CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 209/MP/2024

Coram:
Shri Jishnu Barua, Chairperson
Shri Arun Goyal, Member
Shri Ramesh Babu V., Member

Date of Order: 15th June, 2024

In the matter of

Petition seeking permission to continue interchange of infirm power including drawl of start-up power from the grid as per the Deviation Settlement Mechanism (DSM) beyond 30.6.2024 till the first synchronization of RAPP-7 or 30.6.2025, whichever is earlier.

And
In the matter of

Nuclear Power Corporation of India Limited (NPCIL),
Nabhikiya Urja Bhavan/ Vikram Sarabhai Bhavan,
Anushaktinagar,
Mumbai– 400094, Maharashtra.

....**Petitioner**

Vs

Northern Regional Load Dispatch Centre,
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai,
New Delhi- 110016. ….**Respondent**

ORDER

This Petition has been filed by the Petitioner, Nuclear Power Corporation of India Limited, under Regulation 19 of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 (hereinafter referred to as 'the Grid Code') as amended from time to time with the following prayers:

> *"a) Permit drawal of start-up power from the grid under Deviation Settlement Mechanism (DSM) for RAPP-7 commissioning till synchronization of RAPP-7 or 30.6.2025, whichever is earlier;*

b) Pass such order(s) as deemed fit by the Commission."

2. Rajasthan Atomic Power Project 7 and Project 8 of the Petitioner are located at Rawatbhata, Chittorgarh district in the State of Rajasthan. They are being implemented in two stages consisting of units of 700 MW each. The project is an indigenous 700 MW Pressurized Heavy Water Reactor (PHWR). Rajasthan Atomic Power Project 7 (in short 'RAPP-7') started drawing start-up power on 17.3.2020, the permission for which expired on 16.6.2021.

3. Rajasthan Atomic Power Project 7 and Project 8 of the Petitioner are located at Rawatbhata, Chittorgarh district in the State of Rajasthan, and are being implemented in two stages consisting of units of 700 MW each. The project is an indigenous 700 MW Pressurized Heavy Water Reactor (hereinafter referred to as 'PHWR'). Rajasthan Atomic Power Project 7 (hereinafter referred to as 'the RAPP-7') started drawing start-up power on 17.3.2020. The Commission, vide its order dated 26.5.2023 in Petition No. 152/MP/2023, had allowed the start-up power to be drawn from the grid up to 30.6.2024 for synchronization of RAPP-7. However, as stated by the Petitioner, it could not be synchronized yet due to the following reasons:

(a) From 2020 to 2022, the Covid-19 pandemic had a severe impact on the execution of the Project. Many restrictions were imposed on employees and contractors at the workplace. This has caused delays in the construction and commissioning activities. All attempts were made to fast-track the project commissioning.

(b) Owing to the Covid-19 pandemic, the degraded financial condition of the vendors, including the EPC Contractors induced stress, which led to delay in getting raw materials for the manufacture and subsequent non-realization of revised target date(s) for commissioning of the unit.

(c) Being a 700 MW PHWR, there is a stringent requirement of quality assurance on the design, selection, qualification, Operation, and Maintenance of critical equipment, e.g., reactor components, steam generators, pressurizers, etc. Therefore, the manufacturing of these critical equipment and their pre-service inspection have added to the delay in the supply of these equipment. Further, there are limited qualified vendors in India for manufacturing nuclear grade reactor equipment and components.

(d) The Petitioner has developed new technology, e.g., interleaving of feeders, primary containment liner, containment spray system, passive decay heat removal system, and partial boiling in the primary heat transport system, to enhance the safety and efficiency of the nuclear power plants. All these new technology developments are reviewed by the independent regulators, and their efficacy has to be proved before erection, commissioning, and implementation. This has increased the project completion time.

4. The Petitioner has submitted the current status of works of the project as under:

(a) 400 kV switchyard has been charged and all 400 kV transmission lines are in service. Start-up transformer (220/6.6 kV) is in service, and station auxiliary electrical system buses have been

commissioned. The generator transformer units are commissioned and drawl of startup power supply from this route is planned.

(b) Major equipment such as moderator pumps and their heat exchangers, primary coolant pumps, primary pressurizing pumps, fueling machine supply pumps, steam generators, emergency core cooling pumps, passive decay heat removal, boiler feed water pumps, auxiliary feed water pumps, condenser storage tank, air compressors, and chillers, etc. have been installed.

(c) All panels of the Control Centre Instrumentation Package (CCIP) have been erected, and most of the panels have been commissioned. Important control systems such as the Reactor Process Control & Monitoring System (RPCMS) along with the auxiliary system panels, are commissioned and are in service. Support systems such as Fire Alarm System & Fire Water Suppression System are also commissioned.

(d) PHT hot conditioning is the last project milestone before loading nuclear fuel & achieving reactor criticality. The same was successfully done in November 2023. Criticality is the process of commencement of sustained fission chain reaction in the nuclear reactor for generating power in a controlled way. The same is achieved by the removal of neutron-absorbing chemicals (Gadolinium & Boron) and fine adjustment of neutron-absorbing rods in a safe and controlled manner.

(e) The commissioning of secondary cycle systems (Turbine generator side systems) is also progressing. Major activities such as condenser extraction pumps, seal oil pumps, and lube oil pumps have been commissioned. TG set lube oil commissioning is over. Turbine and Generator auxiliary system commissioning is expected to be completed by August, 2024.

(f) The spent fuel bay has been commissioned, and the commissioning of the nuclear fueling system activities is in an advanced stage. Nuclear fuel loading in the Reactor, Heavy water addition in Primary Heat Transport (PHT), and Bulk addition of heavy water in the moderator system is scheduled for completion by May, 2024. After completion of the above-mentioned commissioning activities and obtaining the regulatory clearance from the Atomic Energy Regulatory Board (hereinafter referred to as 'AERB'), the reactor criticality was planned in May 2024.

(g) Subsequent to reactor criticality, low power physics experiments are planned for completion by the end of July, 2024.

(h) Post commissioning of secondary cycle system and reactor low power physics experiments, the first synchronization of RAPP-7 is expected by September, 2024. All attempts are being made to advance the synchronization date.

5. The Petitioner has submitted that due to reasons beyond its control, it could not synchronize RAPP-7. The Petitioner has requested permission be granted for the

drawl of start-up power from the grid beyond 30.6.2024 till synchronization of RAPP-7 or 30.6.2025, whichever is earlier.

6. The Petition is admitted by circulation.

7. 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."*

8. 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."*

9. The Petitioner has submitted that 700 MW PHWR, being a new system, structure, and components, are being incorporated for establishing the robustness in

design, erection and operation based upon regulatory recommendations. The Petitioner has submitted that due to the Covid-19 pandemic, delays in the manufacturing of critical equipment, and introduction of new technology, etc., RAPP-7 could not be synchronized. Accordingly, the Petitioner has sought permission for the drawl of start-up power from the grid till synchronization or 30.6.2025, whichever is earlier.

10. We have considered the submissions and the difficulties stated by the Petitioner, as quoted in paragraph 3 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. Accordingly, we are of the view that the non-availability of start-up power would hamper the progress of commissioning activities and result in a further delay in the synchronisation of RAPP-7. Accordingly, in the peculiar facts and circumstances, by way of an exceptional case, we hereby allow the extension of time for the drawl of start-up power from the grid, as sought, till the synchronization of RAPP-7 or 30.6.2025, whichever is earlier. We expect the Petitioner to make all efforts to ensure the synchronization of RAPP-7 of the project by this date.

11. With the above, the Petition No. 209/MP/2024 is disposed of.

Sd/-	**sd/-**	**sd/-**
(Ramesh Babu V.)	**(Arun Goyal)**	**(Jishnu Barua)**
Member	**Member**	**Chairperson**