

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 112/MP/2022

Coram:

**Shri P.K. Pujari, Chairperson
Shri I.S. Jha, Member
Shri Arun Goyal, Member
Shri P.K. Singh, Member**

Date of Order: 22nd April, 2022

In the matter of

Petition seeking permission to continue interchange of infirm power including drawal of start-up power from the Grid as per Deviation Settlement Mechanism (DSM) beyond 30.6.2022, whichever is earlier.

And

In the matter of

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

...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 Limiter under Clause (7) of Regulation 8 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 (hereinafter referred to as “the Connectivity Regulations”) with the following prayers:

“(a) Permit drawl of start-up power from the grid under Deviation Settlement Mechanism (DSM) for RAPP-7 commissioning till synchronization of RAPP-7 or 30.6.2023, 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 is located at Rawatbhata, Chittorgarh district in the State of Rajasthan and is being implemented in two stages consisting unit of 700 MW each. The project is an indigenous 700 MW Pressurised Heavy Water Reactor (PHWR). Rajasthan Atomic Power Project 7 (in short 'RAPP-7') started drawing start-up power from 17.3.2020, the permission for which is expiring on 16.6.2021.

3. The Commission in its order dated 5.6.2021 in Petition No. 108/MP/2021 had allowed to draw the start-up power from the grid up to 30.6.2022 for synchronization of RAPP-7. However, as stated by the Petitioner, it could not be synchronized due to the following reasons:

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

(b) RAPP-7 has been provided with multiple First of a Kind (FOAK) systems such as passive heat removal system, containment spray system, etc. for enhancement of safety features. As per the guidelines of Atomic Energy Regulatory Board, all FOAK systems have to be proven to meet their design intent by mock up and experiments. The results are further validated by computed code and analysis. The design of these systems is finalized after successful completion of experiments and verification of data of these experiments. This has added to the delay in construction and subsequent commissioning activities.

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

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

(e) RAPP-7 is being constructed under EPC contract. The financial conditions of various vendors executing the EPC contract had suffered a major setback post Covid-19 pandemic outbreak and added the delay in construction and commissioning activities.

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. Generator transformer-unit transformer back charging through 400 kV switchyard is scheduled in May, 2022

(b) Major equipment such as moderator pumps and their heat exchangers, primary coolant pumps, primary pressurizing pumps, fuelling 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. All panels of Control Centre Instrumentation Package (CCIP) have been erected and commissioning is in progress. Fuelling Machine (FM) bridge and carriage, roll on shield (North and South) have been installed.

(c) All panels of Control Centre Instrumentation Package (CCIP) have been erected and commissioning is in progress. Reactor process control and monitoring system has been commissioned. The turbine control system is scheduled for commissioning by December, 2022.

(c) No load testing of certain major motors, namely, shutdown cooling pumps motor, emergency core cooling pump motor and FM supply pump Motor, etc. has been completed.

(d) Load testing of certain major equipment viz. service water pumps, plant water pumps, compressors, chillers, shutdown cooling pumps and emergency core cooling system pumps, etc. have been completed.

(e) PHT hydro testing has been done on 19.11.2021.

(f) Integrated leak rate test of reactor building of RAPP-7 will be carried out in May, 2022.

(g) Hot conditioning is expected to be completed by November 2022.

(h) Nuclear fuel loading in reactor, heavy water addition in Primary Heat Transport (PHT) and bulk addition of heavy water in moderator system will be completed by February 2023.

(i) After completion of all commissioning activities and obtaining the regulatory clearance from AERB, the reactor is expected to attain the first criticality in April, 2023. Criticality is the process of commencement of sustained nuclear chain reaction for generating nuclear power in a controlled way and the same is achieved by removal of some neutron absorbing chemicals (Gadolinium and Boron) and fine adjustment of neutron absorbing rods in a safe and controlled manner.

(j) After reactor criticality, low power physics experiments will be completed by the end of May 2023.

(k) Turbine and generator auxiliary system commissioning is expected to be completed and put on barring gear by April, 2023.

(l) After completion of commissioning of secondary cycle system and reactor low power physics experiments, the first synchronization of RAPP-7 is expected by June 2023.

5. The Petitioner has submitted that due to reasons beyond its control, it could not synchronize RAPP-7. The Petitioner has requested to grant permission for drawl of start-up power from the grid beyond 30.6.2022 till synchronization of RAPP-7 or 30.6.2023, whichever is earlier.

6. The Petition is admitted by circulation.

7. We have considered the submissions of the Petitioner. The fourth and fifth provisos to Regulation 8(7) of the Connectivity Regulations provides as under:

“Provided that the Commission may in exceptional circumstances, allow extension of the period for inter-change of power beyond the period as prescribed in this clause,

on an application made by the generating station at least two months in advance of completion of the prescribed period:

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

8. The Petitioner has submitted that 700 MW PHWR being a new system, structure and components are being incorporated for establishing robustness in design, erection and operation based upon regulatory recommendations. The Petitioner has submitted that due to Covid-19 pandemic and delay in manufacturing of critical equipment etc., RAPP-7 could not be synchronized. Accordingly, the Petitioner has sought permission for drawl of start-up power from the grid till synchronization or 30.6.2023, whichever is earlier.

9. We are of the view that non-availability of start-up power would hamper the progress of commissioning activities and result in further delay in synchronisation of RAPP-7. Accordingly, we allow extension of time for drawl of start-up power from the grid till the synchronization of RAPP-7 or 30.6.2023, whichever is earlier. We expect the Petitioner to make all efforts to ensure the synchronization of RAPP-7 of the project by this date.

10. With the above, the Petition No. 112/MP/2021 is disposed of.

**Sd/-
(P.K.Singh)
Member**

**sd/-
(Arun Goyal)
Member**

**sd/-
(I.S.Jha)
Member**

**sd/-
(P.K. Pujari)
Chairperson**