

Scope of Work And Technical Specification

Part A: This shall be for six (6) months period before COD for providing support in commissioning activities of Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliaries, Balance of Plant (DM Plant, AHP, FOPH, FWPH, CWPH, Hydrogen Plant, Compressor House, CT & RWPH etc.), Switchyard & Switchgear operation of BTG & BOP.

Activity List for Part-A:

Sr. No.	Area Description	Job Description
1	Turbine Area	Isolation, normalization & operation of Equipments of TG & Auxiliary during commissioning activity.
2		Assist in Motor Solo run & Load trial of Equipments of TG & Auxiliary.
3		Assist in Lube oil flushing of MDBFP, TDBFP , Main turbine etc.
4		Assist in Seal oil System Commissioning
5		Assist in Commissioning in Barring Gear of Main Turbine.
6		Assist in HPSU flushing of HP Bypass, LP Bypass , Control Oil & Valve commissioning.
7		Assist in Hydro test of DMCW, Condensate System & Feed water System.
8		Assist in Condenser Flood Test.
9		Assist in Pre-boiler Flushing .
10		Assist in steam blowing of pipes from Aux Boiler to APRDS, Deaerator heating & APH Soot blowing etc.
11		Assist in steam blowing of MS ,CRH , HP , LP Bypass & TDBFP pipelines.
12		Assist in Steam Dumping activity.
13		Assist in Primary Water System Commissioning.
14		Assist in Generator ATT Activity.
15		Assist in H2& Co2 purging Activity
16		Assist in Turbine Rolling.
17		Assist in Synchronization of unit.
18		Assist in capability Testing.
19		Assist in commissioning Activity of Air Washer.
20		Monitoring & recording the parameter of Equipment & Process as per commissioning Check list.
21		Defect and parameter deviation reporting to concern person
22	Boiler Area	Isolation, normalization & operation of Equipments of Boiler & Auxiliary during commissioning activity
23		Assist in Motor Solo run & Load trial of Equipments of Boiler & Auxiliary.
24		Assist in Lube / Hydraulic oil flushing of Boiler Auxiliaries.
25		Assist in Drainable & Non drainable hydro test of Boiler.
26		Assist in Furnace Air tightness test .
27		Assist in clean air test of coal pipes.
28		Assist in Chemical Cleaning of Boiler.
29		Assist in Duct Air tightness test .
30		Assist in soot blowing System Commissioning .
31		Assist in cold & Hot Flushing
32		Assist in Boiler Light up.
33		Assist in Steam blowing Activity.
34		Monitoring & recording the parameter of Equipment & Process as per commissioning Check list.

Sr. No.	Area Description	Job Description
35	Switch Gear	Isolation, normalization & operation of Switch gear during commissioning activity.
36		Assist in commissioning Activity of GCB, GT, RAT,UT,UAT,SAT,UST,SST and ESP transformers.
37		Assist in Commissioning of HT and LT switchgears & Record parameters in commissioning check sheet .
38		Assist in Commissioning of of ACDB,DCDB,UPS ,battery charger and battery bank.
39		Assist in Commissioning of DG set and auxiliaries .
40		Operation, Isolation & normalization of HT and LT switchgears as per commissioning Procedures.
41		Monitoring & recording the parameter of Switchgears as per commissioning Check list.
42		Assist in Commissioning activity of HVAC System.
43		Defect and parameter deviation reporting to concern person
44	SWITCHYARD	Assist in commissioning Activity of CT, CVT , isolators, earth switches and SF6 breakers and record the parameters
45		Assist in Operation, Isolation & normalization of isolators, earth switches, breakers and switchyard as per Commissioning Procedure.
46		Assist in Monitoring and record the parameters of switchyard MCC, ACDB, DCDB, UPS, battery bank and battery charger
47		Assist in Monitor and record all SF6 breakers, LA counter readings
48		Assist In Condition monitoring of all equipments
49	BOP Electrical	Assist in Commissioning of Isolation & normalization of BOP LT switchgear .
50		Assist in Commissioning & Monitoring and record the parameters of BOP MCC, ACDB, DCDB, UPS, and battery bank and battery charger.
51		Assist in Commissioning & Monitoring and record the parameters of BOP transformers
52	FWPH	Assist in commissioning Activity of equipments at Fire water Pump House
53		Assist in FWPH Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
54		Assist in Monitor & Record the FWPH Equipment operating parameters as per Commissioning Procedure.
55		Defect and parameter deviation reporting to concerned person
56	Compressor House	Assist in Compressor House commissioning Activity.
57		Assist in Compressor Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
58		Assist in Monitor & Record the FWPH Equipment operating parameters as per Commissioning Procedure.
59		Defect and parameter deviation reporting to concerned person
60	FOPH	Assist in commissioning Activity of equipments at Fuel oil Pump House.
61		Assist in FOPH Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
62		Assist in Monitor & Record the FOPH Equipment operating parameters as per Commissioning Procedure.
63		Defect and parameter deviation reporting to concerned person
64	Hydrogen Plant	Assist in Hydrogen Plant commissioning Activity.
65		Assist in Hydrogen Plant Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
66		Assist in Monitor & Record the Hydrogen Plant operating parameters as per Commissioning Procedure.
67		Defect and parameter deviation reporting to concerned person

Sr. No.	Area Description	Job Description
68	CWPH	Assist in commissioning Activity of equipments at CW Pump House .
69		Assist in CWPH Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
70		Assist in Monitor & Record the CW Pump House operating parameters as per Commissioning Procedure.
71		Defect and parameter deviation reporting to concerned person
72	CT Area	Assist in CT Fan area commissioning Activity.
73		Assist in CT Fan Equipments isolation, normalization, changeover, normal operation & schedule trial run as per commissioning Procedure.
74		Assist in Monitor & Record the CT Fan area operating parameters as per Commissioning Procedure.
75		Defect and parameter deviation reporting to concerned person
88	DM Plant	Assist in commissioning of equipments in Raw Water Pump House.
89		Assist in commissioning of equipments in Pre Treatment Plant.
90		Assist in commissioning of equipments in Clarified Water Pump House.
91		Assist in commissioning of equipment in DM Plant & RO System.
92		Assist in commissioning of equipments in ETP.
93		Assist in LAB for Coal, Oil , SWAS sampling during commissioning .
94		Assist in commissioning of AVGF & CW chlorination.
95		Assist in Commissioning of CPU.
96	Defect and parameter deviation reporting to concerned person	
97	Ash Handling Plant Control Room	Assist in Ash Handling Plant Commissioning.
98		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per commissioning procedure
99		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
100		Assist in Monitor & Record parameters in check sheet of equipments/systems
101		Communicating and coordinating activities with main control room
102		Defect and parameter deviation reporting to concern person
103	HCS D Control room & Silo	Assist in HCS D System Commissioning.
104		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
105		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
106		Monitor & Record parameters of equipments/systems as per commissioning checklist.
107		Defect and parameter deviation reporting to concern person
108	Slurry pump house, Clarifloculator & Compressor	Assist in commissioning of equipments in Slurry Pump House.
109		Assist in commissioning of equipments in Compressor House.
110		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
111		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
112		Monitor & Record parameters of equipments/systems as per commissioning checklist.
113		Defect and parameter deviation reporting to concern person

Sr. No.	Area Description	Job Description
114	ESP, APH, DUCT Hoppers	Assist in Commissioning of ESP.
115		Assist in Commissioning Fly Ash System.
116		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
117		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
118		Monitor & Record parameters of equipments/systems as per commissioning checklist.
119		Defect and parameter deviation reporting to concern person
120	ECO & Bottom Ash Hoppers	Assist in Commissioning of Clincker Grinder.
121		Assist in Commissioning Bottom Ash System.
122		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
123		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
124		Monitor & Record parameters of equipments/systems as per commissioning checklist.
125		Defect and parameter deviation reporting to concern person
126	AWRS	Assist in Commissioning of equipment in Ash Water Sump pump house.
127		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
128		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
129		Monitor & Record parameters of equipments/systems as per commissioning checklist.
130		Defect and parameter deviation reporting to concern person
131	MRS	Assist in Commissioning of equipment in Mill Reject System.
132		Assist in Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per Commissioning Procedure.
133		Assist in System / Equipment Start-up, Shutdown and routine performance test as per Commissioning Procedure.
134		Monitor & Record parameters of equipments/systems as per commissioning checklist.
135		Defect and parameter deviation reporting to concern person

Note: All the activities mention are exhaustive and may vary as per commissioning requirement and site condition.

Part B: This shall be for Three (03) years after COD for providing operation services for Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliaries, Balance of Plant (DM Plant, AHP, FOPH, FWPH, CWPH, Hydrogen Plant, Compressor House, CT & RWPH etc.), Switchyard & Switchgear operation of BTG & BOP.

The following works are to be carried out in all shifts (Morning, Evening, Night & General shift).

1. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all main boiler and its auxiliaries like coal mills, ID/FD/PA Fans, APH and other auxiliaries & associated systems. He is also to assist in evacuation of Bottom Ash/APH/ECO/DUCT hoppers & associated systems in shifts and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
2. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Turbine/Generator and its auxiliaries like main turbine, TDBFPs, MDBFPs, Primary water, Seal oil, Generator gas, IPBD/SPBD APU, Condenser, Turbine lube oil, Governing system, DM Make up & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
3. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Switchyard equipments like GIS Local & Panel operation, MCC Panels, Battery Charger, Battery banks & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
4. Round the clock Operation, monitoring for isolation/normalization of Transformers, Electrical modules/Feeders/Breakers at MCCs of different voltage levels at main plant and BOP area, Battery chargers, UPS, Battery banks & associated and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
5. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Fuel Oil Pump House equipments like both HFO/LDO unloading and forwarding systems, LDO transfer system, Drain oil system, HFO & LDO Tanks, Fire Fighting of HFO/LDO area & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
6. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Fire Water Pump House equipments like Main hydrant pumps, Jockey Pumps, Diesel hydrant pumps, Main fire water header pressure control from PLC & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.

7. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Compressor house equipments like Compressors, Air receiver tanks, Cooling water system & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
8. Round the clock Operation, checking, monitoring, Logging of parameters and patrolling of all Circulating water pumps (CW Pumps, Pumps/Motors cooling system), cooling tower equipments (CT fans, Drive motors, Drift eliminators) & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
9. Round the clock Operation, checking, monitoring, Logging of parameters, patrolling of all Hydrogen Plant equipments & associated systems including start up & shut down of Hydrogen Generation Plant and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
10. Round the clock Operation, checking, monitoring, Logging of parameters, patrolling of all ESP equipments like ESP transformers, ESP Fields etc. and also assisting in evacuation operation of ESP hoppers and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
11. Round the clock Operation, checking, monitoring, Logging of parameters, patrolling of all HVAC and Air Washer equipments like chiller, Air handling units & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
12. Round the clock Operation, checking, monitoring, Logging of parameters, patrolling of all DM Plant, ETP, PTP, AVGF & CW chlorination, CPU & associated systems and also do the Water, Steam, Coal & oil analysis on regular basis and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
13. Round the clock Operation, checking, monitoring, Logging of parameters, patrolling of all ASH Plant & associated systems and carry out all activities of shift operation as per instruction of Shift In-charge/Engineer In-charge.
14. Technical assistance in general shift for different activities such as performance test, safety valve testing, soot blower pressure setting etc. as per instruction of Shift In-charge/Engineer In-charge.

Activity List for Part-B:

SL No.	Area	Job Description
1	Turbine Area	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems in TG area
6		Generator gas purging (H2, Co2, N2) and H2 rack filling
7		Monitoring of service water, portable water & DMCW overhead tank levels
8		Check & Record water, Steam & Lube Oil leakages and valve passing from equipments/system
9		Check & monitor of condenser vacuum system for any air ingress
10		Operation of central lub oil storage and purification system including portable centrifuges
11		Operation of sump/pit pumps at TG area and ensure no water in sump/pit
12		Monitor & Record parameters in check sheet of equipments/systems in ACW & CST pump house
13		Check healthiness and record parameters of fire fighting system
14		Provide support to chemical dept. for sampling
15		Defect and parameter deviation reporting to concern person
1	Boiler 0'mtr Area	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments in boiler 0-meter area
6		Monitor and checking of BRP, HPU of MEFCV, HWL-1 & 2 valves
7		Monitor and checking of Flash tank/Drain tank/Condensate transfer pump
8		Check & Record water, Steam & Lube Oil leakages and valve passing from equipments/system
9		Check & Record pulveriser for Coal, SA/PA/Seal air and Flue gas Leakages
10		All Dampers/gates and blade pitch healthiness checking
11		Monitoring and operation of Mill reject conveying system
12		Ensure perfect Bottom Ash Hopper emptiness after Dashing and seal trough overflow
13		Check healthiness and record parameters of fire fighting system
14		Provide support to chemical dept. for sampling
15		Defect and parameter deviation reporting to concern person

SL No.	Area	Job Description
1	Boiler Firing floor	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments Feeder floor and above
6		Monitoring and operation of Coal and fuel oil firing system
7		Monitoring and operation of soot blower including checking healthiness such as poppet valve passing and steam leakages
8		Monitor and checking of SADC, burner tilt & peep holes as per check list
9		Check & Record water, Steam & Oil leakages and valve passing
10		Check & Record Coal, SA/PA/Seal air and Flue gas Leakages/ingress
11		All Dampers/gates healthiness checking
12		Ensure APH Hopper, Eco Hopper and Flue gas duct hopper emptiness
13		Check healthiness and record parameters of fire fighting system
14		Provide support to chemical dept. for sampling
15		Defect and parameter deviation reporting to concern person
1	BTG Electrical System	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Check healthiness of GCB, GT, RAT,UT,UAT,SAT,UST,SST and ESP transformers & Record parameters in check sheet
4		Check healthiness of HT and LT switchgears & Record parameters in check sheet
5		Check cable gallery area of TG Building
6		Record the GT, UT & RAT energy meter reading
7		GT, UT & RAT Transformers cooling pumps, fans changeover and schedule trial run as per SOP
8		Monitoring and record the operating parameters of ESP
9		Operation, Isolation & normalization of HT and LT switchgears as per SOP
10		Monitoring and record the operating parameters of ACDB,DCDB,UPS ,battery charger and battery bank
11		DG set and auxiliaries checking and schedule trials as per SOP
12		DC lights checking as per schedule
13		Defect and parameter deviation reporting to concern person
1	Switchyard	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Check healthiness and status of CT, CVT , isolators, earth switches and SF6 breakers and record the parameters
4		Defect and parameter deviation reporting to concern person
5		Check cable gallery
6		Record the Line energy meter reading
7		Operation, Isolation & normalization of isolators ,earth switches, breakers and switchyard as per SOP
8		Monitoring and record the parameters of switchyard MCC, ACDB, DCDB, UPS, battery bank and battery charger
9		Monitoring and record the parameters switchyard
10		Monitor and record all SF6 breakers, LA counter readings
11		Condition monitoring of all equipments
12		DC lights checking as per schedule

SL No.	Area	Job Description
1	BOP Electrical	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Defect and parameter deviation reporting to concern person
4		Check cable gallery
5		Operation, Isolation & normalization of BOP LT switchgear as per SOP
6		Monitoring and record the parameters of BOP MCC, ACDB, DCDB, UPS, battery bank and battery charger
7		Monitoring and record the parameters BOP transformers
8		Condition monitoring of all equipments
9		DC lights checking as per schedule
1	FWPH	Ensure housekeeping and safety compliance in FWPH
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for FWPH Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Monitor & Record the FWPH Equipment operating parameters as per check list.
5		Monitor and maintain the fire water tank level, diesel tank level etc
6		Check & Record the water leakages from hydrant line, spray line and passing valves.
7		Defect and parameter deviation reporting to concerned person
1	Compressor House	Ensure housekeeping and safety compliance in compressor house
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Compressor House Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Monitor & Record compressor house Equipment operating parameters as per check list.
5		Ensure the operation of instrument air and service air receiver tank moisture auto drain traps
6		Operation and monitoring of air drier, suction filters
7		Check & Record the water/air leakages in Compressor house and receiving tank areas
8		Defect and parameter deviation reporting to concerned person
1	FOPH	Ensure housekeeping and safety compliance in FOPH area.
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for FOPH Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Unloading of HFO & LDO from oil tankers as per standard operating procedure.
5		Monitor & Record HFO & LDO tank parameters as per check list.
6		Reporting to SCE about oil Receipt and consumption on daily basis
7		Monitor & Record parameters in check sheet of equipments in forwarding pump house
8		Check & Record water, Steam & Oil leakages and valve passing
9		Check healthiness and record parameters of fire fighting system
10		Provide support to chemical dept. for fuel oil sampling
11		Defect and parameter deviation reporting to concern person

SL No.	Area	Job Description
1	Hydrogen Plant	Ensure housekeeping and safety compliance in H2 Plant
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Safe startup and shut down of H2 plant
4		Adhere to SOP for Hydrogen Plants Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
5		Monitoring proper KOH solution level in cell skids.
6		Ensure adequate DM water pressure to the rectifier cell skid.
7		Ensuring proper working of gas holders and its sealing.
8		Monitoring of H2 purity through O2 analyzers.
9		Ensuring proper functioning of compressors and its cooling water system.
10		Proper draining of moisture from knockout box before compressor, catalytic purifier and filters
11		Shifting of filled cylinder to storage room and empty cylinder to gas filling room
12		Loading of cylinders to trolley for shifting to TG area
13		Counting and monitoring of all H2,CO2 and N2 filled cylinders in storage room
14		Update status Turbine side and hydrogen plant filled and empty cylinders status at every shift and report to control room desk engineer
1	CWPH	Ensure housekeeping and safety compliance in CWPH area.
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for CWPH Equipments/System isolation, normalization, changeover, Normal operation & schedule trial run.
4		Monitor & Record CWPH Equipment operating parameters as per check list.
5		Check & Record the water & Oil leakages
6		Provide support to chemical dept. for AVGF operation and cooling water treatment.
7		Defect and parameter deviation reporting to concern person
1	CT Area	Ensure housekeeping and safety compliance in CT area.
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for CT Equipments/System isolation, normalization, changeover, Normal operation & schedule trial run.
4		Check & Record the water & Oil leakages
5		Equipments/System isolation, normalization, changeover & schedule trial run of CT fans as per SOP.
6		Monitor & Record CT fans operating parameters as per check list.
7		Defect and parameter deviation reporting to concern person
1	HVAC & Air Washer System	Ensure housekeeping and safety compliance in HVAC & Air Washer System.
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for HVAC & Air Washer Equipments/System isolation, normalization, changeover, Normal operation & schedule trial run.
4		Check & Record the water & Oil leakages
5		Equipments/System isolation, normalization, changeover & schedule trial run of HVAC & Air Washer system as per SOP.
6		Monitor & Record CT fans operating parameters as well as the room temperatures as per check list.
7		Defect and parameter deviation reporting to concern person

SL No.	Area	Job Description
1	Pre Treatment Plant & Effluent Treatment Plant (PTP&ETP).	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Operation of RAW water System/Equipment as per SOP.
6		Operation of HRSCC System As per SOP.
7		Dosing of Chlorine Gas and Sensor Inspection.
8		Preparation of All Dosing (Alum, Poly, Lime).
9		Sample Collection & Analysis as per SOP.
10		Operation of Ro System /ETP As per SOP.
1	DM PLANT	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Normal Operation Of DM plant as Per SOP.
6		Sample Collect & Analyze As per SOP.
1	CPU (Condensate polishing Unit)	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Assist Unit/System Start-up, Shutdown and routine performance test as per SOP
5		Normal operation Of CPU as per SOP.
1	Water LAB/OIL LAB	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Adhere to SOP for Equipments/System isolation, normalization, changeover, normal operation & schedule trial run.
4		Preparation of Standard reagent in SWAS Chemicals ,& Laboratory & as per Requirement
5		Calibration Of LAB Instrument.
6		Collection of sample Steam water Cycle & Oil Sample, Analysis as per SOP.
7		Monitoring of On line parameter`s in SWAS, CPU & SPU.
8		Preparation OF LP Dosing Chemicals.
9		Analysis of Gas Analysis as per SOP.
1	Coal Chemistry	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Collection of Coal sample in Rack coal /Feeder Floor Coal.
4		Preparation of coal in IS 436 Procedure.
5		Analysis of coal in IS 1350 Procedure.
6		Analysis of MILL Finess Sample Collected & analysis of Both Unit.

SL No.	Area	Job Description
1	Ash Handling Plant Control Room	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Communicating and coordinating activities with main control room
7		Defect and parameter deviation reporting to concern person
8		Field inspection.
9		Coordination with maintenance team for defect rectification
10		Generation of Shift report
1	HCS D Control room & Silo	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Monitoring & ensuring emptiness of main silo
7		Defect and parameter deviation reporting to concern person
8		Uninterrupted ash unloading through trucks & wagons
9		Coordination with maintenance team for defect rectification
10		Generation of Shift report
1	Slurry pump house, Clarifloculator & Compressor	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to chemical dept. for sampling
7		Defect and parameter deviation reporting to concern person
8		Monitoring operation of Clarifier and maintain water level in ash water tank
9		Coordination with maintenance team for defect rectification
10		Ensuring emptiness of ash slurry sump
1	ESP Hoppers	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to chemical dept. for sampling
7		Defect and parameter deviation reporting to concern person
8		Field inspection for ensuring emptiness of hoppers
9		Coordination with maintenance team for defect rectification
10		Ensuring healthiness of system for smooth ash evacuation

SL No.	Area	Job Description
1	APH & Eco Hoppers	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to chemical dept. for sampling
7		Defect and parameter deviation reporting to concern person
8		Field inspection for ensuring emptiness of hoppers
9		Coordination with maintenance team for defect rectification
10		Ensuring healthiness of system for smooth ash evacuation
1	Bottom Ash Hopper	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to chemical dept. for sampling
7		Defect and parameter deviation reporting to concern person
8		Hopper inspection
9		Coordination with maintenance team for defect rectification
1	MRS	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to maintenance during dechocking work
7		Defect and parameter deviation reporting to concern person
8		Checking emptiness of Pyrite Hopper.
9		Coordination with maintenance team for defect rectification
1	AWRS	Ensure housekeeping and safety compliance
2		Keep record of every activity done throughout the shift in shift activity Logbook
3		Equipments/System isolation, normalization, changeover, normal operation & schedule trial run as per SOP
4		System / Equipment Start-up, Shutdown and routine performance test as per SOP
5		Monitor & Record parameters in check sheet of equipments/systems
6		Provide support to chemical dept. for sampling
7		Defect and parameter deviation reporting to concern person
8		Monitoring water level
9		Coordination with maintenance team for defect rectification

Note: All the activities mention above are exhaustive and may vary as per operation requirement and site condition.

The General Shift Activity list (Other Than Shift Activities)

Assist in the following General shift activity as per instruction of Shift In-charge/ Area In-charge.

- Unit Routine Performance Tests
- Operation Documentation
- 5S Audit & QC Presentation
- Safety Audits
- PA system Healthiness
- Defect Compilation & Record
- Fire Fighting Extinguisher Availability in designated area
- Fire Fighting System Healthiness Checking
- Burner Tilt & SADC Checking
- Furnace Temperature Mapping
- Drain & Vent passing Checking
- Condenser Air ingress checking
- Instrument & Service air leakage identification
- Aux. Boiler Trial

Note: All the activities mention above are exhaustive and may vary as per operation requirement and site condition.

Contract Period And Special Terms & Conditions

A. Contract period & Quantities:

1. The contract shall be for a period of Three (03) years and Six (06) months from the date of LOI, which shall have following two parts:

Part A: This shall be for six (6) months period before COD for providing support in commissioning activities of Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliaries, Balance of Plant (DM Plant, AHP, FOPH, FWPH, CWPH, Hydrogen Plant, Compressor House, CT & RWPH etc.), Switchyard & Switchgear operation of BTG & BOP .

Contract period may vary as per site requirement.

Part B: This shall be for Three (03) years after COD for providing operation services for Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliaries, Balance of Plant (DM Plant, AHP, FOPH, FWPH, CWPH, Hydrogen Plant, Compressor House, CT & RWPH etc.), Switchyard & Switchgear operation of BTG & BOP.

Contractor mobilization will be at discretion of OPGC. Contractor shall mobilize within 15 days from the date of NTP (Notice to Proceed), intimated by OPGC.

2. OPGC reserves the right to extend the Contract Period up to 3 months on the same rates and terms and conditions without any price escalation and entering into any new contract.
3. The said contract period can be extended if mutually agreed upon by both the parties up to one year and in such a case a revised Work Order shall be issued at the same rates and terms & condition or at negotiated rates acceptable by both parties i.e. the Company & the contractor.
4. In case it is observed during the tenure of the contract that vendor is not capable or not in a position to perform the work as per requirement, OPGC reserves the right to offload the same and get it done through other agencies at the risk and cost of the vendor.
5. OPGC reserves the right to short close the Contract with one month notice period.
6. Quantities mentioned in the BOQ against each item are indicative only. During actual execution, the quantities of the items may vary in the plus or minus side depending upon exigencies of work. The contractor shall not have any extra claims over the agreed rates for job on account of increase or decrease in activities during the contract period. Also execution of all items and their respective quantities are not binding on OPGC.
7. Contractor's performance shall be evaluated at the end of every year. Contract shall be extended for another year only if performance of the contractor shall be found satisfactory.

B. Penalty/Recovery Clauses:

1. A penalty of double the awarded price as in BOQ will be deducted if the contractor fails to provide the services as per scope of work or as instructed by the Engineer In-charge.
2. The Contractor shall make its own arrangement of storage of tools and tackles etc. and shall be responsible for safe custody of such items at its site store/site office. Any tool/ tackle, if provided by Owner on loan basis, will be in safe custody of Contractor. In case of theft / lost / damage of such item, while in Contractor's custody, the item will be replaced by Contractor free of cost or the cost of item shall be recovered from Contractors bills at prevailing market rates including 20% overheads.
3. In case of shortfall of manpower deployed as per minimum manpower deployment plan, cost as detailed below will be deducted from the contractor monthly RA bills as a penalty. The attendance on Manual/Biometric records shall be treated as primary reference for the calculation of headcount/deduction/penalty for RA bills.
 - i) Man power availability between 100 & 95% - No deduction.
 - ii) Man power availability between 95 & 90% - 2% of monthly RA Bill
 - iii) Man power availability between 90 & 85% - 5% of monthly RA Bill
 - iv) Man power availability below 85% deduction from monthly RA bill will made on pro-rata basis of the shortage (i.e. For example ; if 84% availability is there , deduction will be $100-84%= 16%$ of the monthly RA bill, Similarly if 80% availability is there , deduction will be $100-80%= 20%$ of his monthly RA bill.
4. The Contractor shall be solely responsible for any loss or damage to Owner property during the period of this Contract due to negligence, fraud etc. on the part of their personnel and will be liable for the damages made during execution of work due to Contractor negligence of wrong workmanship, the cost of the same as per prevailing market rate plus departmental expenses shall be recovered from the Contractor's bill.
5. OPGC shall be entitled to recover all cost, damages, expenses which Owner may have to incur or become liable to incur as a result of Contractor's negligence or any other action that may originate such cost, charges, expenses etc from Contractor's bills.
6. In case of delay in mobilization for any work, penalty @ 1.5 times shall be deducted from the contractor's bill for the said work.
If any particular job is not carried out expeditiously as per the demand of the situation and instruction of EIC, Penalty @ two times the scheduled job rate shall be deducted from the contractor's bill.
7. Penalty clauses mentioned in other parts of tender documents shall also be applicable.
8. The service providers in shift shall leave the premises or work area only after ensuring his relieving by proper reliever and after permission from Shift supervisor or his authorized persons, by agencies representative. If anyone found in such case the penalty of Rs. 2000/- shall be deducted from the contractor's bill for each occurrence.

Note: Total penalty/recoveries shall not exceed 10 % of the total executed contract value.

C) Terms of Payment:

1. Contractor may raise RA bills once in a month against work executed in a month through work measurement record duly certified by the EIC, along with certified wage sheet of the month, PF & ESI statement of the previous month after depositing in the individual accounts.
2. The contractor shall comply with all the statutory requirements covered under Minimum Wages Act, PF, Safety, Insurance, ESI etc. He should have a valid labour license.
3. The contractor shall comply with all rules and regulations of local authorities during the performance of the contract. He shall comply with minimum wages act and the payment of wages act and the rules made under in respect of any employee or workmen employed by him and he has to keep all the necessary records with him as required under different labour laws and if required, he has to produce the same to OPGC.
4. The contractor shall have the group insurance for the working manpower at site looking at the scope of work and as per the statutory rules for the complete period of contract.
5. The contract price shall be firm throughout the contract period irrespective of the revision irrespective of the revision in daily wage rate as an escalation of 5% (rounded) has been considered for job Unit rate in the subsequent 2nd and 3rd year respectively.

D) Security Deposit:

10% of the contract price shall be retained as security deposit from each RA bills which shall be released only after three months of the completion of contract and submission of final work completion certificate duly certified by OPGC EIC. All penalties, statutory payment etc shall be recovered from the security amount, if required.

E) Assignment and Subletting of the Contract:

The contractor shall not assign or sub-let any part of the contract to any other party or agency without the written consent of OPGC.

F) Familiarization:

1. Bidder shall visit the site and make himself familiar with the equipment/system related to Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliary, BOP, Switchyard and Electrical system, amount of work involved, etc. under the scope of subject contract. If the contractor needs any technical details or additional information regarding equipment or work procedure in relation to the proposed work, he should do so before submitting the bid to OPGC.
2. It is imperative for each bidder to fully acquaint himself of all local conditions & factors, which may have effect on the execution of the work covered under the specifications. OPGC shall not entertain any request for clarifications from the bidder regarding such local conditions post-bid.

3. OPGC shall entertain no claim, whatsoever, nor any change in the time schedule of the contract there of which arise on account of clear information or its effect on the cost of works to the bidder.

G) Type of work:

1. The plant area consists of 2 x 660 MW coal fired Power plant. The area of work shall be Operation of Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliary, BOP, Switchyard and Electrical system. **Detail of activities for Part A & Part B are mentioned in scope of work.**
2. Contractor shall be responsible for assisting commissioning activities of Boiler & Auxiliaries, Turbine & Auxiliaries, Generator & Auxiliary, BOP, Switchyard and Electrical system up to COD and subsequently operation activities after COD as mentioned in BOQ and to be executed as directed by engineer in charge. All service providers and tools required for the execution of the jobs are to be arranged by the contractor and is a part of the contract. In addition to these the contractor has also to arrange additional service providers for carrying out any other and emergency jobs.
3. The service providers engaged by the agency will be deployed for work at any location/area of OPGC-II (Unit-3&4).
4. It will be responsibility of the contractor to make all his service providers familiar with all working locations before starting the work.
5. The work has to be carried out daily in round the clock in three shifts and general shift (If any) on all the days including Sundays, Holidays, & National Holidays.
6. The contractor and service providers shall co-operate with all other agencies working at site.
7. The contractor shall deploy his skilled service providers for jobs/activities that should be technically satisfactory to the Engineer In-charge.
8. The contractor should not deploy service providers who are physically unfit.
9. The contractor is fully responsible and accountable for discipline of person deployed by him in plant premises and any loss to malicious intention/action of his service providers shall be made good by the agency as per decision of Engineer In-charge.

H) Manpower:

1. The contractor shall deploy adequate service providers of required qualification and experience as mentioned below. The service providers to be deployed by the contractor at site shall be interviewed by the owner prior to deployment & is subjected to owner's approval. In case owner is not satisfied by the performance/Conduct of any of the person, the same shall be immediately replaced by competent person.

A. Main Plant & BOP:

- Minimum qualification of service provider for operation of Turbine area, FPOH, FWPH, Hydrogen plant, Compressor house, CT & Raw water pump house, CW pump house, HVAC & Air Washer and ESP is Diploma (Mechanical) with 3-5 years of experience.
- Minimum Qualification of service provider for operation of Boiler area is 1st class boiler attendant certified Diploma/ITI with 3-5 years of experience in pulverized fired boilers
- Minimum qualification of service provider for Switchyard and electrical system operation is Diploma (Electrical) with 3-5 years of experience.

Note:

- i. Diploma Engineers (Mech.): 3 years Diploma in Mechanical Engg.
- ii. Diploma Engineer (Elec.): 3 years Diploma in Electrical Engg.
- iii. ITI (Mech.) : 1st Class Boiler Attendant certificate from any state Boiler Board

B. ASH Plant:

- Minimum qualification of shift in-charge for ASH Plant operation & coordinating all operation activities is Diploma (Mech.) with 6-10 years of experience.
- Minimum qualification of service provider for desk operation in ASH Handling Control room and HCSD Control room is Diploma (Electrical) with 0-3 years of experience.
- Minimum Qualification of service provider for field operation in Silo, Slurry pump house, Compressors, MRS, AWRS, ESP Hoppers, APH Hoppers, Eco Hoppers and Fly Ash & Bottom ash is ITI with 3-5 years of experience.

C. DM Plant:

- Minimum qualification of service providers for PTP, ETP, Chemical Lab (Steam & water), Chemical Lab (Coal Analysis) is BSc with 3-5 years of experience.
- Minimum qualification of service provider for operation of DM Plant, CPU, RO plant etc. is ITI (Mech./Elec.) with 3-5 years of experience.

2. In Manpower rate contract (Part A), Contractor shall deploy a Seventy Six (76) Manpower for assisting commissioning activities and normal operation of DM Plant. The area wise detail requirement is as below.

a. Boiler/Turbine/Generator: 19 Nos.

- Diploma (Mech.) : 10 Nos. (3-5 Yrs. Exp.)
- Diploma (Elec.) : 05 Nos. (3-5 Yrs. Exp.)
- Diploma (Mech.) : 04 Nos. (6-10 Yrs. Exp.)

b. Balance of Plant (BOP): 15 Nos.

- Diploma (Mech.) : 14 Nos. (3-5 Yrs. Exp.)
- Diploma (Elec.) : 01 No. (3-5 Yrs. Exp.)

c. ASH Plant (AHP): 20 Nos.

- Diploma (Mech.) : 04 Nos. (6-10 Yrs. Exp.)
- Diploma (Elec.) : 08 Nos. (0-3 Yrs. Exp.)
- ITI (Mech.) : 08 Nos. (3-5 Yrs. Exp.)

d. DM Plant: 22 Nos.

- BSc : 10 Nos. (3-5 Yrs. Exp.)
- ITI (Mech./Elec.) : 12 Nos. (3-5 Yrs. Exp.)

Allocation of manpower in three shifts or in general shift shall be as per instruction of OPGC EIC based on the requirement of work according to commissioning schedule.

3. In Job rate contract (Part B), the contractor shall deploy one Site-in-charge and one no. qualified safety supervisor (round the clock) for managing the site administration.

4. For Part B, Contractor shall deploy a minimum One hundred Eighteen (118) nos. of Manpower for operation activities. The area wise detail requirement is as below.

a. Boiler/Turbine/Generator: 36 Nos.

- Diploma (Mech.) : 16 Nos. (3-5 Yrs. Exp.)
- Diploma (Elec.) : 08 Nos. (3-5 Yrs. Exp.)
- 1st Class Boiler Attendant: 08 Nos. (6-10 Yrs. Exp.)
- Diploma (Mech.) : 04 Nos. (6-10 Yrs. Exp.) – Shift Supervisor

b. Balance of Plant (BOP): 20 Nos.

- Diploma (Mech.) : 16 Nos. (3-5 Yrs. Exp.)
- Diploma (Elec.) : 04 No. (3-5 Yrs. Exp.)

c. ASH Plant (AHP): 40 Nos.

- Diploma (Mech./Elec) : 04 Nos. (6-10 Yrs. Exp.)
- Diploma (Mech.) : 08 Nos. (0-3 Yrs. Exp.)
- Diploma (Elec.) : 04 Nos. (0-3 Yrs. Exp.)
- ITI (Mech.) : 24 Nos. (3-5 Yrs. Exp.)

d. DM Plant: 22 Nos.

- BSc : 10 Nos. (3-5 Yrs. Exp.)
- ITI (Mech./Elec.) : 12 Nos. (3-5 Yrs. Exp.)

Allocation of manpower in three shifts or in general shift shall be as per instruction of OPGC EIC based on the requirement.

5. In Job rate contract (Part B) 01 (one) supervisor will be in shift for handling the shift service providers and also coordinating the shift activities and will report to Engineer in-charge or Shift in-charge.
6. If the performance of any service provider is found unsatisfactory, he should be replaced with suitable service provider by the agency.
7. Only experienced, qualified and medically fit persons shall be deployed for any activity as per instruction of Engineer In-charge or Shift In-charge.
8. The contractor shall maintain required minimum service providers (Defined in sr. No.-4) all the time so that plant operation is not affected due to lack of service providers. Adequate no. of manpower shall be maintained to cover leave, holidays and weekly off.
9. Lodging, boarding, transportation and local conveyance of their workmen shall be arranged by the contractor at their own cost.

In case of additional service provider requirement in shutdown or in emergency, contractor shall deploy the required manpower within 12 hrs.

I) CONSUMABLES, TOOLS & TACKLES:

The Contractor shall have to arrange all general kind of tools & tackles required for the various commissioning/operation activities

1. Safety Shoes (Individual)
2. Safety Helmets (Individual)
3. Safety Goggles (Individual)
4. Hand Gloves –Cotton (Individual)
5. Ear Plugs (Individual)
6. Nose Mask (Individual)
7. Electrical operation hand gloves
8. Torch lights
9. Gum shoes
10. F-rods
11. Spanners (General & Non sparkles)
12. Search Lights
13. leather gloves (For operation in heating area)
14. Safety Belts