



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-20-May-20

CORRIGENDUM- 04

PROJECT	:	1x660 MW BHUSAWAL TPS UNIT 6
PACKAGE	:	FUEL OIL HANDLING AND STORAGE SYSTEM
ENQUIRY NO	:	PE/PG/BHU/E-6420/2020 Dated. 08.04.2020
SUBJECT	:	PRE- BID CLARIFICATION

Type of Corrigendum			
Technical Corrigendum -	☒	Commercial Corrigendum -	☐

In reference to the above mentioned tender enquiry for **FUEL OIL HANDLING AND STORAGE SYSTEM** package

Please note the following.

1. All bidders are requested to go through the attached pre bid clarification for their kind consideration.

All the other terms and conditions of the tender enquiry remain unchanged. All the bidders are requested to quote accordingly.

Yours faithfully,

For and on behalf of BHEL

Guru Das
Dy. Manager

PRE BID CLARIFICATION SCHEDULE				
Project:	1X660 MW BHUSAWAL TPP UNIT # 6			
Package:	FUEL OIL UNLOADING AND STORAGE SYSTEM			
Bidder:				
Sr.No.	Section/Clause/ Page No.	Statement of the referred clause	Clarification/ Confirm action required	BHEL Reply
A	Mechanical			
1	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Scope of works / Cl.1.1.0 / Page no. 14 of 659.	16.One Condensate Flask Tank near fuel oil dyke area of capacity 10.0m3 and one near FO pump house of 2.0 m3 each duly insulated and cladded.	Both referred clauses are contradicting each other regarding capacity of Condensate flash tank near FO dyke area. Please clarify.	One Condensate Flask Tank near fuel oil dyke area of capacity 6.0 m3 and one near FO pump house of 2.0 m3 capacity, each duly insulated and cladded are in bidder scope.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Cl.3.3.0 / Page no. 28 of 659.	The condensate from heating coil & suction heater shall be collected in condensate header and will be taken to condensate flask tank of 6 m3 capacity (in FO dyke area) and condensate flask tank of 2 m3 capacity (in FOPH area) which shall further be connected to oil-water separator pits.	Also provide the technical specification for condensate flash tanks like Preferred dimensions, MOC, Design parameters, accessories required & etc.	
2	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Cl. No. 3.1.0 / Page no. 26 of 659.	The tank shall be provided with steam floor coil heaters to initially raise the temperature of full tank capacity of HFO oil from 18-degree centigrade temperature to the handling / tank maintenance temp of 50 °C in 36 hrs and for compensating the heat loss from the insulated tank in order to maintain the temperature as 50°C.	Both referred clauses are contradicting regarding initial temperature of HFO to be considered for design of floor coil heater of HFO day tank. Please clarify.	Bidder to consider details mentioned at Section IA / System Writeup / Cl. No. 3.1.0 / Page no. 26 of 659.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Cl. No. 10 / Page no. 32 of 659.	10. FLOOR COIL HEATER OF HFO DAY TANKS Design capacity: To raise the temperature of full tank capacity of Heavy Fuel oil from 5 C to storage temperature of 50C in 36hours.		
3	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup /Page no. 31 of 659.	9 EQUIPMENT SELECTION & DESIGN CRITERIA/ DATA SHEET FO STORAGE AND DRAIN OIL TANKS Tank capacity (m3) - HFO day tank - 500; LDO day tank - 500; Drain oil tanks - 6 & 10.	We understood that given capacities of storage tanks are effective capacities which is a volume corresponding to levels between top of largest outlet & bottom of over flow nozzle. Please confirm.	Bidder's understanding is correct.
4	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 3.7 / Page no. 56 of 659.	Portable hand pumps of suitable design complete with suitable spout for removal of oil from the dyke area drain sumps shall be provided.	We understood that referred portable pumps will be supplied by BHEL. Hence we are not considering the same in our scope. Please confirm.	Bidder to follow technical specification. These pumps are in bidder's scope.
5	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 7.4 / Page no. 74 of 659.	In addition the requirement spelt out above, all instrument & controls as shown in drawing no. PE-189-PF-215 and as found necessary for safe and trouble free operation of system.	The referred drawing no. PE-189-PF-215 is not available in the specification. Please provide the same.	This drawing is not applicable. All applicable drawings are attached with the specification.
6	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / FUEL OIL CHARACTERISTICS / DATA SHEET - A / Page no. 76 of 659.	Relative density at 15 deg.C - 0.89	Density of HFO oil given in the referred datasheet is contradicting with the value given (0.95 gm/ml) in the datasheet given in pg.no. 30 of 659. Please clarify which is to be considered.	Bidder to follow value given at datasheet, pg.no. 30 of 659.
7	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Scope of works / Cl.1.1.0 / Page no. 13 of 659.	2) Two (2) nos (1W+1S) LDO twin screw Positive Displacement transfer pump with motor, each of capacity 125 m3/hr with simplex type strainers of matching capacity at the suction of each pump.	Both the referred clauses are contradicting each other regarding the capacity of LDO transfer pumps. Please clarify.	Capacity of LDO transfer pumps shall be as mentioned at Section IA / Scope of works / Cl.1.1.0 / Page no. 13 of 659.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 4.2.1 / Page no. 58 of 659.	LDO transfer pumps: a) Design flow capacity, each - Shall be minimum 200 Cu.m/hr.		
8	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 6.2.14 / Page no. 68 of 659.	Surface preparation and painting.	Referred clause calls for painting for internals of oil tanks shall be primer coat of double boiled linseed oil followed by finish coat of synthetic enamel. But synthetic enamel can not be applied on double boiled linseed oil. Hence please advise the alternate painting scheme to be followed for internals of the oil tanks. Also provide the painting scheme to be followed for insulated external surfaces of HFO day tank and HFO & steam/condensate piping.	Bidder to follow technical specification. During detailed engineering, separate document, painting schedule, shall be prepared by successful bidder in line with the intent of technical specification.

9	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 6.7 / Page no. 70 of 659.	Potable water: Potable water will be arranged from the plant domestic water system. Local PVC tank of 500lt shall be provided.	We presume potable water and service water distribution in the FO transfer pump house area as described in the referred clause shall be in BHEL scope. Please confirm.	Portable and service water distribution is not in bidder's scope.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Cl. 6.8 / Page no. 70 of 659.	Service water: Service water will be provided from the service water system. The service water will be provided at the following areas a) Fuel oil transfer pump house - ground floor - 2 nos. b) Fuel oil transfer pump house - out door - 1 no. c) Fuel oil storage area- Out door - 1no.		
10	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 44 of 659.	18. VELOCITIES FOR SELECTING PIPING	Velocity criteria for pipe sizing is given in the both the referred BHEL & Customer specications differently. Please clarify which is to be followed.	Velocity criteria for pipe sizing shall be as per Section IA, System Writeup, Clause no 18, Page no. 44 of 659.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Low pressure piping, valves & specialties / Cl. 4.1.1 / Page no. 201 of 659.	Line sizing		
11	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 43 of 659.	The valves shall be provided in the oil lines as per the following:- a) Size up to 200 NB: Ball valves b) Size 250 NB and up to 350 NB: Plug valve c) Size above 350 NB: Gate valve	Referred clause of customer specification is not calling for usage of plug valves in Fuel oil service. But BHEL specification calling for plug valves to be used in oil lines of size 250 NB and up to 350 NB.	Section IA, System Writeup, Clause no 17, Page no. 41 of 659 to be followed.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Low pressure piping, valves & specialties / Cl. 4.1.12 / Page no. 203 of 659.	Refer table for type valves to be used for different services.	As per customer specification, we shall consider ball valves for the oil lines of size up to 350NB . Please confirm.	
12	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 35 of 659.	13. STRAINERS FOR HFO/LDO UNLOADING PUMPS & DRAIN OIL PUMPS: Type of strainer - Simplex type	Both referred clauses are contradicting each other regarding the type of strainers to be used on fuel oil lines. Please clarify.	Strainers shall be simplex type as per Section IA, System Writeup, Clause no 13, Page no. 35 of 659.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Low pressure piping, valves & specialties / Cl. 4.5.2 / Page no. 207 of 659.	Strainer for fuel oil system: (a) There shall be Duplex strainers on the Fuel oil line.		
13	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 34 of 659.	12. TRANSFER PUMPS, DRAIN OIL PUMPS ,RECOVERY PUMPS & SUMP PUMPS: HFO & LDO Transfer pumps: Casing & casing liner: Carbon steel	Both referred BHEL & customer specification are contradicting each other regarding MOC of HFO/LDO Transfer pumps casing & casing liner MOC. Please clarify.	Casing and case liner for HFO and LDO transfer pumps shall be as per Section IA, System Writeup, Clause no 12, Page no. 34 of 659.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Page no. 82 of 659.	FUEL OIL TRANSFER PUMPS (DATASHEE-A): HFO & LDO Transfer pumps: Casing & casing liner: Cast Iron IS 210, Gr.FG.260		
14	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 41 & 42 of 659.	17. Valves Gate, Globe, Check & Ball valves: For sizes 50NB and below body material shall be to ASTM A-181 Gr. II.	Both referred clauses are contradicting each other regarding the body material of forged body valves (for sizes 50NB & below). Please clarify.	Shall be as per A105.
	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Low pressure piping, valves & specialties / Annexure III (Specification for valves) / Page no. 220 of 664.	(C) Steel body Gate/Globe/Check valves: 4.1 Body & Bonnet cover: A216 Gr.WCB for cast body (for sizes 50NB above) A105 for Forged body (for size 50NB & below)		
15	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 41 & 42 of 659.	17. Valves Gate, Globe, Check & Ball valves: For sizes 50NB and below Stem and disc material shall be to ASTM A182 F6a.	Both referred clauses are contradicting each other regarding the Stem and disc material of forged body valves (for sizes 50NB & below). Please clarify.	Bidder to follow page no 220 of 659.

	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Customer specification / Low pressure piping, valves & specialties / Annexure III (Specification for valves) / Page no. 220 of 659.	(C) Steel body Gate/Globe/Check valves: 4.2 Trim/Disc: A182 F6a heat treated and hardened (min. 250BHN) for cast body (for sizes 50NB above) A105 Hard faced with Stellite (min. 350 HB) for Forged body (for size 50NB & below)	Also in BHEL specification, Stem and disc material of cast body valves (for sizes above 50NB) to be considered is not given. Hence we consider the same as A182 F6a heat treated and hardened (min. 250BHN) which is given in customer specification.	
16	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 370 to 372 of 659.	Regarding P&IDs	In tender specification both customer & BHEL P&IDs are given for Fuel oil handling system. There are many discrepancies between them. Discrepancies are as follows 1. Pressure gauges are indicated in the upstream of HFO & LDO transfer pumps suction strainers in the drg. PE-189-PI-252, where as the same are not shown in the drg. PE-DG-415-166-T001/T002. 2. Temperature indicator is shown in the upstream of HFO transfer pumps suction strainers in the drg. PE-DG-415-166-T001, where as the same is not show in drg. PE-189-PI-252. 3. Level switch is shown in the upstream of HFO/LDO transfer pumps suction strainers at Existing tanks outlets in the drg. PE-DG-415-166-T001/T002, where as the same is not show in drg. PE-189-PI-252. 4. Only one pressure gauge is shown in common upstream line of HFO/LDO transfer pumps suction strainers in the drg. PE-189-PI-252, where as in the drg. PE-DG-415-166-T001/T002 one pressure gauges each are shown in the up streams of each HFO/LDO transfer pumps suction strainers. 5. Check valves are shown in the return lines of HFO/LDO transfer pumps at the inlets of the existing HFO/LDO tanks in the drg. PE-189-PI-252, where as the same are not shown in the drg. PE-DG-415-166-T001/T002. 6. Three nos external cage type Level switches are shown on the HFO/LDO day tanks in the drg. PE-189-PI-252, where as the same are not shown in the drg. PE-DG-415-166-T001/T002. 7. Only one LT is shown on the HFO/LDO day tanks in the drg. PE-189-PI-252, where as in the drg. PE-DG-415-166-T001/T002 two nos LTs are shown on HFO/LDO day tanks. 8. Two return lines are being shown as connected to the HFO/LDO day tanks in the drg. PE-189-PI-252, where as in the drg. PE-DG-415-166-T001/T002 only single return line shown as being connected to HFO/LDO day tanks. 9. Two level switches are being shown on the DOT to be installed at FO day tank area in the drg. PE-189-PI-252, where as in the drg. PE-DG-415-166-T001 Only one LS being shown.	Instruments shown in each drawing shall be provided by bidder. Apart from this instruments redundancy requirements shall also be meet by bidder. Separate drawing by successful bidder shall be prepared showing all these instruments during detail engineering.
17	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-F-Mandatory spares list / Page no. 377 of 659.	4. Drain oil pump - a) to g)	We understood that spare quantities given for drain oil pumps shall be the quantities of spares required for each type & rating of drain oil pump. Please confirm.	Confirmed.
18	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-F-Mandatory spares list / Page no. 378 of 659.	11. Pump screw - 1 lot (Ten(10) each type whichever is applicable)	Description of spare " Pump screw" is not clear. Clarify what to be consider for this item. Also check and confirm quantity required.	Bidder to follow technical specification.
19	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-F-Mandatory spares list / Page no. 378 of 659.	S.No. 14 to 17	We understood that spare quantities indicated for items of referred s.no. shall be for each type & rating. Please confirm.	Bidder's understanding is correct.
20	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-F-Mandatory spares list / Page no. 378 of 659.	S.No. 18 Flame arrestor - Two(2)	We understood that two nos means one each of sizes required for HFO & LDO day oil tanks. Please confirm.	Two (2) numbers means two for each type and size.
21	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-F-Mandatory spares list / Page no. 378 of 659.	S.No. 23 Thermodynamic traps - 5 Nos S.No. 24 Inverted Bucket type traps - 2 Nos	Spares for steam traps already given under sl.no.2. Hence we are not considering these spares given under sl.no.23 & 24. Please confirm.	For these mandatory spares, bidder to consider quantities mentioned at both location.
22	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 371 & 372 of 659.	Refer P&ID for HFO/LDO transfer & storage system	Provide the sizes of HFO & LDO return lines from P/H pump house and LDO pressurizing pumps supply line from LDO day tank.	LDO pressurizing pumps supply line from LDO day tank shall be 150 Nb and return line shall be 80 Nb. For HFO same shall be 300 and 150 respectively.

23	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / System Writeup / Page no. 32 of 659.	10. FLOOR COIL HEATER OF HFO DAY TANKS	Please provide the size and thickness of the pipe to be used for floor coil heater of HFO day tank.	Bidder to follow technical specification.
24	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Terminal points / Cl. 4.0.0 / Page no. 16 & 17 of 659.	LDO & HFO: Near FO transfer pump house area: Existing LDO/HFO tank for LDO/HFO unloading / transfer Pump suction and recirculation.	In the referred clause terminal points for HFO/LDO lines near FO transfer pump house area is given as Existing HFO/LDO tank. Where as in P&ID for FO system, outlet & recirculation valves near existing HFO/LDO storage tanks are shown as in the customer scope. Please clarify whether those valves shall be in the bidder scope or customer scope.	These valves are in bidder's scope.
25	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Terminal points / Cl. 4.0.0 / Page no. 18 of 659.	Isolation valves at the terminal points shall be in the scope of the bidder.	In the P&IDs for HFO/LDO transfer & storage system, no valves are indicated for pressurizing pumps common supply line & return line at terminal points which is contradicting with the requirement specified in the referred clause. Please clarify whether valves shall be consider at terminal points or not.	These valves are in bidder's scope.
26	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Terminal points / Cl. 4.0.0 / Page no. 16 of 659.	Terminal points	Please provide the terminal points for instrument air, spray water for PRDS. Also provide the pressure and temperature of spray water at terminal point.	Instrument air and spray water for PRDS shall be provided to bidder at approximately 10..0m from Fuel oil dyke area.
27	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Terminal points / Cl. 4.0.0 / Page no. 17 of 659.	Terminal points Condensate : Condensate from condensate flash tanks in FOPH area shall be terminated at existing oil water separator.	Terminal point for condensate from the flash tank in FO day tank area is not given. We Hence we consider that same to be terminated to OWS of FO day tank area through pipe line by gravity. Please confirm.	Bidder to follow technical specification. Refer plot plan, page 369 of 659, existing oil water separator pit is located at coordinate (1200E, 950N).
28	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 371 of 659.	Refer P&ID for HFO transfer & storage system	Please provide the specification for displacer type level switch which are being used in DOTs, sump in FO transfer pump house and OWS oil & water pits. We understood that only low level switch is required for tripping of transfer pumps in DOTs and sump pits, high level switch/alarm is not required. Please confirm.	Bidder to follow technical specification.
29	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 371 & 372 of 659.	Refer P&ID for HFO/LDO transfer & storage system	In the P&ID for HFO transfer & storage system common DPS is indicated across the two simplex strainers, where as in P&ID for LDO transfer & storage system DPT is indicated. Please check and confirm.	Bidder to consider both.

30	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 371 & 372 of 659.	Refer P&ID for HFO/LDO transfer & storage system	In the common discharge of HFO/LDO transfer pumps, recirculation line is indicated. This line should have either PRV or Manual valve. Please check and clarify the requirement.	Additional valves, instruments, etc as per system point of view, if required, shall be in bidder's scope.
31	SPECIFICATION NO. PE-TS-415-166-A001 / Section IA / Annexure-E- INPUT DRAWINGS & DOCUMENTS/ Page no. 371 & 372 of 659.	Refer P&ID for HFO/LDO transfer & storage system	In the referred P&IDs LS is indicated in the suction line of HFO/LDO transfer pumps, where as in customer P&IDs LS is not indicated. Also note that LS can not be installed on pipe lines directly which can only be installed on tanks. As per customer P&ID, it is understood that level switches are already available on existing storage tanks which can be used for tripping of transfer pumps when the level in the tanks is low. Please confirm.	Bidder to consider these LS in its scope in line with technical specification.
B	Electrical, Control & Instrumentation:			
1	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION I-A (SPECIFIC TECHNICAL EQUIREMENT-MECHANICAL)/ Cl. No.15/Page No. 14 of 659 SPECIFICATION NO. PE-TS-415-166-A001 / Volume IIIA, Fuel Oil Handling System./ Page No. 52 of 659 SPECIFICATION NO. PE-TS-415-166-A001 / Flow diagram for HFO Transfer & Storage system , Drg. No. PE-DG-415-166-T001, Rev.00, Sht. 01 of 01/ Page No. 371 of 659.	15) Complete steam tracing , Insulation and cladding material along with all accessories for HFO tank, HFO lines, pumps, strainers, etc. 2.11 Electrical System A complete electrical system consisting of all the required electrical equipment, XLPE cables for hoists, crane, pumps & auxiliary loads like lighting panels, Electrical heat tracing panels, control panel, heat tracers etc. shall be provided. LEGEND: ----- Electrical traced HFO Pipe	Both referred clauses are contradicting about type of heat Tracing. Please clarify whether the type of heat tracing is steam or electrical . Incase it is electrical please provide the following: 1. Maintenance temperature 2. Type of Electrical heat tracer 3. Specifications of electrical heat tracing system	Only steam tracing is applicable.
2	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION I-A (SPECIFIC TECHNICAL EQUIREMENT-MECHANICAL)/ Page No. 16 of 659	2.0.0 EXCLUSION: f) Exclusion as indicated in Electrical & C&I portion of technical specification	We have not found any specific exclusions for Electrical & C&I portion. However we are considering scope as per "ELECTRICAL SCOPE BETWEEN BHEL AND VENDOR" only. Please confirm.	Bidder to follow technical specification.
3	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION I-A (SPECIFIC TECHNICAL EQUIREMENT-MECHANICAL)/ Page No. 27 of 659	4.1. The control of Fuel oil transfer, storage, heating system shall be DCS based. One no. DCS based panel shall be located at control room of FO transferring pump house for operation and monitoring of this system. One Remote I/O panel, if required, will also be provided near FO dyke area for operation of pumps and instruments located in and near FO dyke area. This DCS based panel shall be provided by BHEL. However, one Local panel for alarm and annunciation shall be provided by bidder . The LCP shall have all necessary switched, push buttons, indicators, etc. to achieve the functions mentioned below.	(a) We understood from the referred clause we have to provide one relay based local control panel with required annunciations. (b) Remote I/O panel, PLC panel & DCS is in purchaser's scope. (c) Also please clarify/confirm integration with LCP to DCS/PLC is in bidder scope or by BHEL.	(a) and (b): - Bidder's understanding is correct. ©: - Integration is in bidder's scope.
4	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION IA, ANNEXURE F, LIST OF MANDATORY SPARES/ Page No. 379 of 659	28) CONDUCTIVITY TYPE LEVEL MONITORING SYSTEM	Requirement of Conductivity type level monitoring system in this Fuel oil system project is not clear. Please clarify	Bidder to follow technical specification.
5	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION IA, ANNEXURE F, LIST OF MANDATORY SPARES/ Page No. 382 of 659 SPECIFICATION NO. PE-TS-415-166-A001 / SECTION C, Technical Specification for Fuel Oil System (Electrical Portion)/ Page No. 387 of 659	31) Instrumentation Cable, Internal wiring and electrical field Electrical Scope Between BHEL and Vendor (for EPC Projects) SI.No. 3	From the referred clauses scope of supply of cables are by purchaser. Hence Instrumentation cables given in the mandatory spares are not applicable. Please confirm.	Cable scope shall be as per Electrical Scope Between BHEL and Vendor attached with electrical portion of specification.

6	SPECIFICATION NO. PE-TS-415-166-A001 / Flow diagrams for HFO, LDO and Steam & condensate systems/ Page No. 371 to 373 of 659.	Refer P&ID for HFO/LDO transfer & storage system	In the P&ID for HFO transfer & storage system common DPS is indicated across the two simplex strainers, where as in P&ID for LDO transfer & storage system DPT is indicated. Please check and confirm.	Bidder to consider both.
7	SPECIFICATION NO. PE-TS-415-166-A001 / Flow diagrams for HFO, LDO and Steam & condensate systems/ Page No. 371 to 373 of 659.	Refer P&ID for HFO transfer & storage system	Please provide the specification for displacer type level switch which are being used in DOTs, sump in FO transfer pump house and OWS oil & water pits. We understood that only low level switch is required for tripping of transfer pumps in DOTs and sump pits, high level switch/alarm is not required. Please confirm.	Bidder to follow technical specification.
8	SPECIFICATION NO. PE-TS-415-166-A001 / Flow diagrams for HFO, LDO and Steam & condensate systems/ Page No. 371 to 373 of 659.	Primary sensor redundancy for control/measurements shall be based on following criteria. (A) Critical control and respective measurements - Triple redundancy (B) Non critical but important control and respective measurements - Dual redundancy (C) Only measurement - No redundancy	Please provide the list of instruments to be considered as triple redundancy, dual redundancy & no redundancy. Or kindly provide revised PID duly indicating the required instruments as per referred redundancy clause. Also please note Critical control, non critical control and only measurement are not defined any where in the tender specifications. Please elaborate.	Bidder to consider following: 1) Critical control - instruments required for pump protection and permissive. 2) Non Critical control - instruments required for control, other than pump.
9	SPECIFICATION NO. PE-TS-415-166-A001 / SECTION IC, Technical Specification for Fuel Oil Unloading and Storage System (C&I Portion)/ Page No. 435 of 659	Specific Technical Requirements (C&I): 1) The control of Fuel Oil Handling System shall be DCS based. The operation and control philosophy of Fuel Oil handling system shall be as per design memorandum given elsewhere in the specification. Bidder to provide Local Control Panel for Fuel Oil Unloading System. The pumps, motorized valves, control valves etc. shall be operated from Lamp /Pushbuttons, selector switches etc. located on the Local Control panel. Integral type hardware annunciation system shall be provided at the top of the panel for alarm monitoring. Bidder to provide FO tank, Drain oil tank, OWS, Sump etc. level indication and FO storage tank temperature and drain oil tanks temperature indications on the Local Control Panel. Three nos. laptop units loaded with software shall be provided by the bidder.	As per given specification it was understood that FOHS is controlled by DCS which is in purchaser. We have to provide a Local control Panel with annunciation for fuel oil unloading system. Please confirm. Also as per referred clause 3Nos of laptops loaded with software to be provided by bidder. As DCS is in purchaser's scope laptops with required software will be by purchaser, we will provide a local control panel. Please confirm.	FOHS control is DCS based and one no. Local Control Panel along with lamp indication,annunciation ,selector switches etc.shall be provided by bidder. Three number laptops are with PLC. As this system is DCS based and DCS is not in bidder's scope. Hence laptops are not in bidder's scope.
10	General	--	Client specification and BHEL specification are having so many contradictions about scope of E, C&I requirements. However we are considering as per BHEL specifications and scope only. Please confirm.	Bidder to follow technical specification.