



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TCN - 03

Ref: PSER:SCT:BRM-M1413:TCN-03

Date: 01-01-2013

Sub	Tender change notice (TCN) 03.	
Job	Design, engineering, manufacturing, supply/delivery, erection, commissioning, trial run, handing over to customer, etc of fuel oil unloading and storage system package for 2x 250 MW Barauni Extension Project at Begusarai, Bihar.	
Ref	1.0	Tender No. PSER:SCT:BRM-M1413:12
	2.0	BHEL's NIT, vide reference no PSER:SCT: BRM-M1413:3052, dated 06-12-2012.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:BRM-M1413:TCN-01, dated 07-12-2012.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:BRM-M1413:TCN-02, dated 24-12-2012.
	5.0	All other pertinent issues till date.

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

- 1.0 Extension of due date of submission of offer from 03-01-2013 to 10-01-2013.
- 2.0 Clarification to bidders' queries as per attached annexure-A.
- 3.0 Revised 'No deviation certificate' as per enclosed Annexure-2. Bidder shall submit no deviation certificate as per enclosed format only.
- 4.0 All other terms & conditions shall remain unchanged.

Thanking you,

Yours faithfully,
for BHARAT HEAVY ELECTRICALS LTD

ENGR(SCT)

Encl

1.0 As above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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

फैक्स/Fax : (033) 23211960

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2X250 MW BARAUNI TPP:FOS
PRE-BID CLARIFICATION

Sl. no.	Reference Clause of tender document	Description of Specification	Bidder's query	BHEL's clarification
1	1.1 o), Sht. 2 of 8, Sec. C, Vol. IIB of BHEL Specn. PE-TS-374-166-A001		This clause calls for one (1) no. relay based control panel/ system for the proposed FOH system, whereas instruments shown on HFO tank in Flow Diagram A001 indicates level transmitter connected to PLC. We presume the operation & control of FOH system will be through relay based control panel.	Relay based control system shall be provided in line with scope of supply of technical specification Vol IIB, Sec C Page 1 of 8.
2	Flow Diagram No. A001 – Size of HFO U/L pump discharge is shown as 300 NB		Discharge size of HFO U/L pump is shown as 300 NB. However, as per velocity guideline (1.5 m/s on pump discharge side), 200 NB size is adequate. Pls. check and confirm the size.	Indicated sizes are minimum to provide. wherever higher size will reckoned from velocity criteria then higher size shall be provided.
3	Flow Diagram No. A002 – LDO U/L pumps shown 2 nos., but written within bracket (2W + 1S)		We presume it is a drafting error. It will be (1W + 1S). Pls. confirm.	Scope of supply shall be as per technical specification Vol IIB, Sec C Page 1 of 8. i.e 1 W+1S)
4	Flow Diagram No. A002 – One (1) No. Ball valve for future connection is shown for tank inlet.		While one no. Ball valve is shown for tank inlet for future use, there is no such future connection shown for HFO tank. Pls. check and confirm whether it is required or not.	Ball valve with blind flange for each tank shall be considered for future unit. Size of valve shall be 350 NB. Provision of one nozzle of size 100 NB with blind flange shall also be provided wrt return line for future unit.
5	Flow Diagram No. A002 – Three (3) nos. float type level switch with external cage for each LDO tank		While 3 nos. float type level switches with external cage are shown for each LDO tank, no such level switch is shown for HFO tank. Pls. check and confirm the requirement of level switch for tanks.	3 nos. float type level switches with external cage shall also be considered for each HFO tank also.
6	Flow Diagram No. A001 – Two (2) nos. level transmitters on roof of HFO tank		While 2 nos. level transmitters are shown for each HFO tank, 1 no. level transmitter is shown for LDO tank. Pls. check and confirm the actual requirement of level transmitter per tank. Also confirm the type of level transmitter to be considered as specification is silent on the type of LT.	Two nos LT's shall also be required for LDO tank. Ultrasonic type LT's shall be considered by bidder.
7	Cl. 4.0, Sht. 4 of 8, Sec. C, Vol. IIB of Specn. PE-TS-374-166-A001 – Terminal Point for Aux. Steam		It indicates Aux. Steam to be supplied at TP @ 11 T/hr at 16 ata 210 oC. However, as per criteria furnished in S. no. 5 of Data Sheet for PRS (Page 13 of 19 of Tech. Specn.) for selection of PRS, it is found that approx. 26.5 T/hr of Aux. Steam will be required for FOH Plant. Pls. refer our calculation for total steam consumption and sizing calculation of PRV in this regard.	Noted, 26.5 TPH steam shall be supplied at terminal point & PRV shall be designed accordingly by bidder.
8	Cl. 1.01.08, running page 345 of NTPC specification – No. & size of steam tracer		No. & size of steam tracer is indicated as 2 x 20 NB for 150 & 300 NB pipe. We presume it will be 150 to 300 NB pipe. Also no. & size of steam tracer for pipe size below 150 NB HFO pipe will be 1 x 20 NB. Pls. check and confirm.	Bidder to consider: 1x20 NB for pipe below 150 NB 2X20NB for pipe 150 to 300 NB 3X20 NB for pipe size above 300 NB

9	Sr. No. A a) – Fuel Oil Pipes – All sizes, page 17 of 19 of BHEL Doc. No. PE-TS-374-166-A001		Material standard for Fuel Oil pipes is specified as Seamless Carbon Steel Pipes to A106, Gr. B, Std. weight or Sch-40 as available/ API 5L Gr. B (with thickness corresponding those covered in other mentioned standards). We have considered seamless pipes to API 5L Gr. B/ A106 Gr. B for fuel oil service of following thicknesses : 400 NB & above : Std. thickness (9.53 mm) Below 400 NB : Sch. 40	The material of construction for fuel oil pipes up to 400NB shall be of Carbon steel pipes to API 5L Gr B ERW and 450NB and above shall conform to API-5L Gr B ERW pipe or site fabricated from min 8mm thick steel plates to IS: 2062 Gr B/IS 3589 Gr FE 410 with type of end as available and acceptable in line with relevant standard. Min pipe thk of various sizes shall be as per annexure-I.
10	Cl. 7.00.00 a), running page 355 of NTPC specification		This clause envisages Aluminium cladding thickness of 16 or 20 SWG for all surfaces of fuel oil and other tanks, pipe line etc. We have considered Aluminium cladding of 16 SWG for HFO tanks, drain oil tank and flask tank and 20 SWG for HFO, steam and condensate pipelines. Pls. check and confirm.	Bidder to consider: Aluminium cladding of 16 SWG for HFO tanks, drain oil tank and flask tank and 20 SWG for HFO, steam and condensate pipelines
11	Vol. II B, Sec D, Annexure I, Page 1 of 7, Clause 1.1.0, Heavy fuel oil system	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.	Please provide the number of working pumps to be considered for inter tank transfer pipe sizing.	Only one no pump shall be used for intertank transfer.
12	Vol. II B, Sec D, Annexure I, Page 2 of 7, Sr.No.1.1.0, Heavy fuel oil system	Maintaining the temperature inside the tank at 55 deg C . The suction heater will raise the temperature of oil by approx 10°C to meet the pressurizing pump suction	Both referred clauses are contradicting each other in the initial and final temperatures. Please clarify the temperatures to be consider.	Suction heater shall be designed for 55 to 65 deg C however floor coil heater shall be designed 60 deg C tank maintenance temp.
	Vol. II B, Sec D, Annexure II, Page 6 of 19, Suction heater of HFO storage tanks	Initial temperature of oil - 50 deg C Final temperature of oil - 60 deg C		
13	Vol. II B, Sec C, sheet 1 of 8, clause no. 1.1 scope of supply.	b) Two (2) (1W+1S) nos. LDO twin screw unloading pump motor set each of capacity 36 m3/hr with simplex type strainers at their suction.	Referred clauses are contradicting each other in the capacity of LDO unloading pump. Please clarify	Pl follow scope of supply shall be as per technical specification Vol IIB, Sec C Page 1 of 8.i.e capacity of each LDO pump shall be 36 m3/hr.
	Vol. II B, Sec D, Annexure I, Page 2 of 7, Sr.No.1.2.0, Light Diesel oil system	LDO from unloading header shall be pumped to two (2) nos. LDO storage tank of capacity 250m3 with the help of two (2) nos. (1W+1S) pumps of capacity 50 m3/hr each.		

14	Vol. II B, Sec D, Annexure II, Page 14 of 19, data sheet for valves	Ball valves shall be used for isolation purpose in oil lines . These shall have 'port' position indicators with CLOSE/OPEN indications marked on valve body. Ball Valves shall be used for sizes up to 200 NB , while PTFE sleeved plug valves shall be used for sizes 250 NB and above. sleeved plug valves shall be used for sizes 250 NB and above.	Referred clauses are contradicting in the type of valves for oil lines. Please clarify	Plug valves shall be used for isolation purpose for pipe sizes 250 NB to 350 NB. Gate valve shall be used for isolation purpose of size 350 NB and above.
	Section - VI, Part B, sub sec IIIA-10, page no 13 of 24, (running page - 347)	Gate valves shall be used for isolation purpose for all sizes in steam and condensate lines and for sizes above 350 NB for oil lines.		
15	Drg no. PE-DG-374-167-A001 sheet no. 1 of 1, rev 0, Flow diagram for HFO system	Note 6. Storage tank shall be provided with float type level switch.	The referred clause calls for level switch on the storage tank where as in the instruments on HFO storage tank (TYP) diagram 2 nos of level transmitters are shown. Kindly clarify.	PI refer reply in point no 5.
16	Vol. II B, Sec D, Annexure I, Page 1 of 7, Clause 1.1.0	Each railway wagon shall have steam heating coil arrangement for heating Fuel Oil to 10 C above pour point. The heating of railway wagon will be performed by serpentine heaters at the bottom of the wagon	Please provide initial temperature for heating of rail wagons. Also indicate the total time for hose connection+wagon heating+pumping+hose disconnection.	Pumping capacity and steam requirement have given. initial temp for heating of wagon shall be considered as 10 deg C. Other data i.e total time for hose connection+wagon heating+pumping+hose disconnection are not relevant wrt system design.
17	Vol. II B, Sec D, Annexure I, Page 6 of 7, Sr.No.1.4	Pour point for HFO - 50 Deg.C	Please check and confirm the HFO pour point temperature, as it looks very high. Also from the above referred clause wagons need to be heated upto 60 Deg. C. Steam requirement will become very high.	Pour point is in order. Follow the specification.
18	Vol. II B, Sec D, Annexure II, Page 17 of 19, a	Fuel oil pipe size - Seamless Carbon Steel Pipes to A106, Gr. B, Standard weight or Sch.-40 as available /API 5L Gr B (with thicknesses corresponding those covered in other mentioned standards) / Equivalent with type of end as available and acceptable in line with relevant standard.	Please clarify whether API5L pipes are ERW or Seamless. Also please provide the minimum thickness to be considered for API 5L pipes. Also note that for wagon unloading header normally IS 3589 ERW pipes/API 5L ERW pipes are used. Please confirm.	PI refer reply in point no 9.
19	Vol. II B, Sec C, Page 1 of 8, Cl.No. 1.1, i	One (1) No. drain oil tank of capacity 5 m3 with heating (steam heating coils) arrangement including all its accessories	Both clauses are contradicting about the drain oil tank capacity. Please clarify the capacity to be considered	PI follow scope of supply shall be as per technical specification Vol IIB, Sec C Page 1 of 8 i.e drain oil tank of capacity 5m3 shall be considered with dimension 3mx2mx1.7m.
	Flow Diagram of HFO system	Drain oil tank capacity given as 10 m3.		
20	Vol. II B, Sec C, Page 1 of 8, Cl.No. 1.1, j	Two (2) (1W+1S) nos. no. of Single screw type drain oil pump motor set of capacity 5 m3/hr each with all its accessories.	Both clauses are contradicting about the drain oil pump capacity. Please clarify the capacity to be considered	PI follow scope of supply shall be as per technical specification Vol IIB, Sec C Page 1 of 8. i.e capacity of drain oil pump shall be 5 m3/hr.

	Flow Diagram of HFO system	Drain oil pump capacity given as 10 m3/h.		
21	Flow Diagram of HFO system	Note. 7. Line sizes indicated are tentative. Final sizes shall be inline with calculation after award of contract.	if pipe sizes, as per velocity criteria and design calculations, comes less than the indicated sizes, please confirm whether it is acceptable or not.	PI refer reply in point no 2.
22	Vol. II B, Sec C, Page 1 of 8, Cl.No. 1.1, b	Two (2) (1W+1S) nos. LDO twin screw unloading pump motor set each of capacity 36 m3/hr with simplex type strainers at their suction	Both clauses are contradicting about the number of LDO unloading pumps. Please clarify.	PI refer reply in point no 13.
	Flow Diagram of LDO system	LDO number of pumps indicated as 2w+1s		
23	Vol. II B, Sec C, Page 1 of 8, Cl.No. 1.1, b	3 nos. 80NB diameter neoprene rubber flexible hoses each of 8metres length with couplings and fittings shall be provided for connecting with road tankers for LDO oil unloading.	Both clauses are contradicting about the number of LDO unloading hoses. Please clarify.	PI follow scope of supply shall be as per technical specification Vol IIB, Sec C Page 1 of 8.i.e 3 nos. 80NB diameter neoprene rubber flexible hoses each of 8metres length with couplings and fittings shall be provided.
	Flow Diagram of LDO system	LDO number of unloading hoses indicated as 5nos.		
24	Vol. II B, Sec C, Page 1 of 8, Cl.No. 1.1, e	96 nos. 50NB diameter flexible hoses each of 8metres length with couplings and fittings shall be provided for connecting with rail wagons for Condensate collection.	25NB condensate hose is sufficient for condensate collection from wagon. Please confirm.	Follow specification.
25	Other clarification are indicated in annexure-II.Bidder to comply			

ANNEXURE-I	
Pipe size (Min)	(material as per API-5L Grade.B
450 NB	7.14 mm
400 NB	6.35mm
350/300 NB	6.35mm
250/200 NB	5.56mm
150 NB	4.78mm
100/80/65 NB	3.96mm
50 NB	3.91mm
40 NB	3.68mm
250 NB	3.38mm
20 NB	2.87mm
15 NB	2.77mm
Note:Pipe size shall be subject to approval of pipe thk calculation	



(ANNEXURE-II)
FUEL OIL HANDLING SYSTEM
2X250 MW BARAUNI TPS

SPECIFICATION NO. PE-TS-374-166-A001

VOLUME II-B

SECTION 'C'

REVISION 00

DATE: 06.08.12

1.1.0 FOLLOWING ADDITIONAL POINTS SHALL BE TAKEN CARE IN SCOPE OF SUPPLY

- a) All mechanical items for oil water separator pit including skimmer pipe, butterfly valve, heating arrangement, rung ladder etc for OWS pits.
- b) Pipe-supporting structures over the insert plates for pedestal supported pipes and also on pipe rack supported pipe.
- c) All MS structures for cross overs, valve / instruments/ equipment operating & maintenance platforms, approach ladders for access to platforms, trench/pit.
- d) Steam hoses shall be provided with diffuser, hoses length if required more than 8.0 m with diffuser shall be provided by bidder without any price implication.

1.2.0 FOLLOWING ADDITIONAL POINTS SHALL BE TAKEN CARE IN SCOPE OF SERVICES

Scope of services will include but not necessarily limited to the following:

- a) Inspection & testing, Performance/functional demonstration.
- b) Preparation of all necessary drawings/data/ documents for obtaining necessary Approval of statutory authorities like CCOE , IBR , Weight & Measures Department and any other agency related to installation of Fuel Oil Handling System on behalf of the customer. The necessary fee for such approval shall also be borne by the successful bidder.
- c) Supply of temporary equipment and services for chemical cleaning, steam blowing, energisation, testing etc as applicable.
- d) Training of plant Owner's personnel, O&M operators' personnel on plant operation and maintenance.

1.3.0 PERFORMACE/FUNCTIONAL DEMONSTRATION

This will comprise of:

1.3.1 Functional Guarantees at shop:

- a. Capacity, total dynamic head and power consumption, noise & vibration level of all pumps in isolation.
- b. Noise level for safety valve to be limited to 105 dB (A)
- c. Inspection and testing of all valves as per approved QAP.

1.3.2 Functional demonstration at site:

- a. Capacity, total dynamic head and power consumption, noise & vibration level of all operating pumps in parallel. The capacity of pumps while operating in parallel will be verified by indication in tank level difference.
- b. Noise level for safety valve to be limited to 105 dBa
- c. Entire piping & support for smooth operation
- d. Demonstration of smooth operation of Fuel Oil Unloading & Storage System with all equipment, instruments, control panel in place.
- e. Steam tracing to demonstrate oil inlet temperature to HFO storage tanks 10 to 15 deg above pour point temperature of oil available at the time of performance testing.
- f. HFO Storage tank maintenance temperature at two places 180 °C apart as per system description.

1.4.0 FOLLOWING ADDITIONAL SHALL BE TAKEN CARE LAYOUT REQUIREMENTS



(ANNEXURE-II)
FUEL OIL HANDLING SYSTEM
2X250 MW BARAUNI TPS

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- a) System layout shall conform to the requirements of the Petroleum Act 1934 & Petroleum Rules 2002, OISD 118 latest edition whichever is more stringent.
- b) All established engineering practices with regard to layout of various equipment & piping shall be followed and the same shall be subject to Customer approval during detail engineering without any commercial implication.
- c) Tentative Location of items related to Fuel Oil handling System is shown in enclosed PLOT PLANS. This will be finalized during detail engineering based on equipment dimensions and other layout related requirements. There will however be no cost implication on account of the same.
- d) Unloading header size & unloading pumps shall be selected suitably by the bidder to ensure that the depth of the pump house shall not go beyond 3.0 m in case of HFO rail tanker unloading and for road tanker unloading of LDO, LDO pumps will be located above ground. Further, while selecting pipe size, velocity inside the pipe shall not overshoot the velocity criteria indicated elsewhere in the specification.
- e) Layout shall be prepared in a way to avoid the buried piping to the maximum possible extent.
- f) To the extent possible, all valves shall be located at grade level for easy operation & maintenance. Where location at grade level is not possible, suitable operating and maintenance platform made of MS grating and access ladder/ staircase to the same shall be given by the bidder.
- g) Where pipes are routed in a manner that it hampers man movement in that area, suitable no. of cross overs made of MS gratings shall be given across such pipes to facilitate easy man movement in such areas. Further suitable access ladder of MS construction shall be given for access to equipment/ pipes located in pit/ trench.
- h) For all pedestal supported pipes, BHEL scope will be limited to pedestal with insert plates. Maximum height of pedestal to be provided by BHEL shall be 300 mm from FGL/FFL in the corresponding area. Structures required above these pedestals for supporting the pipes are included in the scope of the bidder. Pipe having BOP up to 2.0m from the grade level / FFL / FGL in the corresponding area shall be pedestal supported. However, inside the pump house no pedestals / insert plate shall be provided for fixing. Bidder shall support the pipes using pipe supports and anchor fasteners inside the pump house.
- i) Oily water collected in storage tank area, oil unloading area will normally be collected in OWS pit by gravity either through trench (limited to a depth of 0.5 m) or through buried pipe (limited to a depth of 1.0 m) . However, in case depth of pipe between the pit and OWS pit exceeds 1 m or gravity flow is not possible due to layout constraints (which can be reviewed during detail engineering), the oily water waste shall be collected by pumping to OWS pit. Necessary pumps, valves, pipes, pipe supports, and instruments etc. for the same shall be included by bidder in their scope.
- j) Rainwater collected inside the dyke shall be diverted to storm water drain while contaminated oily waste shall be sent to OWS. All valves required in pits outside the dyke are included in bidder's scope of supply.
- k) Instruments to be mounted on tank shall be suitably located so as to have easy access from the staircase without interfering with man movement on the staircase. Wherever this is not possible, suitable platform along with access to the same shall be provided by FO System bidder.
- l) Signals from all field instruments shall be first terminated in Junction boxes before transmitting this signal either to Control panel or to I/O rack or to DCS. Junction box is



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included in bidder's scope. Erection of cable between field instruments to Junction Box is also included in bidder's scope. Scope of cable supply shall be as per project specific scope split sheet.

1.5.0 FOLLOWING ADDITIONAL SHALL BE TAKEN CARE TECHNICAL REQUIREMENTS

- a) In case of anchoring of tanks, the no. of anchors shall be in multiple of 4 and shall straddle north south centreline.
- b) All the civil foundation shall be provided by BHEL based on input received from vendor. if any rework in civil foundation will happen due to wrong input cost debit of same shall be applicable to Bidder.
- c) Valves wherever required for isolation from process point of view and completeness of package shall be provided by the bidder without any commercial implication to the BHEL.
- d) Initial temperature and final temperature of oil in drain oil tank shall be considered as 12 deg. C and 50 deg. C for floor coil heater sizing. Heating time may be considered as 4 hrs.
- e) Valves for which fire safe test have not been carried out within last 5 years a on date of submission of bid by the bidder, the same has to be carried out by the bidder and certificate for the same shall be furnished to BHEL during detail engineering stage for acceptance for which no commercial implication shall be entertained by BHEL.
- f) 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.

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

Sub	No Deviation Certificate.	
Job	Design, engineering, manufacturing, supply/delivery, erection, commissioning, trial run, handing over to customer, etc of fuel oil unloading and storage system package for 2x 250 MW Barauni Extension Project at Begusarai, Bihar.	
Ref	1.0	Tender no PSER:SCT:BRM-M1413:12
	2.0	BHEL's NIT, vide reference no PSER:SCT:BRM-M1413:3052, dated 06-12-2012.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:BRM-M1413:TCN-01, dated 07-12-2012.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:BRM-M1413:TCN-02, dated 24-12-2012.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:BRM-M1413:TCN-03, dated 01-01-2013.
	6.0	All other pertinent issues till date.

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)