



Annexure-IV

SCOPE OF WORK FOR CONTRACT PART-B

400 KV switchyard and control room

The scope of work starts from Generator HV bushing to 400KV transmission line gantries including gantries and line equipments erected within switch yard. 400 KV Transmission lines outside plant boundaries are excluded from the scope of work.

SF6 Gas filling:

- Assisting in SF6 gas filling work if required. Shifting of gas filling equipment from OPGC stores to site and back to Stores.
- Checking of SF6 gas leakage from breakers, leakage detector will be provided by OPGC, and attending the leakages if found any.

Clamps, Jumpers, equipment structure maintenance:

- Checking the tightness of all fixing bolts & nuts, Jumpers, CVTs, CTs, Bus bars, Lightning arresters, Wave traps, Bus post insulators, Coupling Capacitors, Connectors, Corona rings, coupling clamp, bolts, spacers, earth connection(s), lock nuts etc. on regular basis and maintaining records.
- Tightness checking of all PT, CT, breaker, isolator control terminals / clamps on regular basis and maintaining records.
- Conductor/bus bar, clamps and connector Replacement.

Attending oil leakage

- Attending the oil leakage from CT, CVT.

Replacement of switchyard equipment

- Removal of busbar / jumpers if required.
- Shifting of spare CT/CVT/LA/BPI/CB/Wave trap from OPGC store to work place and defective equipment shifting back to store.
- Assisting in testing activities after replacement.
- Thorough monitoring of different parameters of replaced equipments, as instructed by OPGC EIC.

Vegetation Removal

- Vegetation growth removal from Switchyard/transformer yard and shifting the waste in designated place.
- Transportation for waste will be in the scope of contractor.

Monitoring

- Logging the equipment status on regular basis as per approved OPGCL format.

- Up keeping control & relay panels in the control room, switch yard equipments /installations, control cubicles for circuit breakers & isolators neat and clean on regular basis. Cleaning of equipments / installations requiring shutdown / power blocking shall have to be planned in consultation with EIC.
- Checking of all indication lamps, switchgear items, and various instrument meters etc. of system under scope and replacement / repair / rectification of faulty ones immediately.
- Checking of winding temperature, oil temperature / oil levels / oil leakage in CTs, CVTs,PTs, bushings, transformers etc. on daily basis and report submission and maintenance of records.
- Identification of probable water ingress points of all field mounted instruments / panels and necessary rectification measures (such as manual de-watering) in consultation with EIC.
- The contractor will have to submit records of daily work activities and records pertaining to electrical parameters, pressure, oil level, tap position, OTI, WTI, cooling fan & pump of each transformer.
- Periodic Checking of leakage currents of LAs, maintenance of their leakage meters & counters. Ensuring it within green band.
- Recording counter reading in surge monitor.

Preventive Maintenance of switchyard equipment and panels

- Cleaning of all porcelain insulators, Inspection for any cracks and chip-off and carrying out repairs wherever required.
- Cleaning of contacts and applying grease or jelly, adjustments of moving mechanism / arms for proper closing and opening operations for the Isolators and application of grease / jelly as per requirement.
- Assisting in all routine tests on electrical equipment including TAN DELTA, DCRM.
- Assisting in testing of the breakers, isolators, LA, CT, CVT, etc. whenever required.
- Cleaning of all the control / Relay panels, Protection panels, Bay Marshalling Kiosk, Centralizing cubicles, PLCC panels, Isolators / Earth switch control box, etc.
- Replacement of faulty components such as Relays, Switches, LED indication, Window lamps, meters, TBs, etc.
- Assisting in checking & maintaining interlocking mechanism among the breakers, Isolators, Earth switches.
- Assisting in testing and calibration of Protection relays, Tri-vector meters, Voltmeters, Ammeters, Watt-meters, Energy meters, Synchro-scope, Transducers etc. and report submission.

Shutdown maintenance of switchyard equipment:

Circuit Breaker

- Replacement of local limit switch, contactor, overload relay, belt, pinion, gear and any type of spares.
- Checking of local and remote operation circuit, annunciation circuit and necessary rectification thereof.
- Checking and replacement of trip coil and closing coil of breaker, if required.
- Checking and replacement of terminal block and junction box including dismantling of cable connection and re-connection the same. Replacement of control wire if, needed.

- Lubrication checking of mechanism of breaker and application of the same, wherever required.
- Measure closing & tripping timings and contact resistance. Ensure them to OEM specified limits.

Isolator

- Applying lubricants in gearbox & isolator blade after proper cleaning with cleaning agent.
- Changing of isolator blade along with proper alignment checking & fitting in jaw (fixed contact) after dismantling of defective blade. Checking mechanical / electrical operation and indication. Rectification of remote / local circuit troubles.
- Replacement of damaged gear box in isolator main box, proper lubricating and checking of electrical / mechanical operation and indication.
- Replacement of defective auxiliary contact and proper adjustment. Checking of isolator electrical (remote and local) / mechanical operation and interlock checking.
- Replacement of defective fixed contact, ensuring proper alignment and electrical / mechanical operation of isolator.

CT & CVT

- TB of junction box replacement along with cable disconnection & termination & tightness checking.
- Assisting in checking and replacement of coupling unit of CVT for PLCC communication.

Lightning Arrester

- Assisting in checking and replacement of LA surge counters.

Thermal image scanning

- Thermograph scanning of all switchyard and transformer yard equipment and maintaining the record as per approved format by OPGCL.
- Thermograph camera will be in scope of OPGCL.

Oil Type Transformers (GTs,UTs,UATs,RATs,SAT,AHP)

Ratings

Generator Transformer (GT) – 3no single phase transformers of 270MVA.

Unit Transformer (UT) – 50MVA

Reserve Auxiliary Transformer (RAT) – 50MVA

Unit Auxiliary Transformer (UAT) – 16MVA

Station Auxiliary Transformer (SAT) – 16MVA

AHP Transformer – 12MVA

Attending oil leakages/assisting in oil filling & filtration

- Cleaning the area of oil leakage.
- Arresting the oil leakage by sealing with help of oil seal compounds. (Sealing compound will be in scope of OPGC).
- Assisting in oil top-up.
- Assisting in oil filtration.
- Oil drum shifting from OPGC store to site location and shifting of empty drums to designated area as instructed by OPGC EIC. (Transportation will be in the scope of contractor)
- Housekeeping of oil spillage area.

Maintenance of GT/RAT/UT/UAT/SAT/AHP transformer

- Radiator, Cooling fan & pump - Attending all sorts of faults / breakdown developed in cooling system. Complete overhauling, Bearing replacement, contactor replacement, re-fitting to transformer, necessary circuit checking, cable changing work if, required and local-remote operation checking of cooling fan & oil pump and changing of motors or/and fans if required.
- Cleaning of bushings. Assisting in Tan Delta and Capacitance test on HV bushings and record keeping.
- Assistance in Tan Delta and Capacitance test on windings. Excitation current test on windings and record maintenance.
- Assistance in carrying out Ratio test, Magnetic balance test, Short circuit test, DC winding resistance test, IR of core, IR of HV bushing, IR of HV bushing test taps, as per requirement.
- IR value improvement through heating process whenever required.
- Cleaning of transformer body.
- Cleaning of radiator fins.
- Assistance in Tap Changer - circuit checking and all other job to activate OLTC through local- remote operation.
- IR value & PI checking of transformer both HV & LV sides to be done including opening of dropper & jumper and connecting the same on availability on shut down minimum once in six months. Report submission thereof.
- Checking healthiness of NGR.
- Tightness checking (with help of torque wrench) of terminals if required on offline and report submission.
- Cleaning of Transformer oil drain pit and de-watering work if required.
- OLTC routine maintenance and assistance during overhaul under expert supervision.
- Checking of circuitry problem including replacement of contactors coil, O/L relay, fuse grip and any type of spares.

Maintenance/Replacement of Buchholz Relay / PRV / MOLG / MOG / Temperature gauges / OSR

- Checking of Conservator, Buchholz relay of transformer & OLTC, PRD, MOG, WTI, OTI, oil surge relay & oil level indicator and their replacement, if required.
- Assistance in checking and calibration of winding temperature & oil temperature indicators, oil level in MOG, atmospheric sealing of conservators and PRVs. submission of report thereof.

Breather maintenance/replacement

- Silica gel re-activation & replacement
- Transformer breather checking and repair if required.
- Oil level checking and filling in breather oil cup.

Transformer Oil sampling & Testing

- Collection of oil samples (in SS bottles only) from top and bottom sampling points of transformer.
- 1Set of sample includes samples from top and bottom sampling points.

- BDV testing of collected oil samples and maintaining record. (OPGC BDV test kit will be available at designated location and samples need to be carried and tested at designated location).

Bushing jumper / flexible removal and reconnection

- Removal and reconnection of TRF bushing jumpers, LV side links as and when required.
- Tightness checking after reconnection with the help of torque wrench.
- Replacement of damaged / burnt connector and hardware.

Generator & Generator Circuit Breaker (GCB)

Preventive maintenance of 660MW generator

- Cleaning of generator outer casing and terminal box with the help of compressed air (Hose pipe will be in scope of contractor)
- Inspection of generator phase and neutral side terminal box.
- Tightness checking of generator terminal
- Check the IR of stator & rotor and maintain record.
- Shaft earthing brush cleaning and replacement or adjustment if required
- Brush holder adjustment or replacement.

Preventive maintenance of Generator excitation system

- Cleaning of exciter body.
- Cleaning of fuses, diodes and heat sinks.
- Exciter power cable terminal tightness checking and terminal lugs replacement if found defective.
- Maintenance of rotor earth fault brush mounting system and replacement of brush if required.
- PMG O/G power cable terminal tightness checking and terminal lugs replacement if found defective.
- Control cable tightness checking.

Preventive maintenance of Generator system control & Relay panels

- Cleaning of control and relay panels which includes GRP, GTRP, UTRP, AVR panels, Transducer panels.
- Terminal tightness checking of all power and control cables in the panel.
- Attending any kind of defects found during panel maintenance.
- Assisting in panel relay testing.
- Assisting in AVR testing.
- Assisting in calibration of energy meters and transducers.

Preventive maintenance of GCB, cooling fan unit & LCP

- Cleaning of ceramic insulators, control panel.
- All routine checks for trouble free operation of breakers.

- Up keeping of breaker Marshalling Kiosk includes replacement of defective/damaged one along with cable dismantling and re-connecting the same.
- Checking and replacement of trip coil and closing coil of breaker, if required.
- Checking and replacement of terminal block and junction box including dismantling of cable connection and re-connection the same. Replacement of control wire if, needed.
- Maintenance of cooling fan set (1SET includes total 12No of cooling fans with motors) including electrical circuit.

Maintenance of LAVT, SPVT, NGT & H2 Drier

- Silica Gel Replacement per KG
- Heating Element Replacement
- Maintenance of control circuit.
- Any type of defects i.e., checking of control circuit, spares replacement etc to be attended.
- Cleaning and terminal tightness checking of LAVT, SPVT & NGT cubicles
- Replacement of VT incase found defective.
- Replacement of LA or surge capacitor, CT, surge counter if found defective.
- Replacement of PT primary fuse in case found defective.

Maintenance of IPBD and Pressurization system

- Fixing and removable of scaffolding at site.
- Disconnection and connection of Bellows.
- Connection and Disconnection of Bus Bar Links.
- Cleaning of Bushings.
- Leakage testing of Air Pressurization System at Bus Duct.
- Fixing and Removing of Hot air Drier, Monitoring during the service, and Removal.
- Connection/ Disconnection of the CT/ PT.
- Replacement of CT of BUS DUCT.
- Applying Silicon Sealant at BUS DUCT.
- Air drier control panel maintenance.
- Alum Replacement.
- Activated carbon replacement.

SF6 Gas filling

- Monitoring and recording of gas pressure.
- Filling of SF6 gas in breaker if required and attending gas leakage if found any.
- Checking and replacement of gas pressure gauge meter, if required.

Maintenance of UCP & ECP

- Cleaning and terminal tightness checking of UCP and ECP.
- Replacement of defective components with spares if required.
- Assisting in troubleshooting activities.

MOTORS

Preventive maintenance of LT motors from 1.5KW to 7.5 KW

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check local push button (clean & tight it).
- Take IR value of motor with respect to earth.
- Check the winding resistance, inductance & capacitance of motor.
- Check resistance of motor space heater.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Sealing of un-used gland holes at motor side.
- Any type of defects i.e., checking motor TBs, bearings, spares replacement etc to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.

Preventive maintenance of LT motors from >7.5KW to 30KW

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check local push button (clean & tight it).
- Take IR value of motor with respect to earth.
- Check the winding resistance, inductance & capacitance of motor.
- Check resistance of motor space heater.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Greasing of motor to be done (if required).
- Sealing of un-used gland holes at motor side.
- Any type of defects i.e., checking motor TBs, bearings, spares replacement etc to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping of work place to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.

Preventive maintenance of LT motors from >30KW to 90KW

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check local push button (clean & tight it).
- Take IR value of motor with respect to earth.
- Check the winding resistance, inductance & capacitance of motor.
- Check resistance of motor space heater.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Greasing of motor to be done (if required).
- Sealing of un-used gland holes at motor side.
- Any type of defects i.e., checking motor TBs, bearings, spares replacement etc to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping of work place to be carried out after maintenance.

- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.

Preventive maintenance of LT motors from >90KW to 200KW

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check local push button (clean & tight it).
- Take IR value of motor with respect to earth.
- Check the winding resistance, inductance & capacitance of motor.
- Check resistance of motor space heater.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Greasing of motor to be done (if required).
- Sealing of un-used gland holes at motor side.
- Any type of defects i.e., checking motor TBs, bearings, spares replacement etc to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.

Preventive maintenance of DC motors

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check healthiness of carbon brush if not replace it.
- Clean commutator.
- Take IR value of motor (Armature & field) with respect to earth.
- Take WR value of motor (Armature & field).
- Check motor space heater resistance.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Sealing of un-used gland holes at motor side.
- Any type of defects i.e., checking motor TBs, bearings, alignment of carbon brushes, spares replacement etc., to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.

Preventive maintenance of HT motors

- Clean motor body & cooling tubes.
- Check cable Termination and Tightness at motor end.
- Check CT connections for proper tightness at motor end (if applicable).
- Check local push bottom (clean & tight it).
- Check CT & space heater cable connection for tightness.
- Check healthiness of indicating lamp on panel before isolation of motor feeder and replace the lamps if found defective during maintenance.
- Take IR value of motor with respect to earth.

- Take WR value of motor.
- Check motor space heater resistance.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Sealing of extra gland holes at motor side.
- Greasing of motor.
- Any type of defects i.e., checking of motor terminal bushing insulators, spares replacement etc., to be attended.
- Spares shifting from store to site, if required to be done.
- Housekeeping to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.

Preventive maintenance of LT motor feeder

- Cleaning and tightness of electrical feeder by air blower.
- IR value measurement of electrical feeder and motor power cable from feeder end.
- Tightness of control circuit.
- Replacement of any faulty components in the electrical feeder.
- Cleaning and tightness of local push button station.
- Gland hole sealing in feeder end and local push button station.
- Cable dressing if required in feeder.
- Power contactor cleaning & maintenance with proper cleaning agent.
- Replacement of lamp and fuses if found faulty.
- In case of Air Circuit Breaker operated Feeder:
 - Cleaning of Arc chut of breaker
 - Cleaning of breaker pole
 - Resistance measurement of closing and tripping coil and replacement if required.
 - Apply petroleum jelly to finger jaws
 - Spring charging motor circuit cleaning and tightness.
 - Carbon brush replacement of spring charging motor.
 - Replacement of spring charging motor if required.
 - Checking of all mechanical interlock of the breaker.
 - Checking of Manual as well as electrical operation of breaker in test position.
 - Replacement of breaker from spare feeder if required.
 - Replacement of finger jaws if required.

Preventive maintenance of HT motor feeder

- Cleaning and tightness of electrical feeder by air blower.
- IR value measurement of electrical feeder and motor power cable from feeder end.
- Tightness of control circuit.
- Replacement of any faulty components in the electrical feeder.
- Cleaning and tightness of local push button station.
- Gland hole sealing in feeder end and local push button station.
- Cable dressing if required in feeder.
- Power and Auxiliary contactor cleaning & maintenance with proper cleaning agent.
- Replacement of lamp and fuses if found faulty.
- Vacuum Circuit Breaker maintenance:

- Cleaning of all insulators of breaker
- Cleaning of breaker pole and apply petroleum jelly to female jaws in breaker
- Resistance measurement of closing and tripping coil and replacement if required.
- Spring charging motor circuit cleaning and tightness.
- Carbon brush replacement of spring charging motor.
- Replacement of spring charging motor if required.
- Checking of all mechanical interlock of the breaker.
- Checking of Manual as well as electrical operation of breaker in test position.
- Replacement of breaker from spare feeder if required.
- Replacement of finger jaws if required.

Shifting and Reinstallation of LT motor

- Base bolt removal of motor.
- Removal of motor power cable and space heater cable.
- Removal of all earthing flats from motor.
- Shifting of motor from motor base to maintenance bay location.
- Shifting of new or repaired motor form maintenance bay or stores to motor base.
- Base bolt tightness.
- Connection of earthing flat.
- Power and space heater cable connection.
- Greasing of motor if required for no load trial.
- Shifting of all scrap material to scrap yard to maintain proper housekeeping in work area.

Shutdown maintenance of LT motor

- Checking of motor for any internal fault in winding.
- Checking of motor for any fault in Power JB of power terminal lugs in motor and feeder end, and replacement of power lugs if required.
- Replacement of Power terminal blocks if found faulty.
- Replacement of insulators in motor power JB.
- IR value improvement by heating of motor.

Shutdown maintenance of HT motor

- Checking of motor for any internal fault in winding.
- Checking of motor for any fault in Power JB or power terminal lugs at motor and feeder end, and replacement of power lugs if required.
- Replacement of Power terminal blocks if found faulty.
- Replacement of insulators in motor power JB.
- IR value improvement by heating of motor.

LT motors Bearing inspection / replacement

- Disconnection of Power cable, control cable & earthing.
- Preparation of necessary arrangements for removal of motor.
- Removal of motor.

- Shifting of motor to workshop or suitable place.
- Removal of coupling and Key.
- Removal of motor cooling fan with proper arrangement.
- Dismantling of motor.
- Inspect the bearings if required replace it
- Preparation of necessary arrangements like puller for removal of bearings.
- Removal of damaged bearings.
- Fixing of new bearings.
- Assembling of motor.
- Shifting of motor to its own place.
- Connection of Power cable, control cable & earthing.
- Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location.

Greasing of motor

- Cleaning of grease nipples.
- Greasing as per approved schedule provided by OPGC EIC.
- Monitoring of motor bearing temperatures after greasing.
- Cooling arrangement of bearing if required after greasing.
- Housekeeping.

HT motors cooling fan replacement

- Removal of fan cover of motor.
- Removal of damaged cooling fan.
- Fixing of new cooling fan.
- Fixing of fan cover of motor.
- Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location.

LT motors cooling fan replacement

- Removal of fan cover of motor.
- Removal of damaged cooling fan.
- Fixing of new cooling fan.
- Fixing of fan cover of motor
- Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location.

LT motors overhauling (Need Based)

- Disconnection of Power cable, control cable & earthing.
- Preparation of necessary arrangements for removal of motor.
- Removal of motor.
- Shifting of motor to workshop or suitable place.
- Dismantling of motor.
- Inspection of stator & rotor.
- Cleaning of stator & rotor winding.
- Apply insulation varnish to motor windings.
- Inspect bearings and replace if required.
- Assembling of motor.

- Shifting of motor to its own place.
- Connection of Power cable, control cable & earthing.
- Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location.

DC Starter panel maintenance:

- Cleaning of starter panel with air blower.
- Tightness checking of all control and power circuit.
- Cleaning of power contactor fixed and moving contacts.
- Resistor box, rheostat resistance measurement, terminal tightness checking.
- Replacement of resistance box/rheostat in case found defective.
- Repair/replacement of control and measuring equipment in case found defective.
- Any kind of defect other than above mentioned need to be attended.
- Housekeeping of the area, removal of all spill over oil / grease / cotton waste from location.

Electrostatic Precipitator (ESP):

Replacement of defective & fixing of new emitting electrode

- Opening and barricading of manhole door. Roof top inspection doors to be opened, if required
- Fixing of lanyards (ropes) inside field and 250W, 230 VAC halogen lights at the manhole door and 24 V lamps inside the field for safety of people working inside
- Removal of the defective emitting electrodes & replacement with new emitting electrodes.
- The stretching & fixing of electrodes have to be done through stretching device.
- Removal of barricades, lanyards, lights and closing of manhole door. Roof top inspection doors to be closed, if opened.
- Checking of IR of field, assisting in testing of the field and attending any defects, if any, due newly fixed emitting electrodes

Fitting of U clamp in collecting electrode

- Opening and barricading of manhole door. Roof top inspection doors to be opened, if required
- Fixing of lanyards (ropes) inside field and 250W, 230 VAC halogen lights at the manhole door and 24 V lamps inside the field for safety of people working inside
- Tack welding of adjacent collecting plates through U clamps is to be done for complete alignment of collecting electrode system.
- Correction of gaps between collecting and emitting electrodes, if disturbed during fixing of U clamps.
- Removal of barricades, lanyards, lights and closing of manhole door. Roof top inspection doors to be closed, if opened.
- Checking of IR of field, assisting in testing of the field and attending any defects, if any, due to low gauge or due to misaligned plates in which U clamps are fixed

Servicing/preventive maintenance of emitting gearbox with motor & alignment

- Decoupling & dismantling of gearbox, motor & distance piece
- Complete servicing of gearbox internal with cleaning with diesel, changing of internals gaskets
- Complete servicing of distance piece
- Complete servicing of motor and changing of bearings, if required
- Assembling & fitting at its location, oil topping and arresting of oil leakage, if any
- Alignment & coupling of the gearbox
- Replacement or alignment of grip coupling, if required
- Checking of IR & WR of the motor, successful trial run, checking of direction of rotation & rectification of defects, if any

Note: All tools and tackles, T&P, consumables are in the scope of contractor. Gear Oil, Diesel, motor bearings, grip coupling are in the scope of OPGC

Servicing/preventive maintenance of collecting gearbox with motor & alignment

- Decoupling & dismantling of gearbox, motor & distance piece
- Complete servicing of gearbox internal with cleaning with diesel, changing of internals & gaskets
- Complete servicing of distance piece
- Complete servicing of motor and changing of bearings, if required
- Assembling & fitting at its location, oil topping and arresting of oil leakage, if any
- Alignment & coupling of the gearbox
- Checking of IR & WR of the motor, successful trial run, checking of direction of rotation & rectification of defects, if any

Note: All tools and tackles, T&P, consumables are in the scope of contractor. Gear Oil, Diesel, motor bearings, grip coupling are in the scope of OPGC

Preventive maintenance of ESP Heaters

- Cleaning and tightness checking of heater, JB and control feeder
- Resistance measurement of individual heaters and maintaining record of the same.
- Replacement/repair of TB in local JB.

Replacement of ESP heaters

- Replacement of heater in case found defective.

Note: All tools and tackles, T&P, consumables are in the scope of contractor. Heaters are in the scope of OPGC

Overhauling of HVR

- Inspection, testing, rectification of all faults.
- Draining of oil from the existing transformer.
- Removal of sludge, if any from the transformer.
- Arresting of leakage, if any.
- Tightening of nuts & bolts inside the transformer.
- Repair/replacement of choke, HVR resistor, diode stack & AC reactor if any and final box-up
- Blowing dry air/creating vacuum to remove moisture from the transformer.

- Power cable connection to the centrifuging machine, filling & centrifuging of oil till the oil reaches a BDV value of 80KV and PPM value less than 15.
- Changing/drying of silica gel if necessary.
- Cleaning and checking of transformer, bushings and marshalling box.
- Changing of LT cable lugs and LT bushing studs, if required
- Inspection of HT side bushings and cleaning of dust from the bushings with air blower and cloth, if required
- Testing & commissioning of transformer.
- Painting & labeling of transformer

Filtration of HVR

- Power cable connection to the oil filtration machine
- Laying of hose pipes from filtration machine and connection to the transformer and oil filtration machine
- Shifting of transformer oil from ground floor to ESP roof top and topping up of oil in the transformer, if required.
- Filtration of oil till the oil reach a BDV value of 80KV and a PPM value less than 15

Note: All tools and tackles, T&P, consumables are in the scope of contractor. Transformer Oil, oil filtration machine with hose pipes and its power cable and connection point and tested chain block for lifting of any material from ground level to ESP roof top are in the scope of OPGC. However, To & Fro lifting and shifting of oil filtration machine and its hose pipes over the roof top or from ground to the ESP roof top has to be done by contractor. Waste oil and other scrap materials have to be brought down from ESP roof top to scrap yard or designated place

Shifting of HVR from one location to other

- Disconnection of cable & other accessories.
- Lifting and Shifting to other location as directed by Engineer-in-charge.
- Connection of cable & other accessories and commissioning, if required.

Note: All tools and tackles, T&P and consumables are in the scope of contractor. Tested chain block for lifting of any material from ground level to ESP roof top are in the scope of OPGC.

Preventive Maintenance of HVR

- Cleaning of the transformer body with air blower, brush and diesel.
- Checking of HT side bushings and cleaning of bushings with air blower and cloth.
- Arresting of oil leakage from the transformer.
- Checking and replacement of silica gel.
- Checking of conservators and Buchholtz Relay.
- Tightness checking of terminals if required on offline.
- Checking of LT and HT side cables terminations and re-glanding & re-lugging and termination, if required.
- Checking of IR and WR of the transformer.
- Checking of oil BDV and PPM.

Maintenance of HV Isolation Box

- Complete maintenance of HV isolation box.
- Cleaning of insulators in HV isolation box.
- Checking earthing integrity.

Internal inspection of ESP field

- Carrying inspection of ESP field as and when instructed by OPGC EIC.
- Identifying defects.
- Making report of defects and submission of the same to EIC.
- Preparing rectification plan, list of spares required for rectification and submission of the same to OPGC EIC.

Rectifier Oil leakage arresting

- Identifying the oil leakage.
- Cleaning area of oil leakage.
- Arresting leakage by using sealing compound. (sealing compound will be in the scope of OPGC)
- Housekeeping of work place after completion of work.

Rectification of emitting and collection plates defects

- Identifying the defect.
- Attending repair works.
- Replacing of emitting/collecting plates if required.

Maintenance of rapping mechanism

- Removing of rapping motor.
- Cleaning of shaft bearing arrangement.
- Replacement of bearing if required.
- Attending any other defects on rapping mechanism shaft.
- Hammer replacement or defect rectification if required.

Other works in ESP

- Replacement of emitter and collector rapping motors if found defective.
- Replacement of emitter and collector rapping motor gearbox if found defective.
- Cleaning of shaft, support and bushing insulator.
- Replacement of shaft, support and bushing insulator if found faulty.
- Assistance in performing OCC and SCC test of Rectifier.
- Checking IR value of field as and when instructed by EIC and maintaining record of the same.
- Opening of manhole door of ESP fields as and when instructed by EIC.
- Replacement of fasteners if required.

Soot Blower

Preventive maintenance

- Clean motor body.
- Check cable Termination and Tightness at motor end.
- Check local push button (clean & tight it).
- Take IR value of motor with respect to earth.
- Check the winding resistance, inductance & capacitance of motor.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Sealing of un-used gland holes at motor side.

- Any type of defects i.e., checking motor TBs, bearings, spares replacement etc to be attended.
- Checking tightness of Limit switch control cables.
- Checking physical operation of limit switch for contact make or break.
- Spares shifting from store to site, if required to be done.
- Cleaning of local JB and control cable tightness checking.
- Housekeeping to be carried out after maintenance.
- Waste generated during maintenance should be disposed as per waste disposal procedures of OPGC.
- Cleaning and replacement of power terminal block in motor TB when ever required.
- Cleaning of motor feeder.
- Checking power and control cable tightness at feeder end.

Servicing/repair works

- Replacement of motors, JB, PB, O/L relays, and Limit switch etc.
- Removal cables and re-connection of cables
- Commissioning of motors, JB, PB,O/L relay, Limit switch etc.

Battery & DC system

Maintenance of Batteries

- To clean & check the level of electrolyte of all cells on daily basis.
- To record voltage & SP Gravity of pilot cell and other battery parameters as decided by the Engineer-In-Charge.
- To record all cell voltage, Sp gravity, checking tightness, applying petroleum jelly on terminals and carrying out preventive maintenance on periodic basis. Any other work like replacement of defective cells etc. as decided by Engineer-In-Charge, It will be part of PM.
- Replacement of batteries.
- Any type of defects ig. Checking of control circuit, spare replacement etc to be attended
- Topping of DM Water.
 - i) Shifting of DM water from WTP to Battery room.
 - ii) Topping of DM water in the battery cell.

Note:

1. Total battery bank (equivalent to rated voltage) will be considered as one set.
2. Apron and DM water/dilute acid will be provided by OPGC and required T&Ps and consumables will be in contractor's scope.

Preventive maintenance of Battery charger panels

- Cleaning of panels externally.
- Cleaning of all feeders.
- Check proper earthing of panel (double earthing).
- Sealing of extra gland holes at panel side
- Check panel & feeder doors for proper closing.
- Check panel & feeder doors for proper gasket.

- Any type of defects ig. Checking of control circuit, spare replacement etc to be attended

Battery Replacement

- Bypassing defective battery from the bank and removing of defective battery.
- Shifting of spare battery from OPGC store to site.
- Filling acid.
- Shifting of battery charger for charging single cell.
- Laying of power cable for charging.
- Termination of power cable at battery, feeder and charger end.
- Charging of battery using charger.
- Monitoring of battery voltage and specific gravity.
- Installing charged battery and reconnection of links after successful charging.

Dry type transformers

Preventive maintenance of Dry type transformer

- Carry out external & internal cleaning of equipment.
- Check all joints for looseness if any tight it.
- Check control & power cable Termination and Tightness at both ends.
- Check proper earthing of transformer (double earthing) If not to be provided.
- Sealing of extra gland holes at transformer & panel side.
- Cleaning, tightness & greasing of LT breaker.
- Check healthiness of indicating lamp in HT & LT feeder of transformer.
- Any type of defects i.e., Checking of control circuit, spare replacement, door interlocking key assembly etc to be attended
- Cleaning and tightness in temperature scanner relay.

Shutdown maintenance of Dry type transformer

- Replacement of Temperature scanner if found defective
- Replacement and adjustment of Door limit switches if found defective
- Repair or replacement of HV links if found defective
- Replacement of Insulator if found defective.
- Relugging of Power cable or Control Cable if need to be done.
- Any type of defects i.e., Checking of control circuit, spare replacement etc to be attended
- Attending the defect, found in Tap Changer.

Preventive maintenance of lighting transformer

- Carry out external & internal cleaning of equipment.
- Check all joints for looseness if any tight it.
- Check control & power cable Termination and Tightness at both ends.

- Check proper earthing of transformer (double earthing) If not to be provided.
- Sealing of extra gland holes at transformer & panel side.
- Cleaning, tightness & greasing of LT breaker.
- Check healthiness of indicating lamp in LT feeder of transformer.
- Any type of defects ig. Checking of control circuit, spare replacement etc to be attended

Shutdown maintenance of Lighting transformer

- Replacement of Insulator if found defective.
- Relugging of Power cable or Control Cable if need to be done.
- Any type of defects i.e., Checking of control circuit, spare replacement etc to be attended
- Attending the defect if found in Tap Changer.

Servicing of Actuators

- Removal of power and control cables
- Dismantling of actuator from its foundation
- Shifting the actuator to shed and servicing
- Shifting from shed & reinstalling the same/another actuator at its foundation
- Servicing/assemble of Actuator
- Replacement of hand wheels.
- Servicing of base and bush, shifting of bush to workshop for repair or re-fabrication
- Servicing of actuator gearbox, base
- Servicing of damper/gate gearbox
- Mounting of gearbox
- Checking healthiness of actuator motor, its TB Fan cover and replacement of these parts as required
- Replacement of defective actuator/motor
- Replacement of oil seal.
- Mounting of actuator/Motor.
- Oil topping/greasing of Actuator
- Change of micro switches.
- Change/adjustment of limit and torque switch assembly
- Proper sealing of covers.
- Rectification of actuator modules
- Reconnection of cables
- Commissioning: Setting of limit & torque switches, Pre-commissioning & interlock checking, checking of electrical operation from local and remote.

- Note: All tools and tackles, T&P and consumables are in the scope of contractor. Actuator spares are in the scope of OPGC.

Re-commissioning work of actuator

- Removal of power and control cables

- Checking healthiness of actuator motor, its TB Fan cover and replacement of these parts as required
- Oil topping/greasing of Actuator
- Change of micro switches.
- Change/adjustment of limit and torque switch assembly
- Proper sealing of covers.
- Rectification of actuator modules
- Reconnection of cables
- Commissioning: Setting of limit & torque switches, Pre-commissioning & interlock checking, checking of electrical operation from local and remote.

Note: All tools and tackles, T&P and consumables are in the scope of contractor. Actuator spares are in the scope of OPGC.

Shifting and reinstallation of actuator

- Removal of power and control cables
- Dismantling of actuator/motor from its foundation
- Shifting the actuator/motor to shed or designated place for servicing
- Dismantling of motor and gearbox assembly for replacement as required
- Mounting of actuator/motor and gearbox as required
- Shifting from shed & reinstalling the same/another actuator at its foundation
- Reconnection of power and control cables
- Commissioning: Setting of limit & torque switches, Pre-commissioning & interlock checking, checking of electrical operation from local and remote.

Note: All tools and tackles, T&P and consumables are in the scope of contractor. Actuator spares are in the scope of OPGC.

Earthing System

Maintenance of Earth pits

- Cleaning of earth pit.
- Painting of joints in earthing pit.
- Connection tightness of bolts in the earth pits.
- Maintaining earth resistance value as per standards.
- Treatment of earth pit by proper process to improve the resistance value (Treatment material will be in the scope of OPGC)

Earth pit resistance measurement

- Measurement of resistance of earth pits with grid and without grid as per approved procedure.
- Maintaining record of resistance values.
- Painting of resistance value and date of measurement on earth pit chamber.

Maintenance of Lightning arrestors

- Visual inspection of overall condition of LA and its intactness to earthing grid.
- Checking tightness of all earthing connection to LA.
- Painting of earthing joints if required.
- Attending defects found at the time of inspection.

- Checking & maintaining the lightening protection cover provided by wire to Switchyard & TG Hall / Transformer area.

Local Control Panels

Preventive maintenance of LCP

- Cleaning of LCP with air blower.
- Connection tightness of all electrical circuit.
- Replacement of any spare part if required.
- Gland hole sealing.
- Cable dressing.
- Checking of proper closing of all doors and rectification if required.

Troubleshooting of LCP

- Checking of control circuit and rectifying defect as and when instructed by OPGC EIC
- Rectification/replacement of defective TB, contactor, MCB, MCCB, Limit switches etc., as and when required (Spare material will be in scope of OPGC).

Lighting

- Checking & rectification of fault circuit in conduit pipes, dismantle of fittings, fixing of lamp, ballast, ignitor, cleaning of well glass, cleaning of choke box & rectification of street light, high bay lights, sky flood light, boundary lights. Sky lift shall be provided by OPGC & all required PPEs, T & P like healthy insulated tools, tested electrical hand gloves shall be provided by contractor. In case of glass cleaning, contractor shall charge one lamp for six no glass cleaning for required location & as directed by engg in charge. Lamp, Ballast, Ignitor, shall be provided by OPGC.
- Laying and fixing of casing capping in surface by help of drill hole and fitted with ceiling grip as directed by engg in charge. All required PPEs, T & P like drill machine & consumables like ceiling grip, screw shall be provided by contractor. Casing capping shall provided by OPGC.
- Laying of wires/cable inside casing capping as directed by engg in charge. All required PPEs, T & P shall be provided by contractor. Wires and cables shall provided by OPGC.
- Laying and fixing of GI conduit in surface by help of drill hole and fitted with ceiling grip as directed by engg in charge. All required PPEs, T & P like drill machine & consumables like ceiling grip, screw shall be provided by contractor. GI conduit shall provided by OPGC.
- Laying of wires/cable inside GI conduit as directed by engg in charge. All required PPEs, T & P shall be provided by contractor. Wires and cables shall provided by OPGC.
- For making & fixing of switch board, all safety PPEs & T & P like drill machine/ceiling grip, screw shall provided by contractor. MS boards, switch and socket etc shall be provided by OPGC.
- For repair & installation of 3/1 phase plug point, all safety PPEs & T & P shall provided by contractor. Plug & required spares shall be provided by OPGC.
- Painting of street light poles of size 10m, 12m & 14m, all safety PPEs & T&P shall be provided by contractor. Aluminum paint, thinner, red oxide, sky lift shall be provided by OPGC. Suitable painting brush shall provided by contractor.

- Replacement of ceiling fans, Ceiling fan shall provided by OPGC. Fixing arrangement of fan, making & fixing U clamp (if required), all T &P, safety PPEs shall provided by contractor.
- Installation of main switch up to 200A, the main switch shall be provided by OPGC. All safety PPEs & T &P shall provided by contractor. For fixing of main switch all T & P like drill m/c, required installation spares, welding arrangement shall be provided by contractor.
- Replacement and fixing of MCB in lighting panel, MCB shall provided by OPGC. Fixing arrangement, all safety PPEs, T&P shall provided by contractor.
- Rectification and replacement of Chimney aviation lamps.
- Checking circuit of aviation lamps, replacing control cards if required.

Spares and consumables:

- Required cables, trays, steel materials, and glands. Lugs, jointing kits, end termination kits, elasto-mould connectors, tray covers, JB's, lamps, tube lights, ballast, ignitors, starter, lamp holders, wire fuses, covering glass, CG box, thinner, red oxide, aluminum paint, switch, socket, MCB, Main switch, casing capping, GI conduit, MS boards, Bakelite covers shall be provided by OPGC free of cost and those items will be brought from OPGC warehouse to site by your own arrangement under the instruction of the Engineer-in-Charge.
- After completion of the work reconciliation of materials has to be made by you with the Engineer-in-Charge.
- All the other consumables like PVC sleeves. Cable ties , Ferrules, adhesive, tapes, cleaners, welding rods, emery papers, dendrite, kerosene, petrol, paint brush etc. have to be arranged by contractor.

MISC. WORKS

Fabrication work

- Welding, cutting, fabrication, erection & installation of steel structure for mounting provision of different equipments like limit switch, lighting fixtures, field equipments, earthing etc (Rate per kg. of steel).

Note: Structural materials will be provided by OPGC and required T&Ps and consumables will be in contractor's scope.

Cutting/welding work

- Welding/ cutting of steel structure as per requirement (Rate per running meter).

Note: Structural materials will be provided by OPGC and required T&Ps and consumables will be in contractor's scope

Painting (with paint):

- Surface cleaning with wire mesh
- Apply two coats of prime solution
- Apply required paint on surface.
- Paint requirement will be as per T&P list.

Note: Required T&Ps and consumables will be in contractor's scope.

Painting (with out paint):

- Surface cleaning with wire mesh
- Apply two coats of prime solution
- Apply required paint on surface.

Note: Primer and paint will be provided by OPGC and required T&Ps and consumables will be in contractor's scope. Surface Painting with or without supply of Paint as per requirement.

Replacement of CT for HT motors

- Removal of cover for CT terminal box
- Checking of CT
- Dismantling of CT from CT box
- Shifting of CT from Stores to the location
- Installation of CT into the motor
- Testing of CT
- Termination of secondary winding of CT
- Final box-up of CT JB box

Restoration of HT/LT module/feeder/MCC/PMCC in case of failure/Flashover.

- Removal of all damaged parts of module.
- Cleaning of panel with cleaning agent.
- Applying of primer and paint if required.
- Replacement of burnt insulation materials and fixing the new one.
- Replacement of damaged components in the panel.
- Rewiring of control circuit
- IR and WR measurement of incoming and outgoing circuit.
- Applying proper insulation to the exposed conductors through proper rating insulation tap or insulation pant.

Facilitation to other department for lighting and welding connections as and when required

- Providing 3 phase welding connection from the nearest source available.
- Providing 1 phase welding connection from the nearest source available.
- Providing temporary lighting from the nearest available source.
- Providing connection to temporary machines.
- Providing Lift operator during unit forced outage.
- Providing 1no. of technician and helper during unit forced outage.

Extra man days for unforeseen jobs

- Providing listed below manpower to miscellaneous electrical works in all area of the plant whenever required.
 - i) Electrician- Skilled electrician with Line man B license.
 - ii) Fitter – Skilled fitter for motor/transformer/SWYD works
 - iii) Rigger- For lifting& shifting of motor/transformer/SWYD works
 - iv) Helpers - Semi skilled personnel for assist to skilled personnel
- Any sort of un-foreseen job as instructed by the EIC, contractor has to arrange manpower with in 2 hrs of intimation. For the execution of job 1 manday will be consider as 8 Hrs and billing will be done accordingly. The no. of man power required will be intimated to contractor before commencing of the job.

Power & Control Cable removal and reconnection(HT Motors /LT Motors /Actuator)

- Marking of phase sequence before Power Cable removal.

- Noting down of TB details and ferrule before removing the control cables as and when instructed by EIC.
- Removal and reconnection of Power & Control cables as per marking and TB details.
- Checking tightness of power cables with the help of Torque wrench.
- Re-lugging or repair of Power & Control cable in case found defective.

Genie Operator

- Operation of Man-lifter when ever required to execute the job in all areas, Man-lifter machine will be provided by OPGCL.
- Man-lifter operator should have the desired license to operate the machine.
- Requirement of operator will be intimated 1day before the commencement of job.

Shift Maintenance:

- Shift maintenance activity should be executed in all three shifts i.e., A-shift (7:00am to 2:00pm), B-shift(2:00pm to 10:00pm) and C-shift(10:00pm to 7:00pm).
- 1No. technician and 1No. Helper should present in each shift for 365 days, for round the clock maintenance activities.
- Monitoring and recording of parameters as per approved format and schedule provided by OPGCL.
- Continues monitoring of all running and standby equipment for healthiness, and reporting to EIC/Shift in charge for any abnormality.
- Attending any type of trouble shooting job arises in the shift.
- Checking of lighting if found faulty during night time.
- Assisting in electrical connection for other department.
- Monitoring of Emergency DG, DC battery and system for healthiness twice in the shift and maintaining the record.
- Maintaining the log book for defects attended the shift.
- And any other activity which is not mentioned but required for smooth running of shift has to be done.

Note: Any other miscellaneous work not mentioned above but required for completion of job and smooth operation of the equipment / system / plant is included in the scope of work and contractors will not be paid any extra amount for the same.

Emergency DG

- Monitoring the Emergency DG healthiness once in the shift.
- Checking the healthiness of DG battery and charger system.
- Servicing the DG once in a month as per the instruction of EIP, spares and service engineer support for servicing job will be provided by OPGC.
- Cleaning of AMF panel, relays, charger panel, DG set.
- Terminal tightness of AMF panel, Charger and DG set.
- Cable inspection of generator and repair if require.
- Checking of earthing continuity.
- Housekeeping of work place.

Electrical Hoist & Crane

Preventive maintenance of Electrical hoist/crane up to 3 ton

- Cleaning of panels internally & externally.
- Check proper earthing of panel (double earthing).
- Sealing of extra gland holes at panel side

- Check panel & feeder doors for proper gasket & closing.
- Clean motor body.
- Check cable Termination and Tightness at both ends.
- Check and clean contactor contact.
- Check control cable connection for tightness.
- Check healthiness of indicating lamp.
- Take IR value of motor w.r.t earth.
- Check for proper lubrication if not to be lubricated.
- Replacement of bearings, fan, terminal box, grease, & re-glanding.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Check operation of hoist.
- Any type of defects ig. Checking of control circuit, spare replacement etc., to be attended.

Preventive maintenance of Electrical hoist/crane 3 ton to 10 ton

- Cleaning of panels internally & externally.
- Check proper earthing of panel (double earthing).
- Sealing of extra gland holes at panel side
- Check panel & feeder doors for proper gasket & closing.
- Clean motor body.
- Check cable Termination and Tightness at both ends.
- Check and clean contactor contact
- Check control cable connection for tightness.
- Check healthiness of indicating lamp.
- Take IR value of motor w r t earth.
- Check for proper lubrication if not to be lubricated.
- Replacement of bearings, fan, terminal box, grease & re-glanding.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Check operation of hoist.
- Any type of defects ig. Checking of control circuit, spare replacement etc to be attended

Preventive maintenance of Electrical hoist/crane 10 ton to 25 ton

- Cleaning of panels internally & externally.
- Check proper earthing of panel (double earthing).
- Sealing of extra gland holes at panel side
- Check panel & feeder doors for proper gasket & closing.
- Clean motor body.
- Check cable Termination and Tightness at both ends.
- Check and clean contactor contact
- Check control cable connection for tightness.
- Check healthiness of indicating lamp.
- Take IR value of motor w r t earth.
- Check for proper lubrication if not to be lubricated.
- Replacement of bearings, fan, terminal box, grease & re-glanding.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Check operation of hoist.

- Any type of defects i.e., Checking of control circuit, spare replacement etc to be attended

Preventive maintenance of TG EOT crane

- Cleaning of panels internally & externally.
- Check proper earthing of panel (double earthing).
- Sealing of extra gland holes at panel side
- Check panel & feeder doors for proper gasket & closing.
- Clean motor body.
- Check cable Termination and Tightness at both ends.
- Check and clean contactor contact
- Check control cable connection for tightness.
- Check healthiness of indicating lamp.
- Take IR value of motor w r t earth.
- Check for proper lubrication if not to be lubricated.
- Replacement of bearings, fan, terminal box, grease & re-glanding.
- Check proper earthing of motor (double earthing) If not, to be provided.
- Check operation of hoist.

Troubleshooting of Electrical hoist/crane/TG EOT

- Checking of DSL or hoist EPR cable and replacement or rectification if found defective.
- Checking of control circuit, VFD, limit switches, control cards as and when instructed by EIC.
- Checking the operation of hoist/crane as and when instructed by EIC.
- Replacement of drive motors if found defective.
- Attending all kinds of defects of motor.
- Attending defects on power, control cables and rectifying the same.

Cabling & Cable tray works

Laying of cable

Laying of Cable including Survey & transportation from store to site with loading and unloading. Meggering of cable with 5KV/1KV/500V megger before laying with proper dressing. Cable shall be provided by OPGC. All required PPEs, T & P like megger, Cable tie to be provided by contractor.

Cable termination

Termination of HT/LT cables in both end=One set, for different types of cables (HT/LT/control & instrumentation). End termination kit/required lugs shall be provided by OPGC, All required PPEs, T & P & cable termination technician (In case of HT cable) is to be provided by contractor.

Cable jointing

Jointing of HT/LT cables (one straight through=One set) for different types of cables (HT/LT/control & instrumentation) in BTG, BOP, AHP, Switchyard and CHP area. Cable

jointing kit, required lugs shall be provided by OPGC, All required PPEs, T &P & cable jointer technician (In case of HT cable)is to be provided by contractor.

Cable fault tracing & dismantling

Tracing of fault cable by manual/cable fault locator, dismantling of cable, dressing for different types of cables (HT.LT, control & instrumentation). Cable fault locator shall be provided by OPGC. Rerolling, shifting from site to store should be done by contractor at their own arrangement. Cable fault tracing job estimation will be done on the no. of fault basis and costing will be done as per the actual fault identified, however if no fault identified the cost of one fault will be paid. Cable trolley / vehicle shall be provided by OPGC & all required PPEs, T &P & cable tie shall be provided by contractor.

Erection of cable trays

Shifting of cable trays from store to site, fixing of cable trays at required location (If any fabrication required fixing the cable tray, welding arrangement & all supporting accessories shall be provided by contractor. For transportation of tray, vehicle shall be provided by OPGC & all required PPEs, T&P shall be provided by contractor.

Erection of cable trays cover & clamps...

Shifting of cable tray cover from store to site at their own arrangement, fixing of tray cover at required location (If any fabrication required fixing the cover, welding arrangement & all supporting accessories shall be provided by contractor. For transportation of cover, vehicle shall be provided by OPGC & all required PPEs, T&P shall be provided by contractor.

Dressing of cable

Dressing of all types of cables by required size of cable tie / clamps. Cable tie / clamps, & all required PPEs, T&P shall be provided by contractor.

Erection of junction box

Shifting of JB from store to site at their own arrangement, fixing of JB at required location (If any fabrication required for fixing JB, welding arrangement & all supporting accessories shall be provided by contractor. For transportation JB, vehicle shall be provided by OPGC & all required PPEs, T &P shall be provided by contractor.

JB/DB/Starter/Pushbutton erection

Shifting of JB from store to site at their own arrangement, fixing of JB at required location (If any fabrication required for fixing JB, welding arrangement & all supporting accessories shall be provided by contractor. For transportation JB, vehicle shall be provided by OPGC & all required PPEs, T &P shall be provided by contractor.

Bus duct Maintenance

Maintenance of SPBD (11KV & 3.3KV)

- External cleaning of complete bus duct.
- Internal checking, cleaning and tightening of insulators and bus bar joints.
- Replacement of defective / faulty part wherever required.

- Opening, cleaning and re-fixing of rubber bellows.
- Wrapping the rubber bellows by polythene.
- Drying out of bus duct, where ever required by hot air blowing.
- Checking and cleaning of all epoxy bushings at phase and neutral side and seal off bushings. Disconnection and connections of various links, wherever required. Replacement of flexible links, if felt necessary.

Maintenance of NSPBD (0.415KV)

- External cleaning of complete bus duct.
- Internal checking, cleaning and tightening of insulators and bus bar joints.
- Replacement of defective / faulty part wherever required.
- Opening, cleaning and re-fixing of rubber bellows.
- Drying out of bus duct, where ever required by hot air blowing.
- Checking and cleaning of all epoxy bushings at phase and neutral side. Disconnection and connections of various links, wherever required. Replacement of flexible links, if felt necessary.
- Checking healthiness of breather, replacement of silica gel if required. Checking and filling of oil in the oil cup of breather

Provided by the owner

- Unfurnished office space for management team, covered space for stores, change room facilities for employees, access to Owners first aid center.
- Compressed air, water, 3-phase power, all equipment spares, all special tools provided by OEM, unloading, storage, preservation and handling at site, trailer, EOT, mobile cranes, boom lift cranes on available basis.
- Painting material
- All instructions, drawing, manual required to do the job. However, it is the responsibility of contractor to return all manuals and other important documents to the Owner in proper condition after use.
- Inside and outside workshop arrangement
- All required permits
- Special consumables for equipment maintenance like gaskets, O-rings, joint compounds, etc.
- Preventive maintenance schedules, available required drawings, specifications and O&M manuals.
- Any major or minor civil work
- Condition monitoring of electrical equipment.
- OEM expert service for any equipment as per requirement
- Scaffolding material, erection of scaffolding is contractor's responsibility.

Excluded from Contractor's Scope of Work

- Annual overhauls of equipment.
- Plant and equipment insurance.
- Civil works
- Painting work (However, contractor will be responsible for painting of area limited to the contractor's works. Paint shall be provided by the Owner)
- All required permits

- General housekeeping (However, contractor will clean the equipment and area of work place after completion of work.)
- Preventive maintenance schedules, available required drawings, specifications and O&M Manuals.
- Condition monitoring of equipment
- OEM expert service for any equipment as per requirement.
- Rewinding of H.T. & LT Motors
- Major Repair / Replacement of Power Transformers.
- Overhauling/repairing work of the generator.
- Major overhauling/repairing work of the excitation system and AVR.
- Major repairing work of HT motors,
- Rewinding and major repairing work of transformers.
- Major erection work.
- Major repairing work in case of fire hazards.

Services provided by the Contractor

- All manpower, supervision and management (Including HR planning, stores and safety manpower) required to perform all the work specified.
- All tools, rigging and consumables required for performing the job.
- Attend all meetings required by Owner.
- Provide equipment log sheets, daily/monthly reports, checklists and any other reports required by the Owner.
- Provide emergency manpower as specified in this specification and to support plant generation.

Sub-Contractors /sub-suppliers

All sub-contractor and sub supplies must be approved by the Owner. All sub-contractor and sub supplies will comply with all the aspects of this specification and other contract documents.