



(H.P. GOVT. ENERGY DEVELOPMENT AGENCY)
SHIMLA-171009

Tender Notice

Sealed tenders are hereby invited by the undersigned on behalf of HIMURJA for Operation and Maintenance of (2x100KW) Kothi Mini Hydro Electric Project near Manali in distt Kullu of Himachal Pradesh from the interested Firms, Company, Corporation, Partnership Firm, Co-operative Society and Independent Power Producers having experience in the field of Operation & Maintenance, repair/supply of E & M equipment of hydro projects. The operation and maintenance shall be carried out as per terms and conditions of Implementation Agreement and H.P. Hydro Power Policy 2006 and its subsequent amendments from time to time.

The detailed tender documents can be purchased from the office of under signed on payment of Rs 5,000/- only (five thousand, non refundable) from 20-7-2019 to 28-7-2019 (10.00AM to 5.00PM) on any working day through demand draft drawn in favour of Director, Himurja payable at Shimla or can be downloaded from the web site of Himurja i.e himurja.hp.gov.in. The tenders duly sealed shall be received in the office of the undersigned up to 2.00 PM on 29-7-2019 and shall be opened on the same day at 3.00 PM in the presence of the tenderers or their authorized representative who may like to be present.

Terms and conditions:-

1. All tenders must be accompanied by EMD (refundable) amounting to Rs 100,000/- (One lakh only) in shape of demand draft drawn in favour of Director Himurja payable at Shimla.
2. The undersigned reserves the right to reject any or all tenders without assigning any reasons whatsoever.
3. If the date on which the tenders are to be received is declared public holiday the tenders will be received on the next working day at same time.
4. Any amendment to the tender after opening made by the tenderers accordingly to his own will is liable to be ignored altogether and such bids will be debarred from tendering.
5. The tenderers should have registration, service tax, PAN, GST No.etc. as required under the rules before issuance of tender documents.
6. Telegraphic /conditional tenders shall not be accepted. Tenders received after due date and time will be rejected out rightly.

Addl. S.E. (C)
Himurja, 8 A, Urja Bhawan,
SDA Complex, Kasumpti,
Shimla-171009.

GENERAL INFORMATION AND INSTRUCTION TO TENDERS

1. Introduction

Himurja has installed Kothi Mini Hydro Electric Project near Manali in Distt Kullu of Himachal Pradesh during 2000-2001. The salient features of the project described in detail in this tender document. Power Purchase Agreements have been executed by Himurja with HPSEBL for the buying the generated power.

Sr. No.	Name of Project	Capacity	Location	Date of commissioning
1	Kothi	(2x100 KW)	Kullu	29-4-2001

2. Purpose of Tender

HIMURJA requires uninterrupted generation and further evacuation of power to H.P. State Electricity Board (HPSEB) grid/consumers from this Power Project. The Contractor/Contractor will operate and maintain the Project and will co-ordinate with concerned authorities for following;-

- Operation and Maintenance of the power project.
- Minimizing plant shut down time and optimizing generation.
- Quality power supply.
- Adherence to all relevant statutory rules and regulation, instructions and safety measures.
- Adherence to approved maintenance schedules and operation procedures.
- Maintenance and repair of the power plant to keep the same in excellent working condition at all times.

The contractor will ensure that these requirements are met by timely and speedy operation and maintenance round the clock. The energy generation at the plant is to be maximized by minimum plant shut down time, operating at higher efficiency of equipment optimal utilization of water resources and timely attention to repair and maintenance for obtaining longer life of the equipment and project components, based on monthly targeted energy output and plant running hours.

3. Brief Scope of Work

The Contractor will act on behalf of HIMURJA and achieve the objectives as specified in Para-2 above. They will co-ordinate liaise, maintain, operate and provide the uninterrupted supply to nearby HPSEB grid as per PPA with HPSEB and to the consumers in case of operation in isolation. They will observe the environmental, social, safety, labour laws and other regulations in force, obtain all necessary authorizations and adhere to laws of the Himachal Pradesh and Govt. of India.

The Contractor is to carry out the following:

- Round the clock Operations and Maintenance of the project including E & M equipment and all Civil Components and switchyard of the project and to supply electricity to HPSEBL.
- Recording of Operation and Maintenance data on log sheets daily basis, and report it on monthly basis to HIMURJA.
- Observation and maintaining of telemetry control and perform manual observations for power generation and water discharge.
- Contractor will ensure co-ordination, liaison with all concerned authorities on availability and water levels upstream and downstream of the plant on daily basis.

- v) The Contractor on behalf of HIMURJA will take all safety measures and other regulations and ensure safe custody of the project and equipment within the laws of the State and Govt. of India.
- vi) The Contract includes any spare parts and consumables required for smooth functioning of the plant. The maintenance will be carried out as per maintenance schedule fixed by HIMURJA.
- vii) Contracting Agency shall have to submit the undertaking regarding understanding of work. Contractor shall have to engage an experienced and qualified Engineer who is well conversant with operation of the project and to rectify the defects during the operation period.
- viii) Contracting Agency shall have to explore the possibility to adjust the staff already on the project if possible.
- ix) Contractor shall have to maintain all components of the project regularly especially during the shut down period of the project. All the components of the project shall be kept clean i.e free from accumulating the silt etc. During this period sufficient staff required to be deployed for the upkeep of these project round the clock.

The O & M of the MHEP will be on lease basis for a period of three years, which can be reviewed on yearly basis from the date of award on the basis of performance of the Contractor. However, after issue of Letter of Intent, the Contractor will take maximum 15 days to mobilize their manpower for training and posting them on required positions.

GENERAL CONDITIONS OF OPERATION & MAINTENANCE

- a) The plant will be operated for 24 hours and an interrupted supply will be ensured.
- b) Daily log books will be maintained in respect of functioning of plant. The detail of staff deployed on the project for O & M will be supplied to Himurja. Any change in staff position will be intimated immediately.
- c) In the event of damage caused due to natural calamities, the Contractor/ Contractor shall carry out the necessary repairs after the approval of Himurja and their claim shall be restricted to the compensation received from the Insurance Company with whom the insurance has been done.
- d) The MHEP shall be made operational within the time period specified by Engineer-in charge, in case of any major fault to the E & M equipment which could not be repaired at site. Respective Project Officer HIMURJA, will be the Engineer-in-charge.
- e) All type of repairs and all the complaints in the consumer protection forums about the supply of power will be the liability of Contracting Agency.
- f) In case of any major defect/damage is caused to the project due to negligence or lack of general repair and maintenance, it will be the full responsibility of the Contractor to make good the loss.
- g) The Contractor will have to adhere the provision of various Electricity Acts/ India Electricity Rules, which are applicable and relevant for this Contract and any violation will be the responsibility of the of Contracting Agency. The Contractor will have to follow various safety measures prescribed for the generation and distribution of the electricity as per latest rules /acts/amendments/instructions issued by the different for the purpose.

4. BID PRICE.

The bidder shall quote per unit rate for the operation and maintenance of this project. The Project will be operated & maintained by the Contractor for which per unit rate of energy generated will be quoted in the price bid. The quoted prices shall be FIRM in all respects and shall not vary during execution of the contract at least for three years. The quoted prices shall include all

obligations of contractor i.e payments to staff, other facilities as per rules, duties & taxes, handling, storage, transit, insurance, EFP, GST etc.

The payment of bill on account of net energy exported at the interconnection point of the respective plant will be released to Contractor/ Contracting Agency by HIMURJA on monthly basis on the approved rates. Energy generated in particular plant will be known as the net energy exported after deducting import energy from export energy at the interconnection point to HPSEB grid.

In case plant is not functional or there is less generation due to fault on the part of Contractor/Contracting Agency except in Force Majeure conditions, repairs, transmission failure, or Scheduled Outages, Minimum charges will become due to Himurja from the Contractor/Contracting Agency. These minimum charges will be recovered from the bills/securities/any other due payment of the Contracting Agency. @ Rs10,000 per month.

In case the plant is not operational due to force majeure condition, the per month payment shall be made to the contractor for watch and ward charges of the project which is maximum of Rs 20,000/- per month. Minimum charges will not be recovered in case of Force Majeure conditions or grid is not available, major repairs at plant, transmission lines of HPSEBL got damaged and discharge of the stream recedes abnormally. However such events have to be proved by the contractor with proper proof.

5. SITE VISIT.

The bidders at their own cost, in their own interest and with prior permission of HIMURJA, may inspect and examine the project site and its surroundings before submission of the bid. The site inspection is not restricted to the following which may influence or affect the O & M work and cost thereof.

- a) A general reconnaissance of the site including head race channel, tail race channel, other civil structures such as water intake, power house, bypass channel, Village Road bridges, switch yard area etc. and all plants and equipment in the power house and switchyard, hydro mechanical gates etc.
- b) Site conditions including access to the site and other means of transport/communications for use by them in connection with the lease agreement.
- c) Any other information pertaining to project and required for carrying out the work under the Lease Agreement including information as to the risks, contingencies and other circumstances which may influence or affect the maintenance and running of the project or the cost thereof.
- d) Manufactures O&M manuals in respect of plants and equipment, Civil, electrical, mechanical and hydro mechanical drawings of plant site is available at project sites and the same can be seen by the bidder on request.

6 Clarifications

Immediately upon receipt of the tender documents the bidder may obtain the clarifications about the project and bid document from HIMURJA, Shimla.

7. Eligibility

The bidder should have experience in the field of Operation & Maintenance of E & M equipment or supply /repair of E & M equipment of hydro projects.

8. SUBMISSION OF TENDER & Documents to form part of tender

The tender documents in prescribed form, duly completed and signed by authorized signatory shall be submitted to the Office of Addl. S.E. (Civil) Himurja Shimla-9

i) Previous experience of similar work, technical, managerial and financial capabilities of the bidder shall be the main criteria of the bid. The bidder shall submit the following information

- a) Name of Company:
- b) Address of registered office.
- c) Address of correspondence.
- d) Name and designation of the authorized signatory submitting the offer and signing the lease Agreement on award.
- e) Nature and Constitution of company
- f) EPF No.
- g) Certified financial statement of previous three years, showing turnover, profit loss of the bidder/balance sheet.
- h) Detail of litigation, disputes and claims pending/lost/won of the company during last five years.
- i) Detail of Employees currently on company strength.
- j) Detail of similar works executed.
- k) Detail of manpower proposed.

9. Earnest Money

Earnest money deposit (EMD) of Rs 1,00,000/- (Rs one lakh) only must accompany the tender and should be placed in the sealed Envelope. This deposit shall be in the shape of a demand draft drawn on any Bank at Shimla in favour of Director, HIMURJA, Shimla-171009. No. exemption whatsoever of any kind will be allowed to any bidder in respect of earnest money deposit. Tender not accompanied by earnest money deposit shall be rejected. If during the tender validity period, the tender withdraws his tender, the Earnest Money deposit shall be for forfeited. The Earnest Money deposit will be returned to the unsuccessful tenderer.

10 Tender Validity Period

The tender shall be valid for a period of 90 days after the date of opening of bid.

11 Instructions for Filling Price Schedules

Conditional offers shall not be considered accepted. The price schedules shall be submitted strictly in the same formats as prescribed in this tender document. The prices shall be written both in words and in figures. Corrections, if any, shall be made by crossing out, Initialing, dating and rewriting. In case of conflict between the figures and words in the prices, the words shall prevail.

12 Revoke/Withdrawal of Tender within Validity Period

The tenderers shall not be entitled, during the Period of validity of their offers, without the written consent of the HIMURJA to revoke or withdraw their tender or vary in any respect the tender given or any term thereof. In case of a tenderer-revoking or withdrawing his tender or varying any terms in regard thereof without the consent of the HIMURJA in writing, the tenderer shall forfeit his earnest money and his bid will not be evaluated.

13. GENERAL AND COMMERCIAL CONDITIONS OF CONTRACT

The terms have the following meanings unless the context clearly indicates otherwise.

“Project/Power Plant(s) Plant (s) means Hydel Project in Himachal Pradesh including all the land, civil structures, electrical, mechanical and hydro mechanical plants and equipment, dedicated telephone lines, telephone and wireless systems, control weir and gates site, components, appurtenant communications, access road or the village Road(VR) the tail race, Kuchha/Pucca Roads, Footpaths, carriageways etc. in the power plant area. It also includes the mobile and immobile equipment, spares, consumables, tools and tackles and services provided for successful operation of the project.

HPSEB or Board means the Himachal Pradesh State Electricity Board or its subordinate offices.

Contractor means Contracting Agency or firm who fulfils the requirement of various Electricity Acts/rules to operate and maintain hydro generating station & associated sub stations and is qualified to do business in the State of Himachal Pradesh and its permitted successors and assigns which has been awarded the work for running of the power plant.

LESSOR means H.P. Energy Dev Agency (HIMURJA) Shimla and its permitted successors and assigns.

“Power house/power station/” means the structure housing the generating equipment with appurtenant works.

“Property” means all the MHEPs located at different parts of state pertaining to HIMURJA.

“Prudent Utility Practices” mean those practices, methods techniques and standards as adopted from time to time, that are generally accepted for use in electric utility industries taking into account conditions in India and commonly used in prudent electric utility engineering and operations to design, engineer, construct, test, operate and maintain equipment lawfully, safely, efficiently and economically as applicable to power stations of the size, service and type of the project, and that generally conform to manufacturer’s operation & maintenance guidelines.

“Maintenance outage means an interruption or reduction of the generating capability of the Project for purpose of performing work on specific components which work should not in the opinion of the Contractor and the LESSOR be postponed until the next Scheduled Outage and shall be scheduled and allowed by the Board/HIMURJA.

“Scheduled Outage” means a planned interruption of the generating capacity of the project that is scheduled as per the Agreement and is for inspection , routine and preventive maintenance, corrective maintenance, repairs, replacement or improvement and is not a Maintenance or Forced Outage.

“ Forced Outage’ means an interruption of the generating capacity of the Project that is not the result of (i) a request by the LESSOR or by the Board in Accordance with this Agreement (ii) a scheduled outage or a Maintenance Outage (iii) an event or occurrence of Force Majeure or (iv) a condition caused solely by the Board/HIMURJA or by the grid system.

‘ Reserved Outage” means shutdown of a generating unit on instruction of LESSOR or HPSEB or any other statutory authority for reasons not attributable to the .

“Interconnection Point” means the point at which interconnection is made between HIMURJA (LESSOR) generation facility and the grid system of HPSEB for each project.

“PPA” means power purchase agreement signed by HIMURJA with HPSEB for each project.

14 Maintenance of Civil Works.

The Civil works of plant and appurtenances of the plant have been executed to standard quality. It is not expected that they will require any special treatment/attention for repairs. These works, however, will require to be maintained by the Contractor in good condition by regular inspection, maintenance dusting, and washing cleaning up and painting and polishing. Practices, followed by H.P. Irrigation Department/H.P. PWD for government structures /buildings will be applicable. Painting and Polishing will be done annually during the lease Agreement period with prior approval of the HIMURJA. All steel members will be required to be painted based on standard practice to the satisfaction of LESSOR. Potholes, damages to concrete if any, will be repaired by contractor at their own cost. Technical specifications to be followed as per HIMURJA/H.P.P.W.D. contract pattern. Contractor shall have to maintain the project components in the same operating condition as exists on the date of taking over. The landscaping, lawns, gardens and greenery in the project area shall be provided by the LESSOR and the same shall be developed and properly maintained in a regular manner at their own expense by the contractor to improve the environment.

The Contractor shall check the gates of bye pass channel regularly for electrical and mechanical failures to ensure safe operation of the gates during any emergency. The Contractor shall also check the diversion structure, channel, desilting tank and forebay regularly for any kind of fault such as cracks leakage etc. and same shall be attended to immediately.

Within one week of issue of letter of intent, the Contractor will prepare schedule of routine, preventive and capital (special) maintenance of all civil structures including desilting and submit the same to LESSOR for approval. The approved schedule will form part of the Agreement. Following Civil works of the project are required to be taken due care.

- a) The silt flushing pipes should be operational specially during April to September for proper desilting in intake, Desilting tank, Forebay tank, so that silt free water flows to Power House
- b) All the Civil components should be free from the hindrances such as minor slides bushes, to avoid any debris accumulation. so that the components can be inspected/ monitored regularly.
- c) Repair work on Civil components i.e single repair in a particular components of the project i.e. Diversion weir, Intake Tank, Desilting tank & bye pass arrangement Forebay Tank Water Conductor System, Penstock, Power house building up to an account of Rs., 10,000/- only on each component during the year will be the responsibility of the Contracting Agency subject to approval of HIMURJA. If the repair, work is more than this amount on any component then the matter will be reported to HQ for sanction & approval of amount along with the detail of work involved with financial implication duly signed by concerned Project officer of Himurja.
- d) Provision for the painting of the penstock, railing-spillway pipes where exposed to the weather & Power House structures be kept in mind being all the project are located in tribal and snow bound areas.

- e) Information pertaining to the land settlement, Major cracks, structures failure indications if observed by the Contracting Agency the same may be intimated immediately. If any change is caused due to negligence on the part of Contracting Agency it shall be his responsibility.
- f) Monthly status report of the Civil components which is to be signed by P.O. & Contracting Agency to be submitted to H.Q. to ensure smooth and proper running of the Power House.

15. Operation & Maintenance of Project

Operation of Project.

Round the clock operation of plant and equipments shall be carried out by the Contractor in accordance with manufacturer's instructions, relevant safety codes India Electricity Act 2003. LESSORs instructions and prudent utility practices etc. to minimize down time and to optimize the quality generation from the plants.

A continuous monitoring of instrumented data will ensure the quality of the electricity delivered by the "MHEP Project". The KWh (Kilowatt-hours, represents the quantum of energy generated) will be recorded by instrumented panels and also in the log sheets manually. The total quantum of energy from 0.00 hrs/of 1st April of any year to 24.00 hrs of 31 March of the following year will from the basis of aggregated energy outputs in the annual cycle of the unit operation in the plant. For an incomplete year the total quantum of energy from the time and date on which a particular power plant is handed over to the Contractor up to the following 24.00 hrs of 31 March or from 00.00 hrs for 1st April to the following time and data on which the power plant is handed over back to the LESSOR, will from the basis of aggregated energy output. The energy from both the units in the plant will represent the aggregated energy output of plant. The monthly output will be reckoned in the same manner based on English calendar months.

Besides the above, the Contractor shall ensure continuous monitoring and recording on hourly basis of all important parameters as instructed by the LESSOR from time to time such as, readings of KW,KVA,KVAR,KWh , voltage current , power factor frequency meters of each generating unit turbine runner blade opening, pressures & temperatures of equipments, readings of export and import energy meters installed at interconnection point, etc. on the log sheets supplied by the LESSOR (HIMURJA).

The Contractor shall maintain a proper log book of power plants for recording regarding various instruments/gauges etc and for recording all operations as and when they occur including scheduled outages, maintenance outages, forced outages, tripping and temporary interruptions in delivery of energy and reasons thereof. The Contractor shall provide all required stationary, etc. at their own cost other than log sheets HIMURJA shall not be held responsible by the Contractor for any failure of HPSEB to meet the requirements set forth in next paragraphs, and due to any fluctuations or failure resulting from HPSEB grid. If the level of fluctuations of electricity supply in the grid exceeds the limits, for an excessively long period, HIMURJA shall study the issue to evolve suitable solution jointly with HPSEB. However, the safety of the generating plant and equipment shall be the responsibility of Contracting Agency.

The manufacturer's operation and maintenance manuals of major plant and equipment are available in HIMURJA office/ project sites. If desired by the bidders these can be seen before submission of the bid. In any case the successful bidder shall be provided one set of the available documents immediately after issue of letter of intent.

16 Maintenance of Project

Round the clock maintenance (routine, preventive, breakdown and capital maintenance of all plants and equipments including hydro –mechanical gates, PLC, SCADA with dedicated telephone lines wireless sets including disposal of trash shall be carried out by the Contractor in accordance with manufacturer's instructions, manufacturers procedures, relevant safety code, India Electricity Act, Electricity Supply Act, HIMURJA instructions, prudent utility practices etc. This is to be based on maintenance schedule prescribed by the manufacturer.

a. Routine, Preventive, Breakdown & Operative Maintenance.

Routine and preventive maintenance shall include such checks and maintenance activities round the clock on hourly, shift wise, daily, weekly, fortnightly, monthly, quarterly, half yearly, and yearly basis which are required to be carried out on all the components of the power plant to minimize breakdowns and to ensure smooth and trouble free running of the power plant. The Contractor shall be responsible to carry out routine and preventive maintenance on each and every component of the power plant and they shall provide all labour, material consumables etc. for routine and preventive maintenance at their own cost.

Breakdown maintenance shall mean the maintenance activity including repairs and replacement on any component or equipment of the power plant which is not covered by routine and preventive maintenance and which is required to be carried out as a result of sudden failure/ breakdown of that particular component of the power plant for breakdown maintenance at their own cost irrespective of the reasons of the breakdown /failure.

The Contractor shall also carry out operative and routine maintenance during the first twelve months of operation and subsequently during lease period. the operative maintenance shall include the petty/minor maintenance of plants, such as tightening of nuts bolts and wiring, replacement of fuses, greasing, oiling, replacement of filters, fusing , cleaning , plugging of leakage, instruments setting etc. for smooth and efficient operation of the plants.

b. Capital Maintenance of Power Plant

Capital maintenance shall mean the major overhaul of any component or equipment of the power plant which is not covered by routine, preventive and breakdown maintenance which may become necessary on account of excessive wear & tear, erosion of underwater parts, cavitations and ageing . The capital maintenance of power plant and all civil structures shall normally be planned. For this purpose a joint inspection of the HIMURJA and Contractor shall be carried out of all the major components of the power plant requiring capital maintenance. In this regard the decision of the HIMURJA will be final and binding. However, if the condition of any plant and component warrants its capital maintenance at any other time, a joint inspection of the HIMURJA and

Contractor shall be carried out immediately on occurrence of such situation and capital maintenance shall be carried out.

The Contractor at their own expense shall carry out the capital maintenance of the power plant. HIMURJA will be free to take expert opinion of the manufacturers of the plants and equipment during joint inspection in order to ascertain the quantum and nature of the capital maintenance from manufacturers of the plant and before handing over the plant to HIMURJA before expiry of the lease agreement.

However the repair of damages to Power Plant due to floods, earthquakes, civil commotion, riots, terrorist activities, war & natural calamities/unforeseen reasons beyond the control of Contractor shall be to the account of HIMURJA but the claim restricted to receipt from insurance company.

If desired additional issuance cover of the equipment will be taken by the Firm at its own cost to meet the cost of excessive wear & tear. If any damage occurs in the turbine or generator or in any other equipment like burning of generator or any other electrical/electronic equipment/component then the skilled/unskilled labour for dismantling and assembly shall be provided by the Firm. The expenditure for the procurement of new equipment /components conforming to relevant Indian Standard or arranging specialized service shall be borne by the Firm. Any component /spare of the equipment during running requiring replacement due to wear/tear/damage/defect shall be to the account of Contracting Agency.

17. Terms of Payment:-

Payment for the operation and maintenance will be made by Himurja to the Contractor against monthly bills. Energy generated in a particular plant will be known as the net energy exported after deducting import energy from export energy at the interconnection point to HPSEB grid.

In case plant is not functional or there is less generation due to fault on the part of the contractor except in force majeure conditions, maintenance outages or schedule outages, minimum charges will become due to Himurja from the contractor @ Rs10000 per month

18. Deliverable Energy:-

Deliverable energy shall be the energy delivered by power plant at the interconnection point and be measured by the export/import energy meter installed at the interconnection point shall be taken on monthly basis jointly by the representative of Himurja and HPSEB as per the provision of the PPA. This energy will be considered for billing purpose.

19. Sale of Energy and Generation of Reactive Power

Power Purchase agreement has been signed under which HPSEB has accepted energy available from Himurja project at the respective interconnection point. The contractor is to generate matching MVARs corresponding to 0/8PF lagging so that there is no adverse affect on Board System. Monthly average PF shall be computed from ration of KVAH injected into HPSEB system during the month.

20. Metering

Trivector meters (export and import) of 0.5 accuracy class of better accuracy and having kWh , KVARH facility have been installed at interconnection points by Himurja capable of recording and storing of all the electrical parameters (both main meter and check meter). Dedicated CTs and Pts of 0.5 class or better accuracy have been provided at the interconnection point.

All the meters, CTs and PTs described above shall be jointly inspected and sealed in the presence of the representatives of both the parties. For testing and calibration of meters, a notice of at least 7 days shall be given by Himurja or HPSEB requesting the testing to enable the authorized representative of both the parties to be present. All meters, CTs and PTs shall be checked for accuracy once in every six months by

both the parties and shall be treated as working satisfactorily so long as the errors are within the limits prescribed for such meters.

If during the half yearly checks, both the main meters and the check meters are found to be beyond permissible limits of error, the meters shall be immediately recalibrated as per the provisions of the relevant clauses in the PPA.

Correction in billing, whenever necessary shall be applicable to the period between date and time of the previous test calibration and the date and time of the test calibration in the current month when the error is observed shall be done as per the provision mentioned in PPA. The billing will be normally done on the basis of readings recorded by meters installed at the interconnection point on the basis of relevant provision of PPA.

21. Billing Procedure

The designated representative of the HPSEBL and Himurja will take readings of the meters at interconnection point on the first day of every calendar month and the Himurja/contractor shall submit the same to HPSEBL and all payments shall be received directly by Himurja from HPSEBL.

i) Parallel & Integrated Plant Operations

The contractor shall run the plant as a part of integrated system to generate power in parallel with the grid and shall inject three phase 50Hz (nominal) AC supply into HPSEBL system at 11/22kV. In matters relating to grid operations and load dispatch, the directions of the State Load Dispatch Centre, HPSEBL or officer who may be authorized by the HPSEBL shall be strictly complied with the Contracting Agency. Any dispute on this account shall be referred to LESSOR i.e Himurja and to the Chief Engineer-in- charge System Operation Organization of the HPSEBL whose decision shall be final.

22. Statutory clearances

All requisite clearances, permissions and approvals have already been obtained. However, the lessor will be responsible for obtaining subsequent /periodic permits clearances as per statutory /obligatory provisions. The Contractor will also comply with the stipulations of the permits/clearances and shall ensure that such permits /clearances are kept in force throughout the agreement period. It is further clarified that necessary clearances of accuracy of meters /metering equipment protection system. Correct installation of equipment safety provisions etc. required from HPSEBL, Chief Electrical Inspector, Deptt of Telecommunications for wireless System will also be obtained by the contractor at their own cost.

The Contractor shall be responsible for ensuring that the power plant is operated and maintained in accordance with all legal requirements including the terms of all consents/clearances/permits and prudent utility practices with in the acceptable technical limits so as not to have an adverse effect on the grid system. Irrigation system and environment.

Himurja shall have the right to designate from time to time its officers/officials who shall be responsible for inspecting the power plant for the purpose of verifying the compliance of the above.

23. Liaison with Himurja & HPSEBL

The contractor shall closely liaise with the Himurja, HPSEBL, Load Dispatch centre and other designated officers and officials of the HPSEBL during the period of Agreement. During the period of Agreement in force, the Contractor shall give seven days prior intimation of its annual maintenance programme and also furnish in the last week of every month supply plan indicating the total quantum of electricity likely to be delivered in the next month.

24. Temporary Interruptions in Delivery of Energy;

The Himurja/ HPSEBL may require to curtail temporarily or interrupt deliveries of energy, only when necessary, in the following circumstances:

- I. For repair, replacement and removal of the equipment or any part of its system that is associated with the Himurja's facility. However, as far as practicable such an event shall be scheduled during annual shutdown period of the generation facilities.
- II. Occurrence of sustained system frequency above 50.5 HZ for a period not less than 2 Hrs in any day.
- III. Load crash in HPSEBL grid system due to wide spread rains, cyclones or typhoons.
- IV. Conditions leading to over loading of interconnecting transformers, transmission lines and switch gears due to outage of some equipment at HPSEBL's interconnecting Grid.
- V. If the HPSEBL determines that the continued operation of the generation facility may endanger the safety of the HPSEBL's personnel or integrity of the Board's electric system or have an adverse effect of the electric services to the Board's other customers.
- VI. Under force – Majeure conditions of the HPSEBL.
- VII. Instructions of the disconnections of the generation facility from the HPSEBLs system shall be notified by the designated Area load Despatch Centre for the period/duration indicated by it. However, the Board shall take all reasonable steps to minimize the number & duration of such interruptions, curtailments or reductions.

25. Manpower Deployments:

The Contractor will provide suitably qualified and trained manpower for O & M of power project. However, the contractor will make its own assessment for smooth and efficient O & M of the project and shall submit details of the personnel proposed to be deployed by them. The Contractor will however also supplement the proposed crew with additional qualified and experienced manpower as and when required and during annual maintenance. Minimum staff to be deployed shall be spelt out. The qualifications of the staff deployed shall conform and fulfill the requirements of the relevant statutory Electricity Acts and Rules of the Govt.

Himurja will depute its staff for inspection of the operation and maintenance programme, schedules and other covenants to the project areas, plant locations for verification and monitoring of provisions under the agreement. Such visits may be made from time to time without prior information to the contracting Agency. Himurja or its authorized representative as may be necessary will keep an inspection book at the plant locations for any written instructions. The Contractor will pay due attention and comply with these instructions for upkeep of the project in perfect working environment.

To engage the expert/qualified engineer for detecting the faults etc if any during the operation and maintenance period shall be the responsibility of the contracting agency.

26. Spare Parts and Consumables:

Contractor shall be responsible for providing all routine, preventive and breakdown maintenance spares and consumables and they shall build up their own inventory of spares and consumables based on likely replacements during the lease agreement period. All expenses on replacement are to be born by contractor including labour and technical supervision, which may be required. The contractor will have to contact the vendors and will purchase the spare parts from original manufacturers of the equipment. Himurja will provide help and support, if required by the contractor for the purpose of obtaining these spare parts expeditiously. In case spare from original manufacturers are not available then it will explore the possibility of purchasing the spares from other manufacturers but before placement of orders the contractor will take the approval of Himurja to the specification of the product and the vendor. Sufficient spares and consumables will be stored at the plant by the contractor at all times to minimize breakdown time and consequent

generation loss. The replaced components will also be kept in the store for verification and inspection and when ever directed these replaced components will be handed over to the Himurja.

The spare parts for maintenance and operation of equipment and of plant including building will require following types on inventory and record keeping by the contracting agency.

-Consumables

-Routine maintenance spares

-Breakdown maintenance spares

The contractor may take insurance cover for burglary and theft for stores of the spares and consumables at its own cost, if desired by them.

27. Tools and tackles and measuring Instruments

The contractor shall provide necessary tools, tackles and measuring instruments required for the upkeep of the plant. The manufacturers have supplied the tools, tackles and measuring instruments with the plant and equipment. These tools and tackles and measuring instrument shall be properly maintained, repaired when necessary and shall always be kept in good order by contractor at its own expense. The contractor shall return these tools and tackles and measuring instruments in good conditions to Himurja after the expiry of the agreement.

28 Insurance's Liability.

Himurja has taken out an insurance policy from insurance company against loss or damage to civil structures, plant and equipment of all power stations and associated switchyard, by floods, earthquake, fire and acts of natural calamities, normal wear and tear for all the plants. The contractor will ensure that the precautions mentioned in the policy are adhered to during O & M of the plants. The contractor shall immediately inform about any major damages which may necessitate a claim from the insurance company. The contractor shall also be responsible for preparing all necessary papers etc. for obtaining risk claim from the insurance company. In the event of damage caused due to natural calamities, the contractor shall carry out the necessary repairs and their claim shall be restricted to the compensation received from Insurance company with whom insurance has been done.

The contractor shall in the interest of its O & M staff takeout a group insurance policy of the staff deployed in each plant and the premium shall be born by the contracting agency. If the contractor fails to keep in force such an insurance policy of its staff then the Lessor may without being bound to effect and renew any such insurance and pay such premium as may be necessary and deduct the amount so paid from the money due or may become due to the contractor and recover the same from the contracting agency.

From the commencement to completion of the lease agreement as a whole , the contractor shall take full responsibility for the care thereof and for taking precautions to prevent the loss and damage. They shall be liable for any damage or loss that may happen to the civil structures, plant and equipment of the power station and its switchyard or any part thereof. The lessor 's plant and equipment , materials, civil structures etc shall always be kept in good order and condition in every respect to the highest accepted industry standards.

29. Communication facility:

Himurja has installed VHF Radio stations for communication between HPSEBL & Himurja powerhouses. Contractor shall take every care for maintenance of these communication systems. If any replacement in respect of battery is required Contractor shall replace the same at its own cost . HF station has also been installed on some power houses and blockhead quarters for communication with H/Q at Shimla.

30. Disputes and Arbitration :

Both the parties shall comply with the provisions of this Agreement and discharge the respective obligations. In the event of a disagreement and if the issue is unresolved a meeting shall be held by designated representative of Himurja and contractor to resolve the issue. In case the issue is still unresolved provision of this clause shall apply.

All differences and disputes between the parties arising out of or in connection with the contract including any question or matter of dispute which falls within the scope of purview of a statutory authorities under the provision of Electricity (supply) Act 1948 as amended from time to time that the parties are unable to

resolve by mutual agreement shall be submitted to binding arbitration in Shimla and shall be resolved in accordance with the provision of Indian Arbitration and conciliation Act 1996 as amended from time to time. All legal proceedings in connection with this agreement shall be subjected to the territorial jurisdiction of competent civil courts at Shimla.

In the event of differences and disputes, between the parties , either party may by written notice of 30 days to the other party seek arbitration the arbitration shall be conducted in accordance with the provisions of the Indian Arbitration and Conciliation Act 1996 as amended from time to time.

Notwithstanding the existence of any question , disputes and difference referred to arbitration, the parties hereto shall continue to perform their respective obligations under this lease agreement and the payment of any bill shall not be withheld by Himurja for any reason whatsoever during the process of arbitration.

31. Indemnification

The Contractor shall indemnify and keep indemnified Himurja against all losses and claims of death, injuries or damage to any person or any property whatsoever which may be arise out of or in consequence of the operation and maintenance of plants and structures during the agreement period and also against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto, and such liabilities shall include claims/compensations of the third party.

32 Performance Guarantee

The successful bidder shall have to submit a demand draft of any nationalized bank in favour of Director Himurja payable at Shimla within 15 days from the date of issue of letter of Intent, in shape of performance guarantee for the project as under:

Sr No	Name of project	Capacity	Amount of bank Draft
1	Kothi	200KW	Rs one lakh only.

33. Right and Ownership of Property

RIGHTS AND OWNERSHIP

a) Right of Ownership

The power plant including its land, civil structure and plant and equipments are the property of the HIMURJA. The contractor enjoys a concession from HIMURJA to run and operate the power plants with other structures and equipments. HIMURJA and the Govt of Himachal Pradesh, shall have all rights to access and inspection of the plants at all reasonable time and make comments and take observations on the satisfactory performance of the plants.

b) Contractor shall have the right to install and display advertising and warning signs or barriers at the property such signs and barriers are reasonable in their content and size and may remove the same upon termination of this Lease provided, however, that upon removing the same shall restore the property to the condition, it was in prior to the installation of such signs or barriers.

c) HIMURJA'S Right of Access to the properties

HIMURJA and authorized authorities shall have the right at all reasonable times to enter upon the properties and to examine and inspect the properties, including such rights of access to the properties as may be reasonably necessary for the maintenance and operation of the power plants.

34. Termination of Lease/ Agreement

a) Termination of Lease due to failure to obtain permits or occurrence of default.

If the Contractor is unable to obtain necessary permits or licenses or authorizations which may be required from any regulatory agency of the Himachal State or Govt. of India or any other State of India to produce hydro electric power and to carry out O&M of power plants or defaults in any of the provisions of the Lease Agreement. HIMURJA may without any liability of any kind to Contractor terminate the Lease. However, before any termination, HIMURJA shall give a reasonable time and notice of thirty days to the Contracting Agency.

b) **Events of Default**

The following shall also be “ events of default” under this agreement and the terms “event of default” or “default” shall mean, whenever they are used in this Agreement, anyone or more of the following events:

Failure to observe and perform any covenant, condition, or agreement in this lease on the part of the Contractor to be observed or performed, other than as referred, for a period of twenty one days after written notice thereof specifying the failure and requesting that it be remedied given to by HIMURJA, unless agreed to in writing to an extension of such time prior to its expiration.

- i) Unable to rectify the defaults pursuant to various clauses of Lease Agreement.
- ii) Becoming insolvent.
- iii) Being unable, or admitting in writing its inability to pay its debts as they mature.
- iv) Failing to promptly lift any execution, which, in the judgment of HIMURJA, impairs the ability of to carry on its business operations.
- v) Making a general assignment for the benefit of creditors or to an agent authorized to liquidate any substantial amount of its property.
- vi) Subletting the contract.
- vii) Becoming the subject of an “order for relief” within the meaning of the prevalent laws.
- viii) Filing a petition in bankruptcy or for reorganization or to effect a plan or other arrangement with creditors under the provisions of the bankruptcy Act, as amended or under any similar act in any domestic or foreign jurisdiction which may now be in effect or thereafter enacted.
- ix) Filing an answer to a creditors (admitting the material allegations thereof) for reorganization or to effect a plan or other arrangement with creditors.
- x) Applying to a court for the appointment of a receiver for any of its assets or
- xi) Having a receiver appointed for any of its assets (with or without the consent of) and such receiver not being discharged within sixty days after his appointment.

35. Additional covenants’ and Explanatory provisions

Contractor shall not assign this lease or sublet all or any part of the property/contract.

- Contractor shall comply with all central, state, and local laws, ordinances, rules, regulations and executive orders pertaining to unlawful discrimination on account of race ,colour, creed, religion, origin, sex, marital status, status with regard to public assistance, disability, or age. Contractor shall further comply at its expense with all central,state and local laws and ordinances and applicable rules, regulations and standard established and orders issued by any agency of such governmental units, which are now or hereafter promulgated insofar as they relate to running of hydroelectric power plant at the project and performance of the provisions of the lease.

36. Maintenance of Records and Other Obligations:-

Himurja shall have full access to all records of Contractor relating to the performance of this lease. Contractor shall maintain records relating to all goods and services provided by it under the terms of this lease. Contractor shall retain all such documentation for three years following the termination of this lease. Such record shall be made available for audit or inspection at any reasonable time upon request of Himurja, the State Auditor, or their respective authorized representatives.

- I. Contractor shall warrant that it is and will remain through out the lease Term duly registered and qualified to do business of O & M of generating stations and sub stations in the State of Himachal Pradesh .
- II. For the purpose of this lease Contractor shall be deemed to be an independent Contracting Agency and not an employee of HIMURJA. HIMURJA will not be responsible to Contractor for

any benefit provided to its employees, including, but not limited to, vacation, sick leave, worker's Compensation and Unemployment Compensation.

- III. The Contractor shall defend and save HIMURJA harmless from any claims, demands, actions, or causes of action arising out of any act or omission on the part of, or its agents, servants, or employees in the performed of or with relation to any of the work of services performed or furnished by Contractor under the terms of this lease.
- IV. Any alteration, variation, modification, or waiver of the provisions of this lease shall be valid only after it has been reduced to in writing and duly signed by both parties.
- V. The waiver of any of the rights and /or remedies arising under the terms of this lease on any occasion by either party hereto shall not constitute a waiver of any such rights and / or remedies in respect to any subsequent breach of or default under the terms of this lease. The rights and remedies provided or referred to under the terms of this lease are cumulative and not mutually exclusive.
- VI. The lease shall be interpreted and construed according to the law of the State of Himachal Pradesh.
- VII. The Contractor shall allow no lien of any nature including liens associated with financing or work performed to be filed upon or attached to any portion of the properties, provided , provided, however, that the provisions shall not operate to prohibit the collateral assignment , leasehold mortgage, or any other security interest of a substantially similar effect of or upon the lease hold interest granted to Contractor by this lease or to prohibit the creation or any security interest in or other lien upon non- leased equipment or any other personal property of HIMURJA. Contractor shall promptly cause any claim for any such lien to be released or shall secure HIMURJA OR HIMURJA's satisfaction, in the event desires to contest such claim.
- VIII. The Contractor shall pay for all heat, gas, light, power, and water unused by it an shall keep the sidewalks, driveways, and parking lots, if any, located at the power plant reasonably free of water logging and unchecked weed growth and shall keep the grass, shrubbery, and trees, if any, property cut and trimmed.

37. Force Majeure

In this agreement Force Majeure" means occurrence of an event which prevents the affected party from performing its obligations under this lease Agreement as under:-

- i) Act or event that is beyond the reasonable control of and not arising out of the fault of Affected Party.
- ii) Affected Party had been unable to prevent by the exercise of the due diligence and reasonable efforts, skill and care, including through expenditure of reasonable sum of money and.
- iii) Event that has a materially adverse effect on the Project.

a) Force Majeure Events

The force Majeure Events shall mean one or more of the following acts or events:-

- i) Acts of God or events beyond the reasonable control of the affected party which not reasonably have been expected to occur such as extreme adverse weather or environmental conditions, lightning, heavy rains, cyclones, tempest, whirlwind , landslides, storms floods, volcanic eruptions or fire (to the extent originating from a source external to the site or not designed for in construction works)
- ii) Radioactive contamination or ionizing.
- iii) An act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, unexpected call up of armed forces, blockade, embargo, rebellion , riot, religious strife.
- iv) Strikes or boycotts interrupting operations of the project.

v) Any judgement or order of any court of competent jurisdiction or statutory authority in India made against the Company in any proceedings for the reason other than failure of the company to comply with any Applicable Law or Clearances or on account of breach thereof, or of any contract, or enforcement of this Agreement or exercise of any of its rights under this agreement by HIMURJA.

vi) Any other event or circumstance of a nature analogous to the foregoing.

(b) Notification obligations

If a Party is affected by any Force Majeure event, the affected Party shall give the other Parties written notice describing the particulars of the Force Majeure event as soon as reasonably practicable after its occurrence but not later than five days after the day on which such Party knew of the commencement of the Force Majeure event or of its effect on such party.

(c) Obligations of Parties in case of Force Majeure event.

i) The Parties shall co-operate and discuss in good faith and develop the proposal for remedial measures and reasonable alternative measures to remove/ remedy Force Majeure event to enable the performance of the effected Party provided however that no Party be required under this provision to settle strike or other labour dispute.

ii) Upon the occurrence and during the subsistence of any Force Majeure event, none of the parties shall be relieved of their liabilities/obligations.

38 Taxes Duties and Octroi .

Taxes, Duties and Octroi if levied by control / State Govt. or by Statutory Bodies on power plants or energy generated shall be paid by the firm.

39 Handing Back of Power Plants by Contractor to HIMURJA.

From commencement to completion of the lease Agreement as a whole i.e. up to the time the power plant is handed back or taken over by HIMURJA, the Contractor shall take full responsibility and care thereof and for taking precautions to prevent loss or damage. They shall be liable for any damage or loss that may happen to the civil structures, plant and equipment of the power station and their switchyards or any part thereof. The plant and equipment, materials, civil structures etc. shall always be kept in good working order and condition in very respect to highest accepted industry standards. After the expiry of the lease Agreement when the power plant is handed back by the Contractor or at any time when the power plant is taken over under the provisions of the lease Agreement, HIMURJA, after allowing for normal wear and tear shall recover from the Contracting Agency, all costs of shortages, damages etc. in the power plant from any amount of money due or payable to the Contracting Agency. The aforesaid recovery shall also be made from performance guarantee or any other means, which deems, fit for effecting such recoveries.

DECLARATION AND PERFORMAs

TENDER FORM
PARTICULARS OF THE TENDER

All the Columns must be filled by the tenderer

1. Name of work:

2. Last date and time of submission of the documents:

3. Amount of earnest money deposited
DD No
Name of Bank

4. Date and time of opening of tender:

5. Place of opening of tender;

6. Name and status of firm /company
Individual to whom the tender document is issued:

7. Validity of tender:

8. Name of Authorized representative to sign the tender:

(Signature of the tenderer)
With designation

GENERAL PARTICULARS OF THE TENDERER

All the Columns must be filled by the tenderer

1. Name of Tenderer:
2. Correspondence Address :
3. Telephone No
4. Fax No:
5. Name and designation of the
The authorized representative of the
Tenderer to whom all the references shall be made:
6. Financial capability of the contractor
For carrying out the work
7. Has the firm ever been debarred by any Govt deptt,
Agency, Organization for undertaking any work:
8. Detail of offer (mentioned No of pages)
 - Reference of any other information attached by the tenderer:
 - Authorized representative for any correspondence:

(Signature of the tenderer)
With designation

EXPERIENCE OF THE TENDERE

Please fill in the information about the similar project undertaken over the last five years.

1. Name of Organization by whom work was awarded
2. Name and location of the work
3. Total amount of contract
4. Year of award
5. Detail of involvement in work as an
Individual or as a company
6. Was the work completed satisfactorily
and within the stipulated time period.
7. Particular of evidence enclosed in token of above
8. Whether list of past supplies enclosed
9. Whether past performance obtained from purchases/utilities

(Signature of the tenderer)
With designation

DECLARATION BY THE TENDERER

I /We(herein after referred to as the tenderer) being desirous of O & M of project of Himurja as per the scope of work set forth in the tender document. We have fully understood the nature of the work and carefully noted all the terms and conditions, specifications etc as mentioned in the tender documents, hereby declared that:-

1. The tendered is fully aware of all the requirements of the tender documents and agrees with all the provisions of the tender documents.
2. The tenderer is capable of executing and completing the work as required in the tender.
3. The tenderer accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.
4. The tenderer is financially solvent and sound to execute the tender.
5. The tenderer is sufficiently experienced and competent to perform the contract to the satisfaction of Himurja.
6. The information and statements submitted with the tender are true.
7. The tenderer has not been debarred form similar type work by any Govt Deptt/Agency/organization.
8. The tenderer gives the assurance to execute the tendered work as per the specifications, terms and conditions on the award of work.

(Signature of the tenderer)
With designation

Salient features of Mini Hydel project.

Description	Kothi
Capacity	2x100KW
Location	Near Manali on Manali - Rohtang road in Kullu
Distance from HQ Shimla	270KM
Road	Power House is appx. 200 mts away from motor road.
River Stream Tributary	Beas nala Beas River
Type of Structure	Trench type RCC
Length	15 mts
Shape	Rectangular RCC tank
No of Gates	3
Length	MS pipe 200mts HDPE =252 mts
size	MS pipe 450 mm dia HDPE pipe 500mm dia
Design discharge	2.95 cumecs
Type	RCC
Size	10x3x2.50
Flushing pipe	10 mts long 2 Nos pipe of 450 mm dia
Type	RCC
Size	12.5x3x2mts
Live storage	3 minutes
Type	MS pipe 350 mm dia 130 rmt
Dia	350 mm
Length	130 mts
Type	Surface type
Head	87 mts
Size	13.4x9x6m
Turbine	Turgo impulse
No	2
Type of generator	Synchronous
Crane	5 ton HOT
Transformer	Oil cooled
Type	Circular MS pipe
Length	450 mm dia , 15 mts

Extracts from manufacturers maintenance instructions in respect of some major plant and equipment

Maintenance of Turbine.

1. Routine & Preventive Upkeep and maintenance

Runner

Check once a year.

- The general Condition of the blades(wear and tear)
- Orientation of the blades with relation to each other.
- On activating the servomotor, the simultaneous rotation of the blades.
- That no sweating or oil leak forms.

In the case of an anomaly or alteration consult expert.

1.2 Speed increaser

- Check the temperature of oil and thrust bearing.
- Once a year, check the appearance of the gear train by dismounting inspection window.
- Each time the installation is stopped and least once a year check the oil level and top up if necessary.

Oil Change:

The oil sample may be taken and tested after every 2000 hours for its quality.

Change the oil in between 5000to 8000 hours. This period is determined with the supplier of the oil depending upon the type and quality of oil and according to the results of the samples taken after every 2000 hours.

Note :-At each oil change, clean the element of the filter . In the event of rapid clogging by metallic particles. Verify the condition of the bearings. If the bearings are found damaged or worn out replace the bearings.

Low space speed lips seal grease : each month 2 to 3 strokes.

1.3 Coupling

Rubber element should be checked twice a year.

1.4 Generator

1.5 Hydraulic Power Unit

Verify once a month

- Oil level.
- Oil cleanliness
- Water tightness of the different connections.
- The state of the filter. If there are signs of clogging ,change the filter element every month.
- Check N2 pressure in accumulators
- Oil level pressure switches settings.

Check one a year;

- The state of the oil . In order to do this take the sample and analyze it.

- Change the oil if the condition so requires carryout filtration or cleaning by using electrostatic cleaner.

1.6 Flume Chamber

Check the general condition from time to time.

1.7 Vacuum valve servomotor

Check twice a year

Water tightness of the cylinder and couplings.

General conditions.

1.8 Vacuum pumps

Check the general condition twice a year . Grease once a year.

1.9 Blade servomotor

Check once a month

- Oil tightness of jack and couplings
- Oil tightness and heating of the rotating seal
- Opening and closing pressure.

Grease each month the rod bearing

2.Maintenance sum up table

Equipment	Oil for grease type	checking	First intervention	Later intervention
Speed increaser	Servomesh SP320 or effective equivalent	Oil level + state of filter	Oil change between 500 &700	Oil analysis every 2000 hours oil change every 5000 to 7000 hours.
Runner	Servo system 150	-	-	-
Hydraulic power unit	Hydraulic oil servo system 68 or equivalent	Oil level +state of the filter, once a month	-	Oil analysis + pressure , once a year
Blade servomotor	Hydraulic oil servo system 68 or equivalent	Opening and closing pressure once a month	-	-
Servomotor rod bearing	-	-	-	Once a month
Duplex filter of cooling water system	-	State of filter once a month	-	-
Vacuum valve Servomotor	-	Water tightness of the cylinder twice a year	-	-
Vacuum pimp motor bags	EP2	Grease	-	Once a year

3. Breakdown Maintenance

3.1 Runner

Removing the runner

- Close the blades
- Dismount the tip of the runner by removing the nut and lock nut
- Drain the gear casing by removing the plug.
- Disassemble the generator from the speed increaser
- Disassemble the hydraulic power unit and blade position indicator system, take care to protect all pipes and apertures.

Disassemble neither the rotating seal nor the flexible pipes on rotating seal

- Disconnect all wires coming from the control command system
- Disconnect air cooler pipes
- Dismount shaft bearing
- Disassemble the bearing from the head cover and slide it up along the shaft. Keep it in position with shaft collar
- Unscrew four bolt on speed increaser shaft flanges and replace them by four threaded rods M36 length 400 mm and nuts (don't replace the driving belts)
- Remove the remaining bolts.
- Drop the shaft runner on the spherical machining in runner band by moving the four threaded rods and disconnect the oil distribution from the servomotor.
- Unscrew the head cover and shim it on the distributor flange. Shimming thickness 150 mm
- Remove the screw from the shaft /runner hub assemble
- Lift the shaft with the four threaded rods. Remove the driving sockets and unscrew the servomotor rod
- Remove the servomotor
- Drop the shaft on the runner and secure with 4 screws.
- Dismount the speed increaser.
- Dismounting the supporting frame.
- Dismount the shaft
- Remove the head cover.
- Sling the runner with sling and lift it.

3.2 Remounting the runner

- Control the screws. Change the dubious element. Thoroughly clean the surface of the seals.
- Carry out the same instructions as those given for the removal, following them in reverse order.
- After mounting the shaft on the speed increaser
- Check the verticality of the shaft.
- Check the gap between the runner and the runner band.

After remounting the bearing

- Check the gap between bearing and shaft.
- Check the gap between runner and runner band
- Make the runner rotate by hand if the packing are not tightened.
- Carryout starting up according to above.

3.3 Intervention on the runner

Changing the blade

- Dismount the runner
- Remove the cross piece by removing the nut and lock nut.
- Remove the pin by unscrewing the screw, remove the washer and eye bolt.
- Remove the link by dismounting the pin..
- Dismount the blade collar
- Dismount the segments of the seal retaining ring
- Remove the blade by sliding it towards the exterior.

Remounting

Clean all the parts of the seal , grease them ,control the screws and the conditions of the bearings change the dubious elements.

- Position the lever, place the seal slide the blade. Its position is given by the keying the lever.
- Assembly the blade collar.
- Assemble the connecting rod on the lever with the aid of pin.
- Mount the casing and nose screw them with the aid of the nuts and the lock nuts.
- Mount the runner.

Speed increaser

This operation does not necessitate the removal of the speed increaser.

Changing the pump.

- Dismount the 2 coupling unions at the entrance and exit of the oil.
- Unscrew the fixation screws on the pump and remove it.
- Clean the parts of the seal and change the seals.
- Introduce the pump making sure for position of the entrance and exit of the oil.

Removing the speed increaser

- Close the blade.
- Disassemble the generator from the speed increaser.
- Disassemble the hydraulic power unit and blade position indicator system . Take care to protect all pipes and apparatus.
- Disconnect all wires coming from the control command system
- Disconnect oil cooler pipes.
- Dismount packing of the shaft bearing, remove rotating seal
- Remove servomotor top flange
- Remove nuts of top flange
- Remove piston of top part
- Remove nut on piston bottom part.
- Remove both piston and cylinder, remove servomotor button flange
- Unscrew four bolts on speed increaser/shaft flanges and replace them by four threaded rods M36 length 400mm and nuts (do not replace driving belts)
- Remove the bearings
- Remove the remaining bolts.
- Drop the shaft and runner on the spherical machining in runner band by four threaded rods.
- Remove four threaded rods

- Unbolt the speed increaser from supporting frame.
- Remove the speed increaser.

Remounting the speed increaser.

- Control the screw change any dubious element.
- Carry out same instructions as those given for the removal, following them in reverse order
- After mounting the shaft on speed increaser.
- Check the verticality of shaft.
- Check the play of the runner in the runner band.
- After mounting the bearing
- Check the play of the bearing to the shaft
- Check the play of the runner band
- Make the runner rotate by hand
- Carryout the starting up according to above.

Generator

Blade servomotor and oil distributor

14. Dismounting the servomotor

- Close the blades
- Remove the blade position mechanism
- Remove the rotating seal
- Remove the servomotor top flange by removing the nuts
- To have access to the piston sealing, remove the servomotor cylinder
- To have access to the servomotor bottom flange sealing.
- Remove the screws and cover ring
- Remove the piston top part by removing the screws
- Remove the piston bottom parts by removing the nuts
- Remove the servomotor bottom flange

15. Remounting

- Control the screws , change the dubious element.
- Carryout the same instructions as those given for the removal, following them in reverse order and adjust the length prior to dismounting.
- Caution : Do not use any grease during the servomotor assembly. Use hydraulic oil only.

Shaft bearing

16. Dismounting of the shaft bearing

- Remove the pipes
- Remove the temperature probe
- Dismount the two top half covers Y removing the screws
- Sling the bearing and lift it.
- Assemble the shaft collar on the shaft
- Drop the bearing on the shaft collar
- Dismount the two half bearings by removing the screws.

8 Remounting the shaft bearing

- Check the screws and packing. Change any dubious element.
- Carryout the dismounting in reverse order

- Before assembly, grease the two half bearings
- After dropping the bearing in the head cover
- Check the plays of the runner hand
- Check the play of the bearing on the shaft
- Make the runner rotate by hand
- Check the spring setting

The grease unit is designed for trouble free operation. However precaution should be taken to avoid major damages to gear unit.

Daily inspection:-

Following points should be checked:

- Check oil level in the grease box through sight glass
- Check pressure of lubricating oil in the system
- Check the proper functioning of the pressure gauges
- Check the proper functioning of all pressure switches
- Check the proper functioning of temperature gauges
- Check the proper functioning of flow indicator.

Monthly Inspection

Following points should be checked.

Check the gear unit noise.

Check the gear unit for tightness

Check the oil filter

Check the lubricating oil quality

Check the condition of oil cooler and filter if necessary clean them.

Yearly inspection

Following working of all sensors.

Cleaning the vent plug

Clean gear unit hosing .

Check all fixing screw for tightness

Check all internal parts of gear unit

Check all internal parts of gear unit

Check any leakage through seals or piping.

Routine maintenance of hydraulic power pack

- Check the fluid level constantly during commissioning of the equipment after then daily and later weekly
- During commissioning filter should be checked after every two or three hours of running the unit and cleaned if necessary. There after they must be checked and cleaned if necessary.
- Hydraulic accumulator charging pressure should be checked from time to time.
- Measure of oil temperature in the oil reservoir and also in the region of pump bearings.
- Check all the pipes joints and tighten them up if found loose
- Main pressure and pilot pressure of the system must be checked up periodically.
- Check the alignment of the pump motor set regularly.

Maintenance of flow Relay

During shut down the indicating flow relay should be removed from line. If flapper is reasonably free and micro switch operating properly, it will be enough to thoroughly clean inside with water jet. This should free the flapper completely. If through cleaning is required proceed as follows.

Single contact type.

- Remove top cover
- Remove terminal block retaining screw. Remove micro switch pivot spindle and two positioning springs loosen adjuster locknut and withdraw adjuster partially.
- Remove terminal block micro switch assembly. Check the assembly and if required replace micro switch terminal block studs and other components.
- Remove inside and outside switch box anchoring bolts. Lift off switch box. Lift off positioning plate assembly. Ensure that the side hole of the positioning plate is not blocked. This hole is meant for dripping out any liquid change the O ring as well.
- Remove window nuts on each side. Remove the window cover, grease discs and gaskets. Unscrew and remove flapper pivot screw lock nuts with the help of special tubular spanner provided.
- Unscrew and remove pivot screws on each side. The flapper can now be removed.
- Clean the inside of the flow relay body and flapper. Replace parts /parts. The trunnion must be free on flapper between vane spindles with minimum clearance. Ensure that the vane spindle retaining grub screws tight.
- Replace flapper in position screw in the pivot screws. Flapper must be free with minimum clearance. Tighten locknuts for pivot screws. Put positioning plate assembly and O ring in position with end of the main spindle inside the trunnion hole. Fit back switch box in position and tighten anchor bolts. Make sure that cable gland facing same direction as before. Check that the flapper is free. If not it might be necessary to shift the flapper to right or left by unscrewing one pivot screw and screwing in the other thereby bringing the positioning plate at the centre of the opening at top or reposition the screw terminal box slightly and retighten the anchor bolts.
- Fit back micro switch terminal box assemblies. Do not forget to provide retaining springs on each side of the micro switch. Push back micro switch to maximum extent. Screw in adjuster so that pin just touches the microswitch. (Pin to be at lower most position). Replace micro switch and shift it to left or right slightly so that the pin falls in the slot provided in the micro switch. Screwing or unscrewing the adjuster will bring forward or retard the micro switch with respect to the main spindle. Set the adjuster so that the micro switch operates at desired flapper tilt. Tighten locknut. At this stage check again that the flapper is free. It might be necessary to do complete readjustment if the flapper when working against micro switch is not free.
- Put the glass discs back in position with two new gaskets (on each side of glass). Put back windows in position. Screw in window nuts. While tightening window nuts see that it is done uniformly. Do not tighten the nuts too hard. Pressure test 21kg/cm sq. (hydraulic) tighten nuts slightly more. If required.
- Fit back flow relay in line.

Maintenance of bypass gate hydraulic hoist.

Check the fluid level constantly during commissioning of the equipment after then daily and later weekly.

During commissioning filter should be checked after every two or three weeks of running the unit and check nitrogen pressure in the accumulator every week and then every month.

Maintenance of vacuum circuit Breakers.

Periodic and routine maintenance

The following maintenance intervals are recommended unless otherwise necessary due to adverse environmental conditions.

Special maintenance is necessary following interruption at the current levels given below for the under of time indicated.

10000 times approximately at rated normal current.

• **Routine maintenance**

Simple and general checks for accumulation of dust.

Recommended maintenance plan.

General

Wiping off dust etc on mechanism interrupter and insulation	Regular and after 1 year /1000 operations
Checks for security of fixing and fasteners	After 1 year /1000 operations whichever earlier
Checks for loose / corroded terminals and damages to coils	After 1 year /1000 operations whichever earlier

Mechanism & drive linkage

Lubrication of pins /sliding surfaces	Regular and after 1 year /1000 operations whichever earlier
Check the damages of springs components etc.	After 1 year /1000 operations whichever earlier

Operation

Checks on mechanical and electrical operation. Closing /tripping coil settings.	Regular and after 1 year /1000 operations whichever earlier
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Vacuum Interrupter

Check snatch gap with setting gauge	4 years /4000 operations
Check for vacuum integrity	4 years /4000 operations

Note ;

- For lubricant as oil. use good quality gear oil containing high pressure additive (SAE 80or 90).
- For lubricant as grease. Use royal molten MTS 2000 or its equivalent.
- Condition for replacement of vacuum interrupters.

The vacuum interrupter in any particular phase needs replacement when the vacuum interrupter loses its vacuum which can be verified by HV test at 24kV for one minute.

Reduction of snatch gap setting from the value of 4.0/3.5 mm indicates contact corrosion. Once the snatch gap reduces to 3.0/2.5 mm, the vacuum interrupter needs replacement.

Do's and Don'ts

- Select check the racking interlock lever roller position is at the top prior to truck insertion into panel.

- Align the truck properly in front of the panel to have an easy entry and also to avoid any strain to the insulating components.
- Rack in the truck to service position.
by inserting the secondary plug &
by taking the racking interlock roller to the bottom position and then close the circuit breaker.
- Before closing the internal door, thoroughly check the interior and free them of any foreign material and vermin.
- Use test plugs in de-energized condition only for high voltage testing and setting
- Select switch on circuit earth only after circuit breaker truck is withdrawn and bus bar shutters are padlocked.
- Access cable chamber only after earthing the circuit side.
- Do not force the secondary plug in the wrong direction.
- Do not discard override safety interlocks.

FINANCIAL BID

For O & M of Mini Hydel project in H.P. for a lease period of three years.

Name of project	capacity	Rate per unit (kwh) inclusive all taxes and charges.
Kothi Near Manali in Himachal Pradesh	200KW	Rsper unit

(Signature of the tenderer)
With designation