

SL	Description	Remarks Long Description	Unit	Quantity
A	Supply Item - 400kV GIS as per enclosed SLD with One and Half Breaker scheme comprising of Items A1-A20	The 400 KV SF6 gas insulated switch gear shall have three single phase construction, one and half breaker arrangement (D-type) having the following bays.:- a) Two (2) fully equipped Generator Transformer Bay b) One (1) fully equipped Standby/ Maintenance Transformer Bay c) Four (4) fully equipped Line Bay d) Two (2) fully equipped Bus Reactor Bay e) Two (2) fully equipped Bus Voltage Transformer Bay with Bus Grounding Switch f) Five (5) fully equipped Tie Bay g) Bus Sectionalizing isolator for each bus h) One (1) fully equipped Spare Bay i) Two (2) numbers spare bay (Unequipped) The Switchgear shall be complete with all necessary terminal boxes, inspection window, SF6 gas filling, interconnecting power and control wiring, grounding connections, gas monitoring equipment and piping, support structures etc. Any other item required for completion of project and not covered above - Complete List to be provided by bidder along with unit prices. The scope of supply shall also include all erection and mounting hardware and interconnecting power and control cables between GIS to LCC and between LCC to LCC including cable tray, glands, lugs, ferrules etc.	lot	1

SL	Description	Remarks Long Description	Unit	Quantity
A1	Fully equipped 400kV, 63kA for 1 second, SF6 GIS GT bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed GT bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) b) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) c) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) ONE set of 3x1-phase, 2-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) e) ONE (1) set of 3x1-phase, multi winding, Voltage Transformer as per single line diagram. (Winding details shall be finalised at detail engg. stage) f) THREE sets of 3x1-phase, group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. g) THREE sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. h) Gas monitoring System, pressure switches etc as required. i) Barriers and other items as required.	Set	2
A2	Fully equipped 400kV, 63kA for 1 second, SF6 GIS STANDBY /MAINTENACE TRANSFORMER bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed Standby/Maintenance Transformer bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) and switching controller b) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) c) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) ONE set of 3x1-phase, 2-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) e) THREE sets of 3x1-phase, group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. f) THREE sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. g) Gas monitoring System, pressure switches etc as required. h) Barriers and other items as required.	Set	1

SL	Description	Remarks Long Description	Unit	Quantity
A3	Fully equipped 400kV, 63kA for 1 second, SF6 GIS LINE bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed LINE bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) and Pre insertion resistor (PIR) b) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) c) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) ONE set of 3x1-phase, 2-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) e) One (1) set of 3x1-phase, multi winding, Voltage Transformer as per single line diagram. (Winding details shall be finalised at detail engg. stage) f) THREE sets of 3x1-phase group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. g) TWO sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. h) ONE set of 3x1-phase, group operated high speed earthing switches, complete with manual and motor driven operating mechanisms. i) Gas monitoring System, pressure switches etc as required. j) Barriers and other items as required.	Set	4
A4	Fully equipped 400kV, 63kA for 1 second, SF6 GIS BUS REACTOR bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed BUS REACTOR bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) and switching controller b) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) c) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage). d) ONE set of 3x1-phase, 2-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) e) THREE sets of 3x1-phase group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. f) THREE sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. g) Gas monitoring System, pressure switches etc as required. h) Barriers and other items as required.	Set	2

Project : 400kV GIS at 2 X 660MW Udangudi STPP (Stage-I)

Technical Specification for 400 kV Gas Insulated Switchgear

SL	Description	Remarks Long Description	Unit	Quantity
A5	Bus VT Modules for Main Buses	400kV, 4000A, 63kA for 1 sec, SF6 gas insulated Bus VT bay module, Disconnector module with Earth switches (Fast acting Earth Switch) connected to Main Bus Bars, each comprising of: a) ONE set of 3x1-phase, 4000A, 63kA group operated Disconnector switches, complete with manual and motor driven operating mechanisms. b) THREE nos. single phase Voltage transformers c) ONE set of 3x1-phase, group operated high speed earthing switches, complete with manual and motor driven operating mechanisms. d) Gas monitoring devices, barriers, pressure switches, etc. as required.	Set	2
A6	Fully equipped 400kV, 63kA for 1 second, SF6 GIS TIE bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed TIE bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) with Pre Insertion resistor (PIR) b) TWO set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) TWO sets of 3x1-phase, group operated Disconnector switches, complete with manual and motor driven operating mechanisms. e) TWO sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. (If required, high speed fault make grounding switch to be provided) f) Gas monitoring System, pressure switches etc as required. g) Barriers and other items as required.	Set	2
A7	Fully equipped 400kV, 63kA for 1 second, SF6 GIS TIE bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed TIE bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) with Switching Controller b) TWO set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) TWO sets of 3x1-phase, group operated Disconnector switches, complete with manual and motor driven operating mechanisms. e) TWO sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. (If required, high speed fault make grounding switch to be provided) f) Gas monitoring System, pressure switches etc as required. g) Barriers and other items as required.	Set	2

SL	Description	Remarks Long Description	Unit	Quantity
A8	Fully equipped 400kV, 63kA for 1 second, SF6 GIS TIE bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed TIE bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) with pre Insertion resistor (PIR) and Switching Controller b) TWO set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) TWO sets of 3x1-phase, group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. e) TWO sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. (If required, high speed fault make grounding switch to be provided) f) Gas monitoring System, pressure switches etc as required. g) Barriers and other items as required.	Set	1
A9	400kV Bus Sectionalizer Bay (for Bus Bars)	400kV, 63 kA for 1 second, SF6 gas insulated Bus Sectionalizer Bay module connected between Main Bus Bars, each comprising of, (a) One (1) set of 3x1-phase, 4000A, 63kA for 1 second group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. (b) Gas monitoring System, barriers, pressure switches, etc. as required.	Set	2
A10	Fully equipped 400kV, 63kA for 1 second, SF6 GIS SPARE bay Module	400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed LINE bay module. Each set shall be complete & shall comprising of a) ONE set of 3x1-phase, SF6 insulated circuit breaker, complete with operating mechanism (suitable for 1&3 phase auto reclose) and Pre Insertion resistor (PIR) b) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) c) ONE set of 3x1-phase, 3-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) d) ONE set of 3x1-phase, 2-core, multi ratio, current transformers as per single line diagram. (Core details shall be finalised at detail engg. stage) e) THREE sets of 3x1-phase group operated Disconnecter switches, complete with manual and motor driven operating mechanisms. f) TWO sets of 3x1-phase, group operated maintenance earthing switches, complete with manual and motor driven operating mechanisms. g) ONE set of 3x1-phase, group operated high speed earthing switches, complete with manual and motor driven operating mechanisms. h) Gas monitoring System, pressure switches etc as required. i) Barriers and other items as required.	Set	1

SL	Description	Remarks Long Description	Unit	Quantity
A11	BusBar Modules	One set of three single phase(isolated), 4000A, 63kA for 1 sec, SF6 gas-insulated metal enclosed bus bars, each comprising of : a) Three individual 4000A bus bars enclosures running across the length of the switchgear to inter connect each of the circuit breaker bay modules in one and half breaker bus system. b) Gas monitoring systems, pressure switches, telescopic enclosure etc. as required. c) Barriers Length of bus bar to be indicated by bidder.	Set	2
A12	Single Phase Isolated, 400kV, 63kA for 1 second, SF6 Gas-Insulated Metal enclosed Bus Bars for Tie Bay Interconnection	Isolated phase, 400kV, 2000A, 63kA for 1 second, SF6 gas-insulated metal enclosed bus bars, each set comprising of : (a) Three (3) nos. single phase(isolated) bus bars to inter connect the Tie Bay circuit breaker bay modules with Circuit breaker bay Modules of Line/GT/ST/Reactor/ST Bays in one and half breaker bus system. (b) Gas monitoring System, barriers, pressure switches, etc. as required.	Set	10
A13	400kV, 2000A GIS duct from GIS to GT/Outgoing Lines/ Station transformer/Bus reactor _SF6 to Air bushing	400kV, 2000A 63kA for 1 sec, SF6 gas insulated GIS duct shall be complete & comprising of:- a) Three Nos. single phase (isolated) SF6 ducts along with all accessories to connect 400kV GIS with 400kV side GT/Outgoing Lines. b) Gas monitoring devices, barriers, pressure switches, etc. as required.	m	1600
A14	400kV,2000A SF6 to Air Bushing	400kV, 2000A, 63 kA for 1 sec, 31mm/kV creepage, SF6 gas insulated, SF6 to Air Bushing for Over head connection of Line/GT/ST/REACTOR with GIS.	Nos.	30
A15	Local Control Cubicles	Bay Control Cabinet for GT/BUS REACTOR/LINES/ STANDBY MAINTENANCE TRANSFORMER/ SPARE/ TIE BAYS/ BUS VT/ BUS SECTIONALIAZING ISOLATOR including cable between GIS & LCC.	No.	17

SL	Description	Remarks Long Description	Unit	Quantity
A16	First Filling of SF6 gas including extra for Compensating Losses for 10 % of total Gas Quantity. Additionally, 10% of total quantity of SF6 gas shall also be supplied in non returnable cylinders as spare requirement. (Bidder to indicate quantity).	First filling of SF6 gas for the equipment supplied plus an additional quantity sufficient for conducting all tests on equipment at site before placing it into successful operation. Additionally, 10% of total quantity of SF6 gas shall also be supplied in non returnable cylinders as spare requirement. Bidder to indicate quantity with break up.	Lot	1
A17	Supply of structure work for Installation of GIS including support structure for GIS ducts, SF6 to air bushings, supports, platforms, ladders, foundation bolts, embedded parts in floors etc., which are required for installation of GIS as per the specification. (The civil works will be done based on supplier design & drawings).	Bidder to indicate estimated weight in the bid (in MT) alongwith support documents & unit prices per MT in their offer. Bidder to quote in units as MT. Addition/deletion shall be on unit rate basis but only if there is any change in input.	Lot	1
A18	Supply of Earthing material for GIS including High frequency earthing material. The quantity shall be estimated & provided by bidder for above floor earthing connection.	Supply of Earthing Material including fixing hardware and Erection of all Earthing connection for GIS to GIS and GIS to Earth Mesh on Floor shall be in bidder's scope. In GIS building, earth mat of copper flat (in bidder's scope) shall be embedded in the concrete floor in grid / mesh form (Pl refer chapter-3 of section 2).The quantity shall be estimated by the bidder, based on their design philosophy. Design philosophy shall be submitted along with the bid in line with chapter-3 of section 2 to be followed for earthing. Any other earthing material if required as per bidder's design philosophy shall be in bidder's scope of supply and erection.	Lot	1

SL	Description	Remarks Long Description	Unit	Quantity
A19	Consumables required for GIS (Bidder to quote item wise with detailed BOQ for these consumables)	Consumables including grouting material as per manufacturer requirement having limited shelf life required during erection, testing and commissioning. It shall be supplied just before erection after confirmation from BHEL.(1 lot is for complete package).	Lot	1
A20	Controlled Switching Device for ONE set of 2000A, 3x1-phase, SF6 insulated circuit breaker without PIR, complete with operating mechanism (suitable for 1&3 phase auto reclose)	Optional Item.	Nos	1
B	Supply Item - Special tools and tackles for operation & Maintenance (B1 to B17)		lot	1
B1	CB analyzer		Nos	1
B2	Hand crank for various GIS mechanisms		Nos	1
B3	Digital manometer		Nos	1
B4	Temperature metering set		Nos	1
B5	Relief valve manometer with coupling elements		Nos	1
B6	Filling handle		Nos	1
B7	A wheeled maintenance device with pressure vessel, vacuum pump and all required gauges and fittings for the service of the GIS switchgear		Nos	1
B8	Spring charging hand crank for CB mechanism		Nos	1
B9	Gas re-filling and evacuating DILO plant MEGA series		Nos	1
B10	980 kg SF6 gas additional storage tank		Nos	1
B11	Gas distribution system		Nos	1

SL	Description	Remarks Long Description	Unit	Quantity
B12	DILO pipe extension		Nos	1
B13	10 m length DILO pipe		Nos	1
B14	120 Cu. m Vacuum pump with maintenance kit		Nos	1
B15	Dew Point measuring device		Nos	1
B16	Portable partial discharge monitoring equipment		Nos	1
B17	Portable SF6 gas leakage detector		Nos	1
C	Supply Items - Mandatory spares (C1 to C14)	These prices will also be used for addition/deletion/replacement (shall be considered as initial spares)	Lot	1
C1	Gas Filling Valve		Nos.	4
C2	Rupture disc		Nos.	2
C3	Rupture disc removing kit		Nos.	4
C4	Replacement set of CB molecular sieve		Set*	4
C5	Replacement set for gasket of CB operating mechanism door		Set*	4
C6	Gasket for CB operating mechanism window		Nos.	6
C7	Replacement kit of absorber cartridge		Nos.	4
C8	Set of gaskets		Set*	2
C9	Maintenance kit for terminal block for VT		Nos.	6
C10	Maintenance kit for terminal block for CT		Nos.	6
C11	40 kg gas SF6 bottle		Nos.	1
C12	CB coil for operating or closing		Nos.	3
C13	CB auxiliary contact block		Nos.	3
C14	Pressure switches		Set*	1

SL	Description	Remarks Long Description	Unit	Quantity
D1	Supply Item - Start up and Commissioning spares for testing & commissioning of GIS till handing over	Bidder to quote detailed BOQ alongwith unit price. Start-up and Commissioning spares are those which would be required during GIS testing, start-up and commissioning. All spares used until the GIS is finally handed over by the supplier to the Owner/BHEL come under this category. All start-up and commissioning spares as required shall be provided by the supplier without any additional cost to the Owner/BHEL. The list and details of start-up and commissioning spares shall be furnished by Supplier alongwith the technical bid.	lot	1
D2	Operation and maintenance spares	Operation and maintenance spares The supplier shall provide, based on his own experience of the performance of his equipment, the complete list of operation and maintenance spares for three (3) years operation of the equipment alongwith unit price. In the list of operation and maintenance spares parts, the Supplier shall identify the unit-wise population of each of items recommended and anticipated normal life of the spares. The spare parts must be able to replace the original part completely and have the same technical specifications in quality, material, inspection and mechanical aspects. Suppliers shall supply all measurement testing data of any spare part supplied, if applicable. All spare parts supplied shall be packed and stored for a 5 years reservation based on the local climatic conditions. Small spare parts shall be packed and sealed by transparent plastic bags and drying agents will be used if necessary. Every spare parts shall have operation instructions and design marks of the factory when it is supplied. When multiple spare parts are packed in one packing box or container, the general indication to the spare parts outside the packing boxes or containers shall include a detailed list. All packing boxes, containers, and other such tanks shall be marked properly and numbered clearly. All electrical equipment including switches, fuse connection easy melting and other similar apparatus shall be protected and insulated. The identification of all spare parts shall be in the English language. Supplier's operation and maintenance spares required spare part list shall be confirmed during detail design. Supplier shall identify in the spare parts list, the items having a delivery time of more than 3 months. These spares shall be supplied just before erection after confirmation from BHEL.	lot	1

SL	Description	Remarks Long Description	Unit	Quantity
E	Supply Item - Tools & tackle & Testing Equipment	Only special tools shall be in bidder's scope. Bidder to submit list of tools, tackle, slings, spanners, gauges, slings and other lifting devices, drills, instruments and appliances necessary for the complete assembly and erection at site of the GIS, required for installation, gas filling, maintenance, site testing of the GIS which shall be arranged by BHEL. EOT cranes shall be provided by BHEL, capacity of EOT crane to be recommended by bidder. Bidder to furnish detailed BOQ for returnable and non-returnable Tools and Tackles along with unit prices.	lot	1
F	Services: Supervision of Erection, commissioning & site testing including earthing and training (F1 to F9)	GT bays, Standby maintenance transformer bay, Line bays, Bus reactor bays, Bus VT bays, spare bay, Tie bay, Bus sectionalizing isolator for each bus etc. will be commissioned seperately at different stages.	Lot	1
F1	Insulation co-ordination studies	In scope of GIS supplier.	Lot	1
F2	Site visit for supervision of unloading, storage & verification of material at site		Lot	1
F3	Supervision of Erection of GIS	Complete GIS including busbar, GT bays, Standby maintenance transformer bay, Line bays, Bus reactor bays, Bus VT bays, spare bay, tie bay, Bus sectionalizing isolator for each bus etc.	Set	1
F4	Supervision of Erection of GIS Duct - GIS to SF6 to Air Bushings	Complete GIS ducts of all rating	Lot	1
F5	Supervision of Erection of complete SF6 to Air Bushing	SF6 to Air Bushing complete in all respect.	Set	30
F6	Testing & Commissioning of GIS	Complete GIS including busbar, GT bays, Standby maintenance transformer bay, Line bays, Bus reactor bays, Bus VT bays, spare bay, tie bay, Bus sectionalizing isolator for each bus etc.	Set	1

SL	Description	Remarks Long Description	Unit	Quantity
F7	Final successful Testing of GIS including HV test kit	HV Test kit shall be arranged by the bidder on returnable basis. (GT bays, Standby maintenance transformer bay, Line bays, Bus reactor bays, Bus VT bays, spare bay, tie bay, Bus sectionalizing isolator for each bus etc. may be commissioned seperately.) Final testing as per IEC for complete GIS including busbar,GT bays, Standby maintenance transformer bay, Line bays, Bus reactor bays, Bus VT bays, spare bay, tie bay, Bus sectionalizing isolator for each bus etc., Ducts, SF6 to Air Bushing etc.	Lot	1
F8	Training for GIS to TANGEDCO Engineers	Training for GIS shall cover following parts and mandays: a) Equipment Theory and Maintenance practice=30Mandays (Max. 6 person) b) Operation and Maintenance of Plant (GIS)=30Mandays (Max. 6 person) c) Plant visit (Reference GIS Substation)=15Mandays (Max. 3 person) d) Visit to Manufacturer's works=15Mandays (Max. 3 person) The cost of travel expenses including travel insurance, boarding and lodging expenses of the TANGENDCO training participant have to be borne by the Supplier. This includes training in India and foreign countries as applicable.	Lot	1
F9	Training for GIS to BHEL Engineers	Training for GIS shall cover following parts and mandays: a) Equipment Theory and Maintenance practice=5Mandays b) Operation and Maintenance of Plant (GIS)=5Mandays c) Plant visit (Reference GIS Substation)=5Mandays d) Visit to Manufacturer's works=5Mandays Boarding of Training Participants shall be in BHEL scope. Lodging and	Lot	1
G	Any other item required for completion of project (G1 to G2)			
G1	Supply - Any other item required for completion of project and not covered in A to E- Complete List to be provided by bidder along with unit prices.		Lot	1

SL	Description	Remarks Long Description	Unit	Quantity
G2	Services - Any other item required for completion of project and not covered in G - Complete List to be provided by bidder along with unit prices.		Lot	1
H	Supply - Unit Prices of Individual Item/Equipment (H11 to H31)	Unit Prices of Individual Equipment included here or in mandatory spares are required for any Addition/Deletion of Equipment and replacement of damaged items. Vendor to ensure that the unit prices have a logical relationship with prices of assemblies in main items (Bay, Busbar etc). Quoting for unit prices is mandatory and shall be considered for evaluation.		
H1	400kV, 2000A Circuit breaker (1 pole complete without enclosure without operating mechanism)		No	1
H2	400kV, 2000A Circuit breaker with PIR (1 pole complete without enclosure without operating mechanism)		No	1
H3	400kV, 4000A Isolator (1 pole) without operating mechanism		No	1
H4	400kV, 2000A Isolator (1 pole) without operating mechanism		No	1
H5	400 kV Maintenance Earthing switch without operating mechanism		No	1
H6	400kV High speed earth switch without operating mechanism		No	1

SL	Description	Remarks Long Description	Unit	Quantity
H7	400kV Current transformer (1 of each type) (Individual prices to be furnished).		No	1
H8	400kV Voltage transformer (1 of each type) (Individual prices to be furnished).		No	1
H9	Operating Mechanism box for 400kV, 2000 A Circuit Breaker		No	1
H10	Operating Mechanism box for 400kV, 4000 A Isolator		No	1
H11	Operating Mechanism box for 400kV, 2000 A Isolator		No	1
H12	Operating mechanism for 400kV, Maintenance Earthing Switch		No	1
H13	Operating Mechanism for 400kV, High Speed Earthing Switch		No	1
H14	Single Phase Bus bar (Any type)	Complete single phase 400kV,4000A, 50 kA for 1s bus bar including Gas monitoring systems, barriers, pressure switches	m	1
H15	Conductor for Single phase Bus bar/ bus duct (any type)	Conductor for bus bar, bus duct, GIB, Interconnecting conductors of any type with interconnecting parts as required.	m	1

SL	Description	Remarks Long Description	Unit	Quantity
H16	GIS metallic enclosure (any type)	Enclosure for bus bar, bus duct, GIB, straight cast enclosure etc with fixing hardware as required.	m	1
H17	Epoxy resin insulators for bus support with holes for gas flow (of each type and rating)	Bidder to inform details at tender stage	set	1
H18	Gas barrier insulators (of each type and rating)	Bidder to inform details at tender stage	set	1
H19	Density switch		no.	1
H20	Gas monitoring system devices	1 set =1 no of each type	lot	1
H21	PD sensor		No.	1
H22	Optical indicator for CB, Isolator		No.	1
H23	Elbow /Angle / T-bends		No.	1
H24	Telescopic enclosure		No.	1
H25	Sleeve enclosure		No.	1

SL	Description	Remarks Long Description	Unit	Quantity
H26	Expansion joints for bellows		set	1
H27	cross tank		No.	1
H28	Supervision Services of manpower for erection per day (excl. travel time)		days	1
H29	Services of manpower for Testing & commissioning per day (excl. travel time)		days	1
H30	Hiring charges of HV test kit	Additional HV test kit charges including charges of manpower, HV test kit, accessories & tools required for completion of HV test (Dielectric Test after installation of GIS). HV test kit charges include one or more bay at site.	lot	1
H31	Training for GIS to TANGEDCO/BHEL Engineers at manufacture's work.	Visit to Manufacturer's works have been considered. Lodging and Boarding of Training Participants shall be in bidder's scope.	Manday	1

Notes:

CT & VT details given in single line diagram are tentative and may change at contract stage. Changes to be incorporated by bidder without any cost and delivery implication.

Item no. A20 & F are optional items and BHEL reserves right at its sole discretion to order these items or not.

BHEL reserves the right for quantity variation due to any reason upto $\pm 30\%$ of total value at same unit rate and terms during execution of contract. The quantity of individual items may however vary upto any extent.

(* One set corresponds to actual quantity of components and devices as installed for the equipment at Site)