to DDCMIS however as per approved DBR no signaling is to go to DDCMIS.  | Bidder to note that Low-Low signal from the tank shall be forwarded to DDCMIS for monitoring purpose only. Provision for same shall be kept.                                  |
|     |   | No Flow meter for specific duty of HFO or LDO are shown.                           | Please check and confirm that no flow meters are required for specific duty of HFO or LDO measurement.   | Flow meters are not required for this project.  |
| 31. | Clause 4.00.00 Page 4/5 of 12, Volume II B, Section C                     | Terminal Point for HFO & LDO.  | The battery limit given in the Flow diagram contradicts terminal points furnished at clause 4.00.00 Page 4/5 of 12. Please clarify.  | Bidders to follow Clause 4.00.00 Page 4/5 of 12, Volume II B, Section C, in case of any contradiction/confusion.  |
| 32. | Instrumentation   |  |  |   |
|     | Specification for Measuring Instruments, Control Valves and Flow Elements | Differential Pressure Indicating switch in Flame Proof Housing with diaphragm seal | Differential Pressure Indicating switch is not available in Flame Proof Housing with diaphragm seal. We suggest an alternative as indicating type Differential Pressure Transmitter. Please confirm.   | Specification requirement to be complied. Issue may be taken up during detailed engineering. Bidder shall forward supporting documents for taking up the issue with customer. |
|     |   | Item 4 Radar Type Level Transmitter for LDO/ HFO Tanks                             | Please confirm that NO ATEX certification is required since not asked for in specifications.   | Bidder to follow the specifications.  |
| 33. | Annexure – 1, page 1 of 5, Volume II B,                                   | Height to Diameter ratio of the Tanks.   | The Height to Diameter ratio of the Tanks seems to be  | Bidder to follow the specifications. Design of tank shall be reviewed/  |

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|     | Section C, Clause 1.1.0 and Annexure III, page 1 of 13.         |  | favoring overturning and would need anchoring due to wind conditions. We suggest to change the H/D ratio to 0.6 for better stability including the height above overflow nozzle              | approved during detailed engineering. Any anchorage as/if required for the tank stability shall be provided by the bidder.  |
| 34. | Annexure – 1, page 2 of 5, Volume II B, Section C, clause 1.3.0 | Pressure Reducing station of adequate capacity.            | The adiabatic reduction of the steam from 14ata/250 degC to 4.5ata is desired. We clarify that steam pressure shall be 4.0ata for equipment consumption, wherever applicable. Please confirm | Bidders' clarification is noted.  |
| 35. | Annexure – 1, page 3 of 5, Volume II B, Section C, clause 1.4.0 | Oil Water Separation                                       | The OWS shall be designed to API 421. Please confirm   | Confirmed.  |
| 36. | Annexure III, page 1 of 13, Volume II B, Section C.             | Drain Oil Tanks  | Shows 2Nos. Drain Oil Tanks whereas flow diagram shows only One. Please check and confirm  | One no DOT common for HFO/LDO shall be provided.  |
| 37. | Annexure III, page 1 of 13, Volume II B, Section C, Sl. No. 10  | Corrosion Allowances.                                      | IS 803 permits NOMINAL Bottom Plate thickness and No corrosion allowance is applicable. Please confirm   | Noted, however in no case the bottom plate shall be less than 8 mm. Further for shell & roof, thickness shall be provided considering corrosion allowance as per specs. |
| 38. | Annexure III, page 1 of 13, Volume II B, Section C, Sl. No. 12  | HFO Tank shell insulation height.                          | Kindly indicate the tank shell insulation height since the same differs from the approved DBR.   | Complete shell/ cylindrical portion of tank shall be insulated.   |
| 39. |   | Heat tracing for Oil Lines, no specification are indicated | We presume that the same shall be designed by us. Please confirm.  | Bidder to provide the steam tracers in the HFO oil lines. Minimum no of tracers shall be considered as follows:<br><br>100 NB & below - 1                               |

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|     |  |  | 100NB -300 NB - 2<br>350 NB & above – 3<br><br>Size of steam tracers shall be 15 NB.  |
| 40. | Sl. No. E 10 & 11, Page 2 of 2 of Project Information: Construction Power & Construction Water - We presume both construction power and construction water will be free issue by BHEL. Kindly confirm.   |  | Please refer Cl. No. 11 Volume-ID of the tender.  |
| 41. | Sl. No. 56 of MOM – Under the `Deviation' column, it is indicated that PLC system for FOH system shall be non-redundant type which has been accepted by the customer. Accordingly, we shall consider non-redundant PLC system in line with the specification requirement.  |  | Bidder to comply the specification requirement.   |
| 42. | Sl. No. 57 e) of MOM – indicates three type of fuel oil, i.e. HFO, LSHS & HPS in the `Deviation' column, whereas in the Fuel Oil characteristics, only properties of HFO has been furnished. We presume design of FO system is to be done considering HFO only. Kindly confirm.  |  | Design for HFO system to be considered.   |
| 43. | In the specification for control valve, SMART type pneumatically operated control valve has been asked for both on-off type for floor coil heater as well as modulating type for suction heater. We clarify that SMART positioner is provided only for modulating control valve. Positioner is not required for on-off type control valve, hence SMART positioner is not applicable for on-off type control valve for floor coil heater. Kindly review and confirm.  |  | Bidder to comply the specification requirement.   |
| 44. | As indicated in Note 2 of Painting Schedule, we shall consider only primer coat as per specification on insulated tanks and pipes. No intermediate and finish cost will be applied on insulated surfaces.  |  | Bidder to comply the specification requirement.   |
| 45. | In the flow diagram for HFO system, pressure switch has been shown on the delivery of each HFO unloading pump and no pressure transmitter is shown on the delivery header on HFO unloading pumps. However, in the flow diagram for LDO system, pressure switch has not been shown on the delivery of LDO unloading pump, but one pressure transmitter is shown on the delivery header of LDO unloading pumps. Should we follow the instruments as per tender flow diagrams, or there will be some change. Pls. check and confirm. Again, there is no flow meter shown on the delivery header of HFO / LDO unloading pumps. |  | Instrument shown are minimum and indicative. Instruments/ equipment shall be provided to meet the system requirement based on approved flow diagram as finalized during detail engineering. Bidder to quote accordingly as per their design to meet system requirement. |
| 46. | We have considered gauge glass type level gauge as per specification for drain oil tank. No level gauge has been shown on flash tank, hence not considered by us.  |  |   |
| 47. | In the data sheet for unloading pumps, drain oil pumps & sump pumps (Page 3 of 13, Vol. II-B, Sec. C of Specn. No. PE-TS-361-166-A001), the quantity of drain oil pumps/ recovery oil pumps will be four (4) and the quantity of sump pumps in oil water separator / pump house will also be four (4) instead of 2 shown in respective column.   |  | Bidder to provided 2 nos pumps ( 1W + 1S) for each of following areas are to be provided<br>Drain oil Pumps, Recovery oil pump, Sump Pump of Oil Water  |

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|     |  |  |   | Separator pit & Sump Pump of pump house.   |
| 48. | Maximum viscosity of HFO has been specified as 370 cst at 50 Deg. C in Fuel Oil Characteristics (Annexure-II), whereas maximum design viscosity of oil has been indicated as 600 cst in the data sheet of pumps. This may be reviewed and confirmed.   |  |   | Specification requirement is clear & bidder to comply to same.                                     |
| 49. | In the data sheet for unloading pumps, drain oil pumps & sump pumps (Page 3 of 13, Vol. II-B, Sec. C of Specn. No. PE-TS-361-166-A001), type of sump pump has been indicated as vertical shaft, screw type. Being bilge water application, screw pump is not suitable. We have considered vertical centrifugal submersible type sump pump which is suitable for bilge water application. |  |   | Bidder to comply to specification requirement.   |
| 50. | Vol. II B, Sec C, Page 1 of 12, Clause 1.1 (c)   | 11 Nos. neoprene rubber hoses for HFO unloading through road tanker, 11 nos. flexible hoses for Steam heating, 11 Nos. flexible hoses for Condensate collection and <b>6 Nos. neoprene rubber hoses for LDO unloading through road tanker.</b> Length of each hose shall be 8 M. | We are considering 6 nos LDO unloading hoses as per the MOM resolution.   | Page no. 182, Sl.no. 57 b-MOM resolution: 6 Nos LDO road tanker unloading points to be considered. |
|     | Flow diagram for LDO system  | Road Tanker unloading, <b>4 nos LDO unloading hoses.</b>   |   |  |
|     | Page no. 182, Sl.no. 57 b  | MOM resolution: 6 Nos LDO road tankers to be considered  |   |  |
| 51. | Page no. 181, Sl.no. 50  | Drain oil tank..... duplex filter at suction... oil from pump house to HFO storage tank.<br>MOM resolution: to be discussed during detailed engg.  | As per the specification, we are considering drain oil pumps as vertical single screw type in which the strainer will be in built with the pump. So we are not considering duplex type strainers. | Bidder to note that duplex type strainer shall not be applicable.                                  |
| 52. | Vol. II B, Sec C, Page 2 of 12, Clause 1.1 (t)   | One no. Pressure Reducing station to reduce aux. <b>steam pressure from 14 kg/cm2(a) to 4.0 kg/cm2(a)</b> or as required by FO System vendor during detail engineering.  | The referred clauses are controversy in the steam pressure. However we are considering 16kg/cm2 to 4.0 kg/cm2 steam pressure as per given in the flow diagram. Please confirm.                    | Details as per Vol. II B, Sec C, Page 2 of 12, Clause 1.1 (t) shall be considered as final.        |
|     | Flow diagram for Steam, Condensate   | Self-actuated pilot operated pressure reducing valve ( <b>16ksc to</b>   |   |  |

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|     | and Instrument air system  | <b>4.0 ksc)</b>  |  |   |
| 53. | Flow diagram for Steam, Condensate and Instrument air system           | FO Storage tank #2, <b>cap: 2000 m3</b>  | As per the specification and flow diagram for HFO system the HFO tank capacity is given as <b>1000 m3</b> . so we are considering 1000m3 nominal capacity for the same. Please confirm           | HFO tank capacity (gross) shall be 1000 m3. However Bidder to adhere to minimum tank dimensions as mentioned in the specifications.       |
| 54. | Vol. II B, Sec C, Page 1 of 12, Clause 1.1 (h)                         | Insulation and cladding of all HFO storage tank on shell only up to 2M from the bottom plate.  | As per the referred clauses we are considering insulation on the shell for FO tanks but only up to 2M from the bottom plate.   | Bidder to note that complete shell/cylindrical portion of FO tanks shall be insulated.  |
|     | Page no. 182, Sl.no. 55, MOM resolution                                | All heavy oil storage tank shall be provided with insulation and cladding  |  |   |
|     | Flow diagram for HFO system  | Notes: 2. FO tanks are insulated on <b>shell</b> only.   |  |   |
| 55. | Page no. 185, Sl.no. 57, MOM resolution                                | Type of FO Fluid (HFO / LSHS / HPS)  | In the given specification fuel oil characteristics is given only for Heavy fuel oil. Hence we are designing the system by considering fuel oil as HFO and as per the given HFO characteristics. | Specification requirement is clear. No change is envisaged.   |
|     | Vol. II B, Sec C, Page 1 of 1, Annexure - II, Fuel oil characteristics | Heavy fuel oil analysis as per IS 1593, 1982 (Grade - HV)  |  |   |
| 56. | Page no. 185, Sl.no. 57 (e), MOM resolution                            | HFO, Gr HV - 35°C (assuming pour point temp of 25°C)   | As referred clauses are contradicting each other, we are considering the pour point of HFO as per Annexure II fuel oil characteristics. Please confirm.  | Most stringent specification shall be governing.  |
|     | Vol. II B, Sec C, Page 1 of 1, Annexure - II, Fuel oil characteristics | Heavy fuel oil analysis as per IS 1593, 1982 (Grade - HV): Pour point, Max: 30°C   |  |   |
| 57. | Vol. II B, Sec C, Annexure- I, Page 1 of 5, Clause 1.1                 | Inter tank transfer facility shall be provided between the tanks from the proposed pumps so that in case one tank is in maintenance, the oil can be transferred to other tank. | As the number of working pumps for inter tank transfer of oil is not specified hence we have considered one no. pump as working to transfer the oil.   | Bidder to note that, HFO unloading pump/s shall be provided in line with specs and same shall be utilized for inter tank transfer of oil. |
| 58. | Vol. II B, Sec C, Annexure- I, Page 1                                  | Each HFO storage tank shall also be provided with one no. of suction   | We are considering the suction heater capacity as per  | Bidder to note that suction heater capacity mentioned is minimum and  |

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|     | of 5, Clause 1.1   | heater with capacity suitable to meet requirement of pressurizing pumps for both units simultaneously.  | the Annexure III i.e; 104 T/hr.  | final capacity shall be subject to approval of BHEL/customer during detailed engineering.  |
| 59. | Vol. II B, Sec C, Annexure- III, Page 3 of 13, Equipment selection and design criteria | Suction heater of HFO storage tanks, SI no. 4 : Heater capacity - 104 T/hr  |  |  |
| 60. | Vol. II B, Sec C, Page 1 of 12, Clause 1.1 (b)   | Two (2) (1W+1S) nos. LDO twin screw unloading pump motor set each of capacity 50 m3/hr with <b>twin simplex type</b> strainers at their suction.  | The referred clauses are controversy regarding strainers. However we are considering twin simplex type strainer as Annexure I and also as per the flow diagram for LDO system. | Bidder to consider twin simplex type strainer at suction of pump.  |
|     | Vol. II B, Sec C, Annexure- I, Page 1 of 5, Clause 1.1                                 | LDO from unloading header shall be pumped to LDO storage tank with the help of two (2) nos. (1W+1S) pumps of capacity 50 m3/hr each. The LDO unloading pumps are of rotary positive displacement, twin-screw type, and provided with matching capacity <b>simplex strainers</b> at their suction with interconnecting piping and valves.  |  |  |
| 61. | Vol. II B, Sec C, Page 1 of 12, Clause 1.1 (d), €                                      | (d). Two (2) nos. of vertical cylindrical, fixed roof type M.S storage tanks for storage of HFO as per IS 803 and /or API 650 of <b>nominal capacity 1000 m3</b> (12M dia. x 10.5M ht.) each duly fitted with steam heated floor coil heaters and outflow suction heater and other appurtenances, accessories, instrumentation, control and fittings etc.<br>(e). Two (2) nos. of vertical cylindrical, fixed roof type M.S storage tanks for storage of LDO as | Please confirm whether the given capacities are nominal or gross capacities.   | Tank capacity mentioned shall be gross capacity. However Bidder to adhere to minimum tank dimensions as mentioned in the specifications. |

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|     |  | per IS 803 and /or API 650 of nominal capacity 250 M3 (8M dia. x 6M ht.) each duly fitted with accessories, instrumentation, appurtenances, control and fittings etc.       |  |   |
|     | Vol. II B, Sec C, Annexure- III, Page 1 of 13, Equipment selection and design criteria | Notes : 1. Tank capacity indicated is capacity between tank bottom plate to bottom of over flow level ( Gross Capacity)   |  |   |
| 62. | Flow diagram of HFO  | Capacity of DOT is 5m3 (2mx1.8mx1.5m ht)  | As both the clauses are contradicting each other, please confirm the dimensions to be considered for drain oil tank  | Bidder to follow Vol. II B, Sec C, Annexure- III, Page 1 of 13, Equipment selection and design criteria.  |
|     | Vol. II B, Sec C, Annexure- III, Page 1 of 13, Equipment selection and design criteria | Dimensions of drain oil tank : 2mx2mx 1.5m  |  |   |
| 63. | Page no. 182, Sl.no. 56, MOM resolution  | PLC - Communication between PLC and DCS is not envisaged. However, for monitoring purpose, a few signals from the PLC shall be made available at the DCS through hard link. | Please inform the signals (level / temperature / flow) required for hard link with DCS and also inform the location of DCS will be in boiler unit / TG area or ESP control room. | Signal details shall be reviewed /approved during detailed engineering (no cost implications shall be admissible). Location of DCS shall be in the pressurising pump house. |

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| TENDER NO – PSER:SCT:VIZ-M1235:11 |   | ANNEXURE-B  |
| VOLUME-IC                         | SPECIAL CONDITIONS OF CONTRACT (SUPPLY) | PAGE 1 OF 2 |

**ADDENDUM TO VOL-IC (SUPPLY)**

**THE FOLLOWING CLAUSES SHALL ALSO BE INCLUDED ALONGWITH EARLIER CLAUSES :**

|            |  |
|------------|--|
| <b>1.0</b> | <b>Steel (plates only for Storage tanks as per scope of the tender) shall be supplied free of cost by BHEL</b>   |
| 1.1        | The bidder shall furnish in the price schedule only total qty of steel(plates only for Storage tanks as per scope of the tender ) that shall be supplied free of cost by BHEL The loading value will be worked out by bidder on the basis of loading rates of steel indicated in the tender.   |
| 1.2        | While BHEL will issue free of cost steel Plates as per tender provision, cumulative qty of free issue of steel Plates will be limited to total qty furnished by bidder in the price schedule.  |
| 1.3        | In case the total quantities of steel Plates issued to bidder is less than the total loading qty furnished by bidder in the price bid, BHEL will only provide the exact quantities of steel plates as per approved drawing for the job. No benefit will be given to the contractor for drawing less quantities of steel Plates.  |
| 1.4        | However, in case, exact quantities of steel plates required during the execution, exceeds the quantities quoted by the bidders in price schedule, the contractor shall have to provide such excess steel Plates at their own cost as per the quality and specification of BHEL from reputed manufacturers like, SAIL other BHEL/HNPCL approved vendor, after obtaining approval from BHEL/ owner                 |
| <b>2.0</b> | <b>ISSUE OF MATERIALS</b>  |
| 2.1        | ISSUE OF STEEL PLATES  |
| 2.1.1      | The steel Plates shall be issued to the contractor free of cost on the following basis.  |
| 2.1.2      | Steel Plates – Weighment basis (unit – MT).  |
| 2.1.3      | All the steel Plates issued by the BHEL shall be properly accounted for. The total quantity of steel plates required for the work will be calculated from the approved fabrication drawings,. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS specifications.<br><br>IS: 1730-1961                      Plates, Sheets and Strips |
| 2.1.4      | In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.   |
| 2.1.5      | The steel plates issued to the contractor shall be mainly in standard length and sections as received from the supplier. However, the contractor shall be bound to accept the steel Plates in length as available in the project stores. No claims for extra payment because of issue of non-standard length will be entertained.  |
| 2.1.6      | The contractor shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL/ HNPCL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL/ HNPCL stores.   |
| 2.1.7      | The contractor shall submit to the engineer, a statement indicating estimated quantity of steel Plates required at least two months in advance. In addition, the contractor shall also furnish the estimated requirement of steel plates during a month by the third week of the previous month indicating his requirement.  |
| 2.1.8      | Bidders to ensure that no lamination materials are taken over by them from BHEL. Fabrication wastage, if any due to above, shall not be compensated by BHEL  |
| 2.1.9      | Bidder to note that steel required for his enabling job like store/site office etc shall be arranged by him at his own cost.   |
| <b>3.0</b> | <b>RETURN OF MATERIALS</b>   |
| 3.1        | RETURN OF STEEL PLATES INCLUDING SCRAP   |
| 3.1.1      | All surplus steel Plates and all wastage materials will be taken back on weighment basis.  |

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|-----------------------------------|---|-------------|
| TENDER NO – PSER:SCT:VIZ-M1235:11 |   | ANNEXURE-B  |
| VOLUME-IC                         | SPECIAL CONDITIONS OF CONTRACT (SUPPLY) | PAGE 2 OF 2 |

|            |   |  |
|------------|---|--|
| 3.1.2      | Surplus, unused and un-tampered steel plates shall be sorted section-wise and returned separately at a place directed by BHEL/Engineer within the project area; Return of such materials will not be entitled to any handling and incidental charges.   |  |
| 3.1.3      | All wastage/ scrap (including wastage, unusable scrap) shall be returned to the stores on weightment basis and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any additional cost due handling and transportation and incidental charge.  |  |
| <b>4.0</b> | <b>STEEL CONSUMPTION AND WASTAGE</b>  |  |
| 4.1        | STRUCTURAL STEEL MATERIALS CONSUMPTION  |  |
| 4.1.1      | The theoretical consumption of various sections shall be based on approved drawings. <u>Weights shall be calculated considering the sectional weights as per Indian standard as mentioned in relevant clause. No extra shall be payable to the contractor for any deviation in weights for the two different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.</u>  |  |
| 4.1.2      | Actual consumption = Issue – Surplus.   |  |
| 4.1.3      | Surplus = Untempered, unused, uncut quantity of steel Plates returned by the contractor to BHEL store.  |  |
| 4.1.4      | Wastage = Actual consumption – Theoretical consumption.   |  |
| 4.2        | STRUCTURAL STEEL, WASTAGE   |  |
| 4.2.1      | Allowable wastage – 4 % (four percent) of the theoretical consumption shall be considered. Wastage is further classified as cut pieces and scrap measured as per actual weightment basis. Invisible wastage (loss of materials due to gas cutting, straightening of edges etc) shall be limited to 0.5 % (zero point five percent) of theoretical consumption and shall be considered for reconciliation purposes only. But this invisible wastage shall be considered to be included in allowable wastage (i.e. four percent). |  |
| 4.2.2      | Sl no   | Basis of issue & penal recovery  |
|            | S-1   | Theoretical consumption (without considering any wastage, scrap or loss) as per specification & drg.                 |
|            | S-2   | Wastage limited to plus four percent (+4%) of the aforesaid theoretical consumption (S-1) towards allowable wastage. |
|            | S-3   | Wastage beyond four percent (4%) of the aforesaid theoretical consumption (S-1).                                     |
| 4.2.3      | All wastage shall be returned to BHEL.  |  |
| <b>5.0</b> | <b>RECONCILIATION OF BHEL ISSUED MATERIALS</b>  |  |
| 5.1        | The contractor shall submit a reconciliation statement of steel issued to him with each RA bill.  |  |
| 5.2        | At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material are available with contractor's custody at site.  |  |
| 5.3        | At the time of submission of bills by the contractor, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate, then BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.  |  |
| 5.4        | The approved drawings/ bar bending schedules are to be considered for the purpose of reconciliation of materials.   |  |
| <b>6.0</b> | <b>RECOVERY OF MATERIAL</b>   |  |
| 6.1        | If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA bill at the penal rate stipulated below.   |  |
| 6.2        | PENAL RATE OF MATERIALS   |  |
|            | Item  | Penal rate (Rs)  |
| 6.3        | Structural steel materials (Plates).  | 70,000/- per MT.   |