



Office of the Executive Engineer Generation
Division USHP-II, Kangan.
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No.: USHP-II/tech/ 435-39

Dated:-10-02-2023

NOTICE INVITING OFFER

For and on behalf of the Managing Director, Jammu and Kashmir power Development Corporation, offers are invited from approved, registered /reputed electro mechanical companies for executing **Routine maintenance contract and Annual Maintenance Contract and Supply of material for two years as per following BOQ in three parts**

Part A

Routine Maintenance Contract (as per BOQ) for two years

Part B

Annual Maintenance Contract (as per BOQ) for two years

Part C

Supply of Material (as per BOQ)

The detailed BOQ is followed after this page.

Note:-

The quoted rates should be inclusive of all taxes and duties.

The offers complete in all respects should reach to the office of the undersigned on or before 17th Jan 2023 upto 2:00 pm through email, registered post or by hand, In case any further details or quires w.r.t the offers the same can be had from the office of the Executive Engineer Generation Division USHP-II kangan on all working days through official mail ID xenekangan@gmail.com or on cell no's **9906435566 (Er. M. Yahya Shah)** and **7006967090 (AEE Er. Ishtiyahq Shora)** during office hours.

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**Executive Engineer,
Generation Division
USHP-II, Kangan**

Copy to:-

1. Chief Engineer Generation wing Kashmir for favour of information.
2. Superintending Engineer Generation Circle II PDC Bemina Srinagar for information.
3. Nodal officer IT management JKPDC Srinagar for information with the request to upload the offer on the website of JKPDC.
4. Notice Board.

Part A: Routine Maintenance Contract**Works to be executed during the Routine Maintenance Contract (RMC) at USHP-II Kangan
for the year 2023-24 & 2024-25**

S.No.	Brief description
01.	Comprehensive Routine Maintenance of Unit-I and III in first year as per detailed scope, however auxiliaries of Unit-2nd are included for this year.
02.	Comprehensive Routine Maintenance of all the three Units for second year as per detailed scope.

The detailed scope of work for AMC includes (but not limited to):-

S.no.	Name of Work	Year 2023-24	Year 2024-25	Rate/year (Rs)	Total amount (Rs)
A	15 MVA ,11/132 KV Power Transformers				
1.	Carrying out general inspection of 15 MVA power transformers of all its live parts along with H.V. / L.V. bushing terminals, oil level in conservator tank, buchoz relay, cooling system for checking any discrepancies and taking necessary measures for rectification of any problem.	Monthly	Monthly		
2.	Carrying out IR and PI tests with 5.0 KV megger along with dielectric strength of oil.	Quarterly	Quarterly		
3.	Flushing of water coolers of all the live power transformers along with checking for any oil leakages from heat exchanger and checking functioning of oil and water flow indicators.	As and when required	As and when required		
4.	Cleaning of water tubes of all the dirt deposited in it for all the live power transformers.	Monthly	Monthly		
5.	Checking of functioning of oil circulation motor and replacement of any defective part viz a viz bearing, coupling and impeller along with its necessary overhauling .	Monthly	Monthly		
6.	Checking and calibration of oil and winding temperature meter along with its RTD's / TSD's and their replacement if found defective.	Quarterly	Quarterly		

7.	Carrying out necessary check and inspection of cooling pipe lines of power transformer along with its NRV's, Gate Valve's with necessary repair / replacement and overhauling.	Monthly	Monthly		
8.	Topping of power transformers as and when required by filtered power oil.	Quarterly	Quarterly		
9.	Filtration of power transformer oil	Half Yearly	Half Yearly		
B	Excitation System				
1.	Dusting off accumulated dirt and dust from inside and outside of excitation cubicle by vacuum cleaner without touching any component. Cleaning of air filters and their replacement if necessary. Inspection of electrical wiring for wear and tear and burns along with melted insulation. Tightening of all loose internal wiring connection, Power circuit joints and jumper connections.	Weekly	Weekly		
2.	Carrying out necessary check and inspection for smooth functioning of all circuitry with functioning of components viz a viz Trip Coil Supervision relay, Field breaker Trip Coil ,Closing Coil, Field Current Measurement Transducer, Field Voltage Measurement Transducer, Crowbar Controller, Power Contactor, SL-11 Bridge Controller,P100C-sx AVR Controller, Power Supply and Rotor Earth Fault Relay .	Monthly	Monthly		
3.	Replacement of any malfunctioning / damaged component of excitation cubicle referred at s.no.2.	As and when required	As and when required		
4.	Checking of cable connection with slip rings and field excitation and making necessary tightening if required and replacing of clamp.	Quarterly	Quarterly		
C	Excitation Transformer				
1.	Cleaning of accumulated dirt and dust with vacuum cleaner from insulating surfaces ,cabin surfaces and openings which tend to restrict air flow. Cleaning up of winding, lead connections and tap connections of dry type transformer.	Weekly	Weekly		
2.	Performing visual inspection of coil, winding, monitoring gadget and transformer core. Checking temperature monitoring equipment circuits and their performance in order to check any abnormality and making necessary	Quarterly	Quarterly		

	corrections.				
3.	Taking IR values of the air cooled transformer as per manufacturer guidelines, checking of terminal connection box for any bad connection, rusted connection, corrosion, condensation and sparking. Taking corrective measures for its healthiness.	Quarterly	Quarterly		
D	L.T. switchgears with Panels				
1	Cleaning of dirt and dust accumulated on the surfaces of L.T. Panel and its switchgear housing. Removing of carbon deposits from the surface of common L.T. bus-bars from back side and replacing of worn-out insulating tapes on bus bar and connection junction for whole L.T. system.	Monthly	Monthly		
2	Checking of earthing connection, door locks and hinges and interlocking system of switchgears. Carrying out general inspection of electromagnetic relays and dusting /cleaning of these relays with CRC. Tightening of all loose connections of control circuitry for closing / tripping of switchgear.	Monthly	Monthly		
3	Carrying out general inspection of 100A/200A/400A and 1000 A switchgear for damaged parts viz a viz Jaw contacts, fixed contact , fuse grip assembly ,copper clamps, cu cable, leap switches etc and their replacement for early restoration of switchgear along with carrying out necessary repairs to closing / tripping mechanism of the switchgear and greasing all rotating parts.	Weekly	Weekly		
E	Gauge Panels				
1.	Carrying out general inspection and cleaning of Gauge panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its thorough cleaning with CRC. Tightening of all loose connections and chopped connections.	Monthly	Monthly		
2.	Checking all the gauge meters and their functioning with respect to RTD's and TSD's by stimulation and making necessary calibration.	Monthly	Monthly		
3.	Replacement of defective RTD's and TSD's	As and when required	As and when required		

F	Unit Auxiliary Transformer (UAT)				
1.	Cleaning of accumulated dirt and dust with vacuum cleaner from insulating surfaces, cabin surfaces and openings which tend to restrict air flow. Cleaning up of winding, lead connections and tap connections of dry type transformer.	Weekly	Weekly		
2.	Performing visual inspection of coil, winding, monitoring gadget and transformer core. Checking temperature monitoring equipment circuits and their performance in order to check any abnormality and making necessary corrections.	Quarterly	Quarterly		
3.	Taking IR values of the air cooled transformer as per manufacturer guidelines, checking of L.T. terminal connection box for any bad connection, rusted connection, corrosion, and condensation and sparking. Taking corrective measures for its healthiness in order to avoid short circuit.	Quarterly	Quarterly		
4.	Checking 11 KV input connections of the UAT terminating from 11 KV bus-bar ducts and tightening of its nuts and bolts and also 415 V termination connections. Taking IR values of the L.T. cable for its healthiness.	Quarterly	Quarterly		
G	220 V Battery Bank with 1000 A Chargers				
1.	Measurement of cell voltage and specific gravity of all 2Vof 965Ah batteries along with cleaning of terminals and battery surface with necessary top up by distilled water.	Daily Basis	Daily Basis		
2.	Checking and inspection of battery terminals one by one for any loose connection and necessary tightening of inter battery connection with replacement of nut and bolts where it is required and applying of petroleum jelly.	Weekly basis	Weekly basis		
3.	Carrying out cleaning of battery chargers with insulating brush and vacuum cleaner along with inspection of all circuits control wiring and components for its healthiness.	Monthly Basis	Monthly Basis		
4.	Testing of boost and float charges and making of necessary calibration .Checking of coupling switchgear between the two chargers and its smooth operation.	Monthly Basis	Monthly Basis		
H.	Generator Control and Relay Panels				

1.	Carrying out general inspection and cleaning of generator control and relay panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its thorough cleaning with CRC. Tightening of all loose connections and chopped connections.	Fortnightly	Fortnightly		
2.	Carrying out inspection of all the electrical components, electrostatic relays, microprocessor based relays for their functioning and necessary calibration within the manufacturing guide lines. Testing of all protection circuits by stimulating the fault conditions.	Monthly Basis	Monthly Basis		
3.	Replacement of any defective electrical components, electrostatic relays or microprocessor based relays viz a viz Numerical Relay with IEC61850 for GTRMP A and B, Multiplier relays, KW transducer, Micom P-III , Semaphore indicator (Isolators) and other essential items.	As and when required	As and when required		
I.	132 KV line Control and Relay Panel				
1.	Carrying out general inspection and cleaning of generator control and relay panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its thorough cleaning with CRC. Tightening of all loose connections and chopped connections.	Fortnightly	Fortnightly		
2.	Carrying out inspection of all the electrical components, electrostatic relays, microprocessor based relays for their functioning and necessary calibration within the manufacturing guide lines.	Monthly Basis	Monthly Basis		
3.	Replacement of any defective electrical components ,electrostatic relays or microprocessor based relays viz a viz trip coil supervision relay, Master trip relay, Micom p-III, Digital input card with base, breaker control switch , Distance Protection Relay with IEC61850 , Breaker Control Switch, Semaphore indicator (Isolators) and any other item.	As and when required	As and when required		
J	Governor Control and Relay panel				
1.	Carrying out general inspection and cleaning of generator control and relay panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its	Fortnightly	Fortnightly		

	thorough cleaning with CRC. Tightening of all loose connections and chopped connections.				
2.	Carrying out inspection of all the electrical components, electrostatic relays, and microprocessor based relays and engineering station for their functioning and necessary calibration within the manufacturing guide lines.	Monthly Basis	Monthly Basis		
3.	Replacement of any defective electrical components, electrostatic relays or microprocessor based relays viz a viz Lockout Relay , Digital input card with Base , Digital output card with Base , Analog Input Card with Base , Speed Module ,Engineering station, Speed sensors and many other items.	As and when required	As and when required		
K	SCADA Panel				
1.	Carrying out general inspection and cleaning of generator control and relay panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its thorough cleaning with CRC. Tightening of all loose connections and chopped connections.	Fortnightly	Fortnightly		
2.	Carrying out inspection of all the electrical components, electrostatic relays, microprocessor based relays for their functioning and necessary calibration within the manufacturing guide lines.	Monthly Basis	Monthly Basis		
3.	Replacement of any defective electrical components, electrostatic relays or microprocessor based relays as per OEM guidelines.	As and when required	As and when required		
L	Synchronizer Panel				
1.	Carrying out general inspection and cleaning of generator control and relay panels with vacuum cleaner .Cleaning of dirt and dust accumulated on the connections and its thorough cleaning with CRC. Tightening of all loose connections and chopped connections.	Fortnightly	Fortnightly		
2.	Carrying out inspection of all the electrical components, electrostatic relays, microprocessor based relays for their functioning and necessary calibration within the manufacturing guide lines.	Monthly Basis	Monthly Basis		

3.	Replacement of any defective electrical components ,electrostatic relays or microprocessor based relays viz a viz synchroscope with check sync Relay, Auto Synchroniser , Guard Relay , Frequency Transducer with Display , Interposing Voltage transformer Reversing Voltage Transformer and other items.	As and when required	As and when required		
M	Surveillance System				
1.	Operation and maintenance of power house surveillance system that consists of Hikvision IP camera. Hikvision PTZ camera ,Hikvision NVR 32 channels and 32 inches LED TV's and its trouble shooting .	Daily basis	Daily basis		
2.	Carrying out necessary repairs to out of circuit surveillance cameras Hikvision IP camera and making them operational.	Six monthly	Six monthly		
N	630 / 400 KVA Servo Stabilizer				
1.	Carrying out general inspection of servo stabilizers and checking of its oil condition and oil level. Making necessary topping of oil. Removing of dirt and dust accumulated on its insulating surfaces and live parts. Making necessary tightening of input/output cable nuts and bolts of clamps / thimbles for any loose connection and cleaning the bushes and bush rod for any accumulated carbon deposits by CRC.	Monthly Basis	Monthly Basis		
2.	Carrying out visual inspection of controlling unit terminal box of servo stabilizer for any abnormality like rust, corrosion, carbon deposits etc and making necessary corrective measures by way of tightening, cleaning with CRC and vacuuming. Making necessary operation of motors for checking up / down control gear system of servo, automatic control card, pulse controlled transformer, three phase control card and their performance. Making of necessary repairs if needed to controlling unit system.	Monthly Basis	Monthly Basis		
3.	Checking and Replacement of worn out parts viz a viz up/down gear system, automatic control card, pulse controlled transformer, three phase control card and other necessary items.	As and when required	As and when required		
O	Star-Delta starter control panels.				
1.	Carrying out inspection of all the Star-Delta starter control	Monthly	Monthly		

	panels for 200hp/100hp/60hp/40h/10hp and 5hp motors .Checking of control wiring and operation of contactors, thermal overloading and phase failure relays ,110v transformers and making necessary repairs and restoration in case of malfunctioning.	Basis	Basis		
2.	Checking of input / output cables for any loose connections and crimping of loose thimbles.	Monthly Basis	Monthly Basis		
3.	Replacement of damaged contactors viz a viz 3TF56 ,3TF52 and 3TF46, thermal overloading and phase failure relays ,110v transformers ,push buttons, thimbles etc	As and when required	As and when required		
4.	Replacement of 50 /95 mm square damaged cable for Star-Delta starter control panels up to motor.	As and when required	As and when required		
P	SAT. (Station Auxiliary Transformer)				
1.	Cleaning of accumulated dirt and dust with vacuum cleaner from insulating surfaces , 11 KV bushes ,L.T. buses and transformer body ,explosion vent ,breather which tend to restrict air flow and silica gel pot . Checking temperature monitoring equipment and their performance in order to check any abnormality and making necessary corrections.	Weekly	Weekly		
2.	Inspection of transformer oil level through conservator tank and making necessary topping of filtered oil.	Monthly	Monthly		
3.	Taking IR values of the oil cooled transformer as per manufacturer guidelines, checking of L.T. terminal connection box for any bad connection, rusted connection, corrosion, condensation and sparking .Taking corrective measures for its healthiness in order to avoid short circuit.	Monthly	Monthly		
4.	Checking 11 KV input connections of the SAT terminating through cable from 11 KV outgoing panel and tightening of its nuts and bolts and also 415 V termination connection. Taking IR values of the XLPE / L.T. cable for its healthiness.	Monthly	Monthly		
5.	Carrying out general inspection of 11 KV main panel and outgoing panel along with its oil circuit breaker. Making necessary tightening of all loose control wiring connection ,11 KV bus-bar and test checking of its C.T.'s and P.T. performance .Cleaning of electromagnetic relays by CRC	Monthly	Monthly		

6.	Carrying out general overhauling of 11 KV oil circuit switchgear for its closing and tripping mechanism, gear system with the replacement of wornout parts incl. tripping/closing coils with assembly. Changing of oil from the tank. Applying of petroleum jelly on all rotating parts	Monthly	Monthly		
Q	Bus Ducts				
1.	Removing of dirt and dust from 11 KV bus ducts of UAT side by way of thoroughly cleaning it . vacuuming the dust accumulated on bus bar surface and wrapping of 11 KV insulation tape where ever it have got damaged. Checking of IR values of the same. Cleaning with vacuum and checking functioning of surge arrestor, surge diverter and potential transformers 11kv/ 415 V with corrective measure if any malfunctioning.	Quarterly	Quarterly		
2.	Removing of dirt and dust from 11 KV generator bus ducts by way of thoroughly cleaning it. Vacuuming the dust accumulated on bus bar surface and wrapping of 11 KV insulation tape where ever it have got damaged. Checking of IR values of the same. Cleaning with vacuum and checking functioning of generator C.T.'s with corrective measure if any malfunctioning.	Quarterly	Quarterly		
R	Indoor /Outdoor Lighting System				
1.	Carrying out inspection of all the sodium vapor/LED outdoor lighting system for its smooth operation . Checking for any damage to wire, lamp , choke, ignitor, mcb switch etc and making necessary repairs for its smooth operation.	Weekly basis	Weekly basis		
2.	Replacement of damaged wire, mcb, ignitor, choke ,lamp and other part for its early restoration	As and when required	As and when required		
3.	Carrying out inspection of all the indoor LED lighting system for its smooth operation . Checking for any damage to wire, lighting console , mcb switch etc and making necessary repairs for its smooth operation.	Weekly basis	Weekly basis		
4	Replacement of damaged wire, mcb, LED light , console and other part for its early restoration	As and when required	As and when required		

5.	Installation of led lights indoor/ outdoor where ever it is required along with its wiring and on/off switch.	As and when required	As and when required		
S	Fire Fighting System				
1.	Carrying out thorough inspection and necessary maintenance of fire- fighting system of the power house .	Weekly basis	Weekly basis		
2.	Refilling of CO2 available cylinders in the power house as per OEM guidelines.	Yearly	Yearly		
T	Dewatering System				
01	Cleaning and replacement of gland packing of pumps for leakage	Monthly	Monthly		
02	Cleaning and inspection of water cooling pipe lines along with NRV's and impeller	Quarterly	Quarterly		
03	Lubrication of all rotating parts	Weekly	Weekly		
04	General overhauling of 100HP dewatering pump including replacement of Shaft, balancing stars, rubber bushes	Three jobs	Three jobs		
05	Rewinding of 100HP motors (if required)	Two jobs	Two jobs		
06	Replacement of bearings	Half yearly	Half yearly		
07	Cleaning and replacement of gland packing of pumps for leakage(40HP)	Weekly	Weekly		
08	Cleaning and inspection of water cooling pipe lines along with NRV's and impeller(40HP)	Quarterly	Quarterly		
09	Lubrication of all rotating parts	Weekly	Weekly		
10	General overhauling of 40HP dewatering pump including replacement of Shaft, balancing stars, rubber bushes/brass bushes	02 jobs	02 jobs		
11	Rewinding of 40Hp motors	02 jobs	02 jobs		
12	Replacement of bearings	Half yearly	Half yearly		
13	Repairing/overhauling of impeller of100HP pump assembly	02 jobs	01 job		
U	HP Compressor Motors				

1.	Cleaning/tightening of nut bolts and change of M.Oil (M-Oil change fortnightly)	weekly	weekly		
2.	Replacement of fan belt/bearings.	As & when required	As & when required		
3.	General overhauling of compressor units including replacement of 100/60mm piston/rings/crank assembly/overhauling of head and replacement of compressor pipe lines.	One job	One job		
4.	Rewinding of 20 HP Motor complete	two jobs	one job		
V	Leakage Units				
01	Overhauling of pump assembly/replacement of coupling/Rewinding of 2 HP motor	03 jobs	02 jobs		
02	Cleaning and replacement of gland packing	Monthly	Monthly		
W	Pressurizing Units				
1.	Cleaning of pressurizing sumps, NRVs, Idler Valves along with lubrication.	daily	daily		
2.	Inspection of high pressure pipe line up to pressure tanks and governor pipe lines for arresting of oil leakage along with pressure relief valve.	Weekly	Weekly		
3.	Checking operation of pump-motor set and coupling with necessary remedial measure along with all NRV's	Quarterly	Quarterly		
4	Cleaning of pressure tanks and oil sumps	Half yearly	Half yearly		
5	Replacement of coupling and coupling bolts	yearly	yearly		
6	Overhauling of NRVs and Idler Valves/Replacement of damaged ones	03 jobs	03 jobs		
7	Overhauling of controlling valves/replacement of damaged ones	Quarterly	Quarterly		
8	Overhauling of 210 LPM oil pump assembly including replacement of bearings/oil seal	03 jobs	03 jobs		
9	Rewinding of 20HP motor of pressurizing units	3 jobs	3 jobs		

10	Over hauling of high pressure air controlling(2 valves of pressure tanks	Half yearly	Half yearly		
11	Replacement of high pressure valves	3 jobs	3 jobs		
X	Servomotors of Governor and MIV				
1.	Routine inspection and cleaning including oil pipe lines ,replacement of damaged oil seals, gaskets ,oil filters of governor, aligning of servo shaft, checking operating mechanism of guide vanes	Quarterly	Quarterly		
2.	Replacement of damaged cup seals and brass bushes.	3jobs	3 jobs		
3.	Overhauling of operating mechanism of MIV servomotors including seal valve/replacement of damaged oil seals and gaskets. Cleaning of oil piston and cylinder arrangements.	02 job	01 job		
4	Overhauling of chocked penstock drain valves	02job	02 jobs		
Y	Pressure Release Value (PRV)				
1	Inspection of PRV, checking of operating mechanism ,arresting of oil/water leakages	Weekly	Weekly		
2	Replacement of PRV cup seals, piston rings, steel wire rope, air balls, manufacture and fitting of locking nut118EN-8 rethreading of shaft	01jobs	02 jobs		
3	Replacement of PRV shaft and overhauling of disc, conditioning of oil cylinder	01 job	01 job		
Z	TURBINE SECTION				
1.	Inspection of underwater parts, setting of TGB pads, clearance of labyrinth, inspection of runner and runner cone, guide vanes, setting right their top to bottom clearances,stay vanes and stay rings.conditioning of TGB housing and replacement of bottom oil seal. Replacement of sleeve rings and air seal/stud bolts of shaft sleeve.	Quarterly	Quarterly		
2.	Replacement of shaft sleeve and shaft rubber seal for arresting of water leakage. Replacement of sleeve rings and air seal/stud bolts of shaft sleeve.	01 job	01 job		
3	Replacement of rubber shaft seal 560mm dia	02 job	02 job		

4.	Inspection of pivot ring ,lubrication of guide vane bushes, reconditioning, cleaning, Replacement of damaged share pins	Half yearly	Half yearly		
5.	Inspection and overhauling of grease lubrication system.	Quarterly	Quarterly		
6.	Cleaning of turbine floor including removal of silt deposited at MIV floor/dewatering sumps ,drains and its disposal	01job	01 job		
7	Inspection of governor operating mechanism/replacement of solenoid valves.	Monthly	Monthly		
8	Reconditioning/cleaning of TGB oil coolers including damaged flanges	01 job	02 jobs		
A1	80/20 TON EOT Crane				
1.	General inspection, lubrication, change of gear/brake oil, replacement of break shoes/brake pads, inspection of wiring and replacement of contactors,	Quarterly	Quarterly		
2.	General overhauling of EOT crane including replacement of couplings, gears,	01 job	01 job		
3	Rewinding of 10 Hp motor of main hook(push button operated) (if reqd)	01 job	02 jobs		
4	Rewinding of 38 Hp motor of main hook(push button operated) (if reqd)	01 job	02 jobs		
5	Rewinding of 3HP Cross travel motor	01 job	01 job		
A2	D.T gate and PRV gate operating CRANE				
1	General inspection, lubrication, change of gear/brake oil, replacement of brake shoes/brake pads, inspection of wiring and replacement of contactors,	Quarterly	Quarterly		
2	Replacement of couplings/coupling bolts	01 job	01 job		
3	Rewinding of 2.3HP motor of long travel motor	01job	02 jobs		
4	Rewinding of 8 HP motor of vertical hook	01jobs	01 jobs		
A3	D.T Gate and PRV gates				
1	Cleaning of DT/PRV gates Reconditioning of hooks and	weekly	weekly		

	locking pins.				
2	Painting of gates	01 job	01 job		
3	Replacement of rubber seals	01 job	01 job		
4	Compounding of sealing	02 Monthly	02 Monthly		
A4	Generator				
1.	Routine cleaning of slip ring and brush rocker assembly along with replacement of carbon brushes and brush holders, adjustment of spring tension. Checking and measuring of IR values.	Weekly	Weekly		
2.	General inspection of current carrying lead, stator bus-bar, bus bar block terminal and carrying out necessary remedial measures for any loose connection.	Monthly	Monthly		
3.	Inspection of Tag welding of balancing weights on rotor from both side of fan assembly and making necessary correction .	Quarterly	Quarterly		
4.	Checking the condition and general inspection of air baffle segment plates and tightening of its nuts and bolts and making necessary repairs to crack plates.	Quarterly	Quarterly		
5.	Carrying out general inspection of generator stator coolers, tubes and their valves for any malfunctioning with remedial measures .Carrying out repairs / replacement of valve.	Weekly	Weekly		
6.	Flushing out water from stator coolers on daily basis for proper water circulation with necessary disposal of muddy water.	Daily basis	Daily basis		
7.	Necessary cleaning of generator barrel from oil leakages and other dirt and dust with arrangement for proper lighting system.	Monthly	Monthly		
A5	Guide Bearing Housing and Pads				
1.	General check of all bearing housing viz a viz LGB, UGB and thrust for any leakage and damage to felt. Checking all pipelines for any leakage and cleaning them thoroughly inside generator barrel.	Monthly	Monthly		

2.	Checking performance of RTD's and TSD's for proper functioning and making necessary calibration.	Monthly	Monthly		
A6	Cooling Motors				
1.	Cleaning and replacement of gland packing of pumps for leakage	Monthly	Monthly		
2.	Cleaning and inspection of water cooling pipe lines along with NRV's.	Quarterly	Quarterly		
3.	Lubricating of all rotating parts of motor –pump assembly with necessary repairs.	Quarterly	Quarterly		
4.	General Overhauling of 700 cusec pump with necessary repairs and allied works.	Four jobs	Four jobs		
5.	Rewinding of 200 HP Motor complete.	Two Jobs	Two Jobs		
6.	Replacement of bearing with other damaged parts for 700 cusec pump with allied works	Quarterly	Quarterly		
7.	Replacement of bearing with other damaged parts for 200 HP motor with allied works.	Quarterly	Quarterly		
8.	Replacement of coupling along with rubber bush bolts	Six monthly	Six monthly		
9.	Flushing out duplex strainer baskets	Weekly	Weekly		
10.	Replacement of damaged strainer baskets of Duplex strainers by way of lifting top cover.	Six monthly	Six monthly		
11.	Checking and cleaning of Foot Valves with necessary repairs.	Six monthly	Six monthly		
12.	General overhauling of NRV's with necessary repairs.	Quarterly	Quarterly		
13.	Checking all pipe line joints for any leakage , changing of gaskets, tightening of nuts and bolts etc.	As and when required	As and when required		
A7	External Oil Cooling (EOC)				
1.	Cleaning and replacement of gland packing of pumps for leakage	Monthly	Monthly		
2.	Cleaning and inspection of Oil cooling pipe lines	Quarterly	Quarterly		
3.	Lubricating of all rotating parts of 60 HP motor –pump	Quarterly	Quarterly		

	assembly including D.C. motors with necessary repairs.				
4.	General Overhauling of 60 cusec pump with necessary repairs	Four jobs	Four jobs		
5.	Rewinding of 60 HP Motor	Two Jobs	Two Jobs		
6.	Replacement of bearing along with other damaged parts for 60 cusec pump with allied works	Quarterly	Quarterly		
7.	Replacement of bearing for 60 HP motor with allied works	Quarterly	Quarterly		
8.	Replacement of coupling along with rubber bush bolts/ square type	Six monthly	Six monthly		
9.	Cleaning / Flushing of oil coolers along with replacement of oil filters	When required	When required		
10.	Replacement of damaged Tubes of oil coolers Max 200 tubes.	Six monthly	Six monthly		
11.	Checking and cleaning of Oil tank inside and outside with necessary repairs.	Yearly	Yearly		
12.	General overhauling of oil NRV's with necessary repairs.	Quarterly	Quarterly		
13.	Checking for oil leakage in oil pipe line, joints, suction, delivery safety valve, changing of gaskets, tightening of nuts and bolts etc to ensure satisfactorily operation.	Weekly	Weekly		
14	General overhauling of inlet and outlet water gate valves with necessary repairs of EOC.	Quarterly	Quarterly		
15	Checking and carrying out necessary inspection of 10 HP DC motor –pump assembly along with lubrication.	Quarterly	Quarterly		
20.	Cleaning of oil seepage from the floor	As and when required	As and when required		
A8	HS motor				
1	Cleaning of H.S. motor filters along with lubrication of all rotating parts.	Quarterly	Quarterly		

2	Inspection of high pressure pipe line up to thrust bearing housing for arresting of oil leakage along with pressure relief valve.	Quarterly	Quarterly		
3	Checking operation of pump-motor set and coupling with necessary remedial measure along with all NRV's	Quarterly	Quarterly		
A9	250 KVA / 125 KVA Generator				
1	Routine checking of available D.G. sets complete with generator along with its engine with all necessary checks viz a viz oil level checking, carbon brush, plugs etc and making necessary topping of M-oil , anti- freezing coolant .	Weekly	Weekly		
2	Checking of battery connections, filling of electrolyte, applying of petroleum jelly and checking of battery charger functioning with allied works and necessary repairs.	weekly	weekly		
3	Replacement of M-oil with oil filters , air filter element ,fan belt etc for all the available DG sets with greasing of all rotating parts.	Quarterly	Quarterly		
4	Inspection of fuel system, cooling pipe line system, electrical components system, air intake system and exhaust system of generator and carrying out necessary repairs.	Monthly	Monthly		
5	Thoroughly cleaning of DG sets and its control room for accumulated dirt and dust.	Monthly	Monthly		
A10	3.15 MVA Receiving station				
1	Overhauling of 11 KV VCB switchgears along with replacement of worn-out parts	Quarterly	Quarterly		
2	Cleaning of 11 KV panel bus bars along with electrostatic relays of 11 KV and 33 KV control Panels, protection and control wiring connection with CRC for any accumulation of dirt and dust.	Quarterly	Quarterly		
3	Replacement of damaged 11 KV Current Transformer 400-200/5 Amp ,11 KV bush rod with spout,36 V tripping and closing coils etc	Half yearly	Half yearly		
4	Checking of 36 V battery bank terminals, cleaning and applying of petroleum jelly for its healthiness.	Weekly	Weekly		

5	Replacement of 2V 250AH damaged battery	Three no.	Three no		
6	Rewinding and making necessary repairs to 36 V 60 Amps battery charger	Six monthly	Six monthly		
7	Replacement of damaged / burnt out aluminum clamps in the 33 KV yard along with tightening of clamp bolts.	Fifteen clamps	Fifteen clamps		
8	Carrying out necessary overhauling of 33 MOCB / VCB for smooth operation with replacement of worn out parts along with tripping / closing coils	Quarterly	Quarterly		
9	Routine checking of 3.15 MVA for oil leakage , Oil level, bushes , and bushes rod along with oil outlet valves and silica gel.	Monthly	Monthly		
10	Routine checking of oil leakage from 33 KV CT, PT, and necessary remedial measure including topping of oil.	Monthly	Monthly		
11	Alignment of 33 KV isolator along with greasing of rotating parts.	Quarterly	Quarterly		
12	Carrying out necessary inspection of 100 KVA auxiliary sub - station with necessary repairs for Link set and dropout set.	Quarterly	Quarterly		
13	Replacement of 11 KV link set, 11 KV LA for outgoing 11 KV feeders and auxiliary sub stations.	Six monthly	Six monthly		
14	Topping of 3.15 MVA power transformer along with its dehydration.	Yearly	Yearly		
15	De-weeding of outdoor Yard along with digging out of Yard metal and spreading .	Quarterly	Quarterly		
A11	11KV Wangath feeder				
1	Extensive branch cutting of 11 KV Wangath feeder all along the route from head works to Receiving station.	Quarterly	Quarterly		
2	Necessary repairs to 11 KV line during faults by way of conductor jointing replacement of damaged x-arm, pin insulator, disc insulator along with straightening of poles.	Monthly	Monthly		
3	Replacement of S.T. Poles along with channel X-arm, pin insulators, disc insulators with cement bottoming.	Six poles	Six poles		
A12	11KV Sumbal feeder				

1	Extensive branch cutting of 11 KV Sumbal feeder all along the route from Sumbal head works to Receiving station.	Quarterly	Quarterly		
2	Necessary repairs to 11 KV line during faults by way of conductor jointing .replacement of damaged x-arm, pin insulator, disc insulator along with straightening of poles.	Monthly	Monthly		
3	Replacement of damaged S.T. Poles/ wooden pole along with wooden /channel X-arm ,pin insulators, disc insulators .	Ten poles	Ten poles		
A13	11 /0.415 KV Sub Station				
1	Carrying out necessary inspection of all the sub stations of wangath canal feeder and sumbal canal feeder for any damage to 11 KV L.A., 11 KV linkset, 11 KV drop out set ,3.5 core cable ,11 KV bush and rod ,415 V bush with rod and MCCB .	Monthly	Monthly		
2	Carrying out necessary inspection of all the D.T. of wangat canal feeder sub stations and sumbal canal feeder sub stations for any oil leakage ,heating of bushes ,oil level of D.T.'s ,burnt out clamps etc.	Monthly	Monthly		
3	Carrying out necessary repairs to L.A., 11 KV linkset, 11 KV drop out set ,3.5 core cable ,11 KV bush and rod ,415 V bush with rod and MCCB for power restoration .	Weekly	Weekly		
4	Dismantling of 100/250 KVA Distribution transformer from 11 KV side and L.T. side Loading of damaged distribution transformer into a vehicle and then unloading at store site for repair with hire charges of vehicle complete.	Ten no.	Ten no.		
A14	Penstock (02 lines)				
1	Carrying out inspection of all expansion joints and measuring of stress at each point and accordingly doing necessary tightening.	Monthly	Monthly		
2	Greasing of all expansion joints and rocker for free movement.	Quarterly	Quarterly		
3	Stoppage of water leakage at expansion joint by carrying out necessary remedial measures	Monthly	Monthly		
4	Carrying out necessary maintenance and repairs of	Six monthly	Six monthly		

	supporting part of penstock				
5	Carrying out necessary bush cutting on both side of entire penstock and cleaning of side drains.	Quarterly	Quarterly		
A15	Gates and Gearings				
1	Routine Lubrication of Gates and Gearings	Monthly	Monthly		
2	Inspection of all the Gates for minor repairs.	Fortnightly	Fortnightly		
3	Replacement of Coupling Bolts, damaged Seals, Gate coupling, Brake Shoes, Z-seal, wire rope (22 mm and 18 mm), damaged lights at canal beats and Gate pulleys.	As & when required	As & when required		
4	Replacement of electrical items in the Control panels like switches, starters, MCBs, cables etc.	As & when required	As & when required		
5	Repair of Monorail Crane at Headworks Sumbal and Wangath.	01 job	-		
6	Rewinding/Repair of damaged motors for Gates and Gearings (3 HP to 5 HP).	01 job	01 job		
7	Weekly Trash cleaning at Satruna, Forebay and Head Works Sumbal and Wangath.	Weekly	Weekly		
8	Weekly Trash cleaning at Satruna, Forebay and Head Works Sumbal and Wangath.	Weekly	Weekly		
9	Rewinding of 10 HP Pump for drinking water purpose in PDC colony.	01 job	01 job		
10	Supply of Roller Guide Bush (15 No.) as per sample.				
	Total amount in figures = Rs. Total Amount in words = Rs.				

Note: Any missing or left out work/job found necessary for execution of Routine Maintenance of machine is deemed to be incorporated in the scope of work.

-Sd-
Executive Engineer
Generation Division
USHP-II kangar

Part B: Annual Maintenance Contract**Annual Maintenance Contract of Electro Mechanical Equipments for Two years**

The scope of work for AMC of USHP-II would be broadly as under:

S.No.	Brief description
01.	Comprehensive Annual Maintenance of Unit-I and III or as required in lean season for first year as per detailed scope.
02.	Comprehensive Annual Maintenance of all the three Units or as required in lean season for second year as per detailed scope.

The detailed scope of work for AMC includes (but not limited to):-

S.No.	Detailed Description	Amount quoted in Rs.
A	ELECTROMECHANICAL COMPONENT (Turbine, MIV, Governor System, Dewatering system and allied equipment.)	
1	Replacement of worn out seals of servomotors of MIV system including re-adjustment of various settings.	
2	Lowering and lifting of draft tube and PRV gates for inspection of underwater parts.	
3	Replacement of Nitrile rubber shaft seal 560mm dia of Turbine shaft	
4	Replacement of damaged shaft sleeve of turbine top cover for arresting of water leakage.	
5	Replacement of damaged nitrile rubber shaft seal of shaft sealing assembly of turbine top cover for arresting of water leakage.	
6	Centrifuging of prime-57 turbine oil (used) in four shifts for 200 lts.	
7	Replacement of governor oil filters (1set) of governing system.	
8	Correction of guide apparatus adjustment of top to bottom clearances of guide vanes.	
9	Inspection of underwater parts of Turbine. Inspection of runner and runner cone for any pitting or other damage, Grinding, welding and polishing if required.	
10	Replacement of feedback mechanism rope including various settings of governing system	
11	Replacement of oil piston ring set of PRV and settings excluding material cost.	
12	Replacement of PRV shaft including various settings of PRV including dismantling, erection, testing and commissioning if damaged.	
13	Check and adjusting TGB bearing clearance, checking labyrinth clearances	
14	Inspection of PRV with necessary cleaning.	

15	Inspection of governor Complete for any malfunctioning.
16	Inspection of governor pressurizing unit including replacement of damaged gaskets, washers, adjustment of oil, piston cylinder spring tension of NRVs and return valves
17	Cleaning of turbine guide bearing coolers including replacement of worn out seals/gaskets, pressure testing and reassembling.
18	Overhauling of high pressure ELGI Air compressor with replacement of piston with rings/crank assembly including dismantling, reassembling and testing which also include the material.
19	Arresting the leakage, if present. Cleaning of E/L panels, contacts, MCBs, Starters etc for the installed motors & replacement, if required. Overhauling & repairs to all installed motors with allied pumps. Repairs in dewatering pipeline and checking the functioning of sluice valves, NRV, etc& replacement of same if required.
20	Rewinding of 100 HP Dewatering motor and over hauling of impellers of 100 HP pump
21	Overhauling of 210 LPM oil pressure pump including Rewinding of 20HP motor
22	Inspection of EOT crane including change of gear oil, bushes, brake shoes, and contactors for keeping EOT
B	Water Cooling System
1	Overhauling of 700 cusec / hr pumps incl. Replacement of damaged parts incl. bearing (02 No).
2	Rewinding of 200 HP Cooling motor (02 No.) complete job
3	Cleaning and Repairing of Duplex Steiner baskets.
4	Replacing of completely damaged Duplex Steiner baskets with new one
5	Cleaning, repairing and overhauling of inlet and outlet valves of cooling system.
6	Arresting of water leakages of cooling pipelines.
7	Reconditioning and repairing of foot valves
C	External Oil Cooling System
1	Dismantling, cleaning of water tubes and necessary repairs to damaged tubes and reinstallation of coolers back.
2	Arresting of oil leakage in the EOC pipe lines.
3	Overhauling and replacement of damaged parts of 60 cusec EOC pumps
4	Overhauling and replacement of damaged parts of 60 H.P. EOC Motors
5	Overhauling of EOC D.C motors pumps
6	Overhauling of EOC D.C. motor.
7	Rewinding of 60 HP EOC motor.
8	Repairing and cleaning of inlet and outlet valves of EOC
9	Repairing and overhauling of oil pipe line NRV's ,etc

10	Cleaning and replacing of oil filters	
11	Filtration of turbine oil	
D	Generator Section	
1	Overhauling and making necessary repairs to H.S. Lubrication pump-motor assembly	
2	Overhauling and making necessary repairs to Jacking pump - motor assembly	
3	Dismantling, through cleaning and re-erection of stator air coolers	
4	Arresting of oil leakages of bearing housings / pipelines	
5	Checking and adjusting of LGB/UGB/Thrust/TGB clearances and housing toppings. Alignment and checking of generator shaft and Turbine shaft and making of corrections there off.	
6	Checking of concentricity of shaft.	
7	Painting and Machining of slip ring	
8	Overhauling and making necessary repairs to H.S. Lubrication pump-motor assembly	
9	Cleaning of surface air coolers externally and internally.	
10	Inspection of the stator foundation bolts with sole plates and upper bracket,	
11	Inspection of fixation points on lower bracket and covers,	
12	Checking of machine base component (sole plates),	
13	Testing of the stator winding and its connections.	
14	Inspection of the upper and lower air guides and all fastenings.	
15	Replacing of stator and frame bolts, nuts if missing, removal of foreign materials, dust & rust, repainting of missing area of paint, Checking the signs of movements or distortion.	
16	Inspection and calibration of RTD's and TSD's for proper functioning. Replacement of non-functional RTD's and TSD's with new one.	
17	Tightening of main star point CT terminals for any looseness. Tightening of main & neutral connections of stator.	
18	Inspection of rotor fasteners & other parts. Inspection of rotor rim and wedging. Inspection of field winding and flexible connections. Inspection of all the connection between poles and current collector. Inspection of the brake liner and its fastening. Inspection and cleaning of the current collector ring and brush system.	
19	Repair the rim key for local fretting, broken or cracked welds. Tightness of pole keys and key retainers. Tightening of connections from rotor to slip rings. Tightening of field cable supports and mounting clamps.	
20	Tightening the earthing of stator body. Measurement of air gap between stator and rotor from the top and bottom against each pole face. Measurement of IR and PI values of stator windings. Inspection and calibration of RTD's for proper functioning.	
21	Checking of field cable electrical connections for security.	

	Measurement of field insulation resistance with low voltage (500volts DC) megger. Cleaning of panel, tightening of all terminations, checking of PCBs, relays, contactors, Fuses for any burn out etc. Checking the functioning of different MCB & their auxiliary contacts for different faults.
22	General inspection of all temperature sensors, Inspection & tightening of all wiring connections at terminal block. Inspection of connection of all grounding connections. General inspection and cleaning of the system.
E	Alignment & Balancing of machine
1	Recording of both pre and post AMC of all bearing clearances and making necessary corrections for proper centering and alignment
2	After successful alignment of machine, continuous trial run of 48 hours to be done and subsequently Dynamic Balancing is to be done before handing over machine
F	250 KVA D.G set / 125 KVA D.G. Set
1	Servicing/maintenance of 02 No. 250 KVA D.G.sets
2	Servicing /maintenance and necessary repairs of 01 No. 125 KVA D.G.sets
G	GENERATOR TRANSFORMER
1	Verification of Oil Level at tank, conservator, bushings and thermometer pockets, verification of venting device, checking of earthing connections, checking of breathing devices(silica gel status),
2	Verification of HV star point neutral grounding C.Ts and secondary connection, Checking for IR and PI.
3	Taking of oil samples for laboratory analysis so as to check oil for appearance, dielectric strength, water content, neutralization value (total acidity), sediment and sludge dielectric dissipation factor, specific resistance, interfacial tension, flash point, viscosity and DGA etc.
4	Checking and cleaning of dust and grease from X-mer body, accessible bushing and accessories
5	Checking of all nuts & bolts. Replace all gaskets with the new ones, if required.
6	Cleaning of transformer coolers and water pipes of the coolers. Checking of oil and cooling water flow indicators and its alarm/trip setting.
7	Cleaning/tightening of conductor clamps of LV & neutral bushing. Taking of IR between LV&HV winding and between LV, and ground and HV and ground& neutral earthing.
8	Checking of electric connection fuses links.
9	Checking and repairing if any leaks on the transformer, cooling pipes and heat exchanger.

10	Checking of oil circulating pumps for proper operation and their cleaning. Replacement of damaged bearings and sleeve.
11	Checking of Buchholz relay for mechanical inspection and its operation.
12	Inspection and calibration of oil & winding temperature indicator along with replacement of TSDs and RTDs if faulty.
13	General inspection and cleaning of the system.
14	Topping up of power transformer as and when required and filtration of all the Power transformer banks.
H	Excitation System
1	Remove dust and dirt from cabinets and electrical components. Inspect excitation transformer thoroughly. Repair foundation bolts of exciter fan if found loose or broken.
2	Check cooling fan motor lubrication. Tight all connections in field breaker cubicles.
3	Inspect field circuit breaker contacts, arc chutes etc. Inspect wiring for wear and burns or melted wire insulation. Inspect contacts on open contactors and relays. Discoloration and rough contact surfaces are normal
4	Check operation of all micro processor based relays, contactors, and switchgear, inspect contacts, and check operation of all firing alarm and protection circuits. Cleaning of Thyristors bridges.
5	Replace inlet air filters and if found dirty clean it. Tightness of all connections and bolted joints.
6	Tightening cables connecting slip rings and field winding.
7	General inspection and cleaning of the system and replacement of excitation filters.
8	Repairs/ Replacements of defective parts, if required.
H	Irrigation Motor-Pump
1	Cleaning and overhauling of Duplex strainers and foot valves of 60 HP irrigation pump-motor assemblies.
2	Overhauling of 60 cusec / hr pumps incl. Replacement of damaged parts (02 No). of Irrigation motor-pump assembly
3	Replacement of bearing of 60 HP irrigation motor and pump (02 No.)
5	Cleaning, repairing and overhauling of inlet and outlet valves of irrigation pipe system.
6	Arresting of water leakages of irrigation pipelines.
7	Reconditioning and repairing of foot valve of irrigation pipeline
I	Star Delta Starter Panels
1	General cleaning of all the star delta starter panels of the power house and its contacts, connections and external casing with CRC.
2	Carrying out general maintenance of all the star delta starter panels of the power house.
3	Replacement of wear out parts of all the star delta starter panels of

	the power house.	
K	630 / 400 KVA Servo Stabilizer	
1	Carrying out dehydration of all 630/400 KVA servo stabilizers with necessary topping.	
2	Greasing all rotating parts of gear system along with testing and tightening of cables.	
3	Carrying out general inspection of control system of servo with necessary repairs.	
L	Bus Duct/ Surge Arrestor	
	Cleaning and removal of dirt in bust duct and on surge arrestor along with inspection and tightening of connections in surge counter with necessary emphasis on its earthing	
	132KV Switchyard & 3.15 MVA receiving station	
1	Providing and refilling of SF6 gas in 132Kv switchgears, inspection, setting right any loose blades among any isolator connections, tightening or replacement of different clamps, ascertaining healthiness of breakers, lubricating any rotating parts cleaning and de-weeding of yards, Applying Vaseline grease on all isolating, fixed and moving contacts	
M	AVR	
1	General inspection of AVR controlling system by way of lifting of core cleaning of dimmers from carbon deposits and replacement of its carbon brushes and holders	
2	Topping with filtered oil and replacement of damaged gear system if required	
	Penstock	
1	Replacement of worn out stud bolts.	
N	Miscellaneous	
1	Cleaning/dusting of panels inside control room. Maintaining proper cleanliness in and around power house with housekeeping.	
2	Carrying out necessary renovation and painting to sub divisional offices , Junior engineers living room and staff rooms in the top floor of power house	
3	Renovation and painting of Shift Engineers room, general wash room and staff kitchen once in two years.	

Note: Any missing or left out work/job found necessary for execution of Annual Maintenance of machine is deemed to be incorporated in the scope of work.

-Sd-
Executive Engineer
Generation Division
USHP-II kangan

Part -C: Supply of Material

The contractor is required to provide the following materials for Routine Maintenance and Annual Maintenance over the period of **Two years**.

Sr.No.	Consumables/Spares	Quantity	Unit	Rate quoted Rs.	Amount quoted in Rs.	Or Lump sum amount
1	White cotton cloth	150	Meter			
2	Old Sarees	500	Kg			
3	Cork sheet 6mm	8	Sheet 6'x3'			
4	Cork sheet 3mm	8	Sheet 6'x3'			
5	Cork sheet 1.5 mm	8	sheet 6'x3'			
6	Champion Gasket 4mm	40	Kg			
7	Champion gasket 2mm	40	Kg			
8	Champion gasket 1mm	40	Kg			
9	Aluminum Lugs 25,35,50,75,95,120,150 sq mm	30	No. each			
10	PVC tape	150	No.			
11	BGM Tape	100	No.			
12	Teflon tape	100	No.			
13	Hydrometer	4	No.			
14	132 KV SF6 switchgear Closing coil with housing	20	No.			
15	132 KV SF6 switchgear Tripping coils with housing	20	No.			
16	SF6 Gas for 132 KV SF6 Circuit breaker	30	Kg			
17	SF6 filling Kit.	01	No.			
18	PVC wire 1.0 sq mm, 90mtr	8	Roll			
19	PVC wire 1.5 sq mm, 90mtr	20	Roll			
20	PVC wire 2.5 sq mm, 90mtr	12	Roll			
21	PVC wire 4.0 sq mm, 90mtr	8	Roll			
22	PVC wire 6.0 sq mm, 90mtr	4	Roll			
23	LED 5 watt Bulb	20	No.			

24	LED 10 watt Bulb	20	No.		
25	LED 15 watt Bulb	20	No.		
26	LED 25 watt Bulb	20	No.		
27	LED 50 watt Bulb	20	No.		
28	Pendant Holder (Heavy)	20	No.		
29	4' LED Tube Rod (complete set)	6	No.		
30	HRC Fuses 2A,6A,10A,16A,20A,32A,65A,80A,100A	10	No. each		
31	Rubber bush bolts for 60 HP E)C motor (as per sample)	10	No.		
32	Hacksaw Blade 12"	20	No.		
33	Welding electrode 3.5 mm Sundeeep	20	pkt.		
34	Welding electrode 4.0 mm Sundeeep	20	pkt.		
35	Holetight 500 gm	8	No.		
36	LED Lamp 10 watt	80	No.		
37	LPG Gas	20	cylinder		
38	White lead	8	Kg		
39	Oxygen gas	10	cylinder		
40	Neoprene Rubber Gasket 1.5,2,3,4,5,6mm	40	Kg each		
41	Emery Paper Smooth & Rough	200	Sheet (10"x12")		
42	Cutting Blades 4", 14"	50	No. each		
43	Grinder Wheel 4", 6"	40	No. each		
44	Carbon Brushes	250	No.		
45	Carbon Brushes Holder	80	No.		
46	PP Rope	100	Kg		
47	Tripping Coil/ closing coil for 33KV VCB with plungers	10	No. each		
48	Turbine Oil Servo 57	20	barrel (210 ltr)		
49	Grease MP	250	Kg		
50	MT Oil	200	Litre		
51	Brake Oil	50	Litre		
52	M Oil	500	Litre		

53	Antifreeze Coolant	200	Litre		
54	Diesel for DG sets	500	Litre		
55	Power transformer Oil for Topping	1050	Litre		
56	CRC 2-26 (400ml Bottle)	150	Bottle		
57	11 KV termination heat shrink Cable kit indoor / outdoor 120 /185 sq mm	10	No.		
58	Coupling rubber bush bolts for cooling motors (as per sample)	100	No.		
59	Coupling for 200 HP cooling motor with 700 cusec pump assembly	4	No.		
60	Cardium Compound	2	barrel		
61	Rubber bush square type for 60 HP EOC motor (as per sample)	100	No.		
62	Mechanical oil seal and Oil seal for EOC motor Motor –pump assembly (as per sample)	12	No.		
63	Nuts & Bolt with washer (off sizes)	100	No. each		
64	Asbestos cloth	40	kg		
65	Varnish	60	Litre		
66	Thinner	100	Litre		
67	Spirit	100	Litre		
68	Rustolene	24	Litre		
69	Socket 6A	40	No.		
70	Switch 6A	40	No.		
71	Socket 16A	40	No.		
72	Switches 16A	40	No.		
73	Break Coils for head works	20	No.		
74	Red Oxide Paint	20	Litre		
75	Heater Rods	20	boxes		
76	Cup seal for servomotors	40	No.		
77	Asbestos powder	40	Kg		
78	Araldite	20	Kg		
79	Mica Tape	20	roll		
80	TeryleneTape	20	roll		
81	Glass Tape	20	roll		
82	Cotton Tape	20	roll		

83	Petroleum jelly	50	Kg		
84	Ms Stud with Nut 10mm	40	Kg		
85	Ms Stud with Nut 8mm	40	Kg		
86	Brazing Rod (Cu)	4	Kg		
87	Disc Insulators 11 KV	20	Sets.		
88	Push Type starter switches (63A) reputed make	05	No.		
89	MCCBs 63 A /16 A/ 20 A	8	No. each		
90	Reverse/ Forward switches for 5 HP motors	05	No.		
91	Stainless steel nuts & Bolts (allen key type) 12mm dia X 60mm long 12mm dia X 65mm long 12mm dia X 80 mm long	40	No. each		
92	Steel wire rope dia 22mm and 18mm, right hand wound galvanized fibre core strength 200Kg/sq.m USHA Martin Make	120	mtr each		
93	V- groove sheev pulleys 506mm dia & 460mm	6	No. each		
94	Woolen felt	100	mtr		
95	100 Amps MCCB	10	No.		
96	11 KV Station Type L.A.	6	sets		
97	M-Oil for DG set	200	ltr		
98	24 Volt Battery Charger for 250 KVA DG set	1	No.		
99	Oil filters for DG set	24	No.		
100	Red gel bactrol paint	10	ltr		
101	11 KV Drop out Sets	5	Set		
102	3.15 MVA transformers H.T./ L.T. bushes with rods	12	No.		
103	11 KV Link sets 400 Amps	5	Set		
104	S.T. poles 9mt	6	No.		
105	0.5 /0.1 ACSR conductor	500	mtr		
106	11 Pin insulators with pins	25	No.		
107	RTD's	30	No.		
108	TSD's	20	No.		

109	Glandoori dry type 8mm/10 mm	40	kg		
110	Glandoori wet type 8mm / 10 mm	40	kg		
111	Impeller for 4.6hp circulation motors	4	No.		
112	Shaft seal set	8	set		
113	Bearing of 100 hp dewatering motors(29324E,6311,6316,73228,7316,6316)	6	No.		
114	Cup seal of PRV	6	set		
115	PRV oil piston rings	6	set		
116	H.P Air controlling valves of pressurizing units(2 inch)	4	no		
117	Compressor piston/rings (60mm.100mm)	4	no		
118	Compressor fan belt	2	no		
119	Governor oil filters	6	no		
120	3TF56,3TF54,3TF50,3TF45Contactors(coil voltage 110 V A.C) Make Siemens	12	no.		
121	T clamp,P.Gclamp,pad clamp ,bush clamp,C.Tclamp,P.T clamp I-Clamp	20	no.		
122	P.T 415V/110 for starter panels	10	no.		
123	12 Volts Batteries for 250 KVA 120 KVA DG set	2	no.		
124	EOC coupling (as per sample)	3	no.		
125	Bearing for 200 HP cooling motor vizaviz 6319 C3 , NU 319 C3	5	No.each		
126	Bearing for 700 Cusec cooling pump viz a viz 6312 C3	10	No.		
127	Bearing for 60 HP EOC motor viz a viz N-215, 6215 , 6313-ZZ , 6213-ZZ	20 / 5 each	No.		
128	Bearing for 60 cusec EOC Pump viz a viz 3308A, 6409 ,	20 / 10 each	No		
129	Stainer Baskets for Duplex Stainer	8	No.		
130	EOC inlet / outlet Valves	4	no.		
131	Filter packs for EOC pipe line	300	no.		
132	Bearing Gland cover for EOC / Cooling motors (as per sample)	6	no.		
133	Main Gate valves 12 " of Cooling pipe lines	2	No.		
134	Main Gate valves 10 " of Cooling pipe lines	2	No.		
135	Balancing stars of 100 HP dewatering pumps	5	No.		
136	Rubber Bushes of100 HP dewatering pumps	20	No.		

137	S.S Shaft for 100 HP dewatering pumps(20 ft)	2	No.		
138	Bearings for 100 HP dewatering pumps(20 ft)	10	No.		
139	Impeller for 100 HP dewatering pumps(20 ft)	02	No.		
140	Rubber Bushes of 40 HP dewatering pumps	10No			
141	Balancing stars of 40 HP dewatering pumps	5No			
142	Bearings of 40 HP dewatering pumps	04 No			
143	S.S Shaft for 40 HP dewatering pumps(20 ft)	2 No			
144	Bearings for compressor units	4No			
145	Couplings for oil leakage motors	04 No			
146	Coupling and coupling bolts of oil leakage motors	04 No/12 No			
147	NRV for 210 LPM pressurizing units	03No			
148	210 LPM oil controlling valves of pressurizing sumps	02 no			
149	High pressure break valve 0.5 inch	06			
149	Stationary items (paper reams, file covers, pens, pencils, Staplers etc.)	as required	as required		
150	Printing Cartridge complete with color for Hp laser jet Cp 1025	4	No.		
Total amount in word =Rs. Total amount in figures =Rs.					

Note: Any material not listed above but required for successful completion of the Routine Maintenance and Annual maintenance is deemed to be included in the spares and consumables list.

List of T&P to be arranged by the firm for carrying out the RMC/AMC at Power House Kangan work. (will remain property of firm after completion of contract)

S.No.	Item Description	Quantity	Remarks
1	Welding machine 60A & 40A	2 no. each	
2	3 phase shaft grinder	2 no.	
3	Magnetic base drill machine of size	1 no.	
4	Bend cutter	1 no.	

6	Hand Drill machine	1 no.	
7	Hydraulic jack 50 ton	2 no.	
8	Mechanical jack	4 no.	
9	Vernier caliper 6"	2 no.	
10	Depth gauge Digital	2 no.	
11	Outside micrometer 0-30mm	2 no.	
12	Inside micrometer 1000-3000mm	2 no.	
13	Dial gauge with stand	6 no.	
14	Grinder 4", 5", 7"	2 no. each	
15	Sling of Sizes	2 no.	
16	Polyester/Nylon Sling 1 ton- 2 ton of different lengths	8 no. each	
17	Eye bolts of different sizes	03 no. each	
18	D- Shackles of different sizes.	8 no. each	
21	Ring and I spanner of different sizes.	8 no. each	
22	Allen key of different sizes.	8 no. each	
23	Cutting wheel, Grinding wheel, Buffering Wheel, -----	8 no. each	
24	Threaded rod and copper rod	as per requirement	
25	Slugging wrench	8 no.	
26	Chain Pulley ½ ton	8 no.	
27	Torque wrench 1500 N-m	8 no.	
28	Torque wrench 750 N-m	8 no.	
29	Acetone -----		
30	Hexagonal socket set with ratchet	4 sets	

Note: Any tool or equipment used to carry out the Routine and Annual Maintenance successfully other than mentioned above has to be arranged by the contractor without asking for any extra charges from JKPDC.

-Sd-
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Generation Division
USHP-II kangar

Grand total for Part A, Part B and Part C of complete contract.

S.No.	Particulars	Total Amount quoted in Rs.	Remarks (if any)
01	<u>Part A</u> Routine Maintenance contract (as per BOQ) for two years		
02	<u>Part B</u> Annual Maintenance (as per BOQ) for two years		
03	<u>Part C</u> Supply of Material (as per BOQ)		
<p>Grand Total amount in word =Rs.</p> <p>Grand Total amount in figures =Rs.</p>			

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