BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-21-Jul-20

CORRIGENDUM- 01

PROJECT	:	2 X 250 MW NSPCL Bhilai TPP- FGD
PACKAGE	:	**MISC. TANKS(SITE FABRICATED)**
ENQUIRY NO	:	PE/PG/BLI/E-6467/2020 **Dated. 08.07.2020**
SUBJECT	:	**PRE-BID CLARIFICATION + DUE DATE EXTENSION**

Type of Corrigendum			
Technical Corrigendum -	☑	Commercial Corrigendum -	☑

In reference to the above mentioned tender enquiry for **MISC. TANKS(SITE FABRICATED)** 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 31/07/2020 (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.

GURU DAS

Yours faithfully,

For and on behalf of BHEL

Digitally signed by GURU DAS
DN: cn=GURU DAS, o=BHEL, ou=PEM, email=gurudas@bhel.in, c=IN
Date: 2020.07.21 14:48:21 +05'30'

Guru Das
Manager

PRE BID CLARIFICATION SCHEDULE						
Tender reference	**PE-TS-468-167-A101**					
Project:	**2 X 250 MW BHILAI**					
Package:	**MISC. FGD TANKS**					
S.No.	**Section/Part/Sub Section**	**Page No**	**Clause No**	**Bid Specification**	**Bidders Query**	**BHEL REPLY dtd. 18-07-20**
1	SECTION –I, SUB SECTION –C1-A	40 of 338	1.3 (h)	Supply and erection of vent valves shall be in bidder's scope.	From the contradicting statement we have understood that no valves are there in our scope. Please confirm whether to consider vent valves in our scope or not	Vent valve is not applicable for these FGD tanks. The clause 1.3 (h), page 40 of 338 stands deleted. However, as per specificaiton bidder shall provide vent with suitable bird screen.
	SECTION –I, SUB SECTION –C1-A	46 of 338	9 (4)	All valves are excluded from bidder's scope of work.		
2	Tank Schedule	331 of 338	15.2	Dynamic load (kg)	The values of dynamic loads are not given in the tank schedule. Please provide us the dynamic load values of agitator for estimating the errection charges.	Pl. refer sl. no. 15.2 (a) of tank schedule. Bidder to comply specification requirement.
3	Tank Schedule	332 of 338	12 e	Nozzle material : SA 106 Gr. B	As per our knowledge, meaning of nozzle and nozzle neck shall be same. But two different specifications are indicated. Please clarify	The nozzle material shall be same as that for Pipe material. Pl. refer Annexure-8A of amendment in this regard. The MOC details specified in Annexure-8A shall superede the details mentioned under Annexure-8 of specification.
	Tank Schedule	332 of 338	12 (h)	Nozzle Necks material : IS 1239		
4	SECTION –I, SUB SECTION –C1-A	43 of 338	3.13	The joint efficiency factor to be adopted for design calculation of shell thickness shall be 0.7.	As per IS for joint efficiency of 0.7, radiography is not required. Please confirm.	The requirement of radiography shall be as per the applicable joint efficiency as per IS: 803. For tanks having joint efficiency of 0.7, no radiography to be considered inline with IS:803.
	Tank Schedule	332 of 338	14 (g)	Radiography is as per IS		
5	Tank Schedule	332 of 338	13 (i)	Fittings material : DN 25 -DN 50: SW A234-WPB ASME B16.11	The socket welded forged fittings must be of SW A105, ASME B16.11.Please confirm.	Socket welded forged fittings as per SW A105, ASME B16.11 are acceptable.
6	Tank Schedule	332 of 338	13 (n)	Anchor Bolt	If we design for anchor bolts as per API 650 for Auxiliary storage tank the no. of anchor bolts are very less when compared to the GAD of tank of Auxialiry storage tank. So please provide the required number of anchor bolts for each tank.	The GAD of Aux. Absorbent tank is shown as typical arrangement of horizontal type Agitators. For qty. of anchor bolts shall be based on calculations as per API 650 and same shall be finalised during detail engineering.
	SECTION II	227 of 338	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		
	GA drawing of Auxialiary absorbent tank	335 of 338	Plan View	As per the GAD of Auxialiary absorbent tank no. of anchor bolts are 40		
7	SECTION –I, SUB SECTION –C1-A	42 of 338	2.4	Minor civil work like chipping of foundation, grouting below base plate for all structures, equipment, grouting of pockets, excavation & filling of earth for buried MS pipes if and as required.	Please note that excavation & filling of earth for buried MS pipes are not i n our scope. Kindly Confirm.	Bidder's scope is limited to supply & E&C of drop down pipe inside the tanks. Excavation & filling of earth for buried MS pipes is not applicable and not in scope of bidder.
	SECTION –I, SUB SECTION –C1-A	45 of 338	9	Exclusions: Tank foundation & associated civil works, all instruments like level gauges, Level Transmitters, etc are excluded from bidder's scope of work. However, required no. of nozzles for the same shall be in bidder's scope of work.		
	Technical Requirements	69 of 338	7.08.01	The Contractor shall provide an auxialiry absorbant tank, for the unit, sized to contain the complete slurry of one absorber tank at its maximum level equiped with all necessary pumps, Valves, Piping and controls to transfer the tanks contents back to the absorber to refill the absorber sump.		The slurry pumps, valves & piping outside tank is excluded from bidder's scope of suppply.

8	SECTION –I, SUB SECTION –C1-A	40 of 338	1.1 & 1.2	Scope of Supply : Supply of Steel plates and fabrication of tanks at site under this specification shall be as per enclosed FGD Tank schedule (Section-III, Annexure-8). Detailed GA & fabrication dwgs. of each type of tank shall be submitted by bidder during detail engineering to suit good engineering practice to the satisfaction of the customer.	As per scope of Supply & Terminal points Slurry Pumps, valves and piping are not in our scope. Please confirm.	
	SECTION –I, SUB SECTION –C1-A	45 of 338	8.0	Terminal points: Matching counter flanges for all nozzles mounted on the tank and its accessories. However,counter flanges for all nozzles of tank shall be provided by the bidder.		
9	SECTION – VI	85 of 338	B (v,vi)	vi) Piping engineering diagrams, pipe and fittings schedules, valve schedules, hanger and support schedules, insulation schedules. V) Piping isometric, composite layout and fabrication drawings.	As per the scope of supply piping and its design, drawings are not in our scope. Please confirm.	Piping & its design outside the tank is excluded from bidder's scope.
10	Annexure - 9 (Nozzle Schedule)	336 of 338	1,2,3,4,5,6, 7,8,9	Nozzle Sizes of all the tanks	The sizes of all the nozzles are given but the thicknees/ Schedules of Nozzles are not given. Please provide the same in order to proceed furthur	The nozzle thickness shall match pipe thichness. Pl. refer Annexure-8A of amendment for pipe thickness.

PRE BID CLARIFICATION SCHEDULE

Tender reference	**PE/PG/BLI/E-6467/2020**
Project:	**2 X 250 MW NSPCL Bhilai TPP- FGD**
Package:	**MISC.TANKS (SITE FABRICATED)**
Bidder:	**THERMOSYSTEMS PVT. LTD, HYDERABAD**

Sl.No.	Section / Part/Subsection	Page No.	Clause No.	Bid Specification	Bidder's Query	Purchaser's Reply
1	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A	40 of 338	1.3	h) Supply and erection of vent valves shall be in bidd er's scope.	As the FGD tanks are of atmospheric tanks, we are not anticipating any valve at the vent nozzle connection. Please confirm.	Vent valve is not applicable for these FGD tanks. The clause 1.3 (h), page 40 of 338 stands deleted. However, as per specificaiton bidder shall provide vent with suitable bird screen.
2	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A / SPECIFIC TECHNICAL REQUIREMENT-TANKS / 1.0 SCOPE OF SUPPLY	41 of 338	1.6	Quantity and size of spare nozzles as per FGD Tank schedule (Section-III, Annexure-8) shall be supplied by the bidder.	As spare nozzles are not indicated in the annexure - 9 (Nozzle schedule), we are not considering any spare nozzles. Please confirm.	Bidder to provide nozzles as per Nozzle Schedule (Annexure-9.)
3	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A / SPECIFIC TECHNICAL REQUIREMENT-TANKS / 2.0 SCOPE OF SERVICES	41 of 338	2.4	Minor civil work like chipping of foundation, grouting below base plate for all structures, equipment, grouting of pockets, excavation & filling of earth for buried MS pipes if and as required.	Plase clarify the scope of supply of grouting material.	Supply of grouting material is in the scope of bidder.
4	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A / SPECIFIC TECHNICAL REQUIREMENT-TANKS / 1.0 SCOPE OF SUPPLY	41 of 338	1.7	Pipes, fittings, nozzles, flanges and counter flanges along with the rubber lining / VE Flake glass lining shall be supplied by the bidder. The minimum requirement like quantity, size, type etc. are indicated in the FGD Tank schedule (Section-III, Annexure-8) and may undergo change during detail engineering stage and these shall be supplied by the bidder as per the approved drawings / documents for which no commercial implication shall be entertained by BHEL. Material of construction of all pipes, fittings, nozzles, flanges and counter flanges shall be as per tank schedule (Section-III, Annexure-8).	Please confirm the tank sizes, nozzle size & quantities & Painting specification at pre bid stage only.	Pl. refer Annexure-8 for tank sizes, Annexure-9 for Nozzle schedule and Sub-section C2 - C for Painting specification.
	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A / SPECIFIC TECHNICAL REQUIREMENT-TANKS / 1.0 SCOPE OF SUPPLY	41 of 338	1.9	Painting of the tanks is included in bidder's scope of work. Painting specifications of storage tanks are given under Painting schedule in Sub Section-C2-C, section-1. Painting requirement specified under Painting schedule are minimum requirement. Any modification in painting requirement found applicable during detained engineering, shall be under bidder's scope without any commercial implication.		

	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-A / SPECIFIC TECHNICAL REQUIREMENT-TANKS / 3.0 DESIGN CONSIDERATIONS	44 of 338	3.18	The number & size of nozzles (including flanges, counter flanges and inside piping) indicated in the tank schedule (Section-III, Annexure-8) & Input dwgs (annexure-III, sub Section-D, Section-I) are tentative and bidder guidance purpose only and the same may undergo change during detail engineering stage for which no commercial implication shall be entertained by BHEL.		
5	PE-TS-468-167-A101 / SECTION-I / Sub Section-C1-B SPECIFIC TECHNICAL REQUIREMENT-RUBBER LINING	51 of 338	7.0	3. Please refer Sub Section- C2 – B, SE CTION – I for Packing Procedure.	We understood that packing procedure shall be as per cl.31.00.00 (PACKAGING AND TRANSPORTATION) given in pg.no.120 of 338. Please confirm.	Bidder understanding is correct.
6	PE-TS-468-167-A101 / SECTION-III / Annexure-8, TANK SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM	332 of 338	---	**13) Material specification:** e) Nozzle - A106 Gr.B h) Nozzle Necks - IS:1239	Meaning of Nozzle & Nozzle necks shall be same. But two different specifications are indicated. However we consider A106 Gr.B for nozzle necks and IS1239/IS3589 for internal extended piping of inlet nozzles. Please confirm. Also provide the thickness of nozzle necks & extended pipes to be considered.	Pl. refer Annexure-8A of amendment in this regard. The MOC details specified in Annexure-8A shall superede the details mentioned under Annexure-8 of specification.
	PE-TS-468-167-A101 / SECTION-III / Annexure-8, TANK SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM	331 of 338	---	**7) Pipe Material Specification:** a) 150NB & below - SA106 Gr.B (IIR) b) Above 150NB - IS:3589 (IIR)		
7	PE-TS-468-167-A101 / SECTION-III / Annexure-8, TANK SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM	332 of 338	---	**13) Material specification:** c) Stairways & Platforms - IS 2062 E250 Gr A/BR	Please clarify stair ways, platforms shall be galvanized or painted with applicable external paint.	The same shall be galvanised as per specification.
8	PE-TS-468-167-A101 / SECTION-III / Annexure-8, TANK SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM	332 of 338	---	**12) Inside lining of tank for process water tank, Belt wash tank & cake wash tank :** a) Lining specification - Epoxy lining minimum three coats of 150 microns thickness	We understood that DFT of each coat shall be 150micron. Total DFT of epoxy lining shall be 450microns. Please confirm. Please provide the detail specification for epoxy lining and confirm the primer requirement.	Bidder understanding is correct. However, the max. DFT of epoxy lining as per OEM recommendation shall be finalised during engineering.
9	PE-TS-468-167-A101 / SECTION-III / Annexure-8, TANK SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM	333 of 338	---	**15) Agitator load:** 15.1) static load (kg)	Please check the load of agitators of auxiliary absorbent tank given in the tank schedule. It seems very high.	The same is check & found in order. Further, to note that the load indicated is the total load for 3 nos. horizontal agitators.
10	PE-TS-468-167-A101 / SECTION-I / Sub Section-C2-C PAINTING SPECIFICATION	231 of 338	Sl.no. 42 & 43	Regarding painting specification of the tanks.	In the referred clauses, painting specfication is given for outside & inside surfaces of tanks only. Painting scheme to be considered for soil side of the bottom plates is not given. Kindly provide the same.	Under side of bottom plate(in contact with soil) of tank - 2 Coats of High Build Coal Tar Epoxy suitably Pigmented, DFT:80-100 microns each Coat.
11	PE-TS-468-167-A101 / SECTION-III / Annexure-9 (Nozzle schedule)	---	---	Regarding overflow line	We understood that Nozzle (on the tank shell) for overflow line only be in the bidder scope. Further piping from overflow nozzle to bottom of tank/terminal point shall be in client scope. Please confirm.	As per specification, only drop down pipe within the tanks, for each tank shall be provided by bidder. Piping outside tank nozzle is excluded from bidder's scope. However, any supporting arrangement requried for these pipes shall be provided by bidder.

12	PE-TS-468-167-A101 / SECTION –I, SUB SECTION –C1-A / 3.0 DESIGN CONSIDERATIONS	44 of 338	3.22	Bidder to note that foundation drawing along with loading data & anchor bolt details shall be provided by bidder within two weeks' time from the LOI. However, Bidder to provide minimum anchor bolts for the Miscellaneous FGD tanks, as specified in the tank schedule (Section-III, Annexure-8).	Referred clause calls for mininmum no. of anchor bolts shall be considered as specified in the tank schedule (Section-III, Annexure-8). But the size & quantity of achor bolts are not given in Annexure-8. Please provide the same.	Qty. of anchor bolts shall be based on calculations as per API 650 and same shall be finalised during detail engineering.
13	PE-TS-468-167-A101 / SECTION-III / ANNEXURE-8 (FGD TANKS SCHEDULE & GA DRAWING (TYPICAL) WITH AGITATOR PLATFORM) / SKETCH-11	334 of 338	---	---	Agitator platform shall designed for dynamic loads of the agitator which can not be carried out by us. Hence please suggest the structural member sizes to be used for the agitator platform.	Bidder to comply specification requriement.
14	PE-TS-468-167-A101 / SECTION-II / Sub Section-A / STANDARD TECHNICAL SPECIFICATIONSMECHANICAL / GUIDANCE FOR DESIGNING AND FABRICATION OF STEEL CONSTRUCTIONS FOR RUBBER LINING	291 of 338	6-1	Any surface of the base metal to be lined should not be coated with paint or oil.	Referred clause calls for Any surface of the base metal to be lined should not be coated with paint or oil, where as in painting specification of FGD tanks it is specified that inside surfaces of tanks shall be painted with ROZP primer. Please clarfy.	Bidde to consider primer as specified in the specification. However, final requirement of type of primer shall be subjected to lining manufacturer's recommendation and to be provided. Same shall be discussed & finalised during detail engineering.
	PE-TS-468-167-A101 / SECTION-I / Sub Section-C2-C PAINTING SPECIFICATION	231 of 338	Sl.no. 43	Tank internal structure Inside surfaces - Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) (Liner is inside the tank, hence primer is only envisaged; Protection till erection only).		

PROJECT : 2 X 250 MW BHILAI FGD

ANNEXURE-8A

Material of construction

Item	Size	Thickness	Standard & Specification
PIPES & NOZZLES	DN25 - DN50	Heavy	IS 1239 SML SW
	DN65 - DN150	Heavy	IS 1239 ERW BW
	DN200 - DN300	SCH20	IS 3589 Gr.410 ERW BE
	DN350 - DN500	SCH10	IS 3589 Gr.410 ERW BE
	DN550 - DN1000	7.9T	IS 3589 Gr.410 ERW BE
	DN1100 - DN1200	9.5T	IS 3589 Gr.410 ERW BE
	DN1350 - DN1500	11.9T	IS 3589 Gr.410 ERW BE
	DN1600 - DN1800	12.7T	IS 3589 Gr.410 ERW BE
FITTING	DN25 - DN50	Suit to PIPE	SW A234-WPB ASME-B16.11 / SW A105, ASME B16.11
	DN65 - DN500	Suit to PIPE	BW A234-WPB ASME-B16.9
	DN550 & above	Suit to PIPE	IS 2062 Gr.B (plate formed) ASME-B16.9
FLANGES	DN25 - DN600	-	IS 2062 Gr.B (plate) SO FF ASME B 16.5 Cl.150
	DN650 - DN1800	-	IS 2062 Gr.B (plate) SO FF AWWA-C207 Cl.D
MS PLATES	-		IS 2062 GR.B
STRCUTURE (ANGLE, CHANNEL, BEAM, BAR,FLAT ETC.)	-		IS 2062 GR.A /B
HANDRAIL	-		IS 1239 (MEDIUM), GALVANIZED
GASKETS	-		BUTYL RUBBER
ANCHOR BOLTS FOR FOUNDATION	-		IS 1367 PART 3, CLASS 4.4
BOLTS & NUTS	-		SA 193 GR B7 & SA 194 GR 2H
FASTENERS USED IN WETTED CONDITION	-		ALLOY 926 or BETTER MATERIAL