CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 10/MP/2024

Coram:
Shri Jishnu Barua, Chairperson
Shri I.S. Jha, Member
Shri Arun Goyal, Member
Shri P.K. Singh, Member

Date of Order: 11th January, 2024

In the matter of

Petition under Section 79(1) (k) of the Electricity Act, 2003 read with Regulation 8 (7) of the Central Electricity Regulatory Commission (Grant of Connectivity, Long Term Access and Medium-term Open Access in inter-State Transmission and related matters) Regulations, 2009 seeking permission for injection of infirm power beyond 31.12.2023 in case of Parbati Hydroelectric Project-Stage-II.

And
In the matter of

NHPC Limited,
NHPC Office Complex,
Sector-33, Faridabad-121 003 **...Petitioner**

Vs.

1. Executive Director,
Northern Regional Load Despatch Centre,
(Power System Operation Corporation Limited),
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi-110 016

2. Member Secretary,
Northern Regional Power Committee,
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi-110 016

3. Chairman and Managing Director,
Power Grid Corporation of India Limited,
Saudamini, Plot No. 2,
Sector-29, Near IFFCO Chowk,
Gurgaon, Haryana-122 001

4. Parbati Koldam Transmission Company Limited,
Building No. 10 B, 12th Floor,
DLF Cyber City, Shankar Chowk,
Gurgaon, Haryana-122 002

5. The Chairman,
Punjab State Power Corporation Ltd.,
The Mall, Near Kali Badi Mandir,
Patiala-147 00, Punjab

6. The Chairman,
Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6, Panchkula-134 109

7. The Chairman,
Uttar Pradesh Power Corporation Ltd.,
Shakti Bhawan, 14-Ashok Marg,
Lucknow-226 001, UP

8. The Chief Engineer and Secretary,
Engineering Department, 1st Floor,
UT Chandigarh, Sectgor-9 D, Chandigarh-160 009

9. The Chief Executive Officer,
BSES Rajdhani Power Ltd.
BSES Bhawan, Nehru Place, New Delhi-110 019

10. The Chief Executive Officer,
BSES Yamuna Power Ltd.,
Shakti Kiran Building, Karkadooma,
Delhi-110 072

11. The Chief Operating Officer,
Tata Power Delhi Distribution Ltd.,
Grid Sub-station Building,
Hudson Lines, Kingsway Camp, Delhi-110 009.

12. The Chairman-Cum-Managing Director,
Uttaranchal Power Corporation Ltd.,
Urja Bhawan, Kanwali Road, Dehradun-248 001

13. The Managing Director,
Jairpur Vidyut Vitran Nigam Ltd.,
Vidyut Bhawan, Janpath, Joyti Nagar,
Jairpur-302 005 Rajasthan

14. The Managing Director,
Ajmer Vidyut Vitran Nigam Ltd.,
Old Power House,
Hathi Bhatta, Jaipur Road,
Ajmer-305 001, Rajasthan

15. The Managing Director,
Jodhpur Vidyut Vitran Nigam Ltd.,
New Power House, Industrial Area,

Jodhpur-342 003, Rajasthan

16. The Principal Secretary,
Power Development Department,
New Secretariat, Jammu-180 001.

17. The Chairman,
Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House,
Shimla-171 004, Himachal Pradesh …**Respondents**

ORDER

This Petition has been filed by the Petitioner, NHPC Limited, seeking permission from the Commission for injection of the infirm power into the grid up to 30.9.2024 or till the declaration of commercial operation of 800 MW (4X200 MW) Parbati Hydroelectric Project, Stage-II (hereinafter referred to "the generating station") in the State of Himachal Pradesh in terms of Regulation 13 of the Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 (hereinafter referred to as 'the GNA Regulations') and Regulation 19(2) & 19(3) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 (hereinafter referred to as 'the Grid Code'). The Petitioner has made the following prayers:

> *"(a) Allow extension of time for injection of infirm power from all four units of Parbati-II Hydroelectric Project beyond 31.12.2023 and upto 30.9.2024 or actual COD of individual units, whichever is earlier, as per provisions of Regulation 13 of the Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 and Regulation 19(2) & 19(3) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 ; and*
>
> *(b) Pass such further order or orders as may be deemed fit and proper in the facts and circumstances of the case."*

2. The Petitioner has submitted that the generating station consists of four units (4x200 MW). The scheduled COD of the generating station was 11.9.2009. It is submitted that unit-I and unit-II of the generating station were first synchronized with

the grid on 14.9.2018 and 22.9.2018, respectively, with available water from Jiwa Nallah. However, due to the unavailability of surplus water, unit-I and unit-II could not be declared under commercial operation. Accordingly, with the prior permission of NRLDC, unit-I and unit-II of the generating station were re-synchronised with the grid on 5.7.2019 and 6.7.2019, respectively. The Petitioner has submitted that the Project has been generating infirm power since the synchronization of its units depending upon the availability of water. The total quantum of infirm power generated by the Project till date, i.e. 4.12.2022, is to the tune of 1089.58 MUs, including 42 MUs generated till 8.12.2018. The Petitioner has submitted that it is selling infirm power in the Power Exchange after implementation of the DSM Regulations, 2022, and it has sold 10.277 MUs in the market till 18.11.2023.

3. The Commission, in its order dated 6.3.2023 in Petition No. 69/MP/2023, had allowed the injection of infirm power of all four units of the generating station up to 31.12.2023 or the actual date of commercial operation, whichever is earlier. The Petitioner has submitted that the units could not be declared under commercial operation within the given timeframe due to the following reasons:

(a) **Balance HRT works:** Completion of HRT is on the critical path of completion of the project. Out of the total length of HRT of 31545 meters, around 9376 meters of HRT works (as on 15.11.2023) is still remaining due to the following reasons:

(i) HRT through Face-4: For HRT from face-4, the TBM face passes through highly abrasive and high-strength quartzite rock. Major hindrances resulting in delay since the re-synchronization of Unit-I is as follows:

*Rock bursting during and after excavation resulted in an increase in the quantum of support systems like fore polling, continuous installation of ribs and McNally plates etc., which consumed considerable time;

*Hard rock conditions resulted in frequent changes of cutters, which consumed considerable time;

*Frequent faults in hydraulic systems in TBM resulted in hindrances. The faults were rectified in the month of June 2019 after taking a maintenance stopover;

*Second scheduled stopover maintenance was taken from 1st August to 7th August, 2019;

*Ingress of water of the order of 4000 pm (litre per minute) in the month of August 2019 hampered the excavation progress;

*Formation of large cavities (up to 4m high) due to rock fall from the crown during the month of September 2019 and October 2019 resulted in less progress;

*The third scheduled stopover for maintenance of cutter head buckets, gripper cylinder and thrust cylinder was taken from 30.12.2019 to 10.1.2020;

*Two gripper cylinders and two main drive motors had to be replaced in the month of March 2020;

*Excessive Rock-fall and formation of large cavities during the month of March, 2020 hampered the progress. As a result, progress of only 8.70 m could be achieved during the month;

*Work came to a standstill due to lockdown w.e.f. 22.3.2020 to 23.4.2020 due to covid-19 pandemic. However, the work was suffered due to various restrictions imposed by Central Government and State Governments;

*Major maintenance of TBM was carried out from 27.4.2021 to 17.5.2021. However, during maintenance, repair and testing works of thrust and gripper cylinders (including removal and re-installing), cutter head face hardening and main bearing seal replacement were carried out;

*Excavation activities were hampered due to various travel restrictions imposed by the Government during the second wave of the Covid-19 pandemic, and the oxygen cylinders available with the contractor were taken over by the District Administration. Due to the shortage of oxygen, maintenance activities were hampered;

* Progress was hampered due to hard rock conditions in July 2021 and August 2021;

*Due to the ingress of water from the face, there was intermixing of muck with water. The silt got accumulated in the invert of the L1, L-2 area and beneath the California deck. The material had to be removed manually and using a sludge pump. This affected the progress of works during February 2022, March 2022 and April 2022;

* Problems with mechanical parts of the machine like kelly, gripper thrust cylinder, etc. and due to ingress of water from face, there was intermixing of muck with water. The silt accumulated in the invert of L-1, and L-2 aeas and beneath the California deck. The material had to be removed manually and using a sludge pump. This affected the progress of works during the months of February 2022, March 2022 and April 2022.

*Progress was hampered due to machine faults such as malfunctioning of the gripper cylinder and thrust cylinder, and malfunction of the primary conveyor belt.

*Planned maintenance of TBM was carried out form 11.6.2022 to 15.6.2022 and 26.6.2022 to 30.6.2022. TBM hydraulic system repair and maintenance including flushing of valves and replacement of hydraulic oil, repaid of thrust pumps, bucket no. 01 and 06 of cutter head repaired, and hydraulic oil of the main tank & 01 no gripper was replaced.

*TBM maintenance work was again taken up from 26.7.2022 to 15.8.2022. Hard facing of the cutter head, new stiffener fixing,

installation of 7 no gripper cylinders and 16 nos PVR on all gripper cylinders was done.

*Low TBM penetration rate due to extremely hard work rock conditions encountered from 5.9.2020 to 16.9.2022. Rock bursting on 6.9.2022 at the rib erection area and subsequent muck removal activities were carried out up to 19.9.2022.

*Due to heavy rock bursting, the TBM roof, Kelly and invert scraper plates were damaged on 4.11.2022. Repair/maintenance of TBM carried out from 4.11.2022 to 15.11.2022 due to which excavation could not be carried out.

*Problem due to alignment issue resulted in cracking/damage of eye joint connecting left side shield support and invert scraper. Repaid/maintenance was carried out from 15.12.2022 to 28.12.2022, and excavation resumed from 29.12.2022.

* Damage to gripper and thrust cyclomers of TBM in the first half of April 2023 resulted in complete stoppage of excavation activities. 04 spherical bearings of the gripper cylinder were damaged. These bearings were tailor-made and were not available in the local market. A supply order was placed to a Bengaluru firm for providing the spherical bearing with a supply tile of 6 weeks. TBM could be made fit for boring on 24.7.2023.

* Due to heavy rain in the project area, approach roads and transmission lines to sites were damaged. Further, a cloud burst in Pancha nallah damaged the already restored roads and transmission lines in addition to fresh washout of roads at multiple locations.

* Excavation activity in Face-4 was completed on 26.9.2023. At present concrete lining and grouting of HRT is in progress.

(ii) HRT through Face-2, Face-3 and Face-6: These HRT works were awarded to Valecha Engineering Ltd. in the year 2013. However, due to poor performance, the contract was terminated in December 2018. The tender for balance works (DBM package) was floated in the year 2019. However, it was

extended multiple times due to poor response/ high rates from the bidders. Finally, a 1500 meter stretch downstream of Face-3 was awarded to Gammon Engineers and Contractors Private Limited on 2.6.2020.

* Mobilization activities were hampered as the site could not be handed over to the new contractor due to agitation/hindrances created by labourers/workers of the previous contractor. The site could be handed over to the contractor only on 16.8.2020 after several rounds of negotiations involving labour unions, local people, contractors and the District Administration. After completion of dewatering activities and other associated works such as illumination, electrification and excavation activities were started on 3.1.2021. Excavation of 646.85m was completed till 12.7.2021.

* Due to heavy ingress of water on 12.7.2021 when the tunnel face was at RD ± 5002m, the tunnel got inundated up to RD ± 2370m. Additional resources were mobilized and dewatering of the tunnel was carried out in the range of 10500-11500lpm, and the face was accessible on 28.9.2021. Channelization of ingress water and treatment works was undertaken. However, the treatment works were not successful.

* Based on the tunnel seismic prediction test, the tunnel was detoured from 27m short of the already excavated face towards the left on 31.10.2021.

* On 1.12.2021, when the face was at RD+61m, there was again an ingress of water with silt and the tunnel was again inundated. After dewatering, removal of muck and installation of supports, excavation activities resumed on 24.1.2022.

* With continuous treatment works by drilling & grouting, fore polling and the installation of support, the weak zone was successfully negotiated at around RD 91m.

* After the advancement up to 100m, there was an episode of rock bursting at the face on 30.3.2022, followed by ingress of silt and water on 6.4.2022, 15.4.2022 and 13.5.2022 resulting in accumulation of silt/muck/fragments of quartzite. Drill Jumbo was completely buried in the muck. As a result of this excavation came to a complete halt from 30.3.2022 and could be resumed on

12.7.2022 after extensive treatment works like rib erection, backfilling, shotcrete, pipe roofing, fore-polin and drilling & grouting, etc.

* The tunnel passed through a weak zone, and due to frequent popping and rock bursting, excavation was carried out with utmost caution by taking controlled blast followed by installation of supports viz. ribs with backfill concrete, shotcrete, rock anchors, pipe-roofing, fore-poling, pre-grouting etc. Probe holes are being drilled at regular intervals to interpret the tunnelling media. Stress relief holes are being drilled before excavation for abatement of stress induced phenomena like rock bursting. This resulted in the slow progress of work at this site. Excavation activities at Face-3 have been completed on 25.10.2023. Benching of the invert is in progress at present.

* Grouting activity was taken up in Face-2. As on date, grouting in only 44m reach is balanced near the junction of Face-2 &Face-3 and shall be taken up at the time of concrete plugging.

* 40.72m of HRT from Face-6 will be excavated after completion of excavation from Face-4 else it will interfere with TBM works.

4. The Petitioner has submitted that in view of the above reasons, the entire project is expected to be completed by September 2024.

5. The Petition is admitted by circulation.

6. We have considered the submissions of the Petitioner. Regulation 13 of the GNA Regulations provides as under:

"13. Injection of infirm power and drawal of start- up power: Connectivity grantee shall be eligible to inject infirm power and draw start up power in accordance with the provisions of the Grid Code."

7. Regulation 19 (2) and 19 (3) of the Grid Code provides as under:

"19. Drawal of start-up power and injection of infirm power

(1) A unit of a generating station including unit of a captive generating plant that has been granted connectivity to the inter-State Transmission System in accordance with GNA Regulations shall be allowed to inter-change power with the grid during the

commissioning period, including testing and full load testing before the COD, after obtaining prior permission of the concerned Regional Load Despatch Centre:

Provided that the concerned Regional Load Despatch Centre while granting such permission shall keep grid security in view.

(2) The period for which such inter-change shall be allowed shall be as follows:

(a) Drawal of start-up power shall not exceed 15 months prior to the expected date of first synchronization and one year after the date of first synchronization; and

(b) Injection of infirm power shall not exceed one year from the date of first synchronization.

(3) Notwithstanding the provisions of clause (2) of this Regulation, the Commission may allow extension of the period for inter-change of power beyond the stipulated period on an application made by the generating station at least two months in advance of the completion of the stipulated period."

8. The Petitioner has submitted that it has made all efforts to ensure the completion of activities of the units of the generating station within the stipulated time but could not succeed for reasons beyond its control. The Petitioner has further submitted that due to the Covid-19 pandemic, for the period from 25.3.2020 to 31.5.2020, the site activities of the units have been hampered, and it could not start the balance works. The Petitioner has reiterated that due to reasons enumerated in paragraph 3 above, it was not able to complete the testing, including full load testing, within the prescribed period from the date of the first synchronization of unit-I and unit-II of the generating station and the project as a whole is expected to be commissioned by December 2023. Accordingly, the Petitioner has sought permission to inject infirm power till 30.9.2024 or the actual date of commercial operation, whichever is earlier. The Petitioner has submitted that revenue earned from the injection of infirm power will be reduced from the capital cost of the project, which would decrease the tariff and it shall be beneficial to the beneficiary States of the Project.

9. We have considered the submissions and the difficulties stated by the Petitioner as quoted in paragraph 6 above. In the given facts and circumstances, we

are inclined to invoke our power under the provision of Regulation 19 (3) of the Grid Code. In the exercise of the power, we hereby allow the injection of infirm power into the grid for commissioning tests, including full load testing of all four units of the generating station up to 30.9.2024. The Petitioner is hereby directed to make all possible efforts to commission the project by September 2024 as submitted. It is, however, clarified that the extension of time granted as above shall not automatically entitle the Petitioner for IEDC/IDC for the delay in declaration of COD from the scheduled COD, which shall be decided separately in accordance with the relevant provisions of the Tariff Regulations. Let an extract copy of the order be provided to the concerned Regional Load Despatch Centre, which will, while granting such permission keep the grid security in view.

10. In terms of the above, the Petition No. 10/MP/2024 is disposed of.

Sd/-	sd/-	sd/-	sd/-
(P.K.Singh)	**(Arun Goyal)**	**(I.S. Jha)**	**(Jishnu Barua)**
Member	**Member**	**Member**	**Chairperson**