Before

UTTARAKHAND ELECTRICITY REGULATORY COMMISSION

Petition No. 37 of 2023

In the Matter of:

Petition seeking approval of capital investment for Supply Installation Testing & Commissioning (SITC) of Generator Transformer (75 MVA, 11/220 KV) with all accessories including dismantling of existing transformer at 4 x 60 MW Chibro Powerhouse under Section 61 and 86 of the Electricity Act, 2003 read with the relevant regulations and guidelines of the Commission.

And

In the Matter of:

Managing Director,
UJVN Limited,
"UJJWAL", Maharani Bagh, GMS Road,
Dehradun.

…Petitioner

Coram

Shri D.P. Gairola **Member (Law) /Chairman (I/c)**

Shri M.K. Jain **Member (Technical)**

Date of Order: October 31, 2023

ORDER

This Order relates to the Petition filed by UJVN Ltd. (hereinafter referred to as "the Petitioner") seeking prior approval of the Commission for 'Capital investment for SITC of Generator Transformer (75 MVA, 11/220 kV) with all accessories including dismantling of existing transformer at 4 x 60 MW Chibro Powerhouse under Section 61 and Section 86 of the Electricity Act, 2003 read with the relevant regulations and guidelines of the Commission'.

Background

2. The Petitioner vide its letter No. M-357/UJVNL/02/D(O)/B-8 dated 31.03.2023 submitted a Petition for 'Capital investment for SITC of Generator Transformer (75 MVA, 11/220 kV) with all accessories including dismantling of existing transformer at 4 x 60 MW Chibro Powerhouse'.

3. The Petitioner under the facts of the case has submitted that:

"…

3.4 Chibro Power Station has been constructed under Hydel Yamuna Scheme Stage-II, which comprises of a diversion dam across the river Tons at Ichari, a head race tunnel (6.2 Km) from the diversion dam to Chibro and an under-ground power station at Chibro. The power station consists of four generating units each having a capacity of 60 MW with a total installed capacity of 240 MW.

3.5 In the downstream of Chibro Powerhouse (240 MW) there is Khodri Powerhouse (120 MW). Both the Power Houses run in tandem i.e. in a manner to maintain a perfect hydraulic rhythm in the water conductor system and one follows the other or if upstream (Chibro) unit is in operation, downstream (Khodri) unit shall follow the suit.

3.6 Generator Transformers of capacity 4x69 MVA, 11/220 kV, 3-ø, 50 Hz were installed & commissioned in 1974 at Chibro Powerhouse for step-up 11 kV generating voltage to 220 kV grid voltage. Each transformer consists of 02 Nos Water Oil Cooling Coolers, Temperature & Protection control panel, HV & LV Bushings and all other accessories. Each Generator Transformer has a separate isolated brick wall chamber with one entry gate in the cavity of Chibro Powerhouse.

3.7 Generator Transformers are in use from last 48 years i.e. since commissioning 1974-75. The life of a power transformer mainly depends on the condition of the paper-oil insulation system. Manufacturers often define the expected life of power transformers to be between 35 to 40 years.

3.8 OEM of Generator transformers is M/s Bharat Electricals Limited, Bhopal. Generator Transformers are in use for last 48 years. As per the CERC norms expected life of transformers are 40 to 50 years only.

3.9 UJVN Ltd. has conducted various test on Generator Transformer during annual maintenance period during 2022-23. Tan delta results of generator transformer of Chibro Powerhouse are on higher side with reference to the acceptable limit as per CIGRE 445 standards indicating deterioration in the insulation. The report of the same is enclosed as part of the DPR.

3.10 Transformers have completed their reliable useful life period. Hence, probability of failure of GT is increasing with time. Further, on account of failure of any existing generator transformer, rectification / replacement activity shall be at

least of 10 months. The expected generation loss and loss on account of PAF shall be un-avoidable for a period of at least 10 months of Chibro Powerhouse as well as Khodri Powerhouse due to tandem control and operational inter-dependency.

3.11 *In view of above SITC of Generator Transformer (75 MVA, 11/220 kV) with all accessories including dismantling of existing transformer at Chibro Powerhouse is required in order to avoid huge Generation Loss at Chibro and Khodri Power Houses.*

3.12 *As per Regulation 22 (4) of UERC Tariff Regulations, 2021, a generating company is required to get prior approval for the additional capitalization works exceeding ₹ 5 Crore. The Regulation 22 (4) of UERC Tariff Regulations, 2021 states that: -*

"Any addition/modification to the existing assets exceeding Rs. 2.50 Crore in case of distribution licensees and Rs. 5 Crore in case of generating companies/transmission licensees shall be taken up only after prior approval of the Commission. The investment approval applications covered under this sub-regulation are excluded from the application of proviso to Sub-regulation (2) of Regulation 10 of UERC (Conduct of Business) Regulations, 2014 in so far as the requirement of submission of documentary evidence with respect to the approval of BoD is concerned."

3.13 *Therefore, a DPR amounting to ₹ 22.96 Crore including taxes has been prepared in-house and is approved by the Competent Authority for SITC of Generator Transformer (75 MVA, 11/220 kV) with all accessories including dismantling of existing transformer at 4 x 60 MW Chibro Power House. The works proposed in the DPR will be carried out during the financial year 2023-24 & 2024-25.*

3.14 *The estimated cost for carrying out the capital investment for SITC of Generator Transformer (75 MVA, 11/220 kV) with all accessories including dismantling of existing transformer at 4 x 60 MW Chibro Powerhouse is summarized as under-*

S. No.	***Description***	***Unit***	***Qty.***	***Rate (Rs.)***	***Total***
A.	***SUPPLY***				
1	*Design, manufacture, delivery of 3-Phase, 220/11 kV, 75 MVA Generator Transformer Make-Siemens/ABB/ Alstom/ BHEL/ Hitachi make (with transformer*	*NO*	*01*	*17,60,00,000*	*17,60,00,000*

S. No.	Description	Unit	Qty.	Rate (Rs.)	Total
	oil) with all fitting and accessories including, Protection Panel, including cost of all routine test. (As per the enclosed detailed technical specification)				
2	*Nitrogen Injection Fire Protection system*	*NO*		*20,00,000*	*20,00,000*
Supply of spare					
3	*HV Bushing-01 Set (03nos)* *LV Bushing with rod-01 Set (03No)* *Neutral Bushing-01 no.* *Remote OTI, WTI with its CT-01 Set* *Spanner Set-01*	*LOT*	*01*	*72,00,000*	*72,00,000*
	Sub Total of (A)				***18,52,00,000***
B.	***Services/Work-***				
1	*Transportation freight/insurance etc of supply from manufacturer to Chibro Powerhouse*	*JOB*	*01*	*8,00,000*	*8,00,000*
2	*Dismantling all connection of exist 69 MVA transformer and transport at required nearby place Dakpathar.*	*JOB*	*01*	*2,00,000*	*2,00,000*
3	*Shifting, installation and commissioning, cable laying and all testing as tan delta & power dissipation analysis tests of 75 MVA transformer in line with SF6 breaker and integration with protection panel, existing CRP and SAS as per IS standard. Any other material/work required as complete earthing, terminal conductor and consumable material etc. for commissioning the 75 MVA generator transformer.*	*JOB*	*01*	*65,00,000*	*65,00,000*
4	*Installation, testing & commissioning of Nitrogen injection fire protection system with generator transformer*	*JOB*	*01*	*4,00,000*	*4,00,000*

S. No.	Description	Unit	Qty.	Rate (Rs.)	Total
	including making of SS oil sump with all required accessories.				
5	*Civil work of removing and re-building a wall of size 8.4Lx8.3Hx0.3 thick meters including entry gate size 1.63 W x 2.58 H for installation. Removing and re-building of various hindrance found in the way.*	*JOB*	*01*	*15,00,000*	*15,00,000*
	Sub Total of (B)				***94,00,000***
	Grand Total (Rs.) of (A+B)				***19,46,00,000***
	GST @18%				***3,50,28,000***
	Grand Total including GST				***22,96,28,000***

"

4. The Petitioner in its Petition has mentioned that it shall arrange the expenditure from its internal resources. Further, with regard to phasing of expenditure the total expenditure of Rs. 22.75 Crore would be incurred during FY 2023-24 and Rs. 0.22 Crore during the FY 2024-25.

5. With regard to the specific inclusion of the proposed investment for 75 MVA Generator Transformer at Chibro Power House in the approved capital expenditure for the year, the Commission vide its letter dated 03.05.2023 directed UJVN Ltd. to furnish its reply. In response to the same, UJVN Ltd. vide its submission dated 22.05.2023 confirmed that the proposed work of SITC of generator transformer (75 MVA, 11/220 kV) with all accessories at 4x60 MW Chibro Power House is included in proposed capital expenditure works for FY 2023-24.

6. On examination of the Petition & DPR certain deficiencies/infirmities were identified and accordingly, the Commission vide its letter No. 413 dated 14.07.2023 directed the Petitioner to submit/furnish its compliance latest by 10.08.2023. In compliance to this, UJVN Ltd. vide its letter dated 14.08.2023 submitted its point-wise reply as follows:-

"

S. No.	Deficiencies	Petition of UJVN Ltd.
1	UJVN Ltd. submitted the necessity for replacement of at least one number existing Generator Transformer (GT) by new GT in order to carry out refurbishment/overhauling of all four existing GT in phased manner without generation loss. Further, UJVN Ltd. submitted that refurbishment oil, oil pump, marshaling kiosk that makes the GT equivalent to new one except transformer oil tank & conservator tank. In this regard, UJVN Ltd. is required to submit the cost benefit analysis duly considering the generation loss at Chibro & Khodri HEP for two scenario (1) Refurbishment of existing GT (2)New 75 MVA GT.	Estimated cost for replacement of 01 no existing GT with new 75 MVA GT is Rs. 19.46 Crore plus applicable GST extra. Assessment of generation loss to the tune of 78.46 MU (54.11 MU & 24.35 MU of Chibro and Khodri Power House, respectively) is based on the assumption that loss and damages is limited to 01 no. existing GT only considering 12 months for its complete restoration period. However, extent of damages and consequential losses and gestation period of restoration may be more than assessed loss of Rs. 21.19 Crores and massive depending upon the outbreak of incident(s). a) Proposal for replacement of GT is recommended mainly due to it's aging factor as all of these 04 nos. GTs each of 69 MVA, 11/220 kV have already completed their useful life (49 years) in continuous operation since they were commissioned in 1975. b) Due to continuous operation, efficiency of GTs must have deteriorated. CEA also recommends the useful life of a power transformer is 40 to 50 years. Keeping prevailing conditions of GTs after continuous operation of 49 years into consideration, unforeseen incidents cannot be overruled. c) In case of any incident(s), extent of physical damages and consequential losses would be massive. Severe threat to safety of underground power house, various equipment installed therein and man power engaged is prevailing. d) No spare GT is available. Generation loss and NAPAF loss of both Chibro as well as Khodri Power House being tandem projects is assessed presuming 12 months in restoration based on the past generation data as per enclosed Annexure-A. e) Apart from the anticipated generation loss from above power houses, the distribution licensee of the state (Uttarakhand Power Corporation Limited) may also suffer financially on account of additional expenditure expected to be incurred in procuring expensive electricity from the

<table>
<tr><th>S. No.</th><th>Deficiencies</th><th>Petition of UJVN Ltd.</th></tr>
<tr><td></td><td></td><td>central pool or exchange to meet the routine demand during that period.
Key figures related to cost & benefit
<table>
<tr><th>S.No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>1.</td><td>Cost of DPR</td><td>Rs. 18.46 Cr + GST</td></tr>
<tr><td>2.</td><td>Probable Generation loss at Chibro & Khodri</td><td>54.11 MU + 24.35 MU =78.46 MU</td></tr>
<tr><td>3.</td><td>Probable revenue loss</td><td>Rs 21.19 Crore</td></tr>
<tr><td>4.</td><td>Implication of capital expenditure on tariff</td><td>Rs 0.07/ Unit i.e. 5.4% increase in tariff</td></tr>
<tr><td rowspan="2">5.</td><td rowspan="2">Replacement of 49 years old GT with new 75 MVA Generator Transformer</td><td>Enhancement of Generator life for risk free & reliable operation</td></tr>
<tr><td>Unforeseen breakdowns due to ageing effect may be avoided which may lead to loss and damages to the properties giving rise to generation loss.</td></tr>
</table></td></tr>
<tr><td>2</td><td>UJVN Ltd. is required to submit whether the procured new transformer would be placed as spare or would replace the existing transformer. In case of replacement, UJVN Ltd. is required to submit the Unit number which would be replaced by new transformer along with the techno-economic justification for choosing the same</td><td>New Generator Transformer shall replace the Generator Transformer of unit-1. Test reports, of unit no, 01 is comparatively much vulnerable December 2022 to February 2023.
…
Proposal is techno-economically viable in view of following facts.
a) By replacing GT of unit no. 01 with new one, we shall be able to minimize the risk of any unwanted incident thus anticipated material damages, consequential generation & NAPAF loss would be avoided.
b) Enhancement of Generator life for risk free & reliable operation.
c) Generation may be enhanced in future after RMU with enhanced transforming capacity.
d) Rs. 0.07/ Unit i.e. 5.4% increase in tariff would be gained as an implication of capital expenditure.</td></tr>
<tr><td>3</td><td>UJVN Ltd. is required to submit its unit-wise GT replacement/refurbishment plan for Chibro Power House</td><td>Unit-wise GT replacement/refurbishment plan for Chibro Power House is proposed/envisaged as follows:</td></tr>
</table>

<table>
<tr><td>S. No.</td><td>Deficiencies</td><td colspan="3">Petition of UJVN Ltd.</td></tr>
<tr><td rowspan="6"></td><td rowspan="6"></td><td>S. N.</td><td>Description</td><td>Period</td></tr>
<tr><td>01.</td><td>Replacement of unit-1 GT with new 75 MW GT.</td><td>October 2023 to June 2024</td></tr>
<tr><td>02.</td><td>Refurbishment of unit-1 GT</td><td>October 2024 to June 2025</td></tr>
<tr><td>03.</td><td>Refurbishment of unit 2 GT.</td><td>October 2025 to June 2026</td></tr>
<tr><td>04.</td><td>Refurbishment of unit 3 GT.</td><td>October 2026 to June 2027</td></tr>
<tr><td>05.</td><td>Refurbishment of unit 4 GT.</td><td>October 2027 to June 2028</td></tr>
<tr><td>4</td><td>UJVN Ltd. has to confirm how they are envisaging to use the spare transformer and whether a separate bay for the same would be constructed for its energization or there will be one by one replacement of GTs. Further, UJVN Ltd. is required to confirm regarding suitability of space in the plant for spare transformer along with statutory & working clearances from existing structures w.r.t. safety point of view.</td><td colspan="3">The GT of unit-1 is proposed to be replaced by new transformer & all existing (old) GTs would be refurbished one by one. The last one shall be kept as a spare in charged condition at 33/11 kV S/s Khodri with proper provision of safety.</td></tr>
<tr><td>5</td><td>UJVN Ltd. is required to furnish General Drawing of the proposed 75 MVA GT including bushings in the existing GT cavity space indicating the dimensions and clearance distances. Further, UJVN Ltd. has to confirm that safety clearances shall be maintained as per safety norms in proposed setup.</td><td colspan="3">GA of proposed 75 MVA GT including bushings in the existing GT cavity space indicating the dimensions and clearance distances is attached as per Annexure-C. Statutory clearance from phase to phase and phase to earth shall be maintained as per norms including segregation of oil vessels by providing suitable baffle wall.</td></tr>
<tr><td>6</td><td>UJVN Ltd. is required to furnish the final findings of the test report pertaining to IR, PI & Tan-Delta of the Windings & Bushing of existing GTs. Further, UJVN Ltd. has to confirm whether any test/inspection has been carried out inline with</td><td colspan="3">Only IR, PI and Tan Delta test have been carried out on the GTs between Dec 2022 & Jan 2023. Reports are enclosed as Annexure-B.</td></tr>
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S. No.	Deficiencies	Petition of UJVN Ltd.
	provisions of Regulations 22 (2) e) of UERC (MYT) Regulations, 2021 for substantiating the need for additional capitalization.	
7	*UJVN Ltd. has to confirm that all the protection for GT as per Schedule IV 'Minimum Protections to be provided for Hydro- electric Generating Units' of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 for 'Generator Transformer' and 'Generator and Generator Transformer' are existing in the installed 69 MVA GT. If not, provide details of the same and confirm that the same shall be provided along with the proposed new GT.*	*Protections/design of existing 69 MVA GT are conforming to Indian Standard 2026:1962. In procurement of new GT, provision of all the protection for GT shall be ensured as per Schedule IV 'Minimum Protections for Hydroelectric Generating Units of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulation, 2022.*
8	*UJVN Ltd. is required to submit unit-wise transformer breakdown duration records for last 10 years along with details of fault records (protection, core, insulation, breaker etc.) and expenditure incurred on the same along with corresponding generation losses in MUs.*	*No breakdown has been observed in any of GT and hence expenditure incurred on breakdown maintenance as well as generation loss is nil for the last 10 years.*
9	*UJVN Ltd. is required to confirm that all the requirements for parallel operation of the old 69 MVA GTs with proposed new 75 MVA GT have been duly considered.*	*All the requirements for parallel operations of 69 MVA GT with 75 MVA GT has been considered.*
10	*UJVN Ltd. has proposed the installation of Nitrogen Injection Fire Protection System. In this regard, UJVN Ltd. is required to furnish the details of existing fire protection system & its current working status and its comparison with the proposed*	*At present GTs have been provided with mulsifyre system against the fire hazards and it is working. The provision of Nitrogen Injection Fire Protection System is proposed for the new GT. Nitrogen Injection Fire Protection System is more effective than that of conventional mulsifyre system and can be accommodated in comparatively lesser space.*

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<tr><td>S. No.</td><td>Deficiencies</td><td>Petition of UJVN Ltd.</td></tr>
<tr><td></td><td>system. Further, UJVN Ltd. is required to confirm regarding availability of space for installation of new Nitrogen Injection Fire Protection System in the existing/proposed setup.</td><td></td></tr>
<tr><td>11</td><td>UJVN Ltd. submitted that each GT has 02 nos. Water Oil Cooling Coolers. UJVN Ltd. is required to explain the working methodology of the existing cooling system. Further, UJVN Ltd. is required to confirm that the proposed 75 MVA capacity of GT is corresponding to ONAN/ONAF/OFAF/OFWF etc.</td><td>02 nos. oil coolers are installed in each existing 69 MVA GT for oil cooling system. Coolers are forced oil and forced water (OFWF) type with oil motor -pumps. One cooler of GT remains in operation continuously and other as standby. In the coolers, water flows in the jacket around the cooler tubes. Pump circulates GT oil in the cooler tubes. Oil pressure remains slightly higher than the water pressure and the pressure is measured by a differential pressure gauge. Proposed 75MVA GT shall be equipped with OFWF cooling.</td></tr>
<tr><td>12</td><td>UJVN Ltd. is required to submit supporting document for the mentioned Design Energy of Chibro HEP as 912 MU.</td><td>It was a typographic error, the same may kindly be considered as 750 MU as approved by the Hon'ble commission.</td></tr>
<tr><td>13</td><td>UJVN Ltd. is required to submit the Permissible Limit of Tan-Delta and PI values for existing GT and new 75 MVA GT for winding and bushing.</td><td>(i) Tan-Delta values of winding with bushing should be below 0.7% at 20 Deg Celsius as per CIGRE 445 Standard for the GTs as per enclosed Annexure - D.
(ii) PI value should be more than 1.0</td></tr>
<tr><td>14</td><td>UJVN Ltd. is required to submit the Unit-wise details of expenditure incurred in GTs in the last 10 years.</td><td>Unit-wise details of expenditure incurred in GTs in the last 10 years.
<table>
<tr><td>Unit</td><td>Amount in Rs. (In lakh)</td></tr>
<tr><td>GT-I</td><td>24.0</td></tr>
<tr><td>GT-2</td><td>24.0</td></tr>
<tr><td>GT-3</td><td>43.0</td></tr>
<tr><td>GT-4</td><td>43.0</td></tr>
</table></td></tr>
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Commission's Observations, Views & Directions:-

7. On examination of the Petition, DPR and subsequent submissions made by the Petitioner before the Commission, the observations, views and decision of the Commission are mentioned hereunder: -

(1) On examination of the Petition, it has been observed that first machine of Chibro Power Station was commissioned in 1975 and since then the existing generator transformer of Unit#1 is in service for more than 48 years. The Commission acknowledges the fact that the life of a transformer mainly depends on the condition of the paper oil insulation system and often the expected life of transformers is between 35 to 40 years. Due to long-time exposure to heat, vibration, magnetic and mechanical stresses, transformer winding insulation gradually weaken both w.r.t. dielectric and mechanical strength, and eventually there may be a breakdown and short-circuit at a hot spot. Further, the test results parameters furnished by the Petitioner for Insulation Resistance (IR), Polarization Index (PI) & Tan Delta tests indicate towards the dilapidated condition of the windings and bushings of Generator Transformer no. 1.

(2) With regard to the potential failure of existing Generator Transformer due to ageing, the Petitioner is envisaging atleast 10 months' time for rectification/replacement activity of the Generator Transformer. The Petitioner foresees that the expected generation loss and NAPAF loss would be un-avoidable for a period of at least 10 months of Chibro Power House as well as Khodri Power House due to tandem control and operational inter-dependency. The expected generation loss at Chibro Power House & Khodri Power House as per Petitioner would be approximately 78.46 Mus i.e. 54.11 MUs at Chibro Power House & 24.35 MUs at Khodri Power House on the basis of last five years generation.

The Commission is of the view that considering ageing factor of Generator Transformer, test results, non-availability of spare transformer and expected generation loss of approximately 78.46 MUs and probable revenue loss of 21.19 Crore, it would be appropriate to replace Unit # 1 Generator Transformer by new Generator Transformer so that the potential generation & NAPAF loss for the indefinite extended period may be avoided besides having an opportunity of refurbishment of other Generator Transformers in a phased manner.

(3) With regard to the proposed 75 MVA GT capacity, the Commission has observed that the Unit MW rating of Chibro HEP is 60 MW and the existing GT are of 69 MVA which is optimum to leverage the 10% overload capacity of the generator. However, the Petitioner has proposed GT of much higher capacity i.e. 75 MVA. In response to the Commission's specific query pertaining to parallel operation of GTs in this regard, the Petitioner has submitted that all the requirements of parallel operations of 69 MVA existing GTs with 75 MVA proposed GT have been taken to account and considered. The Commission cautions the Petitioner to ensure that all the relevant technical aspects associated with parallel operation of GTs viz. circulating current etc. are taken care while planning and execution of the proposed works.

(4) With regard to the submission made by the Petitioner in its Petition on general performance/failure rate of GTs, it has been submitted that 24 Nos. transformers failure cases have been reported to CEA during the period of Oct, 2011 to Aug, 2015 by 14 Utilities across the Country, out of which 50% of transformers i.e., 12 Nos. of transformers have failed within 10 years of operation and 25% transformers have failed after service of more than 20 years. In this regard, in response to the Commission's specific query pertaining to unit-wise transformer breakdown duration records for last 10 years failure rate in past years, the Petitioner vide its submission dated 14.08.2023 submitted that none of the Unit of Chibro Power Plant has experienced break-down in Generators Transformers in last 10 years. The Commission opines that all the technical parameters of the GTs should be monitored on regular basis so that the condition monitoring of the GTs is ensured and any untoward event can be speculated and pre-emptive steps be taken for avoiding any generation loss due to GT failure.

(5) With regard to the Petitioner's submission pertaining to dilapidated condition of Generator Transformer of Unit#1, the Commission has observed that the existing GT has almost outlived its life and is more than 48 years old. It is known fact that the age of an asset does not substantiate

its requirement of replacement. However, in the instant matter, the test parameters of GTs of Unit#1 are not within the permissible limits as per test report enclosed by the Petitioner. Considering the above submissions, the proposal of Petitioner seems to be appropriate to replace the GT of Unit#1 which is in a dilapidated condition and has almost outlived its life.

(6) With regard to Petitioner's submission "*…GT of unit-1 is proposed to be replaced by new transformer & all existing (old) GTs would be refurbished one by one. The last one shall be kept as a spare in charged condition at 33/11 kV S/s Khodri with proper provision of safety*". It is observed that the Regulation 21 (3) d) & Regulation 21 (11) (ii) of UERC (Terms & Conditions for determination of Multi Year Tariff) Regulations, 2021 limits the cost of spares to a certain percent of cost of Plant and Machinery for Hydro Generating Stations.

Further, the Commission is of the view that placing a 69 MVA transformer as spare would result in increasing transformation losses/auxiliary consumption in the system. Moreover, installation of such assets would add to various initial as well as recurring associated costs. Therefore, post replacements of GT of Unit#1 and refurbishment of other 03 nos. GTs at Chibro Power Station, the Petitioner is advised to re-visit its prospective planning of keeping the GT as spare.

Further, the Commission opines that as UJVN Ltd. intends to refurbish the GTs one by one, the entire work of new GT purchase and refurbishment of old GTs may be carried-out in a composite package so that uniformity in quality of works can be maintained besides establishing single point responsibility of the entire work and getting competitive rates from the bidders.

(7) With regard to the proposed Nitrogen Fire Protection System (NFPS), the Commission is of the view that all the necessary arrangements for creation of transformer oil soak pit be made in the existing setup, if not available.

(8) The Commission cautions the Petitioner that it should take utmost care while procurement, installation, testing & commissioning of the new GT

and examination of the desired Specifications/Guaranteed Technical Parameters (GTP) w.r.t. parallel operation of GTs, load sharing and circulating currents etc.

8. Based on the above discussions, the Commission grants in-principle approval for the proposed works. The in-principle approval is being granted subject to the following:

(1) The Petitioner should go for the competitive bidding for obtaining the most economical prices from the bidders and should also compare the same with similar procurements done within the organization/other generating companies. Further, the price variation should strictly be computed as per methodology/formula specified by IEEMA.

(2) The Commission may verify/check the proposed works to be executed by the Petitioner at any point of time during/post execution of the works from the perspective of Quality, Optimum utilization of resources, Benefits accrued from the proposed investments etc.

(3) The Petitioner shall ensure that provisions of all the protection for Generator Transformer shall be ensured as per Schedule IV 'Minimum Protections for Hydroelectric Generating Units of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulation, 2022.

(4) The Petitioner must submit the detailed sanctioned letter from the Financial Institution, if any, to the Commission as soon as they get approval from the Financial Institution. All the loan conditions as may be laid down by the funding agency, if any, in their detailed sanction letter should be strictly complied. However, the Petitioner is directed to explore the possibility of swapping the loan with cheaper debt option if any, available in the market etc.

(5) The Petitioner shall, within one month of the Order, submit letter from the State Government or any such documentary evidence in support of its claim for equity funding, if any, agreed by the State Government or any other source in respect of the said works.

(6) On completion of the project, the Petitioner shall submit the completed cost and financing of the project.

(7) The cost of the project and servicing on the same shall be allowed in the Annual Fixed Cost of the Petitioner after the assets are capitalized and subject to prudence check of the cost incurred.

Ordered accordingly.

(M.K. Jain)
Member (Technical)

(D.P. Gairola)
Member (Law) /Chairman (I/c)