BHARAT HEAVY ELECTRICALS LIMITED

TRANSMISSION BUSINESS ENGINEERING MANAGEMENT

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TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	NKT	MVK	SKS
TITLE		SIGN			
SPECIFICATION FOR 360kV LIGHTNING ARRESTER		DATE	22.12.21	22.12.21	22.12.21
		GROUP	TBEM	W.O. No	
CUSTOMER/ CONSULTANT	THE WEST BENGAL POWER DEVELOPMENT CORPN. LTD./ DEVELOPMENT CONSULTANTS PRIVATE LIMITED,KOLKATA				
PROJECT	1X660MW,SAGARDIGHI THERMAL POWER EXTENSION PROJECT (UNIT #5)				

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SECTION 1
SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES

1.1 SCOPE:

This technical specification covers the requirements of design, manufacture, testing at works, packing and dispatch of Lightning Arrestors complete with accessories as listed under this specification.

This section covers the specific technical requirements of Lightning Arrestors. This constitutes minimum technical parameters for the above item as specified by the customer (WBPDCL). The offered equipment shall also comply with the General Technical Requirements for the project as detailed under section-3 of this specification.

The specification comprises of following sections:
Section-1: Scope, specific technical requirements and Bill of Quantities
Section-2: Equipment specification under scope of supplies.
Section-3: General technical requirements for all equipments under the project.
Section-4: Guaranteed Technical Particular
Section-5: sShedule of technical deviations
In case of any conflict between various sections, order of precedence shall be in the same order as listed above.

The equipment is required for the following project:

Name of customer : The West Bengal Power Development Corporation Ltd.

Name of Consultant : Development Consultants Private Ltd. Kolkata.

Name of the project : 1X660MW thermal power extension project Unit-5 at Sagardighi- 400KV Switchyard.

1.2 SPECIFIC TECHNICAL REQUIREMENTS:

Sl. No.	Description	Unit	
1.	Rated Arrester Voltage	kV (rms)	**360**
2.	Rated system voltage	kV (rms)	400
3.	Highest system voltage	kV (rms)	420
4.	Rated frequency	(Hz)	50
5.	No. of poles	No.	1
6.	Design ambient Temperature	(°C)	50
7.	Type		Station class, Metal Oxide gapless, heavy duty
8.	Installation, Mounting		Outdoor, Hot dip galvanised GS Lattice Structure mounted.

9.	One minute power frequency lightning impulse withstand voltage of arrestor housing.	kVp	1425
10.	One minute dry/wet power frequency withstand voltage of arrester housing	kVp	1050 -switching impulse 1425 -lightning impulse
11.	Corona extinction voltage	kV (rms)	320
12.	Minimum creepage distance: Phase to ground	(mm)	13020
13.	Seismic acceleration		0.3g
14.	Partial discharge at 1.05 COV	pc	Not exceed 50 pc
15.	Maximum continuous operating voltage	kV (rms)	306
16.	System neutral earthing		Effectively Earthed
17.	Rated Nominal discharge Current	kA	20 of 8/20 microsec. wave
18.	Minimum energy handling capacity	KJ/kV	8
19.	Maximum residual voltage at 8/20 μSec current wave at 10kA discharge current	kVp	900
20.	Maximum switching impulse residual voltage at 10kA	kVp	780
21.	Long duration discharge class		**4**
22.	Impulse current withstand capacity	kA	100
23.	System fault level	kA	50
24.	Pressure Relief Class		50
25.	High current short duration test value (4/10 microsec. Wave)	kVp	100
26.	Degree of protection of Surge monitor	-	IP55

1.3 QUANTITIES:

Sl. No.	Description	Qty.
1.	Main Supply: 20kA nominal discharge, 31mm/kV creepage, 360kV single phase, class-4, metal oxide, gapless (ZNO) surge arrester complete with terminal clamp suitable for twin moose ACSR conductor and all accessories (corona ring [if applicable], surge counter/ monitor, insulating base, lugs, fixing & earthing hardware etc) except terminal connector and insulated connecting cable.	6 Nos.
2.	Main Supply: 360kV terminal connector suitable for twin ACSR moose conductor with horizontal approach for 360 kV surge arrester(single phase).	6 Nos.
3.	Main Supply: Insulated copper cable connecting surge arrester to surge counter(single length).	36 m
4.	Mandatory Spare: 20kA nominal discharge, 31mm/kV creepage, 360kV single phase, class-4, metal oxide, gapless (ZNO) surge arrester complete with terminal clamp suitable for twin moose ACSR conductor and all accessories (corona ring [if applicable], surge counter/ monitor, insulating base, lugs, fixing & earthing hardware etc) except terminal connector and insulated connecting cable.	1 Nos.
5.	Mandatory Spare: 360kV terminal connector suitable for twin ACSR moose conductor with horizontal approach for 360 kV surge arrester(single phase).	1 Nos.
6.	Mandatory Spare: Insulated copper cable connecting surge arrester to surge counter(single length).	6 m

Note-1- Mandatory spares (i.e. 360kV, 20kA, class -4 Lightning Arrestor) shall be supplied along with all accessories as applicable for 360kV, 20kA,class-4, Metal –oxide Lightning Arrestors.

Note-2-Terminal connector shall be suitable for horizontal take off .

Note-3 -Sub conductor spacing for Moose ACSR conductor is 450 mm.

Note-4- Copper Insulated connecting Cable (minimum 75 sq mm cross sectional area) between Lightning Arrestor and Surge monitor shall be supplied in single length of 42 m for total 7 nos. Lightning Arrestors (i.e. Considering individual length of 6 m). Please note that connecting lead, lugs and accessories shall be provided with each Lightning Arrestors.

Note 5- Insulator shall be of **polymer or wet process porcelain**, brown glazed

and free from imperfections. All metal parts and hardware shall be hot dip galvanised.

Note 6- Insulator for Surge arrester shall be either polymer type or porcelain type . Both the types are technically acceptable. Bidders are free to quote any of the two types (i.e. either polymer type or porcelain type insulator)

Note 7- The surge counter/monitor shall be provided with a potential free contact rated for 220 Volt (DC) which shall close whenever a surge is recorded by the surge monitor. Necessary arrangement shall be provided for extending the contact information to Substation Automation System/RTU.

1.4 FITTINGS AND ACCESSORIES REQUIRED:

Each Lightning Arrester shall be furnished complete with the accessories as listed below :

1. Insulating Base with anchoring bolts, nuts etc. for fixing the equipment on to structure.
2. Surge counter with integral leakage current monitor.
3. By-pass shunt with connection provision.
4. Clamp type bimetallic terminal connectors.
5. Ground terminals.
6. Grading ring, if necessary.
7. Other standard accessories which are not specifically mentioned but are usually provided with Lightning Arrester of such type and rating for efficient and trouble-free operation.

Note- Prices for accessories shall be included in the equipment prices.

1.5 TOOLS & TACKLE:

The Bidder shall supply with the equipment one complete set of special tools and tackles required for the erection, assembly, dis-assembly & proper maintenance of the plant and equipment and systems (including software). These special tools shall also include special material handling equipment, jigs & fixtures for maintenance and calibration/ re-adjustment, checking & measurement aids etc. A list of such tools & tackles shall be submitted by the Bidder along with the offer. Detailed description of each tool/tackles, its function along with the equipment/part for which it is meant for, shall also be indicated in the offer. These tools & tackles shall be separately packed and sent to site before the first unit commissioning. The Bidder shall also ensure that these tools are not used for erection, commissioning and initial operation. For this period, the Bidder shall bring his own tools and tackles. All the tools and tackles shall be of reputed make acceptable to Owner.

1.6 TERMINALS:

i) All connection terminals shall be of corrosion resistant material and complete connection hardware.

ii) High voltage line terminal shall be provided with bimetallic terminal connector suitable for connection to the type and size of Twin moose ACSR conductor.

iii) All ground terminals shall have provision of connection to 75 x 10 mm G.I. flat.

1.7 TESTS:

Routine Test-
During manufacture and on completion, Lightning arrester, clamps, connectors and accessories shall be subjected to the Routine Tests as laid down in latest revision of IEC/IS.

Type Test -
Type tests on Lightning arrester shall carried out as stipulated in relevant IEC/Indian Standards. Test certificates for type tests, as stipulated in Indian Standards carried out on equipment clamps, connectors etc. shall be furnished.

Bidder shall submit valid type test reports (as per relevant IEC/IS standard) for the tests carried out within last **ten years** from the date of Techno-commercial bid opening (**i.e. 18.03.18) .** The reports should have been conducted on identical or similar equipment/components to those offered. In case type test reports are more than 10 years old (from the date of Techno-commercial bid opening) or the reports of type tests are found to be technically unacceptable , the type test shall be conducted by the vendor without cost and delivery implication to BHEL.

1.8 SPECIAL TESTS:
Test reports for Special tests listed below shall be submitted to WBPDCL/BHEL for approval-

a) Special thermal stability tests to be conducted on lightning arresters according to IEC, as an acceptance test.

b) Temperature cycle test on the porcelain housing of the arrester to be conducted as per IS/IEC.

c) The artificial pollution test shall be carried out as per applicable standards.

d) The galvanisation test on metal parts shall be carried out as acceptance test.

e) The functional (operational) acceptance tests shall be carried out on the surge counter.

1.9 INSPECTION & TESTING:

Before being fitted on the equipment, all components shall be subjected to routine tests at the Contractors factory, as per the relevant IEC/IS standards. A detailed

test report proving the successful passing of such tests shall be provided.

Prior to dispatch, the routine & acceptance tests shall be carried out on equipment in accordance with the applicable IEC /IS and the material shall be offered for final inspection to BHEL and WBDPCL in accordance with agreed quality plan with 15 days advance information.

All the tests shall be carried out in the presence of the BHEL/WBPDCL representative unless the witnessing of tests is waived beforehand by WBPDCL. The Bidder shall give minimum 15 days advance notice of the date when the tests would be carried out.

The Bidder shall obtain approval for the test procedure before conducting the type test. The procedure shall specify the test set up, instrument to be used, acceptance norms, interval of recording etc. for the type test to be carried out. In case the Bidder has conducted any of the specified type tests on similar equipment within the last ten (10) years as on the **date of bid opening i.e. 18.03.2018**, he may submit type test report during detail engineering for waive of conducting such test. For these tests, only reports are to be submitted.

In case the Bidder is **not** able to submit report of the type test(s) conducted within last ten (10) years from the date of bid opening i.e. 18.03.2018 or in the case of type test(s) reports are not found to be meeting to specification requirement, the Bidder shall conduct all such test(s) under this contract without cost and delivery implication to BHEL and submit the reports for approval.

For short circuit test, proto-type of similar design and of same capacity with documentary evidence shall be submitted for customer approval.

For newly designed equipment, type test shall be conducted at CPRI or Government approved laboratory at the bidder's cost. Certified reports of all the tests carried out at the works shall be furnished in six (6) sets for approval.
The equipment shall be dispatched from works only after receipt of written approval of the test reports and MDCC.

1.10 QUALITY PLAN:

The contractor shall carry out contract works in accordance with sound quality management principles which shall include such as controls which are necessary to ensure full compliance to all requirements of the specification & applicable international standards. These quality management requirement shall apply to all activities during design, procurement, manufacturing, inspection, testing, packaging, shipping, inland transportation, storage, site erection & commissioning. Contractor shall submit detailed Quality Plan for BHEL / customer's approval.

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SPECIFIC REQUIRMENTS

4.06.00 **Lightning Arresters**

The equipment will be used in the switchyard having characteristics as listed in the ~~Annexures.~~ Section-1.

Arresters shall be designed with sufficient cantilever strength to meet with stress due to wind pressure and short circuit forces arising from rated short time current.

The lightning arrester shall be installed as close to the equipment as possible and also on the line entrance.

Lightning arrester shall be station class, heavy duty, metal oxide gapless type with ratings as detailed in the ~~Annexures.~~ Section-1.

The arrester shall be suitable to protect the equipment having insulation level as indicated in the ~~annexure.~~ Section-1.

The arrester shall be capable of discharging over-voltages occurring during switching of unloaded transformer, reactor and long line

The arrester shall have adequate thermal discharge capacity for severe switching surges, long duration surges and multiple strokes.

4.06.01 Constructional Features

i) The arrester shall be single pole, hermetically sealed, with non-linear blocks of sintered metal oxide material so as to obtain a robust construction with excellent electrical, thermal and mechanical characteristics even after repeated operation.

ii) Insulator shall be polymer or ~~wet~~ process porcelain, brown glazed and free from imperfections. All metal parts and hardware shall be hot dip galvanised.

iii) Creepage distance shall correspond to that specified in the annexure. Grading ring, if required, shall be provided to maintain voltage gradient within permissible limit.

iv) The arrester shall be provided with pressure relief device to prevent shattering of porcelain in case excessive gas pressure builds up.

4.06.02 Accessories

i) Lightning arrester shall be furnished complete with insulating base, arrester disconnector, surge counter, leakage current monitor and anchoring hardware for mounting on steel structure.

ii) A leakage current detector shall be furnished with the counter as an integral part. This is for monitoring the leakage to indicate any possible breakdown.

iii) Surge counter and leakage current meter shall be housed in an IP 55 enclosure and their reading shall be visible through inspection glass panel in the front.

iv) The surge counter shall be suitably enclosed for outdoor duty and be mounted at a convenient height for reading. Counter terminals shall be such as to permit connections with minimum possible bends. The mounting arrangement shall be such that it can be tilted 45 degree from horizontal plane for convenient of reading No auxiliary power supply or battery shall be required for operation of counter.

v) A suitably sized by-pass shunt along with necessary terminals shall be furnished for bypassing the discharge counter if required.

vi) Grading ring/corona ring as applicable for the particular voltage class of arrester shall be provided.

4.06.03 Terminals

i) All connection terminals shall be of corrosion resistant material and complete connection hardware.

ii) High voltage line terminal shall be provided with bimetallic terminal connector suitable for connection to the type and size of conductor indicated in annexure.

iii) All ground terminals shall have provision of connection to 75 x 10 mm G.I. flat.

ANNEXURE-B

FITTINGS & ACCESSORIES

Lightning arrestor

Each Lightning Arrester shall be furnished complete with the accessories as listed below :

1. Insulating Base with anchoring bolts, nuts etc. for fixing the equipment on to structure.
2. Surge counter with integral leakage current ~~monitor~~ meter.
3. By-pass shunt with connection provision.
4. Clamp type bimetallic terminal connectors.
5. Ground terminals.
6. Grading ring, if necessary.
7. Other standard accessories which are not specifically mentioned but are usually provided with Lightning Arrester of such type and rating for efficient and trouble-free operation.

SECTION-3

3.0 GENERAL

This section stipulates the General Technical Requirements under the Contract and will form an integral part of the Technical Specification.
The provisions under this section are intended to supplement general requirements for the materials, equipments and services covered under other respective sections and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall hold good.

3.1 PROJECT INFORMATION AND SYSTEM PARAMETERS

a)	Customer/ Purchaser/ Owner	The West Bengal Power Development Corporation Ltd.
b)	Consultant/Owner's Engineer	Development Consultants Private Ltd. Kolkata
c)	Project Title	1X660MW thermal power extension project Unit-5 at Sagardighi- 400KV Switchyard
d)	Location	Site is located at Manigram village of Murshidabad district in West Bengal and around 240kM from Kolkata. 13kM north of Sagardighi town by the side of the SMGR(Sagardighi Manigram –Gankar –Raghunathganj) road at a distance of 20kM from National Highway 34 . Nearest railway station is Manigram adjacent to the site on Bandel-Barhawara branch line and 6.5kM from Sagardighi railway station on Sainthia-Azimhunj line of eastern railway. Nearest Airport –Kolkata. Nearest Seaport-Kolkata/Haldia
e)	Altitude	34 m above MSL
f)	Transport Facilities	Road/Rail
g)	Postal Address	To follow
SITE CONDITIONS		
a)	Maximum Design ambient dry bulb temperature	50°C
b)	Minimum Design ambient dry bulb temperature	5°C
c)	Average Relative humidity (for design)	73 %
d)	Maximum relative humidity	84%
e)	Pollution Severity	Heavily Polluted
f)	Seismic zone	III
g)	Wind velocity	47m/sec.

h)	Wind pressure	150kg/sq.mts
i)	Terrain category	2
j)	Risk coefficient (K1)	1.07
k)		
l)	Average rainfall	1389mm

SYSTEM PARAMETERS

Nominal system voltage	**400 kV**
Highest system voltage	420 kV
System voltage variation	-5% to +5%
Basic Impulse Level(dry /wet)	1425kVp
Power frequency withstand voltage dry/wet	630kVrms
Switching Impulse withstand voltage (Phase to Earth)	1050kVp
Switching Impulse withstand voltage (Phase to Phase)	1575kVp
Lightning impulse withstand voltage (kVp between live terminals and earth.)	1425kVp
Lightning impulse withstand voltage (kVp impulse on one terminal and other terminal earthed) (across isolating distance).	1665kVp
Maximum radio interference voltage at 320kV rms phase to ground voltage	1000 micro volts for frequency between 0.5 MHZ and 2.0 MHz
Rated short time current	50 kA for 1 sec
Frequency	50 Hz, +3% to -5%
Creepage distance	31 mm/kV
System Earthing	Effectively earthed

AUXILIARY POWER SUPPLY

3 phase A.C power supply	415V ±10%, 50 Hz±5%, 3-phase 4 wire,50kA, solidly earthed, combined voltage and frequency variation ±10%
1 phase A.C power supply	240V±10%, 50 Hz +3% to -5%, 1-phase AC supply
D.C. power supply	220V +10% to -15%, 2-wire , ungrounded 48V ±10%, 2 wire system positively earthed

3.2 GENERAL TECHNICAL REQUIREMENT

3.2.1 TYPE TESTS

All equipment/systems to be supplied shall conform to type tests as per relevant standards and proven type. The Bidder / Contractor shall furnish the reports of all the type tests carried out in within last **Ten years from date of techno commercial bid opening i.e. 18.03.2018.** as listed in relevant clauses in respective electrical specification and relevant standards for all components / equipment / systems. These reports should be for the tests conducted on identical/similar components/equipment/systems to those offered/proposed to be supplied under this contract.

Type tests done in an independent government laboratory or in the presence of representative of State Electricity Board or other reputed public undertakings, the type test reports of the same shall be submitted for scrutiny /approval. If these are found suitable and technically acceptable, conducting of type tests shall be waived off.

In case Contractor is not able to submit report of type test(s) conducted in last ten years, or in case type test report(s) are not found to be meeting the specification/relevant standard requirements, then all such tests shall be conducted under this contract by the Bidder free of cost to Employer/Purchaser, and reports shall be submitted for approval. No charges shall be paid under this contract. All acceptance and routine tests as per relevant standards and specification shall be deemed to be included in the bid price.

3.2.2 CODES AND STANDARDS

All materials and equipment shall generally comply in all respect with the latest edition of relevant international electro-technical commission (IEC) or any other internationally accepted standard which ensure equal or better quality or relevant Indian standard(IS) mentioned against each equipment and this specification.

3.3 MATERIAL/WORKMANSHIP

3.3.1 General Requirements

Where the specification does not contain characteristics with reference to workmanship, equipment, materials and components of the covered Equipment it is understood that the same must be new, of highest grade of the best quality of their kind conforming to best engineering practice and suitable for the purpose for which they are intended.

The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety, subject to mutual agreements and shall be used throughout the design. All joints and fastenings shall be devised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfill their required function. In general screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from purchaser.

Whenever possible, all similar part of the Works shall be made to gauge and shall also be made interchangeable with similar parts. All spare parts shall be interchangeable with, and shall be made of the same materials and workmanship as the corresponding parts of the Equipment supplied under the Specification. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

All materials and equipment shall be installed in strict accordance with the manufacturer's recommendation(s). Only first-class work in accordance with the best modem practices will be accepted. Installation shall be constructed as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, leveling, aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer's tolerances and instructions and the Specification. All factory assembled rotating machinery shall be checked for alignment and adjustments made as necessary to re-establish the manufacture's limits suitable guards shall be provided for the protection of personal on all exposed rotating and / or moving machine parts and shall be designed for easy installation and removal for maintenance purpose. The spare equipment(s) shall be installed at designated locations and tested for healthiness.
The Contractor shall apply oil and grease of the proper specification to suit the machinery, as is necessary for the installation of the equipment. Lubricants used for installation purposes shall be drained out and the system flushed through where necessary for applying the lubricant required for operation. The Contractor shall apply all operational lubricants to the equipment installed by him. All oil, grease and other consumables used in the Works/ Equipment shall be purchased in India unless the Contractor has any special requirement for the specific application of a type of oil or grease not available in India. In such is the case he shall declare in the proposal, where such oil or grease is available. He shall help purchaser in establishing equivalent Indian make and Indian Contractor. The same shall be applicable to other consumables too.

3.3.2 Provisions For Exposure to Hot and Humid climate

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favorable to the growth of fungi and mildew. The indoor equipments located in non-air conditioned areas shall also be of same type.

3.4 PAINTING

The painting of equipment shall be as follows:

Epoxy based with suitable additives. The thickness of finish coat shall be minimum 80 microns (minimum total DFT shall be 100 microns). However in case electrostatic process of painting is offered for any electrical equipment, minimum paint thickness of 80 microns shall be acceptable for finish coat.

Painting process shall be of powder coating type. All surface shall be cleaned , phosphated and given two coats of rust –resistant primer followed by two coats of finish paints . The interior of all panels cabinets and enclosures shall be finished with gloss white enamel. Two final powder coats of synthetic enamel paint of light grey shade(631 of IS-5) shall be given to exterior surface of all the panels. Sufficient quantities of touch paint shall be furnished for application at site. All The indoor cubicles shall be of same colour scheme and for other miscellaneous items, **colour scheme will be approved by the purchaser.**

3.5 PROTECTION

All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves, piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage.

All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion. The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner. Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent entry of insects.

3.6 FUNGISTATIC VARNISH

Besides the space heaters, special moisture and fungus resistant varnish shall be applied on the parts, which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interface with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application to the varnish.

3.7 SURFACE FINISH

All interiors and exteriors of tanks, control cubicles and other metal parts shall be throughly cleaned to remove all rust, scales, corrosion, greases or other adhering foreign matter. All steel surfaces in contact with insulating oil as far as accessible, shall be painted with not less than two coats of heat resistant, oil insoluble, insulating paints.

All metal surfaces exposed to atmosphere shall be given two primer coats of zinc chromate and two coats of epoxy paint with epoxy base thinner. All metal parts not accessible for painting shall be made of corrosion resisting material. All machine finished or bright surfaces shall be coated with a suitable preventive compound and suitably wrapped or otherwise protected. All paints shall be carefully selected to withstand tropical heat and extremes of weather within the limit specified. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling. All external painting shall be as per shade no. 631 of IS:5.

3.8 GALVANIZING

All ferrous parts including all sizes of nuts, bolts, Plain and spring washers, support channels, structures, shall be hot dip galvanized conforming to latest version of IS:2629 or any other equivalent authoritative standard. However, hardware less than M12 size shall be electro-galvanized. Minimum weight of zinc coating shall be 610 gm/sq.m and minimum thickness of coating shall be 85 microns for all items thicker than 6mm. For items lower than 6 mm thickness, requirement of coating shall be as per relevant ASTM.

3.9 PACKING

The following details are to be clearly indicated in the material forwarding documents:

a) Name and address of the consignee.
b) Purchase order number.
c) Name of supplier/s.
d) Description of equipment / material.
e) Net weight.
f) Gross weight.

Each package shall be accompanied by a packing note (in weather proof paper).

All the equipment shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the purchaser, the Contractor shall also submit packing details/associated drawing for any equipment material under his scope of supply, to facilitate the purchaser to repack any equipment/ material at a later date, in case the need arises. Any material found short inside the packing cases shall be supplied by the supplier without any extra cost. The cases containing easily damageable material shall be very carefully packed and marked with appropriate caution symbol i.e. fragile, handle with care, use no Hooks etc.

3.10 HANDLING, STORING AND INSTALLATION

Contractor may engage manufacturer's Engineers to supervise if required for unloading, transportation to site, storing, testing and commissioning of the various equipment being procured by them separately. In case of any doubt/misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the purchaser. Contractor shall be held responsible for any damage to the equipment consequent to not following manufacturer's drawings/instructions correctly.

Where assemblies are supplied in more than one section, contractor shall make all necessary mechanical and electrical connections between sections including the connection between buses. Contractor shall also do necessary adjustments/alignments necessary for proper operation of circuit breakers, isolators and their operating mechanisms. All components shall be protected against damage during unloading, transportation, storage, installation, testing and commissioning.

Contractor shall be responsible for examining all the shipment immediately of any damage, shortage, discrepancy etc. for the purpose of Purchaser’s information only. Any demurrage, pilferage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. The Contractor shall be fully responsible, for the equipment/material until the same is handed over to the purchaser in an operating condition after commissioning.

The minimum phase to earth, phase to phase and section clearance along-with other technical parameters for the various switchyard voltage levels to be maintained shall be strictly as per the approved drawings.

The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances, the Contractor shall immediately proceed to correct the discrepancy at his risks and costs.

3.11 DEGREE OF PROTECTION

The enclosures to be installed shall be provided with degree of protection as detailed here under:

a) Installed out door: IP-55

b) Installed indoor in air conditioned area: IP-31

c) Installed in covered area IP:52

d) Installed indoor-in non-air-conditioned area where possibilities of entry of water is limited:IP-41

e) For LT switchgear (AC & DC distribution Boards): IP-54

f) 11kV & 3.3kV Switchgears: IP4X

g) 415V MCC / DBs / Fuse Board IP52 for indoor and IP65 for outdoor.

h) Motor (Indoor/Outdoor): IP55

i) Motor Actuator: IP65

j) Control and Relay Panel in AC area: IP3X

k) Control and Relay Panel in normal area: IP42

l) Pushbutton Station/Kiosk/Panel - Indoor IP55

m) Pushbutton Station/Kiosk/Panel -Outdoor IP65

n) Indoor Junction boxes for cables / wires: IP55

o) Outdoor lighting fixtures: IPW65

p) Battery Charger Panel: IP42

The degree of protection shall be in accordance with IS:13947, (Part-1)/IEC-947(Part-1). Type test report/or degree of protection test on each type of the box shall be submitted for approval.

3.12 RATING PLATES, NAME PLATES AND LABELS

Type or serial number together with details of the loading conditions under which the item of the substation in question has designed to operate and such diagram plates as may require by the Purchaser. The rating plate of each equipment shall be according to IEC requirements.

All such nameplate instruction plates, rating plates shall be bilingual with Hindi inscription first followed by English. Alternately two separate plates one with Hindi and other with English inscriptions may be provided. All measurements shall be in M.K.S units.

3.13 EARTHING

Equipment shall be provided with two grounding pads suitable for connection to galvanized steel flat. Control panels, Relay panel, outdoor marshalling boxes, Junction boxes, lighting panels and distribution board shall be provided with two grounding pads, for connection to galvanized steel flat. The two pads shall be provided, one each at the middle of the two opposite sides of the bottom frame of the equipment. Earthling of hinged door shall be done by using a separate earth wire.

3.14 TERMINAL BLOCKS AND WIRING

Control and instrument leads from the switchboards or from other equipment will be brought to terminal boxes or control cabinets in conduits. All Inter-phase and external connections to equipment or to control cubicles will be made through terminal blocks.

Terminal blocks shall be 1100 V grade box –clamp type and have continuous rating to carry the maximum expected current on the terminals. Those shall be of molded piece complete with insulated barriers stud type terminals, washers nuts and lock nuts. Screw clamp, overall insulated, insertion type, rail mounted terminals can be used in place of stud type terminals. But preferably the terminal blocks shall be non-disconnecting stud type equivalent to Elmex type CATM4, Phoenix cage clamp type of Wedge or equivalent. The Insulating material of terminal block shall be nylon 6.6 which shall be free of halogens, fluorocarbons etc.

Terminal block for current transformer and voltage transformer secondary leads shall be provided with test links and isolating facilities. The current transformer secondary leads shall also be provided with short circuiting and earthing facilities.

The terminal shall be that maximum contact area is achieved when a cable is terminated. The terminal shall have a locking characteristic to prevent cable from escaping from the terminal clamp unless it is done intentionally. The conducting part in contact with cable shall preferably be tinned or silver plated however Nickel plated copper or zinc plated steel shall also be acceptable. The terminal blocks shall be of extensible design. The terminal blocks shall have locking arrangement to prevent its escape from the mounting rails.

The terminal blocks shall be fully enclosed with removable covers of transparent, non deteriorating type plastic material. Insulating barriers shall be provided between the terminal blocks. These barriers shall not hinder the operator from carrying out the wiring without removing the barriers.

Unless otherwise specified terminal blocks shall be suitable for connecting the following conductors on each side.

All circuits except CT circuits :	Minimum of 2 nos. of 2.5 sq.mm, copper flexible.
All CT circuits :	Minimum of 4 nos. of 2.5 sq.mm, copper flexible..

The arrangements shall be in such a manner so that it is possible to safely connect or disconnect terminals on live circuits and replace fuse links when the cabinet is live. At least 20 % spare terminals shall be provided on each panel/cubicle/box and these spare terminals shall be uniformly distributed on all terminals rows.

There shall be a minimum clearance of 250mm between the first bottom row of terminal block and the associated cable gland plate. Also the clearance between two rows of terminal blocks shall be a minimum of 150 mm. The Supplier shall furnish all wire, conduits and terminals for the necessary inter-phase electrical connection (where applicable) as well as between phases and common terminal boxes or control cabinets.

All input and output terminals of each control cubicle shall be tested for surge withstand capability in accordance with the relevant IEC Publications, in both longitudinal and transverse modes. The supplier shall also provide all necessary filtering, surge protection, interface relays and any other measures necessary to achieve an impulse withstand level at the cable interfaces of the equipment.

3.15 CONTROL CABINETS, JUNCTION BOXES, TERMINALS BOXES AND MARSHALLING BOXES FOR OUTDOOR EQUIPMENTS

All types of boxes, cabinets etc. shall generally conform to and be tested in accordance with IS-5039, IS-8623 or IEC-439, as applicable and the clause given below.

Control cabinet, Junction boxes, Marshalling boxes & Terminal boxes shall be made of **CRCA sheet** steel of minimum 2 mm thickness. The thickness of door s/covers shall not be less than 1.6 mm. The box shall be properly braced to prevent wobbling. There shall be sufficient reinforcement to provide level surfaces, resistance to vibrations and rigidity during transportation and installation. Cabinet/boxes shall be free standing floor mounting type, wall mounting type or pedestal mounting type as per requirements.

Cabinet /boxes shall be provided with double hinged doors with padlocking arrangements. The distance between two hinges shall be adequate to ensure uniform sealing pressure against atmosphere. The quality of gaskets shall be such that it does not get damaged/cracked during the operation of the equipment.

All door, removable covers and plates shall be gasketed all around with suitably profiled **Neoprene gaskets**. The gasket shall be tested in accordance with approved quality plan. The quality of gasket shall be such that it does not get damaged /cracked during the years of the equipment or its major overhaul whichever is earlier. All gasketed surfaces shall be smooth, straight and reinforced if necessary to minimize distortion and to make a tight seal. Ventilating Louvers, if provided, shall have screen and filters. The screen shall be fine wire mesh made of

brass.

All boxes/cabinets shall be designed for the entry of cables from bottom by means of weather proof and dust-proof connections. Boxes and cabinets shall be designed with generous clearances to avoid interference between the wiring entering from below and any terminal blocks or accessories mounted within the box or cabinet. Suitable cable gland plate projecting at least 150 mm above from the base of the Marshalling Kiosk/box shall be provided for this purpose along with the proper blanking plates. Necessary number of cable glands shall be supplied and fitted on this gland. The gland shall project at least 25mm above gland plate to prevent entry of moisture in cable crutch. Gland plate shall have provision for some future glands to be provided later, if required.

3.16 SPACE HEATERS

The heater shall be suitable for continuous operation at 240 V AC supply voltage and shall be provided with on – off switch and fuse shall be provided for heater.

One or more adequately rated, thermostatically connected heaters shall be supplied to prevent condensation in any compartment. The heater shall be installed in the lower portion of the compartment and electrical connections shall be made from below the heater to minimize deterioration of supply wire insulation. The heaters shall be suitable to maintain the compartment temperature to prevent condensation.

The heaters shall be suitably designed to prevent any contact between the heater wire and air and shall consist of coiled resistance wire centered in metal sheath and completely encased in a highly compacted powder of Magnesium Oxide or other material having equal heat conduction and electrical insulation properties, or they shall consist of a resistance wire wound on a ceramic and completely covered with a ceramic material to prevent any contact between the wire and air. Alternatively, they shall consist of resistance wire mounted into a tubular ceramic body built into an envelope of stainless steel or the resistance wire is wound on a tubular ceramic body and embedded in glaze the surface temperature of the heaters shall be restricted to a value which will not shorten the life of the heater sheaths or that of insulated wire or other component in the compartments.

3.17 QUALITY

BHEL quality plan to be followed subject to TBEM / customer's approval.

3.18 DOCUMENTATION

3.18.1 LIST OF DOCUMENTS

The bidder shall submit a detailed list of drawings / documents along with the bid proposal which he intends to submit to the Employer after award of the contract.

The supplier shall necessarily submit all the drawings / documents unless any thing is waived.

All engineering data submitted by the Contractor after final process including review and approval by the Employer shall form part of the Contract Document and the entire works performed under this specification shall be performed in strict conformity, unless otherwise expressly requested by the Employer in Writing.

3.18.2 DRAWINGS

All drawings submitted by the Contractor including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, material description, Bill of Materials, weight of each component, break-up for packing and shipment, the external connections, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearances and spaces required for installation and interconnection between various portions of equipment and any other information specifically requested in the specifications.

Each drawing submitted by the Contractor shall be clearly marked with the name of the Employer, name of consultant, the unit designation, contract no., and the name of the Project. If standard catalogue pages are submitted, the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

Further work by the Contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the Employer if so required.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawing shall be at the Contractor's risk. The Contractor may make any changes in the design which are necessary to make the equipment conform to the provisions and intent of the Contract and such changes will again be subject to approval by the Employer. Approval of Contractor's drawing or work by the Employer shall not relieve the contractor of any of his responsibilities and liabilities under the Contract.

3.18.3 APPROVAL PROCEDURE

The scheduled dates for the submission of these as well as for, any data/information to be furnished by the Employer would be discussed and finalized at the time of award. The supplier shall also submit required no. of copies as mentioned in this specification of all drawings/design documents/test reports for approval by the Employer. The following schedule shall be followed generally for approval.

i.	Initial submission of drawings and data sheet	Within 2 (two) weeks from PO date.
ii.	Approval/comments/by employer on Initial submission	Within 2 (two) weeks of receipt
iii.	Resubmission	Within 1 (one) weeks (whenever from date of comments required) Including both

		ways postal time.
iv.	Approval or comments	Within 1 week of receipt of resubmission
v.	Furnishing of distribution copies	1 week from the date of last approval.

Note: The contractor may please note that all resubmissions must incorporate, all comments given in the submission by the Employer failing which the submission of documents is likely to be returned. Every revision shall be a revision number, date and subject, in a revision block provided in the drawing, clearly marking the changes incorporated.

The title block of drawings shall contain the following information incorporated in all contract drawings. Please refer enclosed sheet for details of Title block.

3.18.4 DOCUMENTS TO BE SUBMITTED ALONGWITH OFFER

1) Drawings
2) Guaranteed Technical Particulars
3) Type Test Reports
4) Manufacturing Quality Plan

3.18.5 DOCUMENTATION SCHEDULE

S. No.	DESCRIPTION	TENDER STAGE	CONTRACT STAGE FOR APPROVAL	FINAL DOCUMENTATION	
			Prints	Prints	CDs
1	Drawings and Data Sheets	1	6	7	4 nos of all drawings/ documents
2	Drawings "As Built "	-	-	7	
3	Type Test Reports	1	6	7	
4	Erection Manuals	-	6	7	
5	Operation and Maintenance Manuals	-	6	7	
6	Manufacturing Quality Plan	1	6	7	
7	Field Quality Plan	1	6	7	
8	Inspection Test Reports	-	-	7	

O & M Manuals shall be submitted 3 months prior start of unit commissioning,
The manual shall be submitted as follows-

1. 1 soft copy + 12 sets of hard copy to WBPDCL Sagardighi site.

2. 1 soft copy + 3 sets of hard copy to WBPDCL Corporate office.

Soft copies of drawings at contract stage shall also be submitted in **PDF format**.

Drawings will also be submitted in mini cartridges in AUTOCAD Release -14 package or any other CAD package along with conversion files for all major items.

Final Documentation shall be submitted in bound volumes with Customer & Project etc. written on top.

CUSTOMER:

THE WEST BENGAL POWER DEVELOPMENT CORPN. LTD.(WBPDCL)

1X660MW,SAGARDIGHI THERMAL POWER EXTENSION PROJECT (UNIT #5)

CONSULTANT:

DEVELOPMENT CONSULTANTS PRIVATE LIMITED

KOLKATA

BHARAT HEAVY ELECTRICALS LTD

TRANSMISSION BUSINESS GROUP

NOIDA

.

Maharatna Company

JOB NO.	445
STATUS	CONTRACT
DISTRIBUTION	

TO				
NO.				
REV.	DATE	ALTD	CHD	APPD

DEPT CODE		NAME	SIGN	DATE
M	DRN	--		--
	DESN	--		--
	CHD	--		--
	APPD	--		--

TITLE

DEPT.	SCALE ---
SIGN	
DATE	

DRAWING NO.

SHEET -- OF -- REV. --

4 3

Fold-1

SIZE-A0

SECTION-4
GUARANTEED TECHNICAL PARTICULARS
EQUIPMENT- 360KV LIGHTNING ARRESTER

1.0	Make	:
2.0	Type	:
3.0	Reference Standard	:
4.0	L. A. Rating	
4.1	Rated Voltage KV	:
4.2	Nominal discharge current KA $_{peak}$	:
4.3	Discharge Class	:
4.4	Rated Frequency	:
4.5	Permissible continuous operating voltage (COV) KV $_{rms}$	
5.0	Insulation Level of arrester housing	
5.1	1-minute 50 Hz withstand wet KV $_{rms}$	
5.2	Lightning impulse withstand KV $_{peak}$	:
5.3	Switching impulse withstand KV $_{peak}$	
6.0	Residual Voltage	
6.1	Maximum Residual Voltage at Lightning impulse of 8/20 µs current wave KV $_{peak}$	:
6.2	Maximum Switching impulse Residual Voltage KV $_{peak}$	:
6.3	Maximum steep current impulse Residual Voltage KV $_{peak}$	:
7.0	Impulse current withstand	
7.1	High current short duration 4/10 µs wave KA $_{peak}$	:
7.2	Long duration current for	
	a) 1000 µs KA $_{peak}$	:
	b) 2000 µs KA $_{peak}$	:

SECTION-4
GUARANTEED TECHNICAL PARTICULARS

8.0	Energy absorption capability KJ/KV	:
9.0	Porcelain creepage distance KV/mm	:
10.0	Pressure relief current KA	:
11.0	Pressure relief class	:
12.0	Max radio interference voltage at 1.1 U_{rated} /√3	
13.0	Permissible discharge level at 1.05 COV pC	
14.0	No. of section per pole No.	:
15.0	Approx. dimension (L x B x H) mm	
16.0	Approx. weight	:
17.0	Accessories furnished as per annexure Yes/No	:
18.0	Characteristic curve furnished Yes/No	:

SECTION-5

SCHEDULE OF TECHNICAL DEVIATIONS

Bidder shall list below all technical deviation clause wise w.r.t. tender specifications:

S.No.	Page No.	Clause No.	Deviation	Reason / Justification

Any deviation not specifically brought out in this section shall not be admissible for any 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.

Date: Tenderer's Stamp & Signature

ANNEXURE-A **Rev-0**

TECHNICAL PRE-QUALIFYING REQUIREMENTS

FOR 360KV LIGHTNING ARRESTER

400kV Surge Arrestors/Lightning Arresters being offered should be from manufacturer who has manufactured and supplied minimum fifteen (15) nos. of single phase Surge Arrestors of offered voltage class or higher, suitable for air insulated substation/ switchyard and which must have been in successful operation# for a minimum period of two (2) years as on date of Notice to Proceed i.e. 01.07.2020.

#Manufacturer must provide performance certificates issued by the employer/utility certifying the successful operation of above Surge Arrestors / Lightning Arresters without any adverse remark.

Prepared Checked Approved

PROJECT:	**WBPDCL SAGARDIGHI TPS**
ITEM:	**360 KV SURGE ARRESTER**
SUBJECT:	**BID SPECIFIC ATC**

1.	For any **technical clarification**, please contact Sh. Naveen Kumar Tripathi, Dy. Manager (TBEM), Contact No. 0120-674-8527; e-mail: tripathi@bhel.in / Sh. M. Vijay Kumar, Sr. Manager (TBEM), Contact No. 0120-674-8537; e-mail: vijaykumar@bhel.in/ BHEL, Transmission Business Group Joy Tower, Sectro-62, Noida-201301, UP, India
2.	For any **commercial clarification**, please contact Ms. Archana Kumari, Manager (TBMM) / Sh. Sunil Kumar, Sr. DGM (TBMM); Contact No. 0120-674-8467 / 8471; e-mail: archanak@bhel.in / sunil.kumar@bhel.in BHEL, Transmission Business Group Joy Tower, Sectro-62, Noida-201301, UP, India
3.	**Terms of Payment:**
For Supply only in scope of the supplier	As per GTC of GeM. However, payment shall be made within 60 days (45 days for MSE Vendors) from the date of receipt of complete invoice along with following documents in 3 sets. Supplier has to provide the following documents for processing of bills: • GST Compliant Tax Invoice • LR / GR • Packing List • Guarantee Certificate • Copy of Transit Insurance Certificate from underwriters • CRAC (consignee receipt-cum-acceptance certificate) • Copy of Performance Bank Guarantee (PBG)
4.	**Term of Delivery:**
As per GeM. However, unloading at site is not in the scope of bidder. Bidders to quote price accordingly.	
5.	**Delivery Time:**
25 Weeks (175 days) from the date of PO as per Activity schedule. As per L2 Schedule, material is required by May'2022. Early Delivery Acceptable.	
6.	**Prices:**
The quoted prices shall be on **Firm basis including packing and forwarding**. Price to be quoted as inclusive of GST. i. e. Ex-Works + F&I + GST.	
7.	**Liquidated Damage of delayed Delivery:**
As per GeM terms and conditions.	
8.	**Scope of supply & BOQ:**
As per Technical Specification & Un – Priced Bid.	
9.	**Technical Specification:**
Technical specification no. **TB-445-316-003 Rev 00**. No permissible Technical Deviation has been envisaged. Bidders to quote as per Technical Specification.	
10.	**Pre-Qualification Requirement:**
As per Annexure-A.	
11.	**Guarantee Clause (Defect Liability Period):**
The equipment / material supplied and services rendered (if applicable) shall be guaranteed to be free from all defects and faults in design & engineering, material, workmanship & manufacture and	

in full conformity with the Purchase Order / Contract, Technical Specifications & approved drawings / data sheets, if any, for **18 months from the date of last delivery or up to 01.10.2025 whichever is later with claim period of 3 months extra over and above.** The defective equipment / material / component shall be replaced free of cost at site. Freight & Insurance during transit shall also be in the scope of the supplier / contractor. Any expenditure for dismantling and re-erection of the replaced equipment / material / component shall be to supplier's / contractor's account. All replacements during the guarantee period shall be delivered at site promptly and satisfactorily within a period not more than 45 days from the date of reporting the defect / rejection etc. In the event of the supplier / contractor failing to replace the defective equipment / material / component within the time period mentioned above, BHEL may proceed to undertake the replacement of such defective equipment / material / component at the risk and cost of the supplier / contractor without prejudice to any other rights under the contract and recover the same from PBG / other dues of this Purchase Order / Contract or any other Purchase Order / Contract executed by the supplier / contractor.	
12.	**Performance Bank Guarantee:**
Performance BG shall be valid for 18 months from the date of last delivery or up to 01.10.2025 whichever is later with claim period of 3 months extra over and above 18 months.	
13.	Bidders to ensure that Third party / customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document / certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e-mail Id etc. In case the same found not available, Purchaser has right to reject such document from evaluation.
14.	**Acceptance of Offer:**
Acceptance of offer is subjected to following: i) Approval of vendor by end customer ii) Qualification of Technical PQR. iii) Techno-Commercial evaluation by BHEL.	
15.	**MQP (Manufacturing Quality Plan):-** Inspection shall be carried out as per approved Quality Plan. For the same, Supplier to submit Quality Plan to BHEL for Customer approval.
16.	**Inspection Required** - Yes (Pre Dispatch) - As per approved QAP / Technical Specification. **Inspection Agency** - BHEL / CUSTOMER / THIRD PARTY.
17.	**Make in India: -** For this procurement, the local content to categorize a supplier as Class-I local supplier / class-II local supplier / Non-Local supplier and purchase preference to Class-I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020, issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT but before opening of part-II bids against this NIT. ñThis tender is not a global tender and **only Class-I** suppliers as defined under the DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04.06.2020 are eligible to bid in this tender. Bids received from Class II & Non-Local supplier shall be rejected.ò
18.	All other terms & conditions shall be as per GTC of GeM

ACTIVITY SCHEDULE

Break up of delivery period taken (Delay analysis for cases of delivery extension if required, shall be governed as per below schedule)

SL. NO.	ACTIVITY (AS PER MANUFACTURING CLEARENCE)	ACTIVITY TIME IN WEEKS
1.	Submission of documents necessary for getting manufacturing clearance like Drawings, data sheet etc. (In scope of vendor)	02
2.	Review and Approval of documents and issue of manufacturing clearance (In scope of BHEL)	03
3.	Manufacturing Time (In scope of vendor)	14
4.	Inspection (In scope of BHEL)	02
5.	Issue of MICC (In scope of BHEL)	02
6.	Dispatch (In scope of vendor)	02

Note - Refer Clause – 3.18.3 of Technical Specification for submission / resubmission of technical documents such as drgs, data sheet etc.

		Vendor to mention as NIL deviation	Remarks if any
1.	Schedule of Commercial Deviation, if any (All terms and conditions shall be as per GeM except as mentioned above)		
2.	Schedule of Technical Deviation, if any (Against Technical Specification)		

Local Content in % - ……. (Vendor to fill the same). In case local Content is less than 100%, Vendor to submit sealed and signed copy of Annexure – 7.

Rate of GST applicable (On Ex- Works) for each line item of BOQ - …….

Rate of GST applicable (On F & I) for each line item of BOQ - …….

- Bidder to mention their works address below from where material will be supplied to Site.

Works Address- ----------

Communication Address- ----------

Person Name - ----------
Email ID – ----------
Contact no. - ----------

Signature & Seal of
Supplier
Date

Annexure-7

Vendor Compliance format in bidder letter head

In view of by order No. 25-111612018-PG, Dated 02.07.2020 of Ministry of Power, GOI

Enquiry No :
Project :
Name of items/Package :

Sl No	Description	Bidder confirmation
1	The vendor should supply all items in strict compliance to directions issued by Ministry of Power, Govt. of India vide order No. 25-111612018-PG dated 02.07.2020.	Agreed / Disagreed / Not Applicable
2	Vendor shall be responsible for conducting all necessary testing in accordance with testing protocol in line with MoP order.	Agreed / Disagreed / Not Applicable
3	All necessary permissions and approvals from Govt of India for import of equipment/ parts/ components shall be submitted, if equipment/ parts/ components are sourced from prior reference countries.	Agreed / Disagreed / Not Applicable

Note: Non-compliance of MoP Order and its subsequent amendment, (if any), by any bidder(s) shall lead for commercial rejection of their bids by BHEL

Bidder's authorized signatory

with stamp & seal

FORMAT FOR BREAK UP OF PRICES

Vendor to provide Break Up of prices for each line items as per this format to BHEL.

S.No.	Description of item.	HSN Code	UNIT for Quantity	QUANTITY	UNIT PRICE EX. WORKS (Rs.)	TOTAL EX. WORKS (Rs.)	GST @ 18% on Total Ex Works (Rs.)	UNIT FREIGHT & INSURANCE UP TO SITE (Rs.)	TOTAL FREIGHT & INSURANCE (Rs.)	GST @ 18% on Total Freight & Insurance (Rs.)	F.O.R. DESTINATION PRICE (Rs.)
1	2	3	4	5	6	7 = 5 * 6	8	9	10 = 5 * 9	11	12 = 7 + 8 + 10 + 11
1	SUPPLY- SURGE ARRESTOR : 20KA NOMINAL DISCHARGE, 31MM/KV CREEPAGE, 360KV SINGLE PHASE, GAPLESS (ZNO) SURGE ARRESTER COMPLETE WITH ALL ACCESSORIES (CORNONA RING [IF APPLICABLE], SURGE COUNTER/ MONITOR, INSULATING BASE, LUGS, FIXING & EARTHING HARDWARE ETC) EXCEPT TERMINAL CONNECTOR AND INSULATED CONNECTING CABLE.		Nos.	6							
2	SUPPLY- SURGE ARRESTOR : 360KV TERMINAL CONNECTOR SUITABLE FOR TWIN ACSR MOOSE CONDUCTOR		Nos.	6							
3	SUPPLY- SURGE ARRESTOR : INSULATED COPPER CABLE CONNECTING SURGE ARRESTER TO SURGE COUNTER		MTR	36							
4	SPARES- SURGE ARRESTOR : 20KA NOMINAL DISCHARGE, 31MM/KV CREEPAGE, 360KV SINGLE PHASE, GAPLESS (ZNO) SURGE ARRESTER COMPLETE WITH ALL ACCESSORIES (CORNONA RING [IF APPLICABLE], SURGE COUNTER/ MONITOR, INSULATING BASE, LUGS, FIXING & EARTHING HARDWARE ETC) EXCEPT TERMINAL CONNECTOR AND INSULATED CONNECTING CABLE.		Nos.	1							
5	SPARES- SURGE ARRESTOR : 360KV TERMINAL CONNECTOR SUITABLE FOR TWIN ACSR MOOSE CONDUCTOR		Nos.	1							
6	SPARES- SURGE ARRESTOR : INSULATED CONNECTING CABLE CONNECTING SURGE ARRESTER TO SURGE COUNTER		MTR	6							
	TOTAL PRICE FOR SUPPLY (in figures)										
	TOTAL PRICE FOR SUPPLY (in words)										