Bharat Heavy Electricals Limited
Transmission Business Group, Noida

Project : 4x225MW Arun-3 HEP, Nepal
Customer: M/s SAPDC, Nepal Consultant : SJVN
Technical Specification for 400kV GIS - Doc No. TB-405-316-001 R0
BHEL NIT NO : 55390 Enquiry no : 61Q2000253, DATED 29/10/2020

Date : 13 Nov 2020

Corrigendum for Technical Specification for 400kV GIS

Sno	Clause Number	BHEL Clarification
A	**BOQ**	
A.1	**Detailed BOQ Sno** **Sno 29 : C.3** **Sno 30 : C.4** **Sno 31 : C.5** **Sno 32 : C.6** **Sno 33 : C.7** **Sno 34 : C.8** **Sno 35 : C.9**	Quantity of the items is revised in Annexure-1 (Detailed BOQ) of Technical Specification- Page 3/5.Please refer revised Price Bid Schedule
B	**Technical Specification**	
B.1	**Section 1:** **Type Test** 5) Type tests: The contractor shall submit the certificates from Govt. approved labs/ accredited laboratories of the type tests listed under Clause 16.A.7.3 of Section-2 for **the 400 KV GIS & 400 KV SF6 CGI Bus Ducts** which should have been carried out within last five (5) years from the date of bid opening **(09.02.2018).** These type test reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and the test(s)	Clause revised as – 5) Type tests: The contractor shall submit the certificates from Govt. approved labs/ accredited laboratories of the type tests listed under Clause 16.A.7.3 of Section-2 for the **400 KV GIS & 400 KV SF6 CGI Bus Ducts** which should have been carried out within last five (5) years from the date of bid opening **(09.02.2018)**. These type test reports should be for the tests conducted on the equipment similar **(i.e. as per IEC/ equivalent standard)** to those proposed to be supplied

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	should have been either conducted at an independent laboratory or should have been witnessed by a client. In case the contractor is not able to submit report of the type test(s) conducted within last five years from the date of bid opening, or in case the type test report(s) are not found to be meeting the specification requirements, the contractor shall conduct the type tests without any commercial implication to BHEL/SAPDC/SJVN.	under this contract and the test(s) should have been either conducted at an independent laboratory **(NABL approved or equivalent).** In case the contractor is not able to submit report of the type test(s) conducted within last five years from the date of bid opening, or in case the type test report(s) are not found to be meeting the specification requirements, the contractor shall conduct the type tests without any commercial implication to BHEL/SAPDC/SJVN.
2	**Section 2: page 2 of 61** **Sno 16A.1.1 (e) (viii)** Three-336 kV single phase, SF6 insulated, metal enclosed zinc oxide surge arrestors.	Clause Deleted
3	**16A.5.11 Service life** In order to minimize maintenance and component replacement, the supplier shall submit proof that all offered SF6 GIS equipment has a minimum service life of 10,000 normal operations/as per relevant IEC/IEEE standard.	Clause reframed as "….. . In order to minimize maintenance and component replacement, the supplier shall submit proof that all offered SF6 GIS equipment has a minimum service life a. CB : M2C2 b. DS : M2 c. ES : As per IEC d. HS : As per IEC as per relevant IEC/[redacted] standard."

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13/11/20

31/10/11

Sl. No of Purchase Indent	Line Items	Description	Detailed Description	Unit	Qty
21	A.21	SUPPLY- GIS : 400KV, LADDER, WALKWAY, MOBILE PLATFORM ETC	Bidder to quote for the following 1. Ladder 2. Walkways 3. Mobile Platform Any reputed make , which shall be subject to approval by customer during detailed engineering as per of Section-2 of technical specification.	MT	5
22	A.22	SUPPLY- GIS : 400KV, DOUBLE MAIN BUS SCHEME - EARTHING MATERIALS INCLUDING HIGH FREQUENCY EARTHING(IF APPLICABLE)	Supply of Earthing Material (Except 40mm MS ROD ,75x12mm / 50x6 GI Flat) and Supervision of erection of all Earthing connection for GIS to Earth Mesh on Floor shall be in Bidder's scope. The quantity shall be estimated by the bidder, based on their design philosophy. Supply of only 40mm MS ROD & 75x12mm / 50x6 GI Flat and Erection of Earth mesh on floor shall be done by BHEL. Design philosophy shall be submitted along with the bid in line with section-2 of technical specification. If any special earthing like high frequency earthing are required then supply and supervision of erection of the same shall be in bidder's scope. Refer Section-2 and SLD for details.	Lot	1
23	A.23	SUPPLY- GIS : 400KV, DOUBLE MAIN BUS SCHEME - CONSUMABLES FOR GIS	Supply of All consumables including grouting material and chemicals for the chemical anchors bolts if applicable for the complete installation, testing, commissioning and placing into successful operation of the GIS equipment. Consumables required during erection, testing and commissioning for complete package. It shall be supplied after confirmation from BHEL. Refer Section-2 and SLD for details.	Lot	1
24	A.24	SUPPLY- GIS : 400KV, CONTINUOUS ONLINE MONITORING AND DIAGNOSTIC SYSTEM INCLUDING REMOTE MONITORING AND SUPERVISION STATION	Continuous Online Monitoring system shall be complete in all respects and comprising of following but not limited to, Continuous on-line monitoring and diagnostic systems in all individual bays (including LCD display) to monitor partial discharge, internal arching, gas density, gas pressure, leakage, moisture etc., operating parameters such as current, voltage, temperature etc. complete with sensors, control / processor units, wiring/cabling in all respects , also comprising of following but not limited to Gas Monitoring System as follows, (a) All gas compartments shall have their own independent gas supervision and alarm systems. There shall not be any interconnection between different gas compartments for the purpose of gas monitoring. (b) Individual temperature compensated gas pressure gauge(s)/ density device(s) shall be provided in each of the gas compartments which will monitor and indicate the state of gas density. The system shall be such that it can be installed separately/ integrated with SAS/SCADA (As applicable). Remote monitoring and supervision station shall be complete in all respects but not limited to following : Remote monitoring and supervision station having time synchronization facility for CSD , SF6 Gas Monitoring & Conitnuous Online Monitoring System to be placed in control room for system operator. Continuous Online Monitoring and Alarm System shall be as per section -2 of technical specification.	Set	1
	B	**Supply Item: Maintenance Supply Items . Refer Technical Spec for details**			
25	B.1	SUPPLY- GIS : SF6 GAS PROCESSING UNIT	Gas processing units suitable for evacuating, liquefying, filling, drying, vacuuming and purifying SF6 gas during initial installation, subsequent maintenance and future extension of the GIS. Processing unit shall have facility of handling all said functions for at least 3 different compartments simultaneously. Both processing units complete with all valves, couplings, fittings etc. shall include the following: a. 20 no. hose pipe - 20m b. 10no. hose pipe - 10m c. 5no. hose pipe - 5m Four way coupling / manifold - 10 sets Straight coupling - 12 sets Required fittings and accessories for above. SF6 Gas Processing Unit shall be as per section -2 of technical specification.	Nos	2
26	B.2	SUPPLY- GIS : VACUUMING MACHINE	Vacuuming machines suitable for vacuuming GIS compartments with latest technical requirements. Processing unit shall have facility of handling all said functions for at least 3 different compartments simultaneously. SF6 Gas Vacuuming machine shall be as per section -2 of technical specification.	Nos	2
	C	**Supply Item: Mandatory SPARES . Technical Spec to be referred for details.**			
27	C.1	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, SF6 TO AIR BUSHING	SF6 / Air outdoor bushings, complete with gaskets and connectors.	Nos	2
28	C.2	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, CIRCUIT BREAKER - COMPLETE CIRCUIT BREAKER POLE OF EACH TYPE & RATING	Single phase 400 kV 2500A circuit breaker complete with all necessary apparatus.	Nos	3
29	C.3	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, CIRCUIT BREAKER - CIRCUIT BREAKER INTERRUPTING HEADS	400 kV 2500A circuit breaker interrupting heads, complete with all necessary apparatus.	Nos	3
30	C.4	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, CIRCUIT BREAKER - CIRCUIT BREAKER OPERATING MECHANISM	400 kV, 2500 A circuit breaker operating mechanisms, complete with motor & all necessary connecting apparatus.	Nos	3
31	C.5	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, DISCONNECTOR SWITCH (3 PHASE)	3 phase 400 kV, 2500A isolator switch.	Nos	3
32	C.6	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, DISCONNECTOR SWITCH (3 PHASE)-OPERATING MECHANISM	3 phase 400 kV, 2500A isolator switch operating mechanism complete with necessary apparatus.	Nos	3
33	C.7	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, DISCONNECTOR SWITCH - INTERNAL PARTS	400 kV, 2500A isolator switch internal parts, complete with all necessary gaskets, mounting hardware etc.	Set	3
34	C.8	SPARES- GIS : 400KV, 50KA FOR 1S, SAFETY GROUNDING SWITCH (3 PHASE)	3 phase 400 kV, 2500A safety grounding switch complete with all necessary gaskets, mounting hardware etc.	Set	3
35	C.9	SPARES- GIS : 400KV, 50KA FOR 1S, HIGH SPEED GROUNDING SWITCH (3 PHASE)	3 phase 400 kV, 2500/500/200 A high speed grounding switch complete with all necessary gaskets, mounting hardware etc.	Set	3
36	C.10	SPARES- GIS : 400KV, 50KA FOR 1S, VT CORE	400 kV /√3 / 110 V / √3 / 110 V /√3 /110/ √3 V VT core,	Nos	1
37	C.11	SPARES- GIS : 400KV, 50KA FOR 1S, CT CORE	400 kV current transformer cores, set to comprise one core of each ratio, burden and accuracy used in the equipment.	Set	1
38	C.12	SPARES- GIS : 400KV, 50KA FOR 1S, SURGE ARRESTOR INCLUDING SURGE COUNTER FOR GIS BUS	336 kV, single phase, station class gas insulated gapless surge arrestors.	Nos	2
39	C.13	SPARES- GIS : GAS MONITORING DEVICE	Gas monitoring devices complete with all necessary fittings,gaskets & switches.	Nos	3
40	C.14	SPARES- GIS : CONTROL SWITCHES	Control switches/control relays comprising one switch / relay of each type and rating used in the control cubicles.	Set	1
41	C.15	SPARES- GIS : LOW VOLTAGE CIRCUIT BREAKERS	Low voltage circuit breakers, comprising one circuit breaker of each type and rating used in the control equipment.	Set	1
42	C.16	SPARES- GIS : FUSES	Control circuit fuses, each set to comprise one of each type and rating of control circuit fuse used on the equipment.	Sets	10
43	C.17	SPARES- GIS : LED	LEDs, each set to comprise one of each type and rating used on the equipment.	Sets	10
44	C.18	SPARES- GIS : INSPECTION WINDOWS	Inspection windows.	Sets	3
45	C.19	SPARES- GIS : SHEER PINS	Sheer pins.	Nos	100
46	C.20	SPARES- GIS : 400KV, 50KA FOR 1S, 2500A, CIRCUIT BREAKER - CLOSING COILS	400 kV circuit breaker closing coils.	Sets	100