BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-23-Jul-20

CORRIGENDUM- 01

PROJECT	**:**	5x800 MW YADADRI TPS
PACKAGE	**:**	**FUEL OIL HANDLING AND STORAGE SYSTEM**
ENQUIRY NO	**:**	PE/PG/YAD/E-6463/2020 **Dated. 02.07.2020**
SUBJECT	**:**	**PRE-BID CLARIFICATION + DUE DATE EXTENSION**

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.
2. Due date for offer submission has been extended up to 03/08/2020 (11:00 AM) and P1 shall be opened on same day at 1:30 pm.

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

Digitally signed by GURU DAS
DN: cn=GURU DAS, o=BHEL, ou=PEM, email=gurudas@bhel.in, c=IN
Date: 2020.07.23 12:10:45 +05'30'

Guru Das
Manager

PRE BID CLARIFICATION SCHEDULE				
Project:	**5 x 800MW YADADRI TPP**			
Package:	**FUEL OIL UNLOADING AND STORAGE SYSTEM**			
Sr.No.	**Section/Clause/ Page No.**	**Statement of the referred clause**	**Clarification/ Confirm action required**	**BHEL reply**
A	**Mechanical**			
1	SECTION-IA, Scope of supply, cl.1.1.0 - 22, Page 13 of 429.	Complete steam tracing, Insulation and cladding material along with all accessories for HFO tanks, **HFO lines,** pumps, strainers etc.	From the referred clauses we understood that pipe required for steam tracing is also free issued by BHEL. Please confirm.	Confirmed
	SECTION-IA, Scope of supply, cl.1.1.0 - 25, Page 13 of 429.	Pipes will be free issued to bidder. However complete Pipe fitting, valves, flanges, counter flanges, traps, fasteners, gaskets with suitable hangers, supports, pipe trestle within		
2	SECTION-IA, System writeup, cl.1.1.2, Page 25 of 429.	HFO shall be also delivered to power station by five (5) nos. road tankers having capacity of approx. 20 cum per Tanker (Road tanker located near Tank farm area). The road tankers shall be unloaded through flexible metallic / neoprene unloading hoses of min. 8.0m length with fire safe type ball valve for isolation and a hose stand for each unloading hose. The HFO unloading header will have 5 Nos. unloading points.	1)As per specification, HFO road tanker unloading facility shall be designed for unloading of 5nos takers through the 3nos (2W+1S) 50m3/hr pumps. In that case, flow through the each road tanker unloading pipe (80NB) will be high. Corresponding velocity shall be around 1.1m/s. Hence its advised to unload 10 nos of tankers instead of 5nos. Please check & confirm. 2)From the referred P&ID for steam & condensate system for FOHS, we understood that HFO brought in the road tankers shall be heated prior to unloading of the same. In order to estimate the steam consumption for heating of HFO in the road tankers, please provide the initial & final temperatures of HFO and time required for heating of HFO.	1) Bidder to follow technical specification. 2) Bidder to consider the initial and final temp. of HFO shall be considered as 16 Deg.C and 50 Deg.C respectively.
	SECTION-IA, System writeup, cl.1.1.3, Page 25 of 429.	HFO from unloading header shall be pumped to HFO storage tank with the help of Three (3) Nos (2W+1S) unloading pumps as indicated in the HFO Unloading and Storage system flow diagram.		
	P&ID for HFO & steam Systems Dwg No: PE-DG-417-166-A001 (3 & 4 sheets), page 217 & 218 of 429.	HFO Road tanker unloading system.		
3	SECTION: I-A, CUSTOMER SPECIFICATIONS, Page 36 of 429.	5.01.01. The unloading capacity shall be suitable to unload at a time a maximum of 50 nos BTPN wagons for each of HFO & LDO/HSD system. 5.01.02. Buffer to buffer dimension of HFO & LDO/HSD wagon is 12.42m. Therfore a net railway track length of minimum 665 metres paved with RCC shall be provided for oil unloading and shall be used unloading of HFO and LDO/HSD.	As per referred clauses of customer specification, we understood that provision shall be made for unloading of both HFO & LDO oils from railway wagons. But in the BHEL specification & P&IDs, wagon unloading facility is considered for unloading of HFO only. Please clarify.	Please note that LDO unloading through Railway wagons is not in bidder scope. Space provisions has been made for Railway LDO unloading for future use by TSGENCO. while preparing piping layout, space for LDO unloading through railway shall be indicated in drawing.
4	SECTION: I-A, CUSTOMER SPECIFICATIONS, Page 39 of 429.	6.02.00 HFO & LDO/HSD storage tanks The tanks shall be constructed to IS 803 and API 650 as applicable. The oil tanks shall be vertical cylindrical type, installed outdoors; site fabrucated and welded construction type with but welded bottom plate.	Referred clause calls for HFO & LDO storage bottom plates shall be of butt welded type. However we consider lap joints for bottom plates which are acceptable as per IS 803 and API 650. Please confirm.	Bidder to consider as per Design code IS 803/ API 650.
5	TECHNICAL SPECIFICATION FOR PRESSURE AND STORAGE VESSELS, Page 81 of 429.	3.16.00 wall thickness of each of atmpspheric tanks shall not be less than 6mm. If higher thickness for any atmospheric storage tank is specified elsewhere in this specification, the same shall be provided.	Both the referred clauses are contradicting each other regarding the minimum thickness of atmospheric storage tanks. Please clarify. Also note that top shell courses thickness are considered as 6mm in the GA drawings of HFO & LDO storage tanks.	For shell and bottom thickness of tank, Minimum thickness is specified in GA drawing of tanks (refer technical spec. page no. 219 & 220 of 429) .The final thickness (over and above the thickness specified) shall be decided during detail engineering.
	TECHNICAL SPECIFICATION FOR MISCELLANEOUS TANKS (STANDARD TANK SPECIFICATION), Page 392 of 429.	3.2.6 Each shell course shall be of uniform width throughout longitudinal weld in plates. Make up for the course width shall not be permitted. Shell plates in each course width shall be so arranged that all vertical joints be staggered having a minimum of 600 mm stagger. Shell thickness could be reduced in upper courses depending on design requirements but in no case the plate thickness shall be less than 8 mm.		
6	ANNEXURE - E (INPUT DRAWINGS & DOCUMENTS OF TENDER), Page 223 of 429.	Refer sketch 2.	Location & equipment layout of FO storage area given in the referred sketch are not matching with the plot plan (PE-DG-417-100-M001). Please advise which is to be followed.	Bidder to follow plot plan (PE-DG-417-100-M001) for the location of the buildings and facilities.
7	ANNEXURE - F MANDATORY SPARES LIST), Page 225 of 429.	1.1 Suction heater gaskets 1.1.1 For LDO/HFO Tanks - 8 sets 1.2 Suction Heater Nuts and Bolts 1.2.1 For LDO/HFO Tanks - 2 Lot 1.10 Suction Heater Heating Element - 2No.	Please clarify, referred spare qty shall be considered for each suction heater or for each type/capacity of suction heater.	Referred spare qty shall be considered for each type/capacity of suction heater.
8	ANNEXURE - F MANDATORY SPARES LIST), Page 225 of 429.	1.12 Thermodynamic traps - 10Nos 1.13 Inverted Bucket type traps - 4 Nos	In the FO system, there will be a requirement of two or more sizes of traps. Hence please specify the size of traps to be considered for spares.	The size & no. of the traps shall be inline with the design requirements submitted by the bidder and approved by the customer during details engineering
9	Volume IV, SECTION-VII, SUB SECTION-B, CONTROL VALVES, Page 307 of 429.	2.04.00 Control valves shall be located near floor or platform fir ease of access and with adequate clearances for maintenance and lay down and shall be placed as station with upstream motorized isolating valve, down stream motorized isolating, inching duty motorized bypass valve and manual drain valves.	Referred clause of customer specification calls for motorized valves in the downstream and upstream of control valves, where as in the steam and condensate P&ID, manual valves are shown in the down stream & upstream of control valves of HFO tanks Floor coil heater, suction hearter steam supply lines and control valves of PRDS. Please clarify.	Bidder to follow details in the P&ID for the same.
10	SECTION-IA, Customer specification, Section - IIIB, Annexure - III, Pipes, fittings & valves, clause no.4-d, Page 52 of 429.	Hoses for Steam/Condensate Lines - Refer Section - I of Vol - IID	Customer specification asks to refer section I of vol IID for steam and condensate line hoses. We have not found the same. However we are considering steam and condensate hoses as per referred BHEL specification section - IIA. Please confirm.	BHEL Noted.
	Section- IIA, I. DATA SHEET FOR STEAM/CONDENSATE HOSES, page 385 of 429.	Refer datasheet		
11	SECTION-IA, Customer specification, V.IIB/S 3A, Strainers, cl. no.6.02.03, Page 59 of 429.	d) The strainer shall have screen of **stainless steel (AISI-316)** construction with wire diameter of about 0.01inch and open area of about 50% e) Strainer body shall be made of **cast steel.** No cast Iron component shall be used in F.O. system.	Both the referred clauses are contradicting each other regarding the MOC of LDO/HFO unloading strainer body & screen. However we consider the MOC of strainer body & screen as per BHEL specification given in **Section- IIA, page 385 of 422**. Please confirm.	BHEL Noted.
	Section- IIA, D. Stariners for LDO/HFO Unloading pumps , page 382 of 429.	Material of construction: Body - **Fabricated from IS 2062/ Seamless pipe to ASTM A 106** Screen Basket - **SS304**		
12	Customer specification, Section - IIIB, Annexure - III, Pipes, fittings & valves, clause no.4-e to i, Page 52 & 53 of 429.	------	In the referred clauses, type of end connection for valves is not given. Hence we consider valve end connections as socket welded for 50NB and below sizes and Flanged ends for above 50NB. Please confirm.	BHEL Noted.
13	P&ID for steam & Condensate Systems Dwg No: PE-DG-417-166-A001 (sheet 4 of 4), page 218 of 429.	Level indicator for flash tank.	In the referred P&ID Float and board type indicator is indicated for level measurement in the flash tank. But the same is not recommended for flash steam service. Hence we want to consider side mounted level gauge of suitable type. Please confirm or advise on type & technical specification of level indicator to be considered.	Level Indicator suitable for the application need to be considered and provided.

14	P&ID for HFO Systems Dwg No: PE-DG-417-166-A001 (sheet 3 of 4), page 217of 429.	------	In the referred P&ID, two tappings of 300NB size are taken from HFO wagon unloading pumps discharge header and gets combined into 450NB line. We understood that these 300NB discharge lines will get combined at outside the tank farm area. Please confirm.	BHEL Noted.
15	GA & Nozzle orientation drawing of HFO storage tank, Dwg No: PE-DG-417-166-A002 (sheet 01 of 02), page 219 of 429.	Outlet Nozzles N2, N5	In the referred drawing, HFO tank out let nozzles size is given as 450NB, where as in the HFO P&ID the same is indicated as 400NB. Both are contradicting, please clarify.	Outlet nozzle size for suction heater is 400 NB. Inlet nozzle size for suction heater is 450 NB or as per manufacturer recommendation.
16	Drawing no. PE-DG-417-166-A001, Rev 0; Process & instrumentation diagram for HFO system	water pit - **pump and pipe** under ETP scope	From the referred clause we understood that pumps, pipes, instruments and valves coming in water pit is in the ETP scope of supply. Please confirm.	BHEL Noted.
	SECTION-IA, System description, Page 27 of 429.	Separated water from the oil water separator water pit shall be taken to CMB as per ETP philosophy. **Pumps, instruments** required for it are in ETP supplier scope.		
17	SECTION-IA, System description, cl.1.1.7, Page 25 of 422.	Initial and final temperature for suction heater shall be **50 deg. C and 60 deg. C** respectively. However, suction heater will be designed for a temperature rise of **20 deg. C.**	Both BHEL and customer specification is contradicting each other regarding suction heater initial and final temperature. Please clarify the temperatures to be considered.	Initial and final temperature for suction heater shall be 50 deg. C and 60 deg. C respectively. However, suction heater will be designed for a temperature rise of 20 deg. C. Further,Initial temperature of oil shall be 50 ± 5°C & final temperature of oil shall be 60 ± 5°C. Bidder to comply
	Customer specification, Section - IIIB, HFO TANK HEATERS - DESIGN PARAMETERS, clause no. 2, Page 47 of 429.	SUCTION HEATER IN HFO STORAGE & DAY TANKS Initial temperature of oil : 50 ± 5°C Final temperature of oil : 60 ± 5°C		
18	SECTION-IA, System description, cl.1.3.3, Page 26 of 429.	A condensate flash tank shall be provided by BHEL-Piping Center in the tank farm for collecting condensate from tank (floor coil heater and Suction heater) before discharging it to Oil Water Separator pit.	From the referred clause we presume that instruments and valves coming on Condensate flash tank is also in the BHEL scope of supply. Please confirm.	Bidder understanding is correct
19	Customer specification, Section - IIIB, Annexure - III, Data sheet for fuel oil unloading pumps, clause no.15.6, 15.7, Page 49 of 429	HFO and LDO unloading pumps : 15.6)Suction & discharge pressure gauge connection 15.7) Suction temperature gauge connection	In the referred P&IDs pressure gauge is given in HFO and LDO UL pump common suction line and in each pump discharge sub headers. From the referred clause Please clarify whether PG to be considered in each UL pump suction and discharge sub header or as per P&ID. As per the referred clause, in LDO P&ID Temperature gauge is not shown in the UL pump suction. Please clarify whether we have to consider or not.	Bidder to follow the P&ID.
	Drawing no. PE-DG-417-166-A001, Rev 0; sheet 2 of 3, sheet 4 of 3 Process & instrumentation diagram for LDO and HFO system, Page 216 & 217 of 429.	Pressure and temperature gauges		
20	Customer specification, Section - IIIB, Annexure - III, Pipes, fittings & valves, clause no.4a, Page 51 of 429.	Fuel Oil Pipe Lines : API 5 L Gr. B or ASTM 106 Gr. B Butt welded ends of pipe sizes 65 mm NB and above as per ANSI B 16.25 and socket welded ends for lower sizes as per ANSI B 16.11.	In the customer specification, whether API 5L is an ERW or SMLS is not given and even thickness to be considered is also not given. However in the BHEL specification API 5L construction is given as ERW and thickness is also given. Please confirm whether we can consider BHEL given pipe MOC and thickness.	Refer GA Drawing for MOC of pipe
	Section- IIA, E. PIPES, FITTINGS & FLANGES , page 383of 422.	2) Pipe in oil lines shall be API 5L Gr. B (ERW). Minimum thickness as follows: ------		
21	Customer specification, Section - IIIB, Annexure - III, Pipes, fittings & valves, clause no.4b, Page 52 of 429.	b) Steam/Condensate Pipe - Refer Section - I of Vol - IID	Customer specification asks to refer section I of vol IID for steam and condensate pipe. We have not found the same. However we are considering steam and condensate pipe material and thickness as per referred BHEL specification section - IIA. Please confirm. As per P&ID, minimum thickness of Pipes used for Steam & Condensate shall be Sch.std/40. But for sizes above 250NB, pipe thicknesses are different for sch.std and sch.40. Hence we consider thickness as sch.40 for pipes of sizes above 250NB as given in BHEL specification section - IIA. Please confirm.	Refer GA Drawing for MOC of pipe
	Section- IIA, E. PIPES, FITTINGS & FLANGES , page 383 of 429.	3) Steam and Condensate line shall conform to ASTM 106 GR. B, Schedule 40.		
	P&ID Legend, Dwg No: PE-DG-417-166-A001 (sheet 1 of 4), page 215 of 429.	Steam Line: ASTM 106 Gr.B, STD/40 SCH.		
22	Customer specification, Section - IIIB, clause no. 6.02.16, Page 43 of 429	Primer for **internal surface** shall be double boiled Linseed oil and that for external shall be synthetic red lead. Finish coat for both **internal and external** surface shall be of synthetic enamel. For bottom surface protection, one coat of bituminastic paint shall be applied.	Painting specification given in the referred three (3) clauses are contradicting each other. However we follow painting specification as per painting schedule given in page 240 of 422. Please confirm.	Bidder to follow tender specification.
	Annexure - G : Painting specification, clause no. 4.03.02Page 232 of 429	Specification for application of paints for **external surfaces** protection of vessels / **tanks** / equipment / **piping** / fittings / valves etc to be installed outdoor shall be as follows :		
	Painting schedule, Page 240 of 429	-----		
23	Customer specification, Section - IIIB, Annexure - I, Page 47 of 429	2. SUCTION HEATER IN HFO STORAGE & DAY TANKS ii) Shell head and tube sheets : Steel plates of IS-2002 Grade 2A	Due to non availability of IS -2002 Grade 2A material in the market, we are considering IS 2062 Gr. B material for shell heads and tube sheets and body of condensate flash tank. Please confirm.	In case of non-availability of IS -2002 Grade 2A material in the market, Bidder to consider material SA 516 Gr70
	Section- IIA, Condensate Flash tank datasheet , page 387 of 422.	Material of construction - Plates : IS 2062 Gr.A		
24	Customer specification, Section - IIIB, Annexure - III, Velocity criteria, Page 51 of 429.	For pipe sizing velocity of fluid in various pipe lines shall be considered as follows unless otherwise stated in the specification :	Both velocity criteria and pipe sizes (in the P&ID's) are given in the specification. Please clarify whether pipe sizes shall be considered as per P&ID's or as per the velocity criteria in case of conflict.	The pipe sizes indicated in the P&ID are the minimum requirement.
25	SECTION-IA, Terminal points, Page 16 of 429	Terminal points	Terminal points for PRDS Spray water, Instrument air & Service water is not given in the referred clause. Please provide the same.	Terminal Point for Steam, Spray Water and IA shall be 5.0m from combined fuel oil pump house (Unloading Road tanker cum Pressurising pump house). Bidder to note that Service water is not in bidder scope
26	General		Please clarify the function of small capacity (25m3/hr) HFO unloading pumps considered in the wagon unloading system and confirm whether these pumps runs or not while main pumps are running.	These pumps will generally be used for initiating flow at the start and at the end when very small amount of oil is available in the header. However, these small pumps might run parallel with the main pumps. Bidder to design system accordingly.
B	**Electrical, Control & Instrumentation**			
27	2.0.0 EXCLUSION; Page 20 of 429.	f) **Exclusion** as indicated in **Electrical & C&I portion** of technical specification	We have not find any exclusions relevant to electrical and C&I scope in respective specifications. Please provide.	Please refer specification. Exclusion wherever applicable are mentioned specifically .
28	VOLUME : IID, SECTION-II, THERMAL INSULATION, Page 73 of 429.	3.01.00 Thermal insulating Materials - preformed bonded mineral wool sections, bonded mineral wool mattresses, loose mineral wool and lightly resin bonded glass wool shall be provided.	Particular type of material (preformed sections or LRB Mattresses) to be considered for Thermal Insulation is not given in the referred specifications. Hence we are considering LRB mattresses with 100Kg/M3 density. Please confirm.	Bidder to follow technical specification.
		4.00.00 MATERIAL SPECIFICATIONS 4.01.00 The insulating materials to be supplied under this specification shall be lightly resin bonded mineral wool of best grade conforming to IS:8183. Hand made mattresses is not acceptable. Material shall be rock wool only. Slag wool or slag wool inclusion shall not be accepted.		

29	Process & Instrumentation Diagram for LDO, HFO & steam Systems Dwg No: PE-DG-417-166-A001 (4 sheets), page 221 to 222 of 429	TE- TEMPERATURE ELEMENT	In the referred P&ID only TE indicated on the pipe lines and Tanks. We understood that we have to provide TE with TT instead of only TE. Please confirm.	TTs are not applicable.
30	P&ID for steam & Condensate Systems Dwg No: PE-DG-417-166-A001 (sheet 4 of 4), page 222 of 429	Level indicator for flash tank.	In the referred P&ID Float and board type indicator is indicated for level measurement in the flash tank. But the same in not recommended for flash steam service. Hence we want to consider side mounted level gauge of suitable type. Please confirm or advise on type & technical specification of level indicator to be considered.	Level Indicator suitable for the application need to be considered and provided.
31	SECTION-IA, Annexure-F - Mandatory spares, Page 229 of 429	3.1.1.1 Transmitters/ Gauges/Switches etc. along with relevant accessories - **20% of total or at least four** (whichever is higher) for each type along with accessories. 3.1.1.2. Temperature Element (RTD/Thermo-couple) with thermowell - **20% of each type , range and immersion length . Minimum 10 nos.** **3.2.1.5.** I/P Converters (If any) **20% of total quantity or minimum 30 nos.**	From the referred BOQ, spares are asked for 20% of total or at least four or min. 10Nos or 30Nos (whichever is higher) for each type along with accessories for instruments. Please note some of instruments actual requirement may less than min. spares you asked. In that case the mandatory spares cost goes high. Hence we will provide 20% of each type & range on actual quantity arrived as spares. Please confirm.	Mandatory Spares as per the list needs to be considered and provided.
32	SECTION-IA, Annexure-F - Mandatory spares, Page 229 of 429.	CONTROL AND INSTRUMENTATION ITEMS : 3.1.2) HFO/LFO Oil meter: i) Sensor - 2 nos. each for each type, model & range	We understood that sensor in mass flow meter is nothing but U tube (flow meter without transmitter), which costs very high (almost equal to flow meter cost). Please check and confirm whether you require a sensor or only transmitter as a spare. Also please note as per project requirement there is 1No of flow meter for each HFO/LDO systems. Whereas in the referred Mandatory spares Oil meter sensors asked for 2Nos of each for each type, model & range. Spares quantity is more than actual quantity. Hence request you to check the spare quantity and confirm.	Bidder to follow technical specification.
33	INSTRUMENTATION DATA SHEET, Page 317 to 318 of 429.	1.01.00 PRESSURE TRANSMITTER: 17. Sealing/Isolation : Extended diaphragm (Silicon oil/ Flurolub filled) with 5 meters SS armoured capillary for corrosive/viscous/solid bearing or slurry type fluid applications. 1.02.00 DIFFERENTIAL PRESSURE TRANSMITTER / FLOW TRANSMITTER 17. Sealing/Isolation : Extended diaphragm (Silicon oil/ Flurolub filled) with 5 meters SS armoured capillary for corrosive/viscous/solid bearing or slurry type fluid applications.	Please define the applicability of extended diaphragm with 5M SS capillary. Also define for which services (i.e.., HFO/LDO) we have to consider extended diaphragm with capillary.	Specification is clear that for corrosive/viscous/solid bearing or slurry type fluid applications diaphragm typeinstruments with capillary need to be provided.
34	INSTRUMENTATION DATA SHEET, Page 317 to 321 of 429	1.01.00 PRESSURE TRANSMITTER: 18. Accessories - g. Handheld calibrator 1.02.00 DIFFERENTIAL PRESSURE TRANSMITTER / FLOW TRANSMITTER : 18. Accessories - g. Handheld calibrator 1.03.00 Displacer Type Level Transmitters: 23. Accessories - e. Handheld calibrator 1.04.02 TRANSMITTER: (MASS FLOW METER): 11. Accessories : a) Handheld calibrator 1.05.00 RADAR TYPE LEVEL MEASUREMENT: 14. Accessories : a) Handheld calibrator 1.06.00 ULTRASONIC LEVEL TRANSMITTER: 15. Accessories : a) Handheld calibrator 1.07.00 ULTRASONIC FLOW TRANSMITTER 11. Accessories : 1) Handheld calibrator	From the referred clause Handheld calibrator asked for each transmitter. Please clarify whether we have to give for each type of transmitter or 1No. for all transmitters.	Hand Held Calibrator are not part of this package and need not to be supplied.
35	INSTRUMENTATION DATA SHEET, Page 325 & 326 of 429	2.00.00 HART HAND HELD CALIBRATOR Hand held calibrators (5 nos. for each type) shall be provided for adjustment/ calibration/maintenance of the HART compatible transmitters. The hand held calibrator shall be suitable for all types of transmitters supplied in the package. If one type of hand held type calibrator is not suitable for communicating with all types of transmitters then separate hand held calibrator will be provided.	We understood from the referred clause the requirement of 5Nos. Of each type of Hand held calibrators is for complete plant. For this fuel oil handling system scope we are considering 1No. Universal type Hand Held Calibrator for all transmitters. Please confirm.	
36	SECTION - IIIE,ELECTRICAL LOAD DATA, Page 428 of 429	------	Motorized bypass valves of the HFO storage tank suction heater steam supply line control valves are not included in the electrical load data. Please check.	The load data provided in the specification is indicative only. Bidder to include drives (if not included in the electrical load data) required as per technical specifications and furnish the signed and stamped copy of the same along with their offer.
37	General		Instrument installation/Hook up drawings are not provided in the tender documents. Please provide the same.	Instrument Stub Detail is provided. Hook up diagram for any instrument shall be standard and should have drain, vent, isolation etc. Same will be discussed during detail engineering.
38	General		Please provide vendor list for Pressure & Diff. pressure transmitter.	Refer annexure-1
39	Terminal Points/4.0.0/ LDO	Near fuel oil unloading & pressurizing pump house: Up to 2000 mm outside Pump house wall for suction & return line of LDO. Further routing shall be in BHEL-Try scope.	In both the statement the terminal Point distance of LDO forwarding Contradicting to each other. Please clarify, which one to be conisdered.	Near fuel oil unloading & pressurizing pump house: Up to 2000 mm outside Pump house wall for suction & return line of HFO/LDO.
	DWG: PE-DG-417-166-A001/Pg.No 217 of 429	1000mm out of P&H unit		
40	Terminal Points/4.0.0/ HFO	Near fuel oil unloading & pressurizing pump house: Up to 2000 mm outside Pump house wall for suction & return line of HFO. Further routing shall be in BHEL-Try scope.	In both the statement the terminal Point distance of LDO forwarding Contradicting to each other. Please clarify, which one to be conisdered.	
	DWG: PE-DG-417-166-A001/Pg.No 216 of 429	1000mm out of P&H unit		
41	DWG: PE-DG-417-166-A001/Pg.No 217 of 429	HFO unlaoding Temperature : 40Deg.C	Please be noted with the help of stream tracer,it can maintain the temperature of the Fuel in pipe and it can't heat (increase the temp.) Oil. further your P&ID of HFO calls for 40Deg.C at unloading HFO Pipes. As per our previous experience in many Projects HFO will be flowable at 50 Deg.c and tracers are design at	Bidder to consider HFO Unloading temperature as 50 Deg.C. Accordingly the tracing system shall be designed.
	Short Description of the system/Cl.No. : 3.02.00 / Pg. No : 34 of 429.	wagons shall be poistioned by the by the side of the unloading manifold and unloading pumps shall be used for unloading of the oil and storage of same. Before unloading the HFO , it shall be heated by steam ~~in the wagon~~, make it flowable if neceesary.		

42	DWG: PE-DG-417-166-A001/Pg.No 217 of 429	1. Suction velocity of unloading HFO - 550NB is 0.9m/sec & at 750NB Pipe is 0.4m/sec.	In both the statements, velocity is contradict to each other , please confirm which one to be considered to design the Pipe size.	HFO Suction pipe Velocity 0.4m/sec
	annexure - III/Pipes, Fitting/ Point No. 1/ Pg.51 of 429	Suction pipe Velocity of 250NB & above : 0.4m/sec		
43	Layout/Pg.223 of 429	Suction Line tapping from the unloading header at railway wagon to Unloading Pump Suction	Please confirm the tapping line from the unloading header to unloading pumps will be considred from nearest point or Mid length of the Header.	Shall be as per the layout requirement. Details of the layout has already been provided in the tender.
44	Scope of Supply/Cl. 1.1.0/12 of 429	25)Pipes will be free issued to bidder. However complete Pipe fitting, valves, flanges, counter flanges, traps, fasteners, gaskets with suitable hangers, supports, pipe trestle within dyke and pump house, as required etc. as applicable within the terminal point will be in bidder scope.	From this refered clause we had understood, all pipes for HFO, LDO, Steams & condensate lines, steam tracer , Instrument air line , DM water Lines will be provided freely by BHEL. Please confirm the same.	Bidder understanding is correct. However,Complete Pipe fitting, valves, flanges, counter flanges, traps, fasteners, gaskets with suitable hangers, supports for the package shall be in bidder scope.
	Scope of Supply/Cl. 1.1.0/12 of 429	22)Complete steam tracing, Insulation and cladding material along with all accessories for HFO tanks, HFO lines, pumps, strainers etc		
45	Terminal Points / Cl. 4.0.0 / Pg. 17 of 429	Steam header at 16 kg/cm2, 290 degC by BHEL at 2000 mmfrom FO pressurizing building. At the TP BHEL shall supply 16 MT/hr of steam. Bidder shall checkthe adequacy of the same. In case this is not adequate, bidder toinform the maximum aux. steam requirement at this TP along with manual calculation for the same	Kinldy provide the following terminal point 1. Instrument Air 2. PRDS Spary -DM water lines.	Terminal Point for Steam, Spray Water and Instrument Air shall be 5.0m from combined pump house (unloading through Road tanker cum Pressuring pump house.
	DWG: PE-DG-417-166-A001/Pg.No 218 of 429	Instrument air Line , DM water Line are indicated in the drawing		
46	annexure - III/Pipes, Fitting/ Point No. 1/ Pg.51 of 429	API 5L or SA 106 for Pipe buttwelded end 65NB and above as per ANSI B16.5 and Socket welded as per ANSI B 16.1	A. Please confirm the MOC of Pipe for above 150NB. B. If IS 2062 Gr. B is Provided for above 400NB to 800NB , Please confirm freely provided will be in raw Plate or fabricated pipe form. C. Please confirm Pipe for API 5L Pipe shall be seamless or ERW Pipe.	A) Refer GA Drawing of tanks. B) Provided in fabricated pipe form. C)Refer GA Drawing of tanks
	GA Drawing of Both HFO & LDO tanks/Pg.Nom 218 & 219 of 429	MOC of Pipe : 1. Upto 50NB - ASTM A 106 Gr. Sch. 40. 2. 65NB to 150NB - ASTM A 106 Gr. Sch. 40. 3.200NB to 350NB API 5L Gr.B ERW, SCH 40 4. 400 to 800NB - IS 2062 Gr . B Plate Formed		
	Legend of drawings/DWG: PE-DG-417-166-A001/Pg.No 215 of 429	MOC of Oil Pipes : API 5L Gr. B ERW		
47	Annexure III/ Pipes, Fittings, Valves : Design Parameters /Point.No :3 / Pg.No : 51 of 429	Tracers: Bidder to indicate	Both are statements are contradict to each other. Please confirm which one to be considered.	The tracer line shall be 20 NB minimum.
	P&ID of HFO DWG: PE-DG-417-166-A001/Pg.No 218 of 429	Tracer : 20NB		
48	1.1.0 SCOPE OF SUPPLY /Point .No 15/ Pg.No 12 of 429	one (1) no. single chamber gravity type oil water separator pit along with its accessories.	Both are statements are contradict to each other. Please confirm the scope of work for OWS Pit.	The Civil work of OWS pit shall be in BHEL scope. However, all the equipments, accessories, supporting arrangements etc. for the OWS pit shall be in bidder's scope in line with the technical specification in line Cl. 1.4.8 / Pg. 27 of 429 & P&ID's .
	DRAIN OIL SYSTEM, SUMP WATER & OIL WATER SEPARATION/Cl. 1.4.8 / Pg. 27 of 429	A single chamber gravity type oil water separator of adequate capacity in tank farm area shall be provided for receiving oil water mixture during normal operation from the unloading area & unloading pump house and tank dyke area respectively. Separated oil collected in oil pit shall be pumped HFO storage tank. Two (2) no. (1W+1S) vertical single screw type oil recovery pump ofcapacity 5m3 /hr each shall be provided in oil pit of OWS to transfer collected oil to HFO storage tank.		
	2.0.0 EXCLUSION /Exclusion of civil Works/ point.No b / Pg.No : 15 of 429	iv. Unloading Pump House, Oil water separator pit.		
49	Scope of service /Cl.1.2.0/Pg.No. 14 of 429/Point.No 1	1. Unloading, Storage, handling and transportation at site, handling & transportation of pipes from storage yard.	Please provide the distance from BHEL Stores of Pipes to tank farm area. To transport the freely provided pipes by BHEL.	Storage yard shall be within plant boundary
50	Heavyfuel Oil System/Cl. 1.1.2/ Pg 25 of 429	1.1.2 BTPN wagons are not equipped with heating facility. Hence, no heating of wagons is provided.Steam header in the unloading area shall be provided for Unloading header tracing only. Fuel oil from wagons will be collected in unloading header (min. size 550NB) laid along with track.Oil from the unloading header shall be pumped to HFO storage tank with the help of unloading pumps as indicated in the flow diagram. The Fuel Oil unloading pumps shall be rotary positivdisplacement,twin screw type, sump heated and provided with matching capacity simplex strainer(steam, sump heated) at their suction with interconnecting piping and valves as shown in the P&diagram, Drwg No.- PE-DG-417-166-A001.	Both the statements are contradicting to each other, please confirm the Heating of sump pit is required or not.	Both the statements are correct: i) Twin screw type, sump heated: This is for screw pump with foot jacketing. ii) sump pit have no heating facilities
	P&ID of HFO DWG: PE-DG-417-166-A001/Pg.No 217 of 429	Sump pit in the drawing having no heating facilities		
51	1.1.0 SCOPE OF SUPPLY /Point .No 24/ Pg.No 12 of 429	All foundation bolts/ anchor bolts required for any equipment foundation under the package. For HFO tank minimum 40 nos. anchor bolts (M42 grade) and for LDO tank minimum 24 nos. anchors bolts (M33 grade) to be considered irrespective of calculation.	In Both the Statement the Anchor bolt design is contardict to each other, Please confirm which statement will prevail.	The no. and size of the anchor bolt given in the specification is the minimum requirement.The final no. and sizes (over and above the minimum requirement, if any)of the anchor bolt shall be decided during detail engineering based on the calculations provided by the bidder. Further the anchor bolt design / selection etc. shall be done as per API 650 latest edition.
	Design Requirement/Cl. No. 3.1.2	Tank thickness shall be calculated as per IS803 latest edition. Intermediary wind girder design, Wind Design, Seismic design, anchor bolt design / selection etc. shall be done as per API 650 latest edition, latest addendum available at the time of detail engineering.		
52	System Design criteria /Cl. 5.01.02 / Pg. No 36 of 429	Buffer to buffer dimensions of HFO & LDO/HSD wagons in 12.42mtrs. Therefore, a net railway track length of minimum 665 meters paved with RCC shall be provided for oil unloading and shall be used for unlaoding both HFO and LSO/HSD	Both the statements are contradict to each other. Please confirm the scope of civil work at railway unloading Area.	Bidder to note that the Civil work in Railway wagons unloading area is not in bidder scope.
	2.0.0 EXCLUSION /Exclusion of civil Works/ point.No b / Pg.No : 15 of 429	Civil work in Railway wagons unloading area		
53	Surface Preparation and Painting /Cl. 6.02.06/ Pg. 43 of 429	Primer for internal surface shall be double linseed oil and that for external shall be synthetic red lead. Finish coat for both internal and external surafce shall be synthetic enamel. For bottom surface protection, one coat of bituminastic paint shall be applied	In both the statements the . Painting specification is contradict to each other. Please confirm which to be considered.	Bidder to follow painting schedule as per Page 240 of 429. However, the same shall be subject to end customer approval during detail engineering based on the application and environmetal factors.
	painting Schedule/ Pg. 240 of 429.	**External Paints of Insulated HFO & drain oil tanks :** Surface Prepartion : Wire Brushing Primer : Epoxy resin based zinc phophate Primer of 1 Coat with 100microns /coat Intermediate & External : NA **External Paints of un-Insulated LDO tanks :** Surface Prepartion : Wire Brushing Primer : Epoxy resin based zinc phophate Primer: 1 Coat of 100microns /coat. Intermediate : Epoxy resin based paint pigmented with titanium Dioxide: 1 Coat of 100microns/coat Finish : i) Epoxy paint : 1 Coat with 75 microns/coat. ii) Polyurethene Finish paint : 1 Coat of 25 Microns/Coat. **External undernath of HFO & LDO tanks :** Surface Prepartion : Wire Brushing Primer : Coal Tar Epoxy- 1 Coat with 80-100microns /coat Intermediate & External : NA		
54	Scope of supply /Cl. 1.1.0/ Point : 40/ Pg. No 14 of 429	All valves, counter- flange with nuts, bolts and gaskets at all the terminal points.	Both the statements are contradict to each other . Please confirm the valves shall be considered at all the terminal points or not.	Bidder to consider all valves, counter- flange with nuts, bolts and gaskets at all the terminal points.
	All P&ID Drawings /Pg. No 216 -218 of 429	No valves are indiacted at all the terminal Points.		
55	Annexure III/ Pipes, Fittings, Valves : Design Parameters /Point.No : 4- e,f,g,h,i / Pg.No : 52 - 53 of 429	MOC of Valves - gate , Globe, Ball, Check & plug	End Connection of specifed Valves are missing , Please Provide the end connection of all types of valves. 1. Size above 50NB 2. Size upto 50NB & below	1.Flanged ends. 2.Socket weld ends

56	Dwg of unloading railway wagon/Pg. No. 222 of 429 DWG: PE-DG-417-166-A001/Pg.No 217 of 429	In this drawing 2 No of 80NB Ball Valves are indicated after the Hoses at unloading of each Railway Wagon of 50No.s. In the P&ID of HFO, 1 No of 80NB Ball Valves are specified after the Hoses at unloading of each Railway Wagon of 50No.s.	Both the statement are drawings are contradict to each other , please confirm which drawing to be conisdered	Bidder to refer DWG: PE-DG-417-166-A001/Pg.No 217 of 429 for the same.
57	painting / Cl. 4.06.05/ Pg. 233 of 429.	**Specification for application of paints for internal surface protection of large diameter pipes (sizes above 600 mm NB and above) if any, shall be as follows :** b) Internal surface of the pipe should be coated with one coat of two part epoxy primer with not less than 50 micron DFT (dry film thickness) followed by two part polyamide cured solvent less epoxy. c) The minimum dry film thickness (DFT) of internal lining shall be 600 micron.	We have understood from the referred clause, the internal Painting shall be done only for Pipe having the sizes above 600 mm NB and above only.Please confirm the same. Further , Please confirm there is no rubber lining for any Pipes.	There is no rubber lining for any Pipes. Further Bidder to follow specification.
58	DWG: PE-DG-417-166-A001/Pg.No 216 of 429	As indicated in the drawing, the unloading LDO transfer Pump 2Nos(W) of 50Cu.m/Hr is provided to unload the 5No.s of Road tanker of each- 20Cu.m.	In the Provided LDO unloading System, if only one tanker is unloaded i.e 20Cu.m, unloading system will not work. Please confirm all the tankers will available to at the time of unload to get the proper flow to suction of LDO Unloading Pumps, if not any decanting Pump of 20Cu.m/Hr is provided.	Bidder to meet the requirement as indicated in DWG: PE-DG-417-166-A001/Pg.No 216 of 429
59	SPECIFICATION NO. PE-TS-417-166-A001 /Page no. 25 of 429 /Cl. 1.1.7 SPECIFICATION NO. PE-TS-417-166-A001 /Page no. 47 of 429 /Cl. 2(a)	Two (2) nos. shell and tube type suction heater **(one designed for three units oil supply and other designed for two units oil supply**) is also provided in each HFO tank to supply oil to pressurizing pump house at required temperature. A. Suction heater 1# : Deisgn Oil Flow - 145 CUM/Hr. B. Suction heater 1# : Deisgn Oil Flow - 217 CUM/Hr.	We have understood from the both Points , suction Heaters will be designed for 1. Suction heater 1# : Design Oil Flow 145Cum/Hr. for 2 units supply 1. Suction heater 2# : Design Oil Flow 217Cum/Hr. for 3 units supply Please confirm the same.	1) Suction heater (Flow - 145 CUM/Hr.) shall cater the requirement for unit 1 & 2. Total Qty of suction heater (Flow - 145 CUM/Hr.) =2 nos. 2) Suction heater (Flow - 217 CUM/Hr.) shall cater the requirement for unit 2,4 & 5. Total Qty of suction heater (Flow - 217 CUM/Hr.) =2
60	Technical specification part-4/2/384 Technical specification part-2/Drg No. PE-DG-417-166-A002/219 & 220	Gasket Material for: 1. Fuel Oil: Teflon 2. Steam: Spiral wound SS316 3. AIR LINE & BILGE WATER LINE: Grafoil Gasket Material for: 1. Fuel Oil: Grafoil 3 thk 2. Steam: Spiral wound SS316	In both the statement MOC of gaskets are contradict , Please confirm which one to be considered.	Gasket Material for: 1. Fuel Oil: Teflon 2. Steam: Spiral wound SS316 3. For Water, Recovered Water and Instrument Air : Teflon
61	SPECIFICATION NO. PE-TS-417-166-A001 /Page no. 51 of 429 /Annexure 3 Cl.4.e/f/g/h/i	Body Material:ASTM A181 GrII 50 NB and below valve	Kindly note ASTM 105 is readily availible in market . Please give clearance for SA 105 for 50NB and below valves.	Bidder to follow technical specification
62	DWG: PE-DG-417-166-A001/Pg.No 216, 217, 218 of 429	Lines : 1. HFO : 300 NB HFO Return line from P&H Pump House to HFO tank.	Since Forwarding system is not in our scope, we are considering the indicated supply and retured lines of	Bidder understanding is correct.
63	DWG: PE-DG-417-166-A001/Pg.No 218 of 429	Heating Time Required for Drain Oil tank.	Please mention the heating time required for Drain oil Tank	Approx. 4 hours
64	DWG: PE-DG-417-166-A001/Pg.No 218 of 429	Condensate Flash Tank - 2cum at Railway unloading Area	Generally to Condesate from Thermodynaic traps are locally dfrain but we have understood from Drawing a dedicated Flash tank- 2Cum is indicated at unloading area of Railway wagon to collect the condesate from unloading Header, Railway unloading Pump House, Drain oil Tank. Please confirm the same.	Bidder understanding is correct.
65	Scope of Supply/Cl. 1.1.0/12 of 429	20)Two (2) nos. (1W+1S) sump pump motor set in of capacity 10 m3/hr. in Oil unloading area. 21)Two (2) nos. (1W+1S) sump pump motor set in of capacity 10 m3/hr. in Unloading Pump House.	we have understood from the layout , the following locations 1. HFO Railway wagon unloading Area 2. HFO Road Tanker Unloading area 3. HFO Railway Unloading Pump House, located near Railway wagon 4. HFO Road tankers unloading Pump House located near tank farm area. Please confirm the loaction 1. sump pit (seriels no. 20) at unloading area whether it is Railway or Road tanker unloading. 2. sump pit (seriels no. 21) at unloading Pump House whether it is Railway or Road tanker unloading Pump House.	1. Sump pit (Sl. No. 20) at unloading area: It is Railway unloading area. 2. Sump pit (Sl. No. 21) is located inside Railway unloading Pump House.
66	EQUIPMENT SELECTION & DESIGN CRITERIA/ DATA SHEET /CL. 2. / Pg. 382 of 429	FOR SUMP PUMP AND OIL RECOVERY PUMP: Data sheet	Both the statements are contradict to each other . Please confirm which type of Pump must be considered for the mentioned service and if Pumps are centrifugal type ,provide the technical Data sheet of the same.	The pumps shall be vertical centrifugal type pumps inline with the CL 1.4 / Pg. No 26 of 429. Further the datasheet for the same shall be submitted by the bidder during detail engineering.
67	DRAIN OIL SYSTEM, SUMP WATER & OIL WATER SEPARATION/ CL 1.4 / Pg. No 26 of 429	1.4.5) Two (2) nos. vertical centrifugal type pumps of capacity 10 cum/hr. is also envisaged in HFO unloading pump house to pump the oil water mixture collected in pump house to oil water separator pits provided in Tank farm area. 1.4.6) Two (2) nos. vertical centrifugal type pumps of capacity 10 cum/hr. is also envisaged in HFO unloading area to pump the oil water mixture in unloading area to oil water separator pits provided in Tank farm area.		
68	EQUIPMENT SELECTION & DESIGN CRITERIA/ DATA SHEET /CL. A / Pg. 381 of 429 Design Requirement/Cl. No. 3.1.2	c) Minimum thickness of the tank shell and roof shall be as per GA Drawing (section1A) Tank thickness shall be calculated as per IS803 latest edition. Intermediary wind girder design, Wind Design, Seismic design, anchor bolt design / selection etc. shall be done as per API 650 latest edition, latest addendum available at the time of detail engineering.	Plaese confirm the thickness and wind girders of all HFO & LDO tanks must be considered as Per GA Drawing or IS 803.	Minimum requirement is specified in the GA Drawing. The final thickness and no. (over and above the minimum requirement, if any)of wind girders shall be decided during detail engineering based on the calculations provided by the bidder inline with the design code.
69	Cl.6.02.14/ Point No. e/ Pg.41 of 429 DWG: PE-DG-417-166-A001/Pg.No 216, 217, 218 of 429	Conversation vent Valve: When Contionus venting to atmospheric directly isnot permitted for the stored liquid, a conservation vent valve or a breather of approved make and design shall be provided on each of the vent /overflow connections of the tanks as specified. Diagram indiactes vent with Flame arrestor	Both the statements contradict to each other. Please confirm breather valves is considered or not for vent for all LDO, HFO, DOT , Condensate tank.	Bidder to consider vent with flame arrestor in their offer.
70	Rectangular tanks/Cl. 3.3.2/Pg.No 392 of 429 EQUIPMENT SELECTION & DESIGN CRITERIA/ DATA SHEET /CL. 2. / Pg. 381 of 429	3.3.2.Tank bottom and / or side plates shall be of minimum 8 mm thick plate. Corrosion margin of at least 2 mm shall be provided over the design thickness of bottom and / or side plates. 2) Drain oil tank: b) Minimum thickness of the plate: 6.0mm including corrosion allowance c) Design Code: IS 800 / standard hand book	Both the statement concerning the thickness of DOT(Rectangular tank)are contradicting to each other , please confirm which to be considered.	Please note the following for Drain oil tank: i)Minimum thickness of the plate: 6.0mm including corrosion allowance ii)) Design Code: IS 800 / standard hand book
71	Page No. 207 of 429, Part - 3	Dealers are not acceptable for any item of the package. Bidder shall procure all items including plates, structural, flanges, counter flanges etc from approved sub vendors only	Please note the quantity of plates and structurals are very less it is impossible to porcure from main manufacturers however we will ensure that the makes of the same will be as per approved sub vendor list only.	Bidder to follow technical specification
72	Point no. 6, Annexure - D, page 211 of 429 part 3	As per MDL point 6 **Stress Analysis of lines in FOHS**	Please note that it is no where mentioned in the specification to perform stress analysis for lines. Kindly confirm and furnish the inputs for identification and categorisation of critical lines	Stress analysis of steam and HFO lines shall be in bidder's scope.
73	DWG: PE-DG-417-166-A002/Pg.No 219 of 429	Shell Nozzle & Appurtenances of Tanks 1. N2 - Suction Heater #1 , size - 450NB 2. N5 - Suction Heater #2, size - 450NB	As per the GAD drawing, both the suction heaters Nozzles sizes indicated as 450NB.But as approved vendors confirmed to meet the technical & Process requirements, 1. Suction heater with 217 cu.m/Hr must have 650NB tank nozzles. 2. Suction heater with 145 cu.m/Hr must have 550NB tank nozzles. Please confirm the sizes of Suction heater Nozzles sizes of tanks.	Recommendation of suction heater manufacturer is acceptable.
ELECTRICAL & INSTRUMENTATION				

74	1.01.00 INSTRUMENT DATASHEET	1. Sealing/ isolation: Extended diaphragm (Silicon Oil/ Flurorub Fill) with 5m SS Armored Capillary for corrosive/ viscous/ solid bearing or slurry type fluid application.	Datasheet for Pressure transmitter calls for 5M Capillary with 0.075% Accuracy. Please be noted with this length we cannot attain that much low accuracy. And also, if capillary is provide, Manifolds are Not	Accuracy : Noted. However, Bidder to offer best posssible accuracy with capilliary. Manifold : Noted.
	1.01.00 INSTRUMENT DATASHEET	2. Accuracy : ± 0.075% of Span or Better.		
75	1.02.00 INSTRUMENT DATASHEET	1. Sealing/ isolation: Extended diaphragm (Silicon Oil/ Flurorub Fill) with 5m SS Armored Capillary for corrosive/ viscous/ solid bearing or slurry type fluid application.	Datasheet for Differential Pressure transmitter calls for 5M Capillary with 0.075% Accuracy. Please be noted with this length we cannot attain that much low accuracy. And also, if capillary is provide, Manifolds	Accuracy : Noted. However, Bidder to offer best posssible accuracy with capilliary. Manifold : Noted.
	1.02.00 INSTRUMENT DATASHEET	2. Accuracy : ± 0.075% of Span or Better.		
76	1.04.00 INSTRUMENT DATASHEET	1. Drain: Self-draining facility	Datasheet for Mass Flowmeter calls for Self Draining Facility. As per your approved Vendor List no one is having this provision. Please Suggest.	Technical specification is clear. In case none of the approved vendors listed in the sub-vendor list is not having the mentioned provision, bidder may suggest additional vendor during detail engineering with relevant credentials for BHEL/TSGENCO acceptance.
77	1.00.00 INSTRUMENT DATASHEET	1. Hand Held Calibrator for All the transmitters.	You have asked Hand Held Calibrator for All the transmitters. Please confirm if you required only one hand held calibrator compatible for all the transmitters or each transmitter shall have its own individual calibrator. Plesae Confirm.	Hand Held Calibrator are not part of this package and need not to be supplied.
78	1.04.00 INSTRUMENT DATASHEET	1. Power Supply: 230VAC	Power Supply for Fowmeter as per the datasheet is 230VAC, It requires external AC Supply. This shall be under BHEL Scope. Please Confirm.	Noted. However, Flowmeter shall have provision of accepting either 230 VAC or 24 VDC.
79	1.06.00 INSTRUMENT DATASHEET	1. Output Contacts: 2SPDT, 230V, 5A	For Ultrasonic Level Transmitter, You have asked for Both Analog & Binary Outputs. Please be noted, we can receive only Analog (4-20mA) output. Please Confirm.	Noted.
80	Clause No. 5, Specific Technical Requirement fo Fuel Oil Unloading & Storage System.	1. As per the Clause, 5. Redundancy of sensors shall be provided, irrespective of instrumentation shown in the PID, by bidder as per following: (i) Triple redundancy for all analog and binary inputs required for protection of system /drives. (ii) For all other control functions & alarms, dual redundancy of the sensors shall be provided by the bidder.	As per the P&ID, The Pressure Transmitters at some locations are only 1 No. But as per the Redundancy Formula, It should be Three. Please Confirm. In addition to that, regarding Flowmeter as per Redundancy formula, it shall be 3Nos. But as per P&ID it is Only 1No. Hence, We are cosidering 1No. Please Confirm.	Please note that Redundancy of sensors shall be provided, irrespective of instrumentation shown in the PID, by bidder as per following: (i) Triple redundancy for all analog and binary inputs required for protection of system /drives. (ii) For all other control functions, permissivies dual redundancy of the sensors shall be provided by the bidder. (iii) For alarm purpose, single transmitter can be used.
		2. P&ID (LDO & HFO)		
	Cl.6.02.14/ Point No. f/ Pg.42 of 429	Instruments as shown in P&ID shall be provided		
C. MANDATORY SPARES				
81	Annexure -F /Mandatory Spares / Page.No 225 of 429	1.10 Suction heater heating Element: 2Nos	1. Please confirm Suction heaters are two model or type , whether we shall consider 2 Nos of each type or 1 No of each type.	Bidder to consider two (2) nos. for each type/capacity
82	Mandatory spares/Annexure F/ Sl.No : 1.8.1 /Pg. 225 of 429	Sl.No. 1.8. Pump & Motor Bearing for 1.8.1 For HFO & LDO transfer pump	Please be noted transfers pumps of both HFO & LDO not in our scope. Please confirm they are not in our scope.	Bidder to consider the mandatry sparesfor HFO/LDO unloading pumps
83	Mandatory spares/Annexure F/ Sl.No : 1.9.1/Pg. 225 of 429	Sl.No. 1.9.Relief Valve Spring for 1.9.1 For HFO & LDO transfer pump	Please be noted transfers pumps of both HFO & LDO not in our scope. Please confirm they are not in our scope.	
84	Mandatory spares/Annexure F/ Sl.No : 1.7 / Pg.225 of 429	Sl.No. 1.7 Pumps Screws : 6 No.s for each type	We have understood , screws must be considered for both HFO & LDO single/twin screw Pumps.	Bidder understanding is correct
85	Mandatory spares/Annexure F/ Sl.No : 1.8.1 /Pg. 225 of 429	Sl.No. 1.8. Pump & Motor Bearing for 1.8.1 For drain oil Pump - 4sets	we have understood from the both statements , 1set or 1No means a complete set of Drain oil Pump (inlcudes of body , cartridge., etc) must be considered as complete assembly.	1 set shall include complete pump with motor.
	Mandatory spares/Annexure F/ Note point (ii)	One (1) Set" and "One (1) set of each type & rating" is defined as total numbers a s required for one complete replacement for one equipment of similar size & capacity.		
86	Mandatory spares/Annexure F/ Sl.No : 1.8.1 /Pg. 225 of 429	Clause No.: 3.1.2, HFO/LDO oil meter	We presume these Oil Meters are as Flow Meter. Please Confirm.	Noted

	5X800 MW YADADRI TPS **SUB-VENDOR LIST**	SPECIFICATION NO. PE-TS-417-166-A001 ANNEXURE-1 PAGE 1 of 1

SUB-VENDOR LIST - FUEL OIL UNLOADING AND STORAGE SYSTEM				
	PRESSURE TRANSMITTER/ DIFF. PRESSURE TRANSMITTER	ABB INDIA LIMITED		
		V. AUTOMAT & INTRUMENTS (P) LTD.	NEW DELHI	
		TOSHNIWAL INDUSTRIES PVT. LTD.,	AJMER, RAJASTHAN	
		PANAM ENGINEERS	NAVI MUMBAI	
		ENDRESS + HAUSER (INDIA) PVT. LTD.,	AURANGABAD MAHARASTRA	
		YOKOGAWA INDIA LIMITED,	BANGLORE	
		SBEM PVT. LTD.	PUNE	FOR CAPACITANCE TYPE ONLY
		NIVO CONTROLS PVT. LTD.	INDORE, M.P	FOR CAPACITANCE TYPE ONLY
		EMERSON PROCESS MANAGEMENT (INDIA) PVT.LTD.	NAVI MUMBAI	
		MOORE INDUSTRIES INTERNATIONAL INC.	CALIFORNIA, USA	
		SIEMENS LIMITED	MUMBAI	
		SMART INSTRUMENTS LTD	BRAZIL	LD-301 & T-301 TRANSMITTER FROM M/S SMART EQUIPMENTS BRAZIL.
		HONEYWELL AUTOMATION INDIA LIMITED	PUNE	

Note: The make of Sub-vendor items shall be generally as indicated above which is subject to customer / BHEL approval during detail engineering.