Bharat Heavy Electricals Limited

(A Govt. of India Undertaking)
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CORRIGENDUM - 05 TO NIT NO-63589

Subject: Corrigendum-5 to Tender enquiry for Pre-bid Tie up for Supply & Services of 400/220 kV GIS for POWERGRID Navsari Project.

Project	: POWERGRID Navsari PROJECT
Equipment / Item	: SUPPLY & SERVICES OF 400/220 kV GIS.
Enquiry No/Date	: NIT 63589_61G2200250 dated 05.03.2022
BHEL NIT NO	: 63589
Original Tender due date	**: 09.03.2022**

This Corrigendum is being issued by BHEL TBG against above mentioned NIT/ enquiry for following:

a. To extend the offer submission date up to **04:00 PM on 17.03.2022 and bids shall be opened 04:30 PM** onwards on **17.03.2022**.
b. To incorporate Technical Clarifications & Corrigendum as attached.

All other terms and conditions for this tender enquiry shall remain unchanged.

Bidder to ensure submission of offer on or before due.

Note: Tender ID in CPP Portal is **2022_BHEL_9147_1.**

Thanking you

Vineet Gupta
BHEL TBG, NOIDA

S. No.	Volume/Section/ Clause No.	Description	Bidder's Query	POWERGRID Reply
	NOTE: ALL TECHNICAL CLARIFICATION(S) FOR GIS, PUBLISHED BY M/S POWERGRID WITH REFERENCE TO SUBJECT PROJECT SHALL BE DEEMED VALID FOR THIS TECHNICAL SPECIFICATION			
1.	General	Land Co-ordinates	Please provide us the Land coordinates for conducting site visit for all Substations.	Location of Kala Extn. S/s is: Latitude: **20° 7'22.82"** N Longitude: **73° 2'8.64"** E Location of Magarwada Extn. S/s is: Latitude: **20°22'54.76"** N Longitude: **72°51'34.34"** E Land coordinates of Navsari (New) S/s shall be shared to the successful bidder during detailed engineering stage
2.	Cl. No. 2 of Section project & price Schedule	Present scope: 400kV:- •Switching Scheme : One and a Half Breaker Scheme • Fault Level: 63kA for 1 sec • Line without Switchable Reactor bays : 2 • Line with Switchable Reactor bays : 2 • ICT Bays: 5 • Bus Reactor Bay: 1 • Tie Bays: 5	As per section project No. of 400KV bays are 15 while as per BPS no. of bays are 17.Please clarify.	Bidder to quote as per BPS. Bidder shall also consider 02 nos. of Switchable Line Reactor bays as per provision of Technical specifications.
3.	General	Creepage distance	We understand that creepage distance to be considered 25mm/kV for each voltage level.	Creepage distance to be considered 31mm/kV for each voltage level.
4.	Cl. No. 3.1.8 (h. iv) of Section project	iv. Factor of safety for design of tower and equipment structures and foundations shall be as mentioned below: ·Factor of safety for design of tower,	We understand bidder shall do the short circuit force calculations following the IEC - 60865, Part-1, 1993 version. Please confirm our understanding.	Confirmed. Factor of safety is same for all three sites as mentioned in the Section Project.

S. No.	Volume/Section/ Clause No.	Description	Bidder's Query	POWERGRID Reply
		equipment structures shall be 1.5 under normal condition and 1.2 under short-circuit condition. ·Factor of safety for design of tower, equipment foundation shall be 1.5 in both normal and short circuit condition as per IS 456. ·Factor of safety for stability of tower, equipment foundation like overturning shall be 2 (without wind or seismic), 1.5 (with wind or seismic) for normal and S/c condition as per IS 1904."		
5.	General	Section drawing for Kala & Magarwada substation	Section drawings of existing GIS in Kala and Magarwada required to understand BB height and spacing	The existing GIS drawings of Kala & Magarwada S/s shall be shared to the successful bidder during detailed engineering stage. However, bidder is advised to visit the existing Substation site.
6.		GIS Mandatory spares : Current Transformer	As per referred BPS line item, current transformer along with the primary conductor is required as spare. However, we understand that primary conductor of current transformer will be the internal conductor of GIS and the same is not required to be supplied as a spare. Please confirm whether bidder understanding is in order.	Primary conductor of current transformer will be the internal conductor of GIS and the same is to be supplied as spare as part of CT spare.
7.		Bay Extn at 400kV Navsari (New) / 400kV GIS Equipment	As per clause no.10.(xiii) of Section-Project, we understand that for 400/220kV ICT-4(F) bay GIS bus ducts with end module need to be provided, however, same is not covered in BPS and surge arrestor for associated bay is also under present scope. Please confirm the actual requirement.	As per clause no.10.(xiii) of Section-Project, it is clearly mentioned that end (Interface) module(s) shall be deemed to be part of outdoor bus duct and item of outdoor Busduct is covered under BPS. Further, GIS Surge arrester for 400kV ICT-4(F) bay is also under present scope.

S. No.	Volume/Section/ Clause No.	Description	Bidder's Query	POWERGRID Reply
8.	General arrangement drawing	(Drg.no. C/ENGG-SS/WR/NAVASARI(NEW)/ GIS/GA/01)	As per the drawing overhead bushing termination is shown for 400kV Line & Bus reactors. However, as per BPS, SF6-to-Oil interface Module is required. Please check & clarify the actual requirement.	For 400kV Transmission Line, SF6/air bushing is considered under present scope. For Bus Reactor, SF6-to-Oil interface Module is considered under present scope of work. Bidder to quote accordingly.
9.	Section-Project :	Clause 7 : Bus-bar rating for Magarwada GIS S/s	As per Main Single line Diagram (Drg. No. G12263-A01), Busbar and line bay current rating is of 3000A and 2000A respectively, however, as per referred clause the same is mentioned as 4000A and 3150A. Please confirm the actual requirement.	Under present scope for Magarwada Extension S/s, Busbar and line bay current rating is to be considered as 4000A & 3150A. Bidder to quote accordingly.
10.	Section-Project :	Clause 7 : Bus-bar rating for Kala GIS S/s	As per 400/220kV Single line diagram (Drg. No. G&B-SS01-KAL-E-SLD-001), Busbar and line bay current rating is of 3000A and 2000A respectively, however, as per referred clause the same is mentioned as 4000A and 3150A. Please confirm the actual requirement.	Under present scope for Kala Extension S/s, Busbar and line bay current rating is to be considered as 4000A & 3150A. Bidder to quote accordingly.
11.	Section-Project :	Clause 5.(iii) : Fault level for Magarwada GIS S/s	As per Main Single line Diagram (Drg. No. G12263-A01), rated short time withstand current is mentioned as 40kA for 1s, however, as per referred clause the same is mentioned as 63kA for 1s. Please confirm the actual requirement.	Under present scope for Magarwada Extension S/s, Rated short time withstand current is to be considered as 63kA/1Sec. Bidder to quote accordingly.
12.	Section-Project :	Clause 5.(iii) : Fault level for Kala GIS S/s	As per 400/220kV Single line diagram (Drg. No. G&B-SS01-KAL-E-SLD-001), rated short time withstand current is mentioned as 40kA for 1s, however, as per referred clause the same is mentioned as 63kA for 1s. Please confirm the actual requirement.	Under present scope for Kala Extension S/s, Rated short time withstand current is to be considered as 63kA/1Sec. Bidder to quote accordingly.
13.	Extension of GIS make	Bay ext. at 400KV GIS Magarwada & 400KV GIS Kala	Please provide flange details of Existing GIS make to plan interface of extension of modules.	The existing GIS detail drawings of Kala & Magarwada S/s shall be shared to the successful bidder during detailed

S. No.	Volume/Section/ Clause No.	Description	Bidder's Query	POWERGRID Reply
				engineering stage. However, bidder is advised to visit the existing Substation site

<table>
<tr><th>S No.</th><th>Volume/Section/Clause</th><th>Volume/Section/Clause as Existing</th><th>Volume/Section/Clause as Amended/Added</th></tr>
<tr><td>1.</td><td>Clause no. 5 (ii) of Section Project</td><td>5 PHYSICAL AND OTHER PARAMETERS

(ii) Meteorological data
The meteorological data are as below<table><tr><td>Substation</td><td>765/400/220kV Navsari (New) (South Gujarat) Substation
400/220kV Kala GIS Substation
400/220kV Magarwada GIS Substation</td></tr><tr><td>Altitude</td><td>Less than 1000 meter above (MSL)</td></tr><tr><td>Snow fall</td><td>NIL</td></tr><tr><td>Seismic Zone</td><td>As per IS 1893</td></tr><tr><td>Wind Zone</td><td>As per NBC 2016</td></tr><tr><td>Min./Max. Ambient Temperature</td><td>0 / 50 degree centigrade</td></tr><tr><td>Coastal Area consideration</td><td>Navsari S/s- Yes
Kala S/s & Magarwada S/s- No</td></tr></table></td><td>5 PHYSICAL AND OTHER PARAMETERS

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Kala S/s & Magarwada S/s- Yes</td></tr></table></td></tr>
<tr><td>2.</td><td>Clause no. 10 (iv) of Section Project</td><td>400/220kV Navsari (GIS) substation is situated in coastal area. Hence, all the specifications defined for coastal area in various sections of Technical Specifications shall be applicable for 400/220kV Navsari (GIS) substation.</td><td>400/220kV Navsari (GIS), 400kV Kala (GIS) & 400kV Magarwada (GIS) substations are situated in coastal area. Hence, all the specifications defined for coastal area in various sections of Technical Specifications shall be applicable for all three substations mentioned above.</td></tr>
<tr><td>3.</td><td>SECTION-1 (PART-A)</td><td>STANDARD SCOPE MATRIX FOR GAS INSULATED SWITCHGEAR REV.01</td><td>REPLACED WITH REV.02 VERSION</td></tr>
<tr><td>4.</td><td>NEW CLAUSE IN SECTION-1(B)</td><td>SPECIAL NOTE</td><td>ALL TECHNICAL CLARIFICATION(S) FOR GIS, PUBLISHED BY M/S POWERGRID WITH REFERENCE TO SUBJECT PROJECT SHALL BE DEEMED VALID FOR THIS TECHNICAL SPECIFICATION</td></tr>
</table>

5	NEW CLAUSE IN SECTION-PROJECT		Cl. No. 3.1.8 (h. iv) of Section project iv. Factor of safety for design of tower and equipment structures and foundations shall be as mentioned below: ·Factor of safety for design of tower, equipment structures shall be 1.5 under normal condition and 1.2 under short-circuit condition. ·Factor of safety for design of tower, equipment foundation shall be 1.5 in both normal and short circuit condition as per IS 456. ·Factor of safety for stability of tower, equipment foundation like overturning shall be 2 (without wind or seismic), 1.5 (with wind or seismic) for normal and S/c condition as per IS 1904." Short circuit force calculations (if applicable) as per IEC - 60865, Part-1, 1993 version.
	BID PRICE SCHEDULE	400KV GIS -SF6 GAS (5 % OF TOTAL GAS QUANTITY) & 220KV GIS -SF6 GAS (5 % OF TOTAL GAS QUANTITY)	NEW REMARK ADDED – 5 % OF TOTAL GAS QUANTITY IS TO BE SUPPLIED AS SPARE IN NON-RETURNABLE CYLINDERS. PLEASE NOTE: IN THE EVENT OF CHANGE IN GIS SCOPE / SF6 GAS QUANTITY, ANY ADDITIONAL PAYMENT SHALL NOT BE ADMISSIBLE. BIDDER TO QUOTE ACCORDINGLY.

CONTENTS

This document covers broader guideline for bidder's scope of supply & services. The same shall be prevailing on all other section of technical specification.

1. SCOPE

This technical specification covers the requirements of (1.) design, type testing, engineering, fabrication, manufacturing, shop assembly, inspection and testing at manufacturer's works, proper packing, supply and delivery to project site, (2.) supervision of material reconciliation, installation / erection, (3.) execution of site testing & commissioning along with necessary kits, tools & equipment , putting GIS with LCC & its Accessories into successful operation complete with all materials, support structures, anchoring bolts, chemical anchor, accessories, commissioning spares & maintenance spares, special spanners, special tools & tackles, any specific required ancillary services, SF6 gas for first filling & spare etc. including design studies, training of BHEL / Customer personnel for offered GIS & its Accessories complete in all respects for efficient & trouble-free operation mentioned under this specification.

This section covers bidder's scope for GIS with LCC & its Accessories. The offered GIS with LCC & its Accessories shall comply with the Section-1, 2 & 3 of technical specification.

The complete technical specification comprises of following sections:

Section-1	:	Scope, Project Specific Technical Requirements & Bill of Quantities including scope matrix
Section-2	:	Equipment Specification under scope of Supplies
Section-3	:	Project Details & General Technical Requirements (For All Equipment under the Project)
Section-4	:	Annexures Annexure A- Compliance Certificate Annexure B- Schedule of Technical Deviations

The following order of priority shall be followed. In case of conflict between

requirements specified in various documents, the more stringent one shall be followed. BHEL/Customer concurrence shall, however, be obtained before taking a final decision in such matters.

1. Statutory Regulations
2. Section-1(PART-A) Standard Scope Matrix
3. Section-1(PART-B)
4. Section-2
5. Section-3

Bidder shall furnish list of conflicts/ ambiguities/ deviations, if any, along with their technical offer and also furnish the basis that is considered for submitting technical offer. BHEL will address the bidder's listed conflicts prior to award. In case of ambiguity, bidder shall inform BHEL of their interpretation. In case bidder fails to convey the same prior to award, BHEL decision on interpretation shall be considered final if need arises during the execution. No additional cost or extra time on account of conflicts/ ambiguities/ deviations shall be admissible.

In general, no deviation from the requirements specified in various clauses of this specification shall be allowed and hence, a certificate to this effect shall have to be furnished along with the offer (Annexure-A), however bidder shall furnish list of conflicts/ ambiguities/ deviations (Annexure-B), if any.

Please note, any deviation not specifically brought out in Annexure-B (Schedule of Technical Deviations) **shall not be admissible** for any time and commercial implication at later stage. Except to the technical deviations listed in this schedule, bidder's offer shall be considered in full compliance to the tender specifications irrespective of any such deviation indicated / taken elsewhere in the submitted offer. Any conflicts/ ambiguities/ deviations mentioned elsewhere in technical offer shall not be reviewed.

The scope of supplies shall be as per commercial terms and conditions enclosed separately with the notice inviting tender/ enquiry.

2. SPECIFIC TECHNICAL REQUIREMENTS

Please refer Section-1(PART-B) of technical specification.

3. NOTE FOR BILL OF QUANTITIES

1. SF6 gas for initial installation of complete GIS System, including wastage during installation, testing and successful commissioning shall be deemed included in the bidder's scope.
2. The offered GIS with LCC & its Accessories shall be complete in all respect in compliance to technical specification and relevant IS / IEC / IEEE standards as applicable. Any other equipment/material required to complete the specified GIS scope of work are inclusive of bidder's scope of supply & services.
3. All essential and desirable accessories are deemed inclusive of offer i.e. and not limited to Gas Monitoring Devices, Pressure Switches, PD sensors, Pressure relief device, insulator, expansion joint/ flexible, bellows/ compensators like lateral mounting units, Axial compensators, Parallel compensators, tolerance compensators and vibration compensators etc. complete in all respect.
4. Total contract value may vary up to ±30% at contract stage.
5. Any Item not quoted mentioned "**Not Applicable**" in bid price schedule and found applicable as per technical specification and system requirement shall be supplied free of cost by bidder without any time / cost implication to BHEL / Customer.
6. Length & route of GIB is purely indicative and same shall be finalized during detailed engineering stage.
7. BHEL reserve rights to amend Bay sequence during contract stage, no separate claim shall be admissible in this regards.
8. Supply scope of Testing & Maintenance Equipment – Scope of supply of following Equipments shall be applicable only if covered in BOQ / BPS.
    a. SF6 Gas leakage detector
    b. Gas filling and evacuating plant: (Gas Processing unit)
    c. SF6 gas analyser
    d. Portable Partial Discharge(PD) monitoring system
    e. Online Partial Discharge Monitoring System
9. Main Bus 1 / 2 / Transfer Bus etc. Gas Insulated Bus Bars running across the length of the switchgear to interconnect each of the bay modules (as per layout) and necessary interfaces (as applicable under the technical requirement) is deemed inclusive in the scope. The same may or may not be indicated with

break-up in BOQ / BPS.

Remark: BPS: Bid Price Schedule

4. NOTES ON MODE OF MEASUREMENT

1. The price of Bus-duct inside the GIS hall (upto **outer** wall face of GIS Hall) shall be integral part of the respective bay module and it will not be paid separately. However, the payment of bus-duct for outside the GIS hall along with support structure shall be paid as per running meters in line with provision of Technical Specification & Bid Price schedule.
2. In the case of outdoor type GIS, Gas Insulated Bus Duct (GIB) length of bus duct outside the GIS BAY MODULE shall be considered for mode of measurement from the end of Bay equipment (VT, LA etc.) to end equipment (SF6 to air bushing / SF6 to oil bushing/ Cable connection module etc.).
3. Any change in bay pitch (distance between bays): In a case where shifting of GIS bays shall be called by BHEL (during contract stage) due to layout requirement / cost optimization / revision / change in civil architectural requirement or due to expansion joint requirement in the GIS building, Bidder to incorporate the same with full compliance of technical requirement. Payment equivalent of BPS / BOQ item under head "Gas Insulated Bus Duct" shall be operated for additional length of Main Bus, subject to such shifting is not attributed to bidder.

5. SUPPORT STRUCTURE & HARDWARES (INCLUDING STRUCTURE STEEL)

Structural Steel, Support Structure & Hardwares (required for installation of complete GIS system with LCC & its Accessories etc.) are deemed inclusive of bidder's scope of supply. The same may or may not be indicated with break-up in BOQ / BPS.

All steel structure members shall be hot-dip galvanized after fabrication (excluding floor embedded items for which standard practice is to be followed). All field assembly joints shall be bolted. Field welding shall generally not be acceptable. Noncorrosive metal or plated steel shall be used for bolts and nuts throughout the work.

The minimum weight of the zinc coating shall be 610 gm/sq.m and minimum average thickness of coating shall be 86 microns for all items having thickness 6mm

and above and 900 gm/sq.m for coastal area (if defined in Section-1B / Section-2 of technical specification) For items lower than 6mm thickness requirement of coating thickness shall be as per relevant ASTM. For surface which shall be embedded in concrete, the zinc coating shall be 610 gm/sq.m minimum and **900 gm/sq.m for coastal area** (if defined in Section-1B / Section-2 of technical specification).

1. Lattice / Pipe structure Materials for support of GIS, Bus Ducts, SF6 to oil bushing/ SF6 to cable connection and SF6 to air bushing/ connection including Anchor Fastener Bolts, Foundation Bolts, Base Plate / Channel / Metallic / Structural Member for seating of GIS system, all floor and wall Embedded Items, wall crossing arrangements, Rails and/ or other items structural items as required. Manufacturer shall provide suitable foundation channels and anchor bolts to support the switchgear assemblies. All mounting bolts, Anchor Fasteners, foundation bolts, nuts and washers, equipment fixing hardware shall be provided to fasten the switchgear base frames to the foundation channels as applicable
2. The GIS Equipment shall be complete with all necessary supports, ladders, galleries, staircases, catwalks, movable platforms or walkways (for accessing the equipment above two meters for maintenance and operation), mechanism cabinets, internal cable raceways etc. for each bay and it shall be of modular construction and extendable design.
3. Structural steel for complete GIS system with LCC & its Accessories is deemed inclusive in bidder's scope of supply.

6. EARTHING MATERIALS OF GIS

Bidder to submit detailed calculations and layout drawings for earthing system during detailed engineering stage based on technical specification, bidder's design philosophy, IS/IEC/IEEE requirement as applicable. Bidder to provide the bill of quantity of entire GIS system with LCC & its Accessories

1. Supply of 40 mm MS ROD, 75X12 mm GI Flat, 50X06 mm GI Flat is **not in bidder's scope** of supply.
2. All other earthing materials including complete Hardwares, nut, bolts washers, lug etc. required, as per earthing design shall be in bidder's scope of supply.
3. Installation / Erection of earthing will be done by BHEL team under the supervision of bidder/manufacturer, as per manufacturer's design.

7. SCOPE FOR CABLES

1. Power, control & instrumentation cables for **Cabling** (1.) within GIS, (2.) GIS to LCC, (3.) LCC to LCC shall be deemed inclusive in bidder's scope of supply.
2. Scope includes for completeness for GIS system with LCC & its Accessories
3. Cabling between LCC to LCC shall be applicable if required in bidder's design philosophy.
4. Cables required for bidder supplied GIS sub-system i.e. condition monitoring system (Gas monitoring system, PD monitoring system etc) are to be supplied by bidder as complete system.
5. Necessary Cable Lug, Glands & shroud etc. required for installation of bidder's supplied cable are deemed inclusive in bidder's scope.
6. Bidder to provide detailed "Bill of Quantity" during detailed engineering stage. Cabling & termination schedule for the same shall be provided by successful bidder along with AS BUILT drawing during contract stage.
7. Power Cable TB's (for both AC & DC incoming feeder cables) shall be suitable for termination of requisite cable.

8. OTHER GENERAL REQUIREMENTS

Other general requirements GIS with LCC & its Accessories shall be as follows,

1. Guaranteed Technical Particulars: Bidder to submit detailed GTP in line with technical specification during contract stage for review and approval. GTP & drawings submitted with technical bid shall only be reviewed during contract stage only. Bidder to please note, deviations / conflict if any please be mentioned in schedule of technical deviations only.
2. The positioning of the circuit breaker in the GIS shall be such that it shall be possible to access the circuit breaker of any feeder from the front side for routine inspection, maintenance and repair without interfering with the operation of the adjacent feeders.
3. The physical layout shall ensure free movement of the SF6 Gas Cart and easy access to all components of the GIS for operation and maintenance purposes.
4. Bidder shall submit list of consumables with shelf life of less than six months and same shall be dispatched before commencement of erection or after clearance from BHEL/Customer whichever is earlier. No separate dispatch clearance shall be

required for consumables. Cost of the same deemed inclusive.

5. Bidder shall offer their latest type tested model to accommodate the specified & allocated space as per attached layout drawing of GIS.
6. Bidder shall conduct insulation co-ordination studies in line with IEC for establishing surge arrester rating, quantity and any other requirement for successful operation of GIS.
7. Bidder to submit Study report of VFTO generated for 400kV GIS installation.
8. Bidder shall check and ensure adequacy of system protection for successful operation of GIS. After checking of system by bidder, GIS shall be installed and if any failure, malfunction of any part occurs after/ during commissioning, same shall be replaced immediately without any extra cost.
9. Final documentation shall be submitted in hard copy (Four prints) and soft (Three CDs/DVDs)
10. In the case if CSD is specifically called in BPS / BOQ / Section-1(PART-B) of technical specifications, the same should have display facility at the front for the display of settings and measured values. In case where CSD does not have complete display facility for settings and measured values, bidder to supply one number laptop PC with pre-installed, licensed software for each site. Special cable required for integration is deemed inclusive in bidder's scope.
11. Bidder to submit all supporting documents in English. If document submitted by bidder is other than English language, self-attested English translated document should also be submitted.

9. DRAWINGS / DOCUMENTS FOR MANUFACTURING CLEARANCE

The drawings/ documents, as follows shall be used for providing technical clearance for manufacturing of GIS and furthermore, it shall be used for delay analysis, if any, from bidder. The first drawing submission will be counted from the date of submitting reasonably correct drawings.

Sl. No.	Overall Drawings approval required in Cat I /Cat II
LOT-1	
1	GIS- Gas Schematics with Single Line Diagram (Including CT VT Parameters)
2	GIS- Guaranteed Technical Particulars (Including all GIS equipment)

3	GIS- Layout Plan & Section
4	GIS- Interfacing Drawings for Cable Connection Module / SF6 to Air Bushing / SF6 to Oil Module (as applicable under scope) with Guaranteed Technical Particulars
5	GIS- Equipment Layout with Earthing philosophy
6	GIS- Type Test Reports (Including all GIS equipment)
7	GIS- Quality Assurance Plan & Inspection Test Schedule
LOT-2	
8	GIS- Earthing Design, philosophy, Layout
9	GIS- Secondary Engineering Base Design
10	GIS- Control Schematics for GIS and Local Control Cabinet
11	GIS- Maintenance Equipment Catalogue with Guaranteed Technical Particulars, test reports
12	GIS- Quantification for main Items, Spares, Consumables
13	GIS- Civil Design Specification with Foundation Loading Diagram (Including interfacing details)
14	Other documents as per Technical Specification / BPS / BOQ shall be finalized during detailed engineering stage.
OTHER	
15	GIS- 3D OGA Drawing (3D-Model with complete editable data base) compatible with Autocad & Primtech for complete GIS & its accessories.
16	Manuals on unloading, safe storage, transportation, installation, testing, commissioning, routine check, preventive maintenance

10. TYPE TEST

Please refer Section-1(PART-B) and Section-2 of technical specification for the details of type test requirement. All equipment being supplied shall conform to type tests as per technical specification and shall be subject to routine & acceptance tests in accordance with requirements stipulated under respective sections of technical specification.

11. QUALITY PLAN

Bidder to follow valid customer approved (1.) Manufacturing Quality Pan, (2.) factory acceptance test (FAT) procedure & (3.) Site acceptance test (SAT) procedures, as per Customer procedure. In case the bidder doesn't have Customer approved Quality Plan, it will be the bidder's responsibility to get its Quality Plan approved from the ultimate Customer within 30 days from the date of issue of after award of LOI / PO whichever is earlier.

All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan. The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the requirements of the specification.

GIS and its associated materials shall be subject to inspection by BHEL/ Customer / authorized representative at bidder / manufacturing works. Hence, Bidder shall furnish all necessary information concerning the supply to BHEL. During fabrication, the equipment shall be subject to inspection by BHEL/ Customer or by an agency authorized by BHEL/ Customer to assess the progress of work as well as to ascertain that only quality raw material is used.

12. SITE SERVICES

Site service activities shall be carried out at in stages as per requirement or front availability at site, and hence multiple visits for completion of work are envisaged as per site requirements hence any claim in this regards shall not be admissible on account of multiple mobilization or idling during project execution stage.

12.1. SUPERVISION AT SITE

1. Supervision of complete installation / erection of GIS with LCC & its Accessories are in the scope of bidder.
2. Scope also includes verification of materials for proper storage with due

instructions/ training to site persons for long storage.

3. Standard storage instruction manual specifically specifying the item detailed with details of type of storage.
4. Supervision for reconciliation and spares / accessories and handing over to customer.
5. Final documentation

12.2. TESTING & COMMISSIONING

1. The complete GIS System shall be subjected to the site tests as per technical specifications, IEC-62271-203. Bidder to submit site acceptance testing (SAT) procedures and get the same approved from BHEL / Customer before carrying out the site testing at site.
2. Carrying out successful HV/ Power Frequency Testing of GIS as per IEC shall be in scope of bidder, which includes HV test kit with operator, accessories & tools required for completion of HV testing. Bays may be commissioned separately.
3. BHEL shall provide free support at site for HV Test Kit i.e. it's unloading, assembling of HV test kit, dismantling & loading back on carrier.
4. Complete Field testing and commissioning of GIS system with LCC & its Accessories are under the scope of Bidder.
5. Bidder supplied special equipment, T&P if required OEM supervision, the same is to be arranged by bidder, cost of the same shall be deemed inclusive of respective item.
6. Bidder/ OEM shall coordinate with manufacturers of other equipment wherever required and shall freely and readily supply all technical information for this purpose as and when called for.
7. ETC work schedule for all the GIS may vary according to readiness of site. Respective dates for the commencement of erection, testing and commissioning activities of GIS shall be communicated to manufacturers from time to time as per the readiness of site.

13. TESTING KITS, TOOLS & TACKLES

1. All the Instruments/ Testing kits including HV Test Kit, SF6 Gas handling

Equipments required for successful installation, testing, commissioning, maintenance of offered GIS are to be arranged by bidder on **returnable** basis. Cost of the same shall be deemed inclusive in the offer.

2. Special tools & tackles for installation, maintenance, testing & commissioning of GIS shall be in bidder's scope, it shall be brought at site on **returnable** basis only.
3. The general Tools and Tackles shall be provided by BHEL, list of the requirement i.e. general tools-tackle, spanners, gauges, slings and other lifting devices, crane, welding machines, drills, general instruments and appliances necessary for the installation of GIS is to be submit by bidder along the technical bid. In case bidder fails to convey the same along with technical bid, BHEL decision on interpretation of general tools tackle shall be considered final and any tools & tackles required shall be brought at site by bidder without any claim.
4. Bidder to furnish detailed BOQ for non-returnable special Tools and Tackles, if applicable along with unit prices to be handed over to ultimate customer. The prices for the same shall be considered during evaluation.

14. SPARES

1. Any equipment which is not supplied as main equipment or part of main equipment, mandatory spare for that is not applicable.
2. In case contractor offers circuit breaker, dis-connector, current transformer, SF6/Air Bushing etc. under main equipment of higher rating than equipment rating specified in the specifications, the mandatory spare of same higher rating offered by contractor identical to main equipment offered in the package shall be required to be supplied against spares without any cost implication.
3. The Mandatory Spares shall be included in the bid proposal by the bidder. The prices of these spares shall be given by the Bidder in the relevant schedule of Bid Price Schedule and shall be considered for evaluation of bid. It shall not be binding on the Employer to procure all of these mandatory spares.
4. The bidder is clarified that no mandatory spares shall generally be used during the commissioning of the equipment.
5. Start-up & Commissioning spares are included in bidder’s scope of supply and shall be included in the base price. Adequate stock of start-up & commissioning

spares shall be made available at the site such that the start-up and commissioning of the equipment /systems, performance testing and handing over the equipment/ systems to the Purchaser can be carried out without any hindrance or delays. The unutilized Start-up & Commissioning spares brought for commissioning purpose by bidder shall be taken back by the bidder.

6. Wherever spares in BPS / BOQ/Technical Specification have been specified as "each type/each rating/each type & rating": If the offered spare/spares is sufficient to replace the respective main equipment of all types/ratings, then such offered spare/spares shall be acceptable. It implies that common spare/spare set fulfilling the spare requirement of all types/ratings shall also be acceptable, provided it is configurable at site itself without special assistance of OEM.
7. Mandatory Spares, wherever mentioned, are envisaged for the equipment/items being supplied under the main equipment heads under present scope meeting the requirements of Technical Specifications. The component/sub-component of an equipment/item specified in BPS / BOQ under Mandatory Spare, which is not applicable as per the offered design of respective main equipment, shall not be referred to.
8. Bidder to submit price break-up of spares during tender stage. It shall not be binding on the BHEL to procure all of these mandatory spares.
9. Bidder/ vendor shall ensure the availability of spare parts and maintenance support services for the offered equipment at least for 15 years from the date of supply. Bidder shall give a notice of at least one year to the Customer & BHEL (both) before phasing out the products/spares to enable the owner for placement of order for spares and services.

15. PACKING AND DISPATCH

1. The equipment shall be carefully packed for transport by sea, rail and road in such a manner that it is protected against the climatic conditions and for any damage during transportation, transit and storage. Packing of the equipment shall be suitable for long storage (minimum 1 year).
2. The GIS transport units shall be shipped in the largest factory assembled units within transport and loading limitations and considering handling facilities on site to reduce the erection and installation work on site to a minimum. Where possible all items of equipment or factory assembled units shall be boxed in substantial crates or containers to facilitate handling in a safe and secure manner.

3. Each individual piece to be shipped, whether crate, container or large unit, shall be marked special notations such as 'Fragile', 'This side up', 'Centre of gravity', 'Weight', 'Owner's particulars', 'PO no.' etc., and other details as per purchase order & technical specification.
4. The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains and high ambient temperature.
5. Special precautions shall be taken to protect any parts containing electrical insulation against the ingress of moisture. This applies particularly to the equipment of which each gas section shall be sealed and pressurized prior to shipping. Dry nitrogen/air or dry SF6 gas (in full compliance to technical requirement) shall be used and the pressure shall be such as to ensure that, allowing for reasonable leakage, it will always be greater than the atmospheric pressure for all variations in ambient temperature and the atmospheric pressure encountered during shipment to site and calculating the pressure to which the sections shall be filled to ensure positive pressure at all times during shipment.
6. All blanking plates, caps, seals, etc., necessary for sealing the gas sections during shipment to site shall be provided. Any seals, gaskets, `0' rings, etc. that will be used as part of the arrangement for sealing off gas sections for shipment of site, shall not be used in the final installation of the equipment at site. Vendor to provide quantity of components accordingly considering permanent installation and commissioning.

16. SPECIFIC- EXCLUSIONS (NOT IN BIDDER'S SCOPE)

The following items are specifically excluded from the bidder's scope of supply & services, irrespective of the same if covered under any section of technical specification other than Section-1 (PART-B). If specific requirement mentioned in the Section-1(PART-B) of technical specification shall overrule this specific exclusion.

1. Any scope of supply / services mentioned in Section-2 or Section-3 of technical specification but not having any relationship with GIS, LCC & its Accessories and not covered in Section-1(PART-B) or BPS / BOQ shall be deemed excluded from bidder's scope.
2. Installation / Erection of GIS with LCC & its Accessories except supervision work.

3. Cable laying & terminations, however supervision work & termination of special cables shall be in bidder's scope.
4. Open & Closed stores at site. (Bidder to provide space requirement in tech bid)
5. Local transportation/ conveyance for bidder's engineers shall be arranged by BHEL between local stay and site.
6. Office assistance shall be provided BHEL including sitting facility etc.
7. Receipt & unloading of material at site except supervision work
8. Terminal connector for SF6 to Air Bushing to conductor or any other interfacing equipment.
9. Watch & Ward of GIS material at BHEL Store
10. Civil Works i.e. GIS Hall, civil works requirement for GIS System. (Please refer clause "Structure-Steel" for bidder's scope of supply)
11. EOT crane, Air Conditioning & Ventilation System, Illumination System & Fire detection & alarm system, however complete input shall be provided for EOT and other system
12. Control Relay & Protection Panels, Numerical Relays, Bus Bar Protection Panel, SAS & ECS system, ACDB, DCDB, Battery & Charger
13. Earthing material i.e. 40 mm MS Rod, 50X6 GI Flat & 75X12 GI Flat for earthing
14. Outdoor AIS Equipments
15. Power & Control cable beyond LCC
16. BHEL / Customer / BHEL appointed 3rd party inspector travel, lodging & boarding charges during testing / inspection.

Rev Number	Date	Initiated by	Reviewed by	Approved by	Updates
Rev.0	19 Feb 2022	JAIK	SKS	AG	
Rev.1	04 March 22	JAIK			Clause 4.1 revised Clause 3.9 added Clause 5 900 gm/sq.m for coastal area
Rev.2	09 March 22	JAIK			Clause 5 updated (yellow highlight)