



Registrar

National Electric Power Regulatory Authority

Islamic Republic of Pakistan

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No. NEPRA/R/DL/LAG-475/7026-32

February 09, 2021

The Project Director,
Lawi Hydropower Project,
Pakhtunkhwa Energy Development Organization,
38/B2, Phase-V, Hayatabad,
Peshawar.

**Subject: Grant of Generation Licence No. GL(Hydel)/17/2021
Licence Application No. LAG-475
Pakhtunkhwa Energy Development Organization (PEDO)
(Lawi Hydropower Project)**

Reference: PEDO's application vide letter No. 3250/PEDO/PD LAWI HPP dated November 20, 2019.

Enclosed please find herewith Determination of the Authority in the matter of Application of "Pakhtunkhwa Energy Development Organization (PEDO)" for the Grant of Generation Licence along with Generation Licence No. GL(Hydel)/17/2021 annexed to this determination granted by the National Electric Power Regulatory Authority (NEPRA) to Pakhtunkhwa Energy Development Organization (PEDO) for its 69.00 MW Lawi Hydropower Project located on River Shishi, near Drosh Town, Tehsil Drosh, District Chitral, in the Province of Khyber Pakhtunkhwa, pursuant to Section 14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018.

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: As Above

Copy to:

1. Secretary, Power Division, Ministry of Energy, A-Block, Pak Secretariat, Islamabad.
2. Managing Director, NTDC, 414-WAPDA House, Lahore.
3. Chief Executive Officer, CPPA-G, ENERCON Building, Sector G-5/2, Islamabad.
4. Chief Executive Officer, Peshawar Electric Supply Company Limited, PESCO House, Shami Road Peshawar.
5. Director General, Environment Protection Department, Government of KPK, 3rd Floor, Old Courts Building, Khyber Road, Peshawar.
6. Secretary, Energy and Power Department, Government of Khyber Pakhtunkhwa, 1st Floor, A-Block, Abdul-Wali Khan Multiplex, Civil Secretariat, Peshawar.



9/2/21
(Iftikhar Ali Khan)

National Electric Power Regulatory Authority
(NEPRA)

Determination of the Authority
in the Matter of Application of Pakhtunkhwa Energy Development
Organization for the Grant of Generation Licence

February 09, 2021
Case No. LAG-475

(A). Background

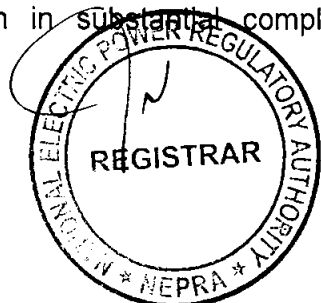
(i). The province of Khyber Pakhtunkhwa is blessed with huge hydropower potential. In order to harness hydropower potential in the province, the Government of Khyber Pakhtunkhwa has set up Pakhtunkhwa Energy Development Organization (PEDO).

(ii). PEDO has identified around 6000 MW hydropower potential at various sites all over the province. The identified/selected sites are at different stages of implementation. One of such sites in the province is on Shishi river, near Drosh town, district Chitral.

(B). Filing of Application

(i). PEDO submitted an application on November 29, 2019 for the grant of generation licence in terms of Section-14B of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the "NEPRA Act") read with the relevant provisions of the NEPRA Licensing (Application and Modification Procedure) Regulations, 1999 (the "Licensing Regulations").

(ii). The Registrar examined the submitted application to confirm its compliance with the Licensing Regulations and observed that the application lacked some of the required information/documentation. In view of the said, the Registrar directed PEDO for submitting the missing information/documentation and the same was received on January 15, 2020. Accordingly, the Registrar submitted the application for the consideration of the Authority to decide the admission of the same or otherwise. The Authority considered the matter and found the form and content of the application in substantial compliance with Regulation-3 of the Licensing



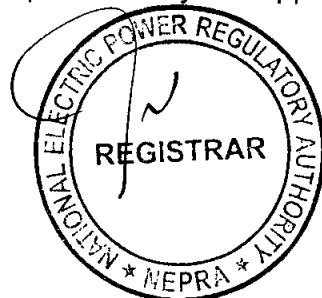
Regulations. Accordingly, the Authority admitted the application on February 10, 2020 for consideration of the grant of the generation licence as stipulated in Regulation-7 of the Licensing Regulations. The Authority also approved a notice of admission to be published in the press for inviting comments of general public, interested and affected persons in the matter as stipulated in Regulation-8 of the Licensing Regulations. Accordingly, the said notice was published in one (01) Urdu and one (01) English newspaper on February 13, 2020.

(iii). In addition to the above, the Authority also approved a list of stakeholders for seeking their comments for assistance of the Authority in the matter in terms of Regulation-9(2) of the Licensing Regulations. Accordingly, letters were sent to different stakeholders as per the approved list on February 14, 2020, soliciting their comments for assistance of the Authority.

(C). Comments of Stakeholders

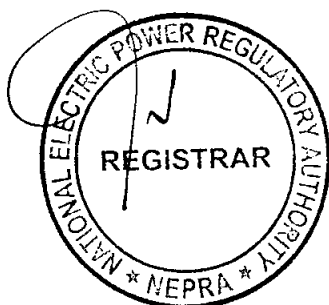
(i). In reply to the above, the Authority received comments from two (02) stakeholders including Indus River System Authority (IRSA) and Central Power Purchasing Agency (Guaranteed) Limited (CPPA-G). The salient points of the comments offered by the said stakeholders are summarized below:-

- (a). IRSA submitted that the Authority may ask the sponsors to provide it a copy of PC-1, along with feasibility report, of the project and also apply for No Objection Certificate (NOC);
- (b). CPPA-G stated that the regulatory requirements for issuance of generation licence are envisaged in the NEPRA Licensing (Generation) Rules, 2000 (the "Generation Rules"). In this regard, Rule-3(5) of the Generation Rules stipulates that the project must satisfy the 'least cost option criteria' including, inter alia, there exists a demand for the proposed facility in view of the forecasts and requirements for additional capacity. Further, the proposed facility should result in optimal utilization of the available resources. Further, Regulation-5 of the Licensing Regulations provide the eligibility criteria for the grant of generation licence. The said criteria include the provision related to fulfilment of the requirement by the applicant regarding existence of demand for



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the proposed facility. PPIB has devised a mechanism for development of hydel projects initiated by the provinces and according to it, the future projects are to be entertained in accordance with the Indicative Generation Capacity Expansion Plan (IGCEP). In this regard, the project of Lawi is not included in the lists of projects notified by PPIB. It is pertinent to mention that NTDC is required to prepare a ten year IGCEP as provided in the relevant provisions of Grid Code which has not been approved. In addition, PC 4.2 of the Grid Code requires preparation of Transmission System Expansion Plan (TSEP) by NTDC to cater the integration of new projects in the system so that transmission constraints are well accounted for. Cabinet Committee on Energy (CCoE) had decided that all future Renewable Energy (RE) projects will be developed pursuant to the new RE policy for which CCI has given in-principle approval. It is submitted that CPPA-G has neither issued any consent for purchase of power from the Project nor has it been issued power evacuation certificate which is mandatory in terms of provisions of Power Generation Policy 2015. It is pertinent to mention that CPPA-G informed PEDO that procurement of power from the project of Lawi will be considered after the approval of IGCEP and TSEP. The application of PEDO lacks the approval of Grid Interconnection Study (GIS) and power evacuation certificate from NTDC and PESCO as Rule-3(5) of the Generation Rules highlight the importance of GIS for grid stability. In this regard, NTDC vide its letter dated February 21, 2019, has pointed out that integrated system study needs to be carried out for evacuation of power from hydel projects in Khyber-Pakhtunkhwa which has not been carried out. In view of the above, CPPA-G requests that application of PEDO for its Lawi hydel project may be rejected as the project does not adhere to the applicable legal, regulatory and policy framework. Further, CPPA-G submitted that a hearing in the matter may be held for providing detailed submissions as well as a session with the technical team of the Authority prior to hearing.

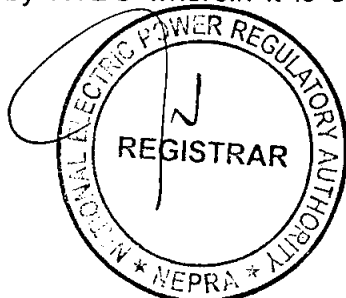


(ii). The Authority examined the above comments of stakeholders and in view of the observations, considered it appropriate to seek the perspective of PEDO. On the comments of IRSA, it was submitted that the project is being developed on the river of Shishi as a Run of River scheme. The water diverted from the river will be released back to the main river not causing any impact on the flow of the river. In consideration of the said, all the necessary documentation desired by IRSA has been provided and detailed presentation has also been given accordingly, IRSA has issued NOC for the project.

(iii). On the observations of the CPPA-G, it was submitted that PEDO has been entrusted under its Act approved by the provincial assembly of Khyber Pakhtunkhwa *inter alia* to develop the available hydel potential of the province for power generation which is one of the most economic source of energy and also environment friendly. PEDO has identified number of sites for harnessing the said potential and one such site is near Drosh, district Chitral, Khyber Pakhtunkhwa which will result in optimal utilization of available resources. PEDO is fully aware of its responsibility to develop the project on least cost basis and the same is evident through the fact that in parallel to the approval of revised PC-1, the EPC contract was awarded to a JV of Sichuan, Sarwar & Co., Silian and Chongqing Luyang on October 26, 2016 after going through an open competitive process under relevant rules.

(iv). Further, PEDO submitted that it has gone through the letter of PPIB dated 7th November 2019 referred by CPPA-G and observed that Para-1(xi) states that "...*The above mentioned decisions of the Board shall be applicable only to the projects presented and considered by the PPIB Board...*". Further, the review of list of projects attached with the PPIB's letter indicates only projects being developed in private sector mode. Therefore, it is clear that the said decision is only applicable to private sector projects whereas the Lawi hydel project is a public sector project which is funded through own resources of Govt. of Khyber Pakhtunkhwa i.e. Hydel Development Fund and Annual Development Fund.

(v). Regarding catering of future projects in light of new ARE Policy 2019, PEDO is of the view that the same will be applicable for future projects not on the instant case as it was started in 2016 and is in advanced stage. PEDO clarifies that its project of Lawi has already been mentioned in "Committed Project" of the draft IGCEP prepared by NTDC wherein it is envisaged to be commissioned in 2021.



Further, there is no requirement of consent of power for the grant of generation licence under relevant rules & regulations.

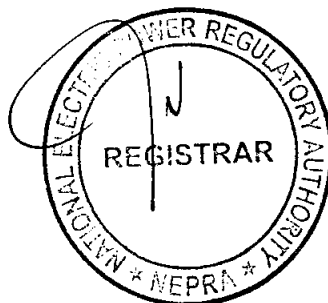
(vi). Regarding interconnection arrangement of the project with national grid, PEDO referred to a meeting held on November 15, 2019 between PEDO, PESCO and NTDC relating to power evacuation issues of various projects. In the said meeting, Chief Engineer (NTDC) confirmed that power generated from the Lawi project can easily be evacuated by connecting it to the existing 132 kV double circuit transmission line for Golen Gol Hydel Power Project which passes through the close vicinity of the project. Further, PEDO has shortlisted the Barqaab Consulting Service Pvt. Ltd. for carrying out the required GIS of the project.

(vii). The Authority considered the above reply of PEDO and considered it appropriate to proceed further in the matter as stipulated in the Licensing Regulations and the Generation Rules.

(D). Evaluation/Findings

(i). The Authority has reviewed the submissions of PEDO including the information provided in its application for the grant of generation licence, comments of the stakeholders and the rejoinder in the matter. Further to the said, the Authority has also considered the feasibility study of the project, interconnection & dispersal arrangement and Environmental Impact Assessment (EIA) of the project and the relevant rules & regulations.

(ii). The Authority has observed that PEDO is an autonomous organization governed by its Board of Directors and is under the administrative control of Irrigation and Power Department of Khyber Pakhtunkhwa. It is pertinent to mention that under Section-24 of the NEPRA Act, the licensees are required to be companies registered under the Companies Ordinance, 1984 (XLVII of 1984) except WAPDA and PEDO. In view of provisions of the NEPRA Act, PEDO fulfills the said basic criteria for the consideration of a licence. PEDO has successfully completed seven (07) small and medium sized hydel power projects. These include (a). 81.00 MW Malakand-III; (b). 18.00 MW Pehur; (c). 1.80 MW Shishi; (d). 4.20 MW Reshun; (e). 2.40 MW Machai; (f). 17.00 MW Ranolia; and (g). 36.60 MW Daral Khwar Projects.

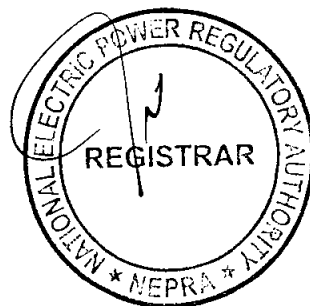


(iii). Currently, PEDO is working on a number of hydropower projects which are at different stages of implementation. These hydropower potential sites are mainly located in the Northern districts of Khyber Pakhtunkhwa i.e. Chitral, Dir, Swat, Mansehra and Kohistan. The major source of funding for financing these projects had been the Hydel Development Fund and the Annual Development Program of Govt. of Khyber Pakhtunkhwa. In view of the above, the Authority considers that PEDO has the required financial and technical capability to implement hydel power projects.

(iv). The Authority has reviewed the feasibility study of the project and observed that the Lawi Hydel Power Plant was initially conceived by GTZ/SHYDO/PEDO during 1992-98 and the initial potential was estimated as 65.0 MW. The feasibility study of Lawi Hydel Power Plant was carried out by Hydro Planning Organization (HPO) of Water and Power Development Authority (WAPDA). ECNEC approved a PC-I of the project on August 16, 2012 with a total cost of approximately Rs. 12.235 Billion (without FEC). Later on, the work of carrying out the review of feasibility study was awarded to Associated Consulting Engineers – ACE (Pvt.), Engineering General Consultants-EGC (Pvt.) Ltd. and Technical Engineering And Management-TEAM Consultants and the same was completed in October 2012.

(v). The above review of feasibility study suggested changes in some of the design parameters resulting in enhancement of the capacity of the project to 69 MW. ECNEC on July 09, 2015 approved a revised PC-1 of the project with a total outlay of Rs. 20.088 Billion. In parallel to the approval of revised PC-1, the EPC contract was awarded on October 26, 2016 to a JV of Sichuan, Sarwar & Co., Silian and Chongqing Luyang after going through an open competitive process. The said contract was signed with the Contract Price of approximately Rs. 16.337 billion and the Notice to proceed was issued on November 03, 2016.

(vi). As explained above, PEDO has submitted the current application for the grant of generation licence for its project of Lawi which is a 69.0 MW Run of River Project proposed to be developed on Shishi River, a left tributary of Chitral River near Drosh Town, District Chitral in the province of Khyber Pakhtunkhwa. The said project is located about 40 Km South of Chitral City. Chitral City is northern most district of Khyber Pakhtunkhwa. Its weir is located on Shishi river which is a tributary of Chitral river. It joins Chitral river on its left bank. The powerhouse of Lawi Hydropower Project

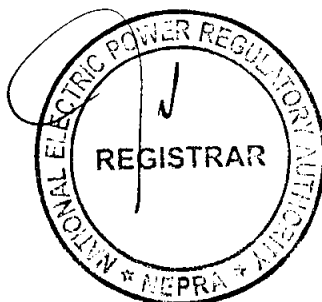


is located about 1.3 Km upstream of confluence of Shishi river and Chitral river. The gross head of Lawi Hydropower Project is 414 m with a design discharge of 20 m³/s.

(vii). A low head concrete weir is proposed on Shishi river near Lao Nassar village to divert water through an intake structure. The water from intake structure is directed through a connecting tunnel to sedimentation ponds. The sedimentation ponds are located underground as open space near the intake is not available. After the sedimentation ponds the clean water is directed to low pressure tunnel which is 11.3 Km long and passes through the hill located on the right bank of Shishi river. At the downstream end there is a surge chamber followed by a long shaft, the upper part of which is concrete lined while the lower part is steel lined. The vertical shaft is 338 m long and is of 3 m diameter. Then there is horizontal pressure tunnel which is steel lined and is 684 m long. At the powerhouse the tunnel feeds three penstocks connected to three Pelton turbines. The releases from the powerhouse will be carried to Chitral river through a concrete lined tailrace canal.

(viii). The total installed capacity of the HPP is 69.0 MW consisting of three (03) Vertical Pelton type turbines (3 x 23.0 MW). The said capacity of the project has been optimized keeping in view the design discharge of 20 m³/s (706 Cusecs). The Lawi HPP is a high head (gross head of 414 m and net head 398.50 meter) run of river project with mean annual energy of approximately 303.00 GWh at plant factor of 58%. The project is in advanced stage of implementation and is expected to be completed by November 01, 2021.

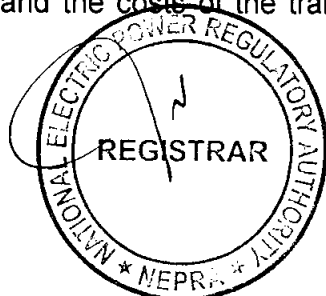
(viii). Regarding GIS of the project, PEDO submitted that it has shortlisted Barqaab Consulting Service Pvt. Ltd. for carrying out the required study and the same will be submitted to the Authority once it is completed. Further, the Authority has reviewed the submission of PEDO whereby it referred to a meeting between PEDO, NTDC and PESCO held on November 15, 2019 regarding power evacuation issues of various projects. In the said meeting, Chief Engineer (NTDC) confirmed the evacuation of power from Lawi project by making an In-Out of existing 132 kV D/C Golen Gol-Timmergarah transmission line.



(ix). The Authority has observed that the proposed project, for which generation licence is being sought, is based on clean water source and does not cause pollution as in the case of conventional power plants. However, the operation of the generation facility/hydro power plant may cause soil pollution, water pollution and noise pollution during construction and operation. In this regard, the Authority has observed that PEDO carried out the Environment Impact Assessment for the project and submitted the same for the consideration and approval of Environmental Protection Agency, Government of KPK (EPAGoKPK). In this regard, EPAGoKPK has already issued a NOC to PEDO for construction of the project.

(x). In terms of Rule-3 of the Generation Rules, the Authority may grant a generation licence to any person to engage in the generation business. The said rule stipulates various conditions pertaining to the grant of generation licence as explained in Rule-3(2), Rule-3(3), Rule-3(4) and Rule-3(5) of the Generation Rules. In the particular case under consideration, the Authority considers that conditions of Rule-3(2) and Rule-3(3) stand satisfied as PEDO has provided details of location, technology, size, net capacity/energy yield, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/hydel Power Plant. The provision of Rule-3(4) of the Generation Rules regarding holding a public hearing is not applicable as there was no issue which required this exercise.

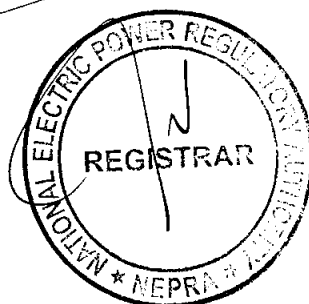
(xi). The Rule-3(5) of the Generation Rules stipulates that the Authority may refuse to issue a generation licence where the site, technology, design, fuel, tariff or other relevant matters pertaining to the generation facility proposed in an application for a generation licence are either not suitable on environmental grounds or do not satisfy the least cost option criteria. In this regard, the Rule-3(5) of the Generation Rules also stipulates the conditions pertaining to least cost option criteria which include (a). sustainable development or optimum utilization of the renewable or non-renewable energy resources proposed for generation of electric power; (b). the availability of indigenous fuel and other resources; (c). the comparative costs of the construction, operation and maintenance of the proposed generation facility against the preferences indicated by the Authority; (d). the cost and right-of-way considerations related to the provision of transmission and interconnection facilities; (e). the constraints on the transmission system likely to result from the proposed generation facility and the costs of the transmission system expansion required to



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remove such constraints; (f). the short-term and the long-term forecasts for additional capacity requirements; (g). the tariff resulting or likely to result from the construction or operation of the proposed generation facility; and (h) the optimum utilization of various sites in the context of both the short-term and the long-term requirements of the electric power industry as a whole.

(xii). In consideration of the above, the Authority has observed that the proposed project will be located in district Chitral which has huge potential for the development of hydel projects including that under consideration project of the Lawi. The Authority considers that the development of the said project will result in development of the indigenous resource of hydel which is considered vital for the sustainable development and optimum utilization of the energy resources of the country. As explained above, although the formal GIS of the project is still under preparation however, based on the preliminary studies it has been established that the project will be connected to existing 132 KV D/C transmission line from Golen Gol to Timmergarah Grid Station. The interconnection of the project will only require the construction of an In-Out arrangement measuring around 01 KM in length. In view of the said, the Authority considers that issues of the cost and right-of-way considerations related to the provision of transmission and interconnection facilities and issues pertaining to the potential constraints on the transmission system will not result likely from the proposed generation facility and the costs of the transmission system expansion required to remove such constraints will be minimum. The Authority is of the considered opinion that the development of the project in Chitral corridor will not only result in meeting with additional capacity requirements in the long term scenario but will result in optimum utilization of various sites in the area. In view of the said, the Authority considers that the project of PEDO fulfills the eligibility criteria for grant of Generation Licence as stipulated in the NEPRA Act, rules, regulations and other applicable documents.

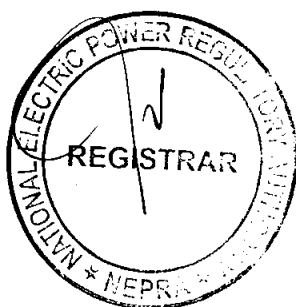


(E). Grant of Generation Licence

(i). The sustainable and affordable energy/electricity is a key prerequisite for socio-economic development of any country. The economic growth of any country is directly linked with the availability of safe, secure, reliable and cheaper supply of energy/electricity. In view of the said reasons, the Authority is of the considered opinion that for sustainable development, all indigenous power generation resources including hydel must be developed on priority basis.

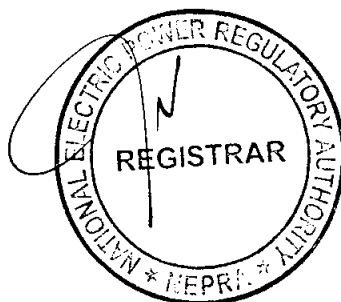
(ii). The existing energy mix of the country is heavily skewed towards the costlier thermal power plants, mainly operating on imported fuel. The import of fuel for electric power generation not only causes depletion of the precious foreign exchange reserves of the country but is also an environmental concern. Therefore, in order to achieve sustainable development, it is imperative that indigenous resources are given priority for power generation and their development be encouraged. The Authority considers that the proposed project of PEDO will not only help in diversifying the energy portfolio of the country but it will also enhance the energy security of the country by reducing the dependence on imported furnace oil and will also help in reduction of carbon emission by generating clean electricity, thus improving the environment.

(iii). The Rule-5(1) of the Generation Rules stipulates that the term of a Generation Licence is to be consistent with the maximum expected useful life of the units comprised in a generating facility, except where an applicant consents to a shorter term. According to the information provided by PEDO, the expected Commercial Operation Date (COD) of the generation facility/Hydel Power Plant is November 01, 2021 and will have a useful life of more than thirty (30) years from its COD. In this regard, PEDO has requested that the term of the proposed generation licence may be fixed as thirty years. In consideration of the said, it is clarified that the submissions of PEDO are in line with the industry standards and norms. In view of the said and considering the fact that PEDO has consented for a shorter term of thirty (30) years, the Authority fixes the term of the generation licence as thirty (30) years from COD of the project, subject to the Section 14-B of the NEPRA Act.



(iv). Regarding the tariff, it is hereby clarified that under Section-7(3)(a) of the NEPRA Act, determining tariff, rate and charges etc. is the sole prerogative of the Authority. In this regard, PEDO in terms of the relevant provisions of the relevant rules has already filed a petition for determination of tariff of the project. The Authority has admitted the said petition and the same in advance stage of processing. In view of the said, the Authority considers appropriate to direct PEDO to charge the power purchaser/CPPA-G only such tariff which has been determined, approved or specified by it. In view of the said, the Authority decides to include a specific article in the generation licence and directs PEDO to adhere to the said in letter and spirit without any exception.

(v). About the compliance with the environmental standards, as discussed in the preceding paragraphs, PEDO has provided the NOC from EPAGoKPK and has confirmed that the project will comply with the required standards during the term of the Generation Licence. In view of the importance of the issue, the Authority has decided to include a specific article in the Generation Licence along with other terms and conditions making it obligatory for PEDO to comply with relevant environmental standards at all times. Further, the Authority directs PEDO to submit a report on a bi-annual basis, confirming that operation of its generation facility is compliant with the required environmental standards as prescribed by the concerned environmental protection agency. As the proposed generation facility/Hydel Power Plant of PEDO will be using hydel source for generation of power, therefore the project may qualify for the Carbon Credits. In this regard, an article for carbon credits and sharing its proceeds with the power purchaser has been included in the generation licence.




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(vi). In view of the above, the Authority hereby approves the grant of Generation Licence to PEDO for its Lawi Hydel Power Plant subject to the condition that the licensee/PEDO will apply for Licence Proposed Modification to reflect the final interconnection arrangement in its Generation Licence once GIS is finalized and approved by the relevant agency. The grant of generation licence will be subject to the provisions contained in the NEPRA Act, relevant rules, regulations framed thereunder and other applicable documents.

Authority

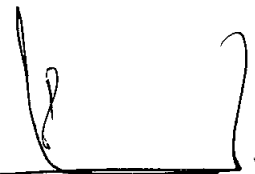
Rafique Ahmed Shaikh
(Member)


2/2/21


Rehmatullah Baloch
(Member)


2/2/21

Engr. Bahadur Shah
(Member)

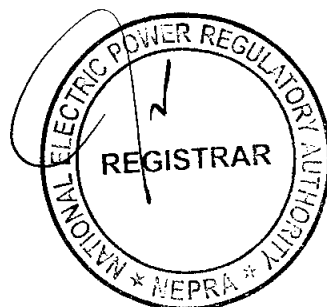


Saif Ullah Chattha
(Member)


4-2-2021

Tauseef H. Farooqi
(Chairman)

Did not Attend-Away





**National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan**

GENERATION LICENCE

No. GL(Hydel)/17/2021

In exercise of the powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section-14B of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997/Amendment Act, 2018, the Authority hereby grants a Generation Licence to:

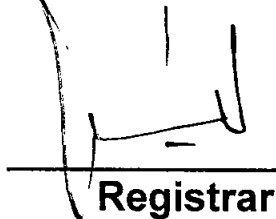
Pakhtunkhwa Energy Development Organization/PEDO
Set up under the PEDO Act of 2014 of Government of Khyber
Pakhtunkhwa (KPK)

for its Hydel Based Generation Facility/Lawi Hydel Power Plant
Located on River Shishi, near Drosh Town, Tehsil Drosh,
District Chitral in the Province of Khyber Pakhtunkhwa

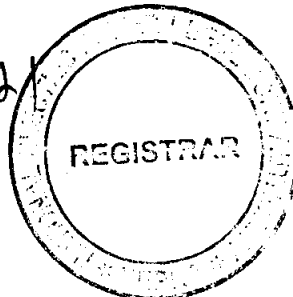
(Total Installed Capacity: 69.0 MW Gross)

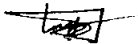
to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand this on 9th day of February Two
Thousand & Twenty One and expires on 31th day of October
Two Thousand & Fifty One.


Registrar

9/2/21



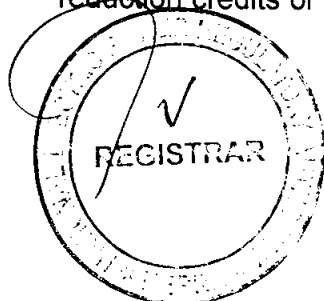


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Article-1 **Definitions**

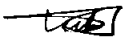
1.1 In this licence

- (a). "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 as amended or replaced from time to time;
- (b). "Applicable Documents" mean the Act, the rules and regulations framed by the Authority under the Act, any documents or instruments issued or determinations made by the Authority under any of the foregoing or pursuant to the exercise of its powers under the Act, the Grid Code, the applicable Distribution Code, the Commercial Code, or the documents or instruments made by the Licensee pursuant to its generation licence, in each case of a binding nature applicable to the Licensee or, where applicable, to its affiliates and to which the Licensee or any of its affiliates may be subject;
- (c). "Applicable Law" means all the Applicable Documents;
- (d). "Authority" means the National Electric Power Regulatory Authority constituted under Section-3 of the Act;
- (e). "Bus Bar" means a system of conductors in the generation facility/Hydel Power Plant of the Licensee on which the electric power from all the generators is collected for supplying to the Power Purchaser;
- (f). "Carbon Credits" mean the amount of Carbon Dioxide (CO₂) and other greenhouse gases not produced as a result of generation of electric energy by the generation facility/Hydel Power Plant and other environmental air quality credits and related emissions reduction credits or benefits (economic or otherwise) related to the



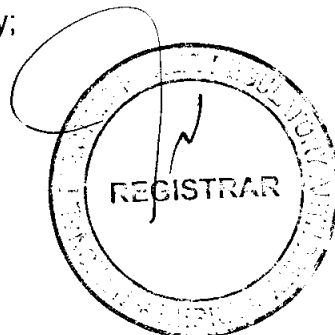
generation of electric energy by the generation facility/Hydel Power Plant, which are available or can be obtained in relation to the generation facility/Hydel Power Plant after the COD;

- (g). "Commercial Code" means the commercial code prepared by CPPA-G under National Electric Power Regulatory Authority (Market Operator, Registration, Standards and Procedure) Rules, 2015 as amended or replaced from time to time;
- (h). "Commercial Operations Date (COD)" means the day immediately following the date on which the generation facility/Hydel Power Plant of the Licensee is commissioned;
- (i). "Commissioning" means the undertaking of the Commissioning Tests of the generation facility/Hydel Power Plant as stipulated in the EPA;
- (j). "CPPA-G" means Central Power Purchasing Agency (Guarantee) Limited or any other entity created for the like purpose;
- (k). "Distribution Code" means the distribution code prepared by the concerned XW-DISCO and approved by the Authority, as may be revised from time to time with necessary approval of the Authority;
- (l). "Energy Purchase Agreement (EPA)" means the energy purchase agreement, entered or to be entered into by and between the Power Purchaser and the Licensee, for the purchase and sale of electric energy generated by the generation facility/Hydel Power Plant, as may be amended by the parties thereto from time to time;
- (m). "Generation Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000 as amended or replaced from time to time;
- (n). "Grid Code" means the grid code prepared and revised from time to time by NTDC with necessary approval of the Authority;





- (o). "Hydel Power Plant " means a generation facility for production of electric power using water as source;
- (p). "IEC" means "the International Electrotechnical Commission or its successors or permitted assigns;
- (q). "IEEE" means the Institute of Electrical and Electronics Engineers or its successors or permitted assigns;
- (r). "Licensee" means **Pakhtunkhwa Energy Development Organization (PEDO)** or its successors or permitted assigns;
- (s). "Licensing Regulations" mean the National Electric Power Regulatory Authority Licensing (Application & Modification Procedure) Regulations, 1999 as amended or replaced from time to time;
- (t). "Net Delivered Energy" means the net electric energy expressed in kWh generated by the generation facility/Hydel Power Plant of the Licensee at its outgoing Bus Bar and delivered to the Power Purchaser;
- (u). "NTDC" means National Transmission and Despatch Company Limited or its successors or permitted assigns;
- (v). "PESCO" means Peshawar Electric Supply Company Limited or its successors or permitted assigns;
- (w). "Power Purchaser" means CPPA-G which will be purchasing electric energy from the Licensee either on behalf of all XW-DISCOs or any single XW-DISCO, pursuant to an EPA for procurement of electric energy;



- (x). "SCADA System" means the supervisory control and data acquisition system for gathering of data in real time from remote locations to control equipment and conditions;
- (y). "XW-DISCO" means an Ex-WAPDA distribution company engaged in the distribution of electric power.

1.2 The words and expressions used but not defined herein bear the meaning given thereto in the Act or Generation Rules and Licensing Regulations issued under the Act.

Article-2 **Applicability of Law**

This licence is issued subject to the provisions of the Applicable Law, as amended from time to time.

Article-3 **Generation Facilities**

3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the generation facility/Hydel Power Plant of the Licensee are set out in Schedule-I of this licence.

3.2 The net capacity/Net Delivered Energy of the generation facility/Hydel Power Plant of the Licensee is set out in Schedule-II of this licence. The Licensee shall provide the final arrangement, technical and financial specifications and other specific details pertaining to its generation facility/Hydel Power Plant before its COD.

Article-4 **Term of Licence**

4.1 This licence shall become effective from the date of its issuance and will have a term of thirty (30) years from the COD of the generation facility/Hydel Power Plant of the Licensee subject to Section 14-B of the Act.



4.2 Unless suspended or revoked earlier or Licence ceases to have effect, the Licensee may apply for renewal of this Licence ninety (90) days prior to the expiry of the above term, as stipulated in the Licensing Regulations.

Article-5 **Licence fee**

The Licensee shall pay to the Authority the licence fee as stipulated in the National Electric Power Regulatory Authority (Fees) Rules, 2002 as amended or replaced from time to time.

Article-6 **Tariff**

The Licensee shall charge only such tariff from the Power Purchaser which has been determined, approved or specified by the Authority.

Article-7 **Competitive Trading Arrangement**

7.1 The Licensee shall participate in such manner as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement.

7.2 The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.3 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.



Article-8
Maintenance of Records

For the purpose of sub-rule(1) of Rule-19 of the Generation Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.

Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of the National Electric Power Regulatory Authority Performance Standards (Generation) Rules 2009 as amended or replaced from time to time.

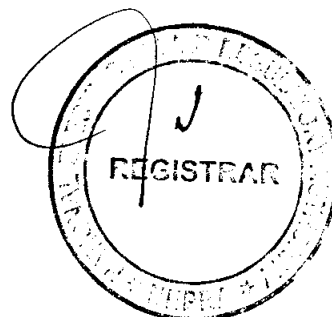
Article-10
Compliance with Environmental & Safety Standards

10.1 The generation facility/Hydel Power Plant of the Licensee shall comply with the environmental and safety standards as may be prescribed by the relevant competent authority from time to time.

10.2 The Licensee shall provide a certificate on a bi-annual basis, confirming that the operation of its generation facility/Hydel Power Plant is in conformity with required environmental standards as prescribed by the relevant competent authority.

Article-11
Power off take Point and Voltage

The Licensee shall deliver the electric energy to the Power Purchaser at the outgoing Bus Bar of its generation facility/Hydel Power Plant. The Licensee shall be responsible for the up-gradation (step up) of generation voltage up to the required dispersal voltage level.



Article-12 **Performance Data**

12.1 The Licensee shall install properly calibrated automatic computerized recording device(s) for measuring flow of water at its generation facility/Hydel Power Plant for recording of data.

12.2 The Licensee shall install SCADA System or compatible communication system at its generation facility/Hydel Power Plant as well as at the side of the Power Purchaser.

12.3 The Licensee shall transmit the data for flows of water and power output of its generation facility/Hydel Power Plant to the control room of the Power Purchaser.

Article-13 **Provision of Information**

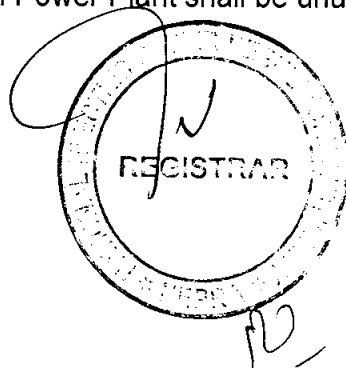
In accordance with provisions of Section-44 of the Act, the Licensee shall be obligated to provide the required information in any form as desired by the Authority without any exception.

Article-14 **Emissions Trading /Carbon Credits**

The Licensee shall process and obtain expeditiously the Carbon Credits admissible to the generation facility/Hydel Power Plant. The Licensee shall share the said proceeds with the Power Purchaser as per the relevant policy.

Article-15 **Design & Manufacturing Standards**

The generation facility/Hydel Power Plant of the Licensee shall be designed, manufactured and tested according to the latest IEC, IEEE standards or any other equivalent standard in the matter. All the plant and equipment of generation facility/Hydel Power Plant shall be unused and brand new.



Article-16
Power Curve

The Power Purchaser shall verify the power curve of the generation facility of the Licensee, as part of the Commissioning tests according to the latest IEC/IEEE standards and shall be used to measure its performance.

Article-17
Compliance with Applicable Law

The Licensee shall comply with the provisions of the Applicable Law, guidelines, directions and prohibitory orders of the Authority as issued from time to time.

Article-18
Corporate Social Responsibility

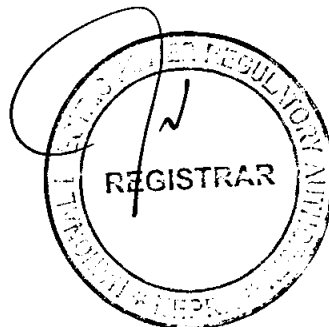
The Licensee shall provide the descriptive as well as monetary disclosure of its activities pertaining to Corporate Social Responsibility (CSR) on an annual basis.



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SCHEDULE-I

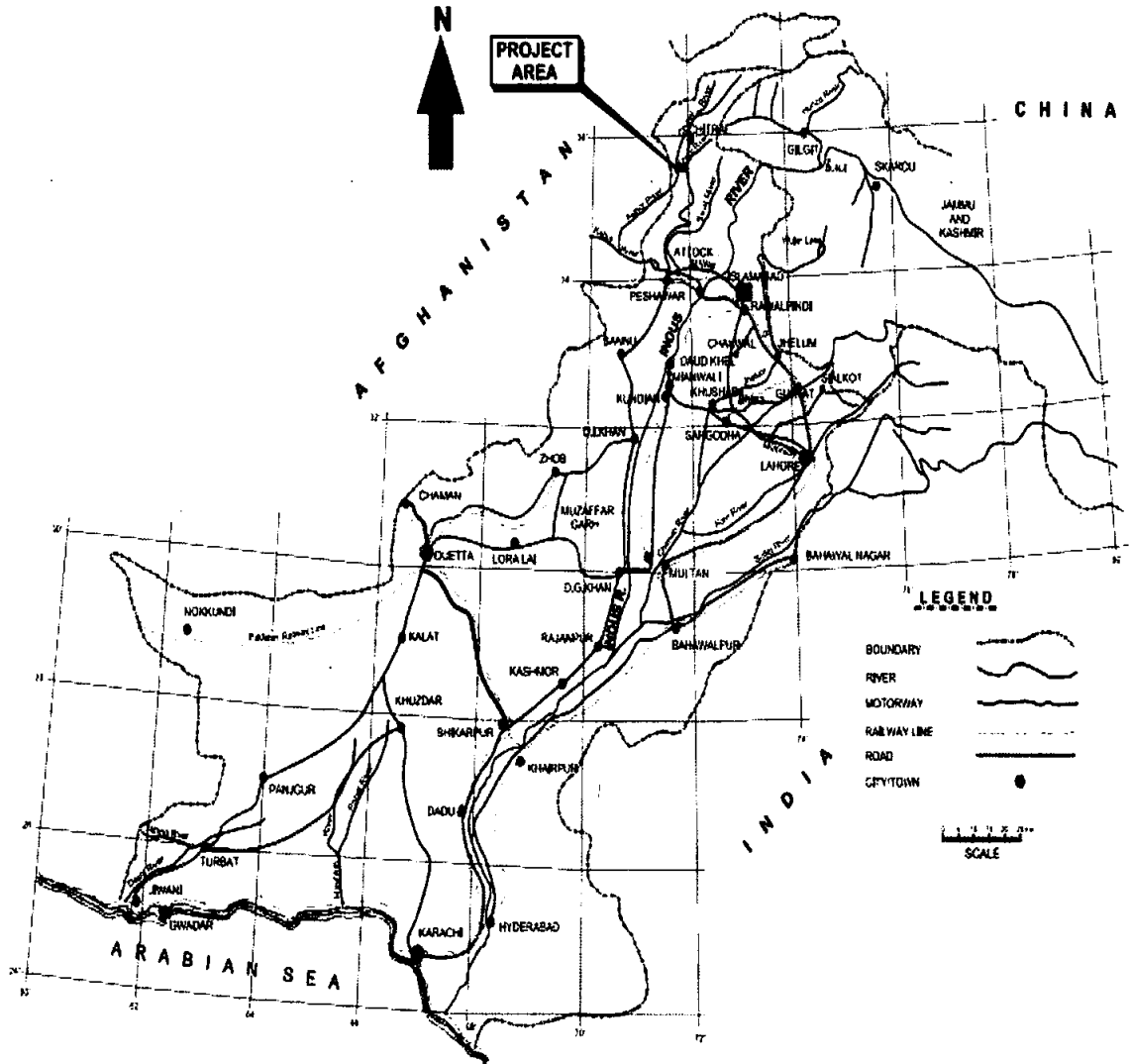
The Location, Size (i.e. Capacity in MW), Type of Technology, Interconnection Arrangements, Technical Limits, Technical/Functional Specifications and other details specific to the Generation Facilities of the Licensee are described in this Schedule.



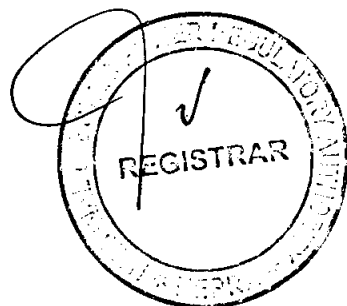
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Generation Licence
 Pakhtunkhwa Energy Development Organization-PEDO
 Lawi Hydel Power Plant
 Near Drosh Town, Tehsil Drosh
 District Chitral
 in the Province of Khyber Pakhtunkhwa

**Location of the
 Generation Facility/Hydel Power Plant of the Licensee
 on Map of Pakistan**



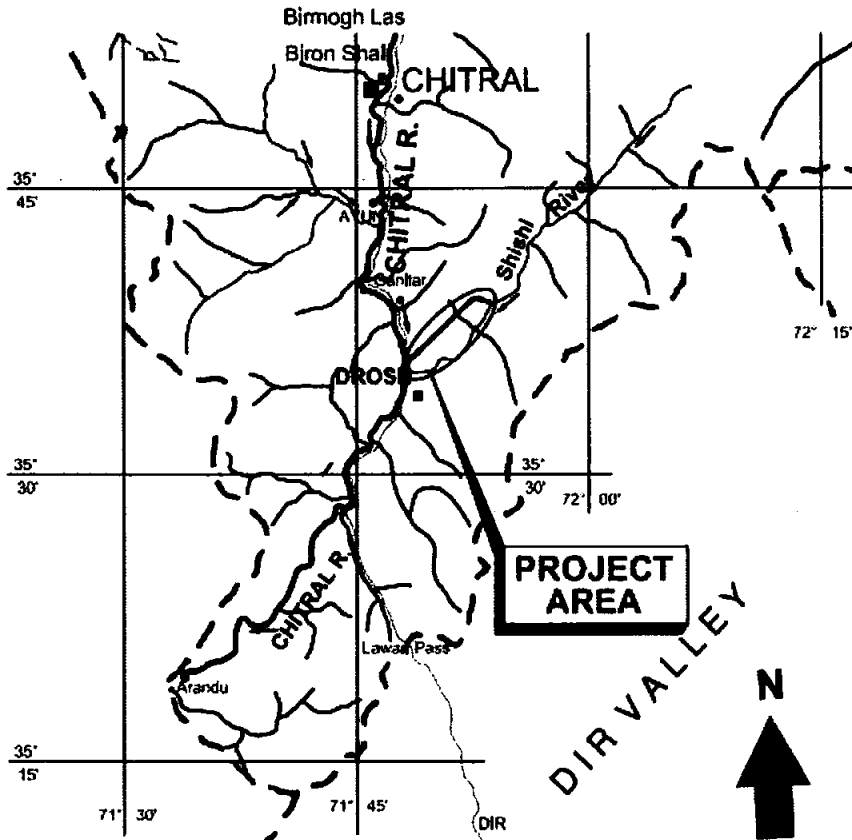
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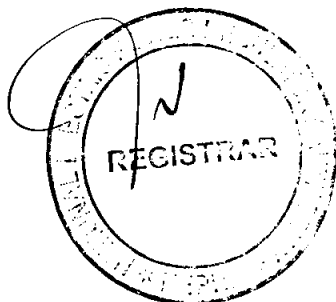
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Generation Licence
Pakhtunkhwa Energy Development Organization-PEDO
Lawi Hydel Power Plant
Near Drosh Town, Tehsil Drosh
District Chitral
in the Province of Khyber Pakhtunkhwa

**Location of the
Generation Facility/Hydel Power Plant of the Licensee
on Map of Province of Khyber Pakhtunkhwa**

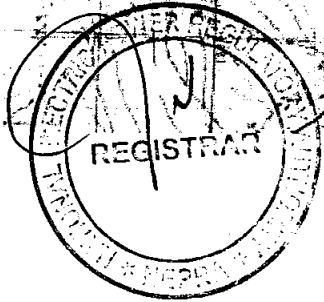
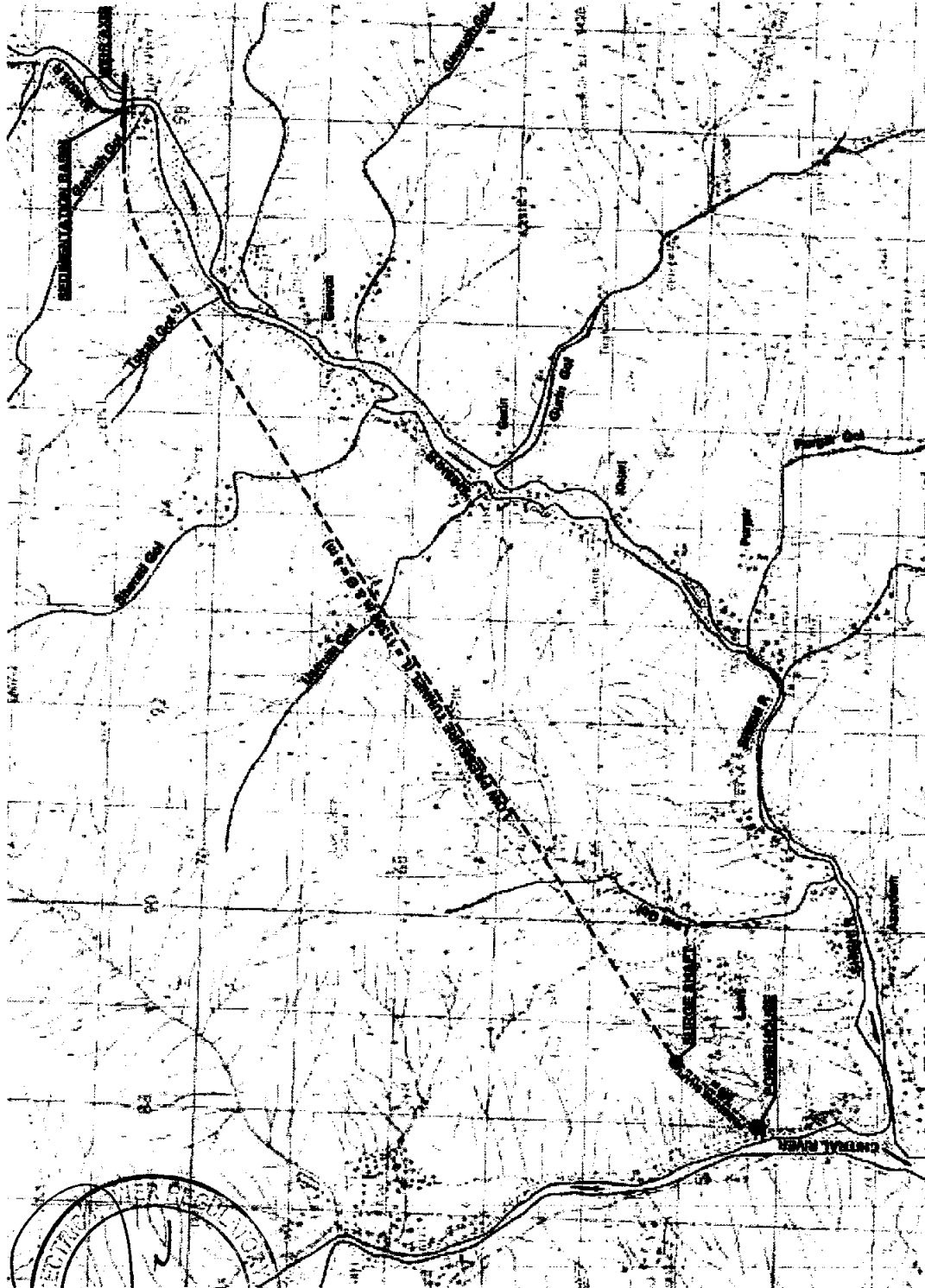


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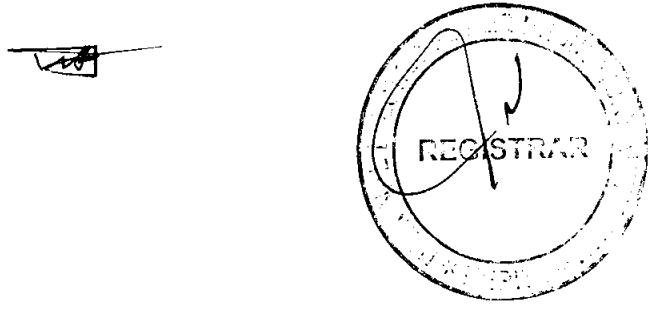
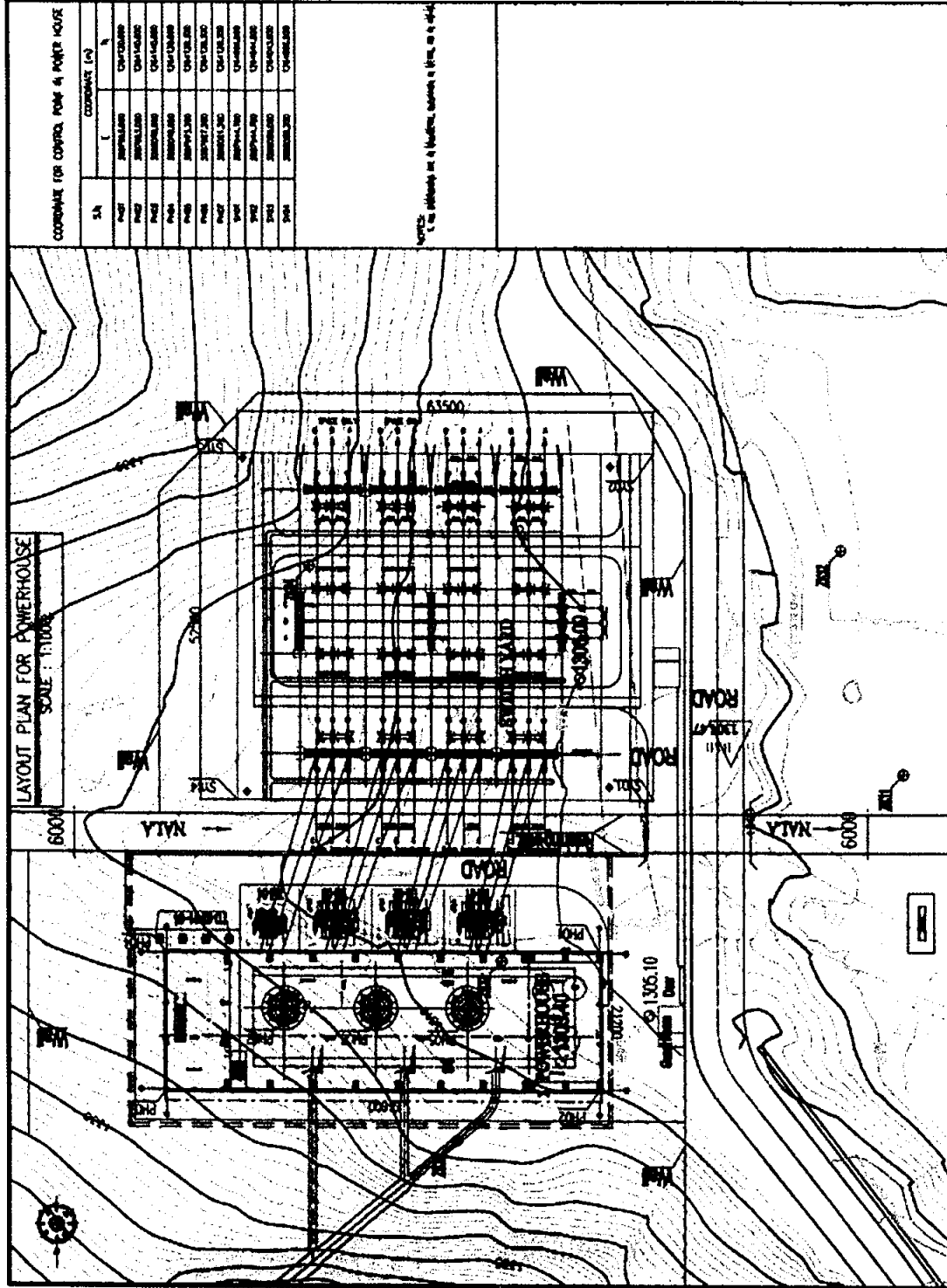
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Lay-out of the
Generation Facility/Hydel Power Plant of
the License

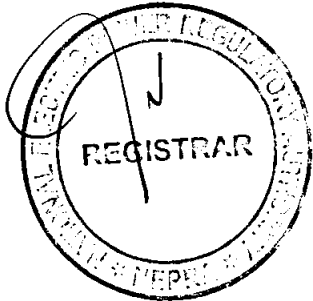
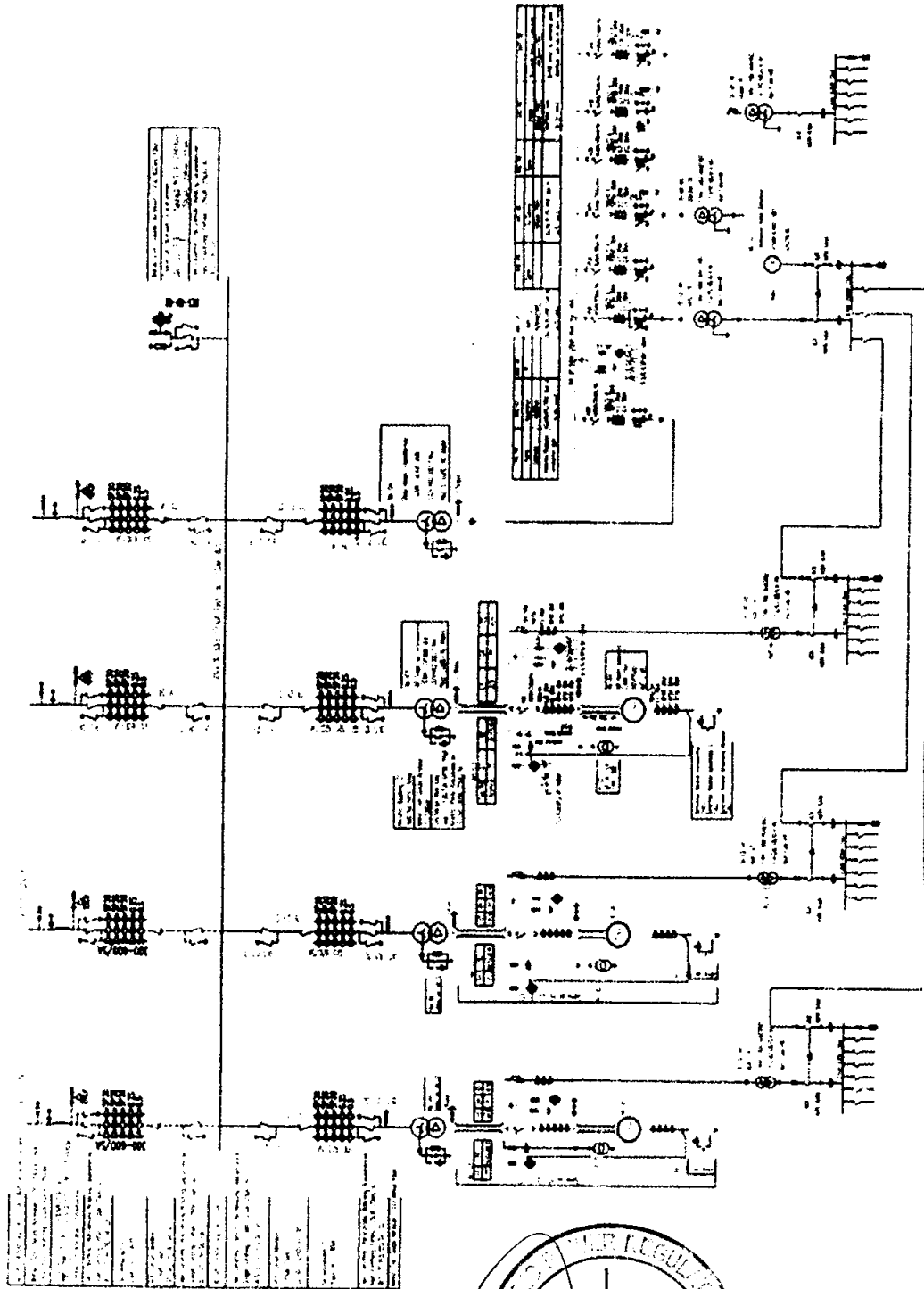


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**Powerhouse of the
 Generation Facility/Hydel Power Plant of
 the Licensee**



**Single line Diagram (Electrical) of the
Generation Facility/Hydel Power Plant
Of the Licensee**



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**Interconnection Arrangement for
Dispersal of Electric Energy/Power from the Generation
Facility/Hydel Power Plant of the Licensee**

The electric power generated from the generation facility/Hydel Power Plant of the Licensee/Pakhtunkhwa Energy Development Organization (PEDO) shall be dispersed to the load centre of PESCO.

(2). Regarding the interconnection arrangement/transmission facilities of the project, PEDO submitted that it has shortlisted Barqaab Consulting Service Pvt. Ltd. for carrying out the required study and the same will be submitted to the Authority once it is completed. Further, the Authority has reviewed the submission of PEDO whereby it referred to a meeting between PEDO, NTDC and PESCO held on November 15, 2019 regarding power evacuation issues of various projects. In the said meeting, Chief Engineer (NTDC) confirmed the evacuation of power from Lawi project by making an In-Out of existing 132 kV D/C Golen Gol-Timmergarah transmission line.

(3). In this regard, the Authority directs to apply for Licence Proposed Modification to reflect the final interconnection arrangement in its Generation Licence once Grid Interconnection Study is finalized and approved by the relevant agency.



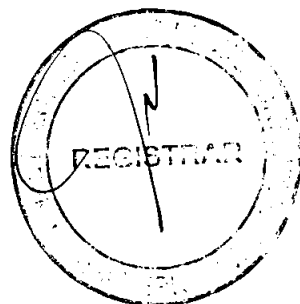
**Detail of
Generation Facility/Hydel Power Plant
of the Licensee**

(A). General Information

(i).	Name of the Licensee/ Company	Pakhtunkhwa Energy Development Organization (PEDO)
(ii).	Registered/Business Office of the Licensee/ Company	PEDO House, 38-B2, Phase-V, Hayatabad, Peshawar
(iii).	Location of the Generation Facility	Near Drosh, District Chitral, Khyber Pakhtunkhwa
(iv).	Type of Generation Facility	Hydel Power Plant

(B). Configuration etc.

(i).	Size/ Installed Capacity of the Generation Facility (Gross)	69.00 MW
(ii).	Type of Storage etc.	Run of River Hydel Power Plant
(iii).	Water Source	Shishi River
(iv).	Type of Technology	Three (03) Vertical Shaft impulse Turbines
(v).	Number of Units & Size (MW)	3 x 23 MW
(vi).	Turbine Make & Model	To be provided later
(vii).	COD of the Generation Facility	November 01, 2021
(viii).	Expected Life of the Generation Facility from COD	Thirty (30) Years



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(C). Main Design Features

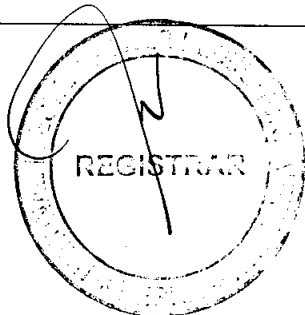
(i).	Design Discharge Q	20 m ³ /sec
(ii).	Gross Head	414 m
(iii).	Installed elevation of generation unit	1297.2 m
(iv).	Rated net head	398.50 m
(v).	Head Loss	15.5 m
(vi).	Maximum Head	414 m
(vii).	Minimum Head	377.35 m

(D). Weir Structure

(i).	Weir Type	Concrete Weir
(ii).	Height of over flow section from riverbed	2.2 m
(iii).	Height from weir top (road level) to riverbed	8.2 m
(iv).	Depth below riverbed	8.4 m
(v).	Crest width overflow section	60 m
(vi).	Design Flood (500 year return period)	872 m ³ /sec

(E). Intake Structure

(i).	Intake orientation	Parallel to river flow
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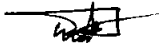
(ii).	Location	Right bank of river
(iii).	Invert level of intake structure	1701.20 m.a.s.l.
(iv)	Width height of orifice	9 m x 4 m

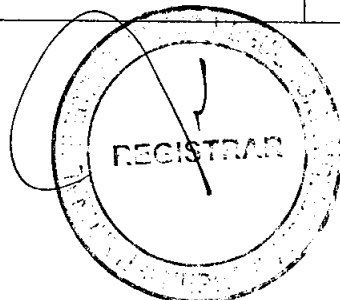
(F). Connecting Tunnel

(i).	Structure	Connecting channel
(ii).	Height	3 m
(iii).	Width	4.5 m
(iv).	Length	296.15 m
(v)	Invert level	1707.20 m.a.s.l.

(G). Sand Trap

(i).	Location	Right bank, 200 m downstream of weir
(ii).	No. of Chambers	Double chamber
(iii).	Working length	68 m
(iv)	Working width (single chamber)	17.9 m
(v)	Working depth	6.75 m
(vi)	Total Width	17.9 m
(vii)	Total Length	90 m







(H). Headrace tunnel

(i).	Internal Height	4.3 m
(ii).	Internal Width / radius	2.15 m
(iii).	Cross Sectional area	15.73 m ²
(iv).	Total Length	12,116 m

(I). Surge Tank (Shaft Type)

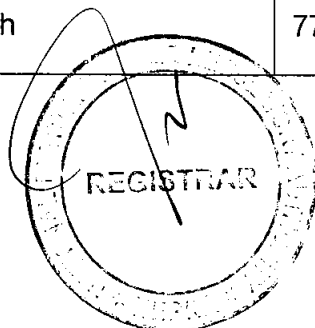
(i).	Internal Height	9 m
(ii).	Cross Sectional area	63.59 m ²
(iii).	Height	70 m

(J). Pressure Shaft

(i).	Internal Diameter	3.0 m
(ii).	Cross Sectional area	7.069 m ²
(iii).	Length	236 m

(K). Penstock Tunnel

(i).	Internal Diameter	2.5 m
(ii).	Cross Sectional area	4.91 m ²
(iii).	Length	776 m



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(L). Tailrace

(i).	Type	Box channel
(ii).	Width	4 m
(iii).	Height	3 m
(iv).	Length	104.86 m

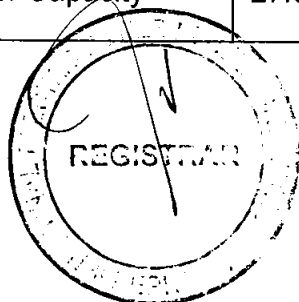
(M). Turbine(s)

(i).	Type of Turbine	Vertical Axis Pelton
(ii).	No. of Units	03
(iii).	No. of Jets	04
(iv).	Unit Discharge	6.67 m ³ /sec
(v).	Rated Turbine Speed	500 rpm
(vi).	Turbine Runaway speed	900 rpm
(vii).	Turbine Efficiency	91 %
(viii).	Runner Diameter	1.62 m

(N). Generator(s)

(ix).	No. of Generators	03
(x).	Generator Capacity	27.078 MVA

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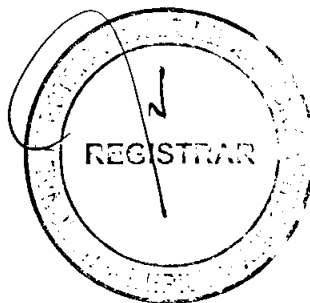


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(xi).	Excitation	Static
(xii).	Frequency	50 Hz
(xiii).	Generator Efficiency	97 %
(xiv).	Insulation Class	F
(xv).	Limit of Utilization	Class B
(xvi).	Connection	Y

(O). Transformer(s)

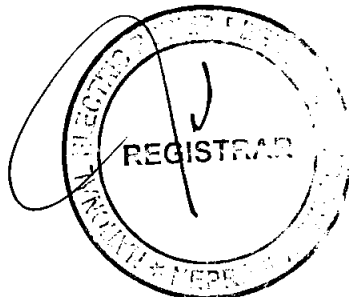
(xvii).	No. of Step-Up Transformers	03
(xviii).	Capacity of Each Transformer	30 MVA
(xix).	Primary Voltage	11 kV
(xx).	Secondary Voltage	132 kV \pm 10%
(xxi).	Temperature rise	55°C
(xxii).	Vector group	YN d11
(xxiii).	Impedance	9-12 %
(xxiv).	Cooling	Oil Forced Water Forced (OFWF)



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(P). Plant Characteristics

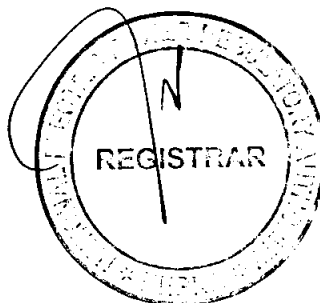
(i).	Generation Voltage	11 kV
(ii).	Frequency	50 Hz
(iii).	Power factor	0.85
(iv).	Automatic Generation Control	Yes
(v).	Ramping Rate	To be provided later
(vi).	Time required to Synchronize to Grid and loading the Complex full load	To be provided later



no

SCHEDULE-II

The Total Installed Gross ISO Capacity (MW), De-Rated Capacity At Reference Site Conditions (MW), Auxiliary Consumption (MW) and the Net Capacity At Reference Site Conditions (MW) of the Generation Facility/Hydro Power Plant of Licensee is given in this Schedule



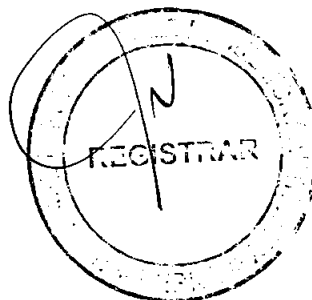
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SCHEDULE-II

(1).	Total Installed Gross Capacity of the Generation Facility/Hydel Power Plant (3 x 23.0 MW Pelton Turbines)	69.00 MW
(2).	Total De-Rated Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions (3 x 23.0 MW Pelton Turbines)	69.00 MW
(3).	Auxiliary Consumption of the Generation Facility/Hydel Power Plant (3 x 0.23 MW Pelton Turbines)	0.69 MW
(4).	Net Capacity of the Generation Facility/Hydel Power Plant at Mean Site Conditions Condition (3 x 22.77 MW Pelton Turbines)	68.31 MW
(5).	Mean Annual Energy of the Generation/Hydel Power Plant	303 GWh

Note

All the above figures are indicative as provided by the Licensee. The Net Delivered Energy available to Power Purchaser for dispatch will be determined through procedures contained in the Energy Purchase Agreement (EPA) or the Applicable Document(s).



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