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DATE 13.07.2018

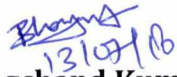
Subject- Corrigendum-2 (Technical Clarification on pre bid queries from vendors)

1. Project : PVUNL PATRATU TPS
2. Equipment / Item : 400 kV GAS INSULATED SWITCHGEAR (GIS)
3. Enquiry No. / Date : 278E067 , Dtd. 15/05/2018

With reference to the above tenders, kindly note the following;

(1) This corrigendum-2 is being issued for Technical Clarification on pre bid queries from vendors (As per attached annexure)

All other terms and conditions shall remain same of the tender.

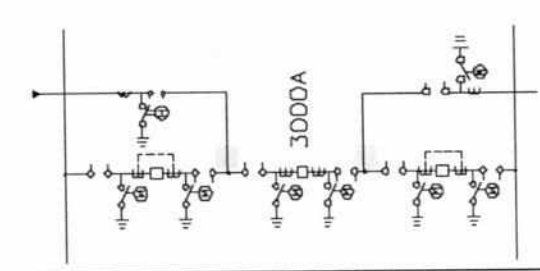

13/07/18
Bhagchand Kumawat
Sr. Mgr (TBMM)

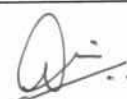
Clarifications and Confirmations for Pre bid query

Sl. No.	Clause No	Page No.	Technical Specification	Bidder query	BHEL Clarifications
1	1	Page 2 of 65	In case of any discrepancies between the requirements mentioned under Section-1, Section-2 and those specified in the Section-3, the order of precedence shall be as follows: Statutory Regulations Section-1 Section -2: NTPC Specification Section - 3 International standards	Kindly provide the copy of the regulations and the Clause numbers to which the compliance is requested	Please refer clause 3.3 of section-3 of technical specification.
2	1.5.10	Page 6 of 65	Bidder shall conduct system studies, insulation coordination for establishing Surge Arrester's rating and any other requirement for successful operation of GIS and cost of same shall be deemed included in scope of supply.	Kindly confirm the requirements for " System Studies ", we infer that Insulation Coordination study is required to be conducted as per BOQ and no other additional requirement is envisaged. Kindly confirm.	Noted
3	1.5.11	Page 6 of 65	Successful bidder shall submit 3D OGA drawing for complete GIS and section drawing of each equipment. OGA drawings shall also be furnished in AutoCAD file format	Isometric View in Pdf wall be provided. 2D/3D AutoCAD shall be provided. Provision of Model files is not envisaged as this is an Intellectual property of the manufacturer	Noted
4	1.5.12	Page 6 of 65	The grounding system shall be designed and provided as per IEEE-80-2000 and CIGRE-44 to protect operating staff against any hazardous touch voltages and electro-mechanical interferences.	The grounding system design is excluded from bidder Scope. Necessary Proposal drawing shall be submitted during detail engineering.	Earthing of GIS is in bidder scope. Switchyard earthing will be done by BHEL. BHEL will provide raiser (50X6 and 75X12 GI flat) for connection of GIS earthing to main earth mat. Bimetallic Strips for Connectiong with riser etc shall be in bidder scope.
5	1.5.13	Page 6 of 65	No support structure shall be placed within 3 meters around the GIS building periphery.	The Location of Support structure shall be in line with the Manufacturers design and shall take into consideration the site safety and design considerations	Bidder to follow Technical specification.
6	1.9	Page 10 of 65	The Customer will have the right of getting any test of reasonable nature carried out on any component or completely assembled equipment at Bidder's premises or at site or in any other place in addition to the aforesaid type and routine tests, to satisfy that the materials/equipment comply with the specification.	The GIS is type tested in line with IEC 62271-203 and confirms to the tender requirements. Repetition of Type tests is not envisaged as such.	Bidder to follow Technical specification.
7	2.1.2	Page 15 of 65	The modular design shall be capable of extension on either side without any major dismantling.	Kindly confirm if the future extension of the GIS is anticipated and the extension requirement is on the both sides of the GIS Bays.	Bidder to follow Technical specification.
8	2.3.5	Page 17 of 65	Due to safety requirement for working on the pressurized equipment, whenever the pressure of the adjacent gas compartment is reduced, it should be ensured by the bidder that adjacent compartment would remain in service with reduced pressure. The gas tight barriers shall be clearly marked on the outside of the enclosures.	As the pressure of a Gas compartment is reduced the dielectric strength of that gas compartment is reduced and due to safety requirement its not recommended to keep the gas compartment in service.	Noted
9	2.3.14	Page 18 of 65	The bus enclosure should be sectionalized in a manner that maintenance work can be carried out by isolating and evacuating the small effected section and not the entire bus.	The requirements of Service continuity in the GIS Bays can be met even without the provision of a Gas Continuous Busbar. Request to kindly accept.	Bidder to follow Technical specification.
10	2.3.33	Page 21 of 65	c) Any other alarm necessary to indicate deterioration of the gas insulating system	Kindly confirm the type of alarms required for this requirement.	will be provided during detailed Engineering after reviewing of schematics of GIS
11	2.11.6	Page 25 of 65	Each annunciator panel shall be complete with an audible warning horn, acknowledge/reset for horn silence and lamp test push buttons. Apart from annunciator system in LCC, alarm contacts for remote alarm indication shall have to be wired separately in LCC terminal block.	Visible display shall be provided in the Annunciators, provision of Audible Horn is not envisaged.	Bidder to follow Technical specification.

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Clarifications and Confirmations for Pre bid query

Sl. No.	Clause No	Page No.	Technical Specification	Bidder query	BHEL Clarifications
12	2.13.5	Page 26 of 65	The equipment shall have provision to monitor the following parameters periodically to check anomalies and/or wear & tear of equipment.	Kindly provide the complete technical specifications of the equipment's to be supplied for the monitoring equipment's. The requirement under this clause is not the part of the BOQ. Kindly confirm	please refer Clause C & D of BOQ for mandatory maintenance and monitoring equipments for GIS (annexure-1 of technical specification) .Please refer annexure -C & D of section-2 of technical specification.
13	Annexure-I	Page 45 of 65	7. The device should have display facility at the front for the settings and measured values, alternatively a laptop shall be supplied with each CSD to facilitate display at the front for the setting and measured values.	1 No. Additional Laptop shall be supplied with the complete requirement of CSD. Request to kindly accept.	Noted
14	2.28.1.3	Page 47 of 65	The isolators and earth switches shall be A. C. motor operated.	The motors for Isolators, Earth switches shall be DC operated.	Noted
15	2.28.7.1	Page 52 of 65	Additionally MBB contacts as required shall also be provided.	Requirement is not clear. Kindly confirm the exact requirement.	will be provided during detailed Engineering after reviewing of schematics of GIS
16	2.29.1	Page 54 of 65	Insulating oil IS: 335	Not Applicable for GIS CT/VT	Noted
17	2.29.2	Page 54 of 65	The Bidder is required to submit the VA burden calculations and obtain approval from the Customer before proceeding with design of the cores.	The technically feasible CT/VT parameters shall be submitted along with the technical offer. Provision of any specific calculations is not envisaged.	Noted
18	20.31.5	Page 65 of 65	f) Capacitance and tan delta measurement at minimum 10kV.	Not Applicable for GIS CT/VT	Noted
19	3.1.9	Page 3 of 4	CODES AND STANDARDS	The proposed GIS confirms to the provision of IEC 62271-203. Kindly confirm the clause number of the specification requested.	Bidder to follow Technical specification.
20	3.6	Page 6 of 9	GENERAL REQUIREMENTS - QUALITY ASSURANCE	The QAP shall be in line with IEC specifications kindly confirm	Bidder to follow technical specification
21	H1	--	H2 - 400kV, 3150A Circuit breaker with PIR (1 pole complete without enclosure without operating mechanism)	The specification does not require a PIR for 400kV GIS CB, thus request to kindly delete this specific requirement of CB with PIR.	The item is kept for any future requirement comes during execution stage. Here bidder to furnish unit rate of item.
22	H20	--	H20 - Gas monitoring system devices	Kindly provide the exact details of equipment's required for this line item.	For specification please refer annexure -C & D of section-2 of technical specification.
23		--	Drawing Number:9585-999-POE-J-002	Kindly provide the clear readable copy of the GIS SLD, the copy attached with tender documents is not clearly readable.	Noted
24		--	GIS SLD,Layout drawing	Kindly provide the AUTOCAD copy with clear dimensions for the proposed S/s	Noted
25	Key SLD		Safety grounding switch on the 'T' points of the Diameter	It is highly recommended to include safety grounding switches at 'T' points for line for grounding the 'T' section of the diameter for safety purpose, when performing maintenance on it. For clarity, please refer attached SLD (The regions marked with yellow are the one where the Safety Grounding switch is recommended).Please confirm 	Bidder to follow Technical specification /SLD . Line /GTdisconnector has two earth switches . One of earth switch is on line/GT side and other earth switch is on T zone side which can be used for earthing of T-Zone
26	1.6.2	6 of 187	The bidder shall define clearly what constitutes the main grounding bus if the GIS. The bidder must supply, commission in the entire GIS viz conductor clamps, joints, bimetallic strips, operating & safety platforms etc.	We understand that GIS manufacturer's scope is limited from GIS Bay to Riser Connection. The remaining (Earth Grid, Bimetallic Strips for Connecting with riser etc.) shall not be in GIS manufacturer's scope. Kindly confirm	Please refer point no. 4 above



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Clarifications and Confirmations for Pre bid query

Sl. No.	Clause No	Page No.	Technical Specification	Bidder query	BHEL Clarifications
27	2.2.8	16 of 187	Protective Finish - All exterior surfaces shall be cleaned & painted before leaving the factory with one coat of approved primer and 2 coats of water resistant approved paint on the equipment. The underside of all painted surfaces bearing upon the concrete foundation shall be given 2 coats of approved primer. extra paint retouching at site shall be made available by the bidder	We understand that paint shade and painting procedure as per GIS manufacturer's standard shall also be acceptable. Kindly confirm.	Bidder to follow Technical specification.
28	2.3.14	18 of 187	The Switchgeargas-proof compartments at least for: a) Bus bars b) Intermediate compartment c) Circuit breakers d) Bus / Line disconnections e) Gas insulated bus duct sections f) Current Transformers g) Voltage Transformers h) Surge Arrestors	In line with our type tested design, our Busbar & Bus Isolator are part of the same gas compartment. Kindly confirm the acceptance of the same.	Noted
29	-	-	Routine Tests on Enclosures, CT, PT & Surge Arresters	The aforementioned items being bought out, routine tests for the same are performed at Sub-vendors end and are not repeated in GIS manufacturers' works. The Routine Test reports of the tests performed shall be furnished for approval. Kindly confirm the acceptance of the same.	All routine tests shall be carried out as per technical specification and NTPC approved QAP
30	1.1	Page 3 of 65	The 400 KV GIS shall have three single phase constructions, one and half breaker arrangement (I-Type) having the following bays:	In GIS, there is no difference in layout arrangement for 1.5 CB scheme whether it is I-type or D-type. Please confirm	Noted
31	1.2	Page 4 of 65	Combined variation of voltage & frequency – 10%	Shall be as per IEC.	Bidder to follow Technical specification.
32	1.5.9	Page 5 of 65	Spacing between bays, if required to be changed to adjust with building column and beams, shall be done without any cost implication to BHEL at contract stage only.	Request for CAD layout drawing with column and beams marked to make precise offer without any assumptions.	will be provided during detailed Engineering
33	1.11	Page 13 of 65	Training at manufacturers works and at Site	To & Fro, local transport, Boarding and lodging charges for trainees are excluded from GIS supplier's scope of supply. It shall remain in BHEL's scope. Request to Note.	Bidder to follow Technical specification.
34	2.1.2	Page 15 of 65	The modular design shall be capable of extension on either side without any major dismantling.	Extension provision shall be given on right side where future bays are shown in customer SLD.	Bidder to follow Technical specification.
35	2.13.5	Page 26 of 65	iii) Insulation failure:	We propose Portable PD tool with UHF sensors for PD detection. Then there is no need for sonic detection.	iii) Insulation failure:
			The parameters to be monitored are:		The parameters to be monitored are:
			- SF6 gas density monitoring of all the compartments		- SF6 gas density monitoring of all the compartments
			- High frequency current detection for partial discharge detection		- High frequency current detection for partial discharge detection
			- Sonic detection		
36	2.16	Page 27 of 65	The leads to the tank heaters shall be enclosed in a conduit.	Thermostats shall be provided only in LCC, operating mechanism cabinet. There are no tank heaters provided.	Noted
37	2.24	Page 32 of 65	(h) Calibration/checking of SF6 gas pressure / density switches.	Checking of Density switch functioning can be performed at site. Density switches can be calibrated at factory.	At contract stage , bidder to follow NTPC approved QAP.
38	Annexure-D & BOQ item no. D1		1.0 Dew point meter	SF6 gas analyzer (item no. C3) can be used to measure dew point of SF6 gas. Hence no need to quote dew point meter separately. Please clarify.	Bidder to follow Technical specification.
39	2.27.3.2	Page 39 of 65	Circuit breakers shall be provided with two (2) independent trip coils, suitable for trip circuit supervision. The trip circuit supervision relay would also be provided. GIS building shall be provided with required electrically operated overhead crane, ventilated system.	Trip circuit supervision relay shall be part of relay panel. In Local control cubicle of GIS, no relays shall be provided.	Noted

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Enquiry No.: 278E067, date:15/05/2018

Project: 400kV GIS at Patratu Super Thermal Power Project Expansion Phase-I

Tech. Spec. No.: TB-397-316-003

Clarifications and Confirmations for Pre bid query

Sl. No.	Clause No	Page No.	Technical Specification	Bidder query	BHEL Clarifications
40	2.29.4	Page 55 of 65	Each current transformer shall be equipped with a marshalling box with terminals for the secondary circuits, which are connected to the local control cubicle.	Terminal box shall be provided for CTs.	Noted
41	2.30.4	Page 60 of 65	i) Pressure relief class - Class A of Table VII of IS:3070	Not applicable to GIS Surge arresters.	Noted
42	BOQ		B – Supply item – Mandatory spares (B1 to B5)	Request to clarify the unit indicated as “set”, as we offer single phase encapsulated design.	Please refer technical specification ,it is already defined in technical specification
43	General		SLD	Request to provide legible single line diagram. From the given SLD ref: 9585-999-POE-J-002 Rev C, Outgoing line disconnectors are with High speed earthing switch on both sides shown. We consider high speed earthing switch - 1 no on outgoing side of line disconnector, maintenance earthing switch shall be considered on other side. Please confirm. From the given SLD and BOQ, there is no PIR for any Circuit breaker. Please confirm.	Bidder to follow technical specification and SLD



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