CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Review Petition No. 31/RP/2018
in Petition No. 110/TT/2017

Coram:

Shri P.K. Pujari, Chairperson
Dr. M.K. Iyer, Member

Date of Order : 25.03.2019

In the matter of:

Petition for review and modification of order dated 29.6.2018 in Petition No. 110/TT/2017 under Section 94(1)(f) of the Electricity Act, 2003 read with Regulation 103 of Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999.

And in the matter of:

Power Grid Corporation of India Limited
"Saudamini", Plot No. 2,
Sector-29, Gurgaon -122 001 **…. Review Petitioner**

Vs

1. Karnataka Power Transmission Corporation Ltd., (KPTCL),
   Kaveri Bhavan, Bangalore – 560 009.

2. Transmission Corporation of Andhra Pradesh Ltd.,
   (APTRANSCO), VidyutS oudha,
   Hyderabad– 500082.

3. Kerala State Electricity Board (KSEB)
   Vaidyuthi Bhavanam
   Pattom, Thiruvananthapuram – 695 004.

4. Tamil Nadu Generation and Distribution Corporation Limited,
   NPKRR Maaligai, 800, Anna Salai,
   Chennai - 600 002.

5. Electricity Department, Government of Goa
   Vidyuti Bhawan, Panaji, Goa-403001.

6. Electricity Department,
Government of Pondicherry,
Pondicherry - 605001.

7. Eastern Power Distribution Company of Andhra Pradesh Limited
(APEPDCL) APEPDCL, P&T Colony, Seethmmadhara,
Vishakhapatnam, Andhra Pradesh.

8. Southern Power Distribution Company of Andhra Pradesh Limited
(APSPDCL) Srinivasasa Kalyana Mandapam Backside,
Tiruchanoor Road, Kesavayana Gunta, Tirupati-517 501,
Chittoor District, Andhra Pradesh.

9. Central Power Distribution Company of Andhra Pradesh limited
(APCPDCL), Corporate Office, Mint Compound,
Hyderabad – 500 063, Andhra Pradesh.

10. Northern Power Distribution Company of Andhra Pradesh Limited
(APNPDCL) Opp. NIT Petrol Pump Chaitanyapuri,
Kazipet, Warangal – 506 004, Andhra Pradesh.

11. Bangalore Electricity Supply Company Ltd., (BESCOM),
Corporate Office, K. R. Circle
Bangalore – 560001 Karanataka.

12. Gulbarga Electricity Supply Company Ltd.,
(GESCOM) Station Main Road, Gulburga
Karnataka.

13. Hubli Electricity Supply Company Ltd.,
(HESCOM) Navanagar, PB Road
Hubli, Karnataka.

14. MESCOM Corporate Office,
Paradigm Plaza, AB Shetty Circle
Mangalore – 575 001 Karnataka.

15. Chamundeswari Electricity Supply Corporation Ltd., (CESC)
927, L J Avenue, Ground Floor, New Kantharaj Urs Road
Saraswatipuram, Mysore – 570 009.

16. Transmission Corporation of Telangana Limited,
Vidhyut Sudha, Khairatabad, Hyderabad- 500082.

17. Andhra Pradesh Solar Power Corporation Private Limited,
6-3-856/A3, Neeraj Public School Lane,
Opp. to Green Park Hotel,
Ameerpet , Hyderabad - 500 016. **.... Respondents**

For Petitioner : Shri Sitesh Mukherjee, Advocate, PGCIL
Shri Deep Rao, Advocate, PGCIL
Shri Divyanshu Bhatt, Advocate, PGCIL
Shri S.K. Venkatesh, PGCIL
Shri S.S. Raju, PGCIL
Shri Zafrul Hasan, PGCIL

For Respondent : None

ORDER

The instant review petition has been filed by Power Grid Corporation of India Ltd. ("PGCIL") seeking review of the order dated 29.6.2018 in Petition No. 110/TT/2017 whereby transmission tariff for extension of Kudankulam APP-Tirunelveli 400 kV (Quad) D/C line to Tuticorin Pooling Station along with associated bays at Tuticorin Pooling Station under Connectivity for Kudankulam 3 & 4 (2X1000 MW) ((hereinafter referred to as "transmission asset") for 2014-19 was determined in terms of the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations"). The Review Petitioner has claimed additional RoE of 0.5% for completing the instant assets within the timeline specified in Regulation 24(2)(i) read with Appendix-I(c) of the 2014 Tariff Regulations.

Brief background

2. As per the Investment Approval dated 12.1.2016 of the Board of Directors of the Review Petitioner, the instant transmission asset was scheduled to be put into

commercial operation within 28 months. Accordingly, the scheduled COD of the instant asset was 11.5.2018. The instant asset, extension of Kudankulam APP-Tirunelveli 400 kV (Quad) D/C line, was put into commercial operation on 10.3.2018, i.e. in 25 months and 27 days which is within the timeline of 38 months specified under the proviso (i) of Regulation 24(2) read with Appendix-I(c) of the 2014 Tariff Regulations for grant of additional RoE of 0.5%. Accordingly, the Review Petitioner had claimed additional RoE of 0.5% for completing the instant asset within the timeline specified in the said provision. However, the Commission disallowed the same observing that the instant asset was envisaged for evacuation of power from Units 3 & 4 of Kudankulam Nuclear Power Plant (KNPP) but was used as an interim arrangement for providing operational flexibility for Unit-1 and Unit-2 of KNPP. The relevant portion of the impugned order is extracted hereunder:-

> "44. In the absence of commissioning of Units 3 and 4 of KKNPP, Asset-1 is an interim arrangement, which has been put in place for providing additional operational flexibility for Unit-1 and Unit-2 of the Kudankulam plant. In this background, we are not inclined to allow additional ROE."

3. Aggrieved by the order dated 29.6.2018, the Review Petitioner has filed the instant Review Petition on the ground that there are errors apparent on the face of the order and has sought review on the following grounds:-

a) The Commission committed a grave error by treating the commissioning of instant asset as an interim arrangement, whereas, the asset has been commissioned as final arrangement and only contingency that shall be addressed with the commissioning of Units 3 & 4 of KNPP is configuration at Bus end of Kudankulam and construction of 3rd 400 kV D/C Kudankulam-

Tirunelveli section, which will be a separate project altogether. The instant asset shall not undergo any rearrangement upon commissioning of Units 3 and 4 of KNPP.

b) The instant transmission asset was put into commercial operation as agreed in the 36th SCM and 25th RPC of Southern Region Constituents.

c) The Commission erroneously concluded that the asset covered under the instant petition is not a single asset forming part of the scope defined under the IA and was contingent upon commissioning of Units 3 and 4 of KNPP.

d) As per Regulation 3(21) of the 2014 Tariff Regulations, an element is defined as an asset which has been distinctively defined under the scope of the project in the Investment Approval. The entire project as defined in the Investment Approval was put into commercial operation within the timeline specified under proviso (i) of Regulation 24(2) read with Appendix-I(c) of the 2014 Tariff Regulations and thus eligible for grant of additional RoE of 0.5%.

e) Not allowing additional ROE of 0.50% on account of non-commissioning of Units 3 and 4 of KNPP is in contravention of proviso (i) and (ii) of Regulation 24(2) of the 2014 Tariff Regulations, as the regulation does not make such a distinction. The Commission has erroneously considered the commissioning of the instant transmission asset (which is the entire project under the instant IA) as alternate arrangement from the one approved in the Investment Approval.

4. During the hearing on 18.12.2018, learned counsel for the Review Petitioner while reiterating the submissions made in the Review Petition has submitted that additional RoE of 0.5% was disallowed for the instant assets as it was envisaged for evacuation of power from Units 3 and 4 of KNPP but used as an interim arrangement for providing operational flexibility for Unit-1 and Unit-2 of the KNPP. He submitted that it is not an interim arrangement and it is a part of the entire scheme. As Units 3 and 4 were getting delayed, it was decided to change the scheme to facilitate two termination points at Tirunelveli and Tuticorin Pooling Stations for evacuation of power from Units 1 and 2 to avoid difficulties in case of fault at one of the pooling stations and therefore the instant asset was preponed. He further referred to the CEA transmission planning criteria for providing two independent pooling stations in case of Nuclear Power Plants. He submitted that not allowing additional RoE of 0.5% is an error apparent on the face of record which should be corrected. He submitted that the 2014 Tariff Regulations does not make any distinction between an interim and final arrangement and as such the Review Petitioner is entitled to additional RoE of 0.5% as the instant transmission asset was put into commercial operation within the timeline of 38 months specified under proviso (i) of Regulation 24(2) read with Appendix-IC of the 2014 Tariff Regulations.

5. After having heard the Review Petitioner, the Commission reserved order on admissibility of the review petition.

Analysis & decision

6. We have considered the submissions of the Review Petitioner. The Review Petitioner claimed additional RoE of 0.5% for completing the instant asset within the timeline specified under proviso (i) of Regulation 24(2) read with Appendix-I(c) of the 2014 Tariff Regulations. However, the prayer for grant of additional RoE of 0.5% was disallowed as the instant asset was envisaged for evacuation of power from Units 3 & 4 of Kudankulam Nuclear Power Plant (KNPP) but used as an interim arrangement for providing operational flexibility for Unit-1 and Unit-2 of KNPP. The Review Petitioner, in the instant Review Petition has contended that the instant asset is not an interim arrangement as held by the Commission in the impugned order. However, the Review Petitioner in the main Petition No.110/TT/2017 submitted vide affidavit dated 8.3.2018 that the instant transmission scheme was discussed in the 15th Meeting of the LTOA held on 4.1.2013 and the 36th Standing Committee on Power System Planning of SR on 4.9.2013 wherein it was agreed to implement the transmission scheme as an interim arrangement due to urgency.

7. The same had been considered by the Commission in the impugned order. The relevant portion of the impugned order is as follows:-

> "11. In response to the above, the petitioner vide its affidavit dated 8.3.2018 has submitted the following:-
>
> "i) During 15th meeting of LTOA and connectivity meeting held on 04th Jan, 2013 the connectivity arrangement for Kudankulam-3&4 was finalized with suitable re-arrangements and through Kudankulam-II-Tuticorin PS 400kV D/C (Quad) line.
>
> ii) Further, the issue of implementation of the transmission line for connecting the Kudankulam to the ISTS was discussed in the 36th meeting of the Standing Committee on Power System Planning of Southern Region held on 04th Sept'2013 and it was

agreed that the proposal of interim arrangement was technically in order and could be firmed up.

iii) The above scheme was technically validated in the 36th SCM and at Para 23.2 of the 36th SCM following submissions were made with respect to interim arrangement.

> "23.2 (i) Turicorin Pooling station – Tirunelveli section of the agreed Turicorin Pooling station – Kudankulam 400 kV Quad D/c line may be constructed ahead of Kudankulam – 3 & 4 and one of the existing Kudankulam – Tirunelveli 400 kV Quad D/c may be connected to the same making Kudnakulam – Turicorin Pooling station 400kV Quad D/c line. This arrangement shall facilitate two termination points viz. Tirunelveli & Turicorin Pooling station for evacuation of power from Kudankulam – 1 & 2 and shall avoid operational difficulties in case of any bus fault at either Tiruneliveli or Tuticorin pooling stations.
>
> (ii) Interim arrangement: As the above scope includes construction of about 100 km of transmission line and the Kudankulam APP – 1&2 units are ready for commissioning, therefore, an interim arrangement for safe operation in case of any untoward incidence at Tirunelveli substation is needed. In this regard it may be mentioned that, one 400 kV circuit from Kudankulam and one 400kV circuit form Madurai are terminating in the same diameter at Tirunelveli substation and therefore, through opening of two main breakers & keeping tie breaker in closed position in normal condition shall provide the required bypass arrangement. By this arrangement, 3 nos. of 400kV circuits from Kudankulam shall be terminated at Tirunelveli, however one 400kV circuits shall be going to Madurai and provide two different termination points. This shall ensure that even with both the main busses out of service at Tirunelveli, the evacuation of Kudankulam APP is not affected."

In view of above discussions the implementation of transmission scheme was agreed due to urgency for the interim arrangement.

iv) The scheme was also deliberated in 23rd meeting of SRPC held on 26.10.2013 in presence of all Southern region constituents.

v) Further, Empowered Committee on Transmission during its 33rd meeting held on 30th September 2014 (Para-6.8) at CEA, New Delhi has recommended the implementation of the said Scheme by POWERGRID under regulated tariff mechanism with compressed time schedule.

> "6.8.4 The issue was discussed in details and the EC recommended that the above modification involving extension of Kudankulam APP – Tirunelveli 400kV Quad D/c line to Tuticorin Pooling Station along with necessary bay modification works at Tuticorin Pooling station and Tirunelveli may be implemented by POWERGRID. Accordingly, the EC agreed to recommend the scheme to MoP, for their consideration for approval and implementation of the proposal under regulated Tariff mechanism with compressed time schedule by PGCIL."

vi) From the above, it can be seen that scheme was taken up for implementation after deliberation and agreement by the constituents in the standing committee meeting and subsequent RPC's and the transmission system shall facilitate two termination points (Tirunelveli &Tuticorin PS) for evacuation of power from Kudankulam-1 & 2 and shall avoid operational difficulties."

8. Further, in response to a query regarding the status of the interim arrangement on COD of Kudankulam Nuclear Power Project Units 3 and 4, in Record of Proceedings dated 24.4.2018, the CTU vide affidavit dated 14.5.2018 reiterated that the instant assets are an interim arrangement. This aspect was also taken into consideration by the Commission in the impugned order. The relevant portion of the impugned order is extracted hereunder for ready reference:-

"12. The Commission vide ROP of the hearing dated 24.4.2018 directed the CTU to explain the planning philosophy followed while planning for Kudankulam Nuclear Power Project (KKNPP) 1 and 2 (connecting to sub-station) and whether the CTU has made similar proposals and risk mitigation measures in case of similarly placed generators. The Commission also directed the CTU to explain the arrangement for KKNPP 3 and 4 on its COD, keeping in view the present interim arrangement. In response, the petitioner vide affidavit dated 14.5.2018 has submitted the following:-

"1. It is submitted that the associated transmission system of Kudankulam NPP (2x1000 MW) was discussed and agreed in 17th & 18th meeting of Standing Committee of Southern Region held on 15th September 2003 and 5th March 2004 respectively. The Kudankulam NPP was envisaged with the ultimate capacity of 4000 MW which was to be developed in two stages of 2000 MW each. Out of which the first stage with 2x1000 MW units was expected by 2006-07.
xxxxx

The project is located at Kudankulam in Nagarcoil district of Tamil Nadu, which is at the tip of the Indian peninsula, thereby restricting the directions in which evacuation lines could be taken off. Further, the location of project was such that it is close to the boundary between Tamil Nadu & Kerala rendering it ideal to connect it to both the Tamil Nadu and Kerala grids from where the share of rest of the constituents may be delivered through principle of displacement.

2. The Kudankulam project had considerable forest stretches in the close vicinity thereby making ROW a major consideration in evolving the transmission system for evacuation of power. The ROW problems, in fact, was so severe (especially in Kerala) that the existing 220 kV transmission lines corridor was utilised by replacing them with high capacity 400 kV transmission lines with multi circuit towers. Further as per the practice, the evacuation

transmission lines from the Atomic power plants are terminated at two different substations.

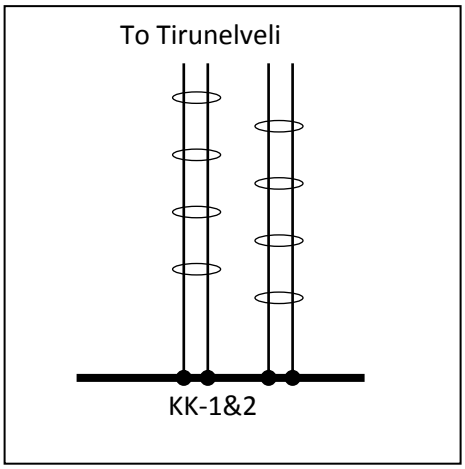
3. The power from the Kudankulam project was planned to be pooled at 400/220 kV substation at Tirunelveli enroute the route alignment of Madurai – Trivandrum 400 kV double circuit line through two numbers of 400 kV D/c lines constructed with high capacity quad conductors. Further, to enhance the reliability of power evacuation from Kudankulam APP to Tirunelveli, the two 400 kV D/c lines are envisaged to be routed apart in different physical corridors. Beyond Tirunelveli, two transmission corridors were envisaged; one towards Cochin through Tirunelveli – Muvattupuzha (near Cochin) 400 kV quad conductor D/c line and the other towards Trivandrum through construction of Tirunelveli – Edamon 400 kV twin conductor D/c line (to be initially charged at 220 kV level). To conserve ROW, the construction of Tirunelveli – Cochin 400 kV D/c line and Tirunelveli – Edamon 400 kV D/c line was proposed with utilisation of the ROW of existing interstate Kayathar – Edamon 220 kV line and a multi-circuit line from Tirunelveli to Edamon utilising the existing ROW corridor.

4. Accordingly, following transmission system was planned

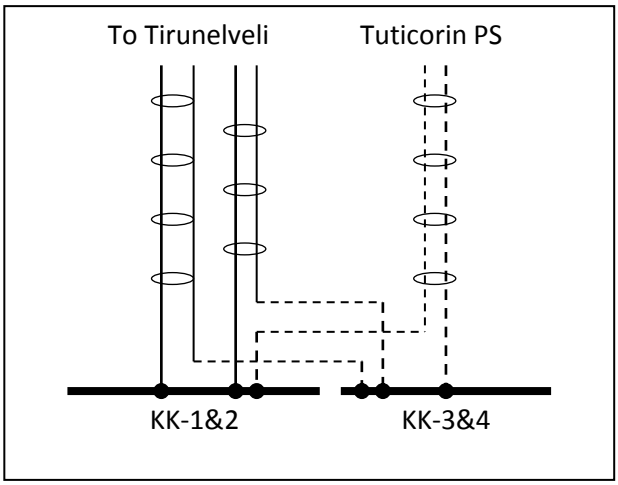
a. Kudankulam – Tirunelveli 2x400 kV D/c lines (with Quad conductors).
b. Tirunelveli – Udumalpet 400 kV D/c lines with twin conductors.
c. LILO of both circuits of Madurai – Trivandrum 400 kV D/c line at Tirunelveli.
d. Tirunelveli – Muvattupuzha 400 kV D/c line (with Quad conductors).
e. Tirunelveli – Edamon 400 kV D/c line (with twin conductors and initially charged at 220 kV) on multi circuit with Tirunelveli – Muvattupuzha 400 kV D/c line.
f. Muvattupuzha - North Trichur 400 kV D/c line (with quad conductor).
g. Establishment of new 400/220 kV substations with 2x315 MVA transformers at Tirunelveli, and Muvattupuzha.
h. Augmentation of transformation capacity at Udumalpet and Trivandrum 400/220 kV substation by 1x315 MVA, 400/220 kV transformer each.

5. However, with the commissioning of the Transmission System and the Unit-1 (1000 MW) of the generation project, on numerous occasions, entire Tirunelveli substation was tripped and due to which the KKNPP generation was also required to backed down the generation. Under such scenario, as interim arrangement, one circuit of one of the KAPP – Tirunelveli 400kV Quad line and the one LILO of Madurai – Trivandrum 400 kV D/c line was bypassed at Tirunelveli substation and for making the Kudankulam – Madurai 400kV line, part of the line is quad conductor and part is twin moose conductor. With this arrangement the KKNPP was connected with two different stations one with Tirunelveli and other with Madurai.

6. In January, 2011, NPCIL submitted application for grant of Connectivity for KKNPP-3&4 with the commissioning schedule of 2016/2017. Initially it was considered to grant the Connectivity for KKNPP-3&4 at KKNPP-1&2 through extension of generation switchyard, however NPCIL stated that considering the limitations of current ratings as well as switch gear rating of 400 KV KK-1&2 switchyard, it is not advisable to have a common switchyard for KKNPP-1&2 and KKNPP-3&4. Accordingly Connectivity was granted to KKNPP-3&4 through 400kV D/c transmission lines with following arrangement:



Existing Arrangement with only unit 1 & 2 in operation



Proposed Arrangement after COD of Unit 3 & 4.

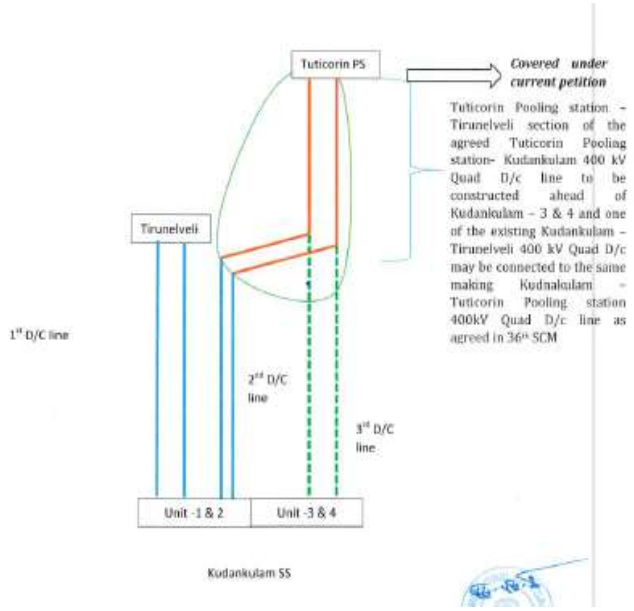


Fig: Interim Arrangement i.e. Asset-1, put in place in absence of commissioning of Unit 3 & 4.

The above arrangement requires re-arrangement of existing connections at KKNPP-1&2 switchyard. Further, such arrangement shall facilitate two 400kV quad lines to Tirunelveli & one 400kV quad line to Tuticorin pooling station from both the phases of KKNPP generation. This arrangement shall also facilitate two 400kv lines available even during contingency of tower outages on any of the three 400kV D/c lines. Further 6 nos. of quad conductor 400kV lines shall generally be adequate for immediate evacuation of power from KKNPP-1&2 and KKNPP-3&4, however any additional transmission system, if required, shall be planned alongwith LTA application for KKNPP-3&4 to be submitted by NPCIL.

7. Further, as the Unit-3&4 of the Kudankulam generation project is getting delayed, it was decided during 36th Meeting of Standing Committee of Southern region held in September, 2013, Turicorin PS – Tirunelveli section of the agreed Turicorin PS – Kudankulam 400 kV Quad D/c line may be constructed ahead of KKNPP-3&4 and one of the existing Kudankulam – Tirunelveli 400 kV Quad D/c is to be connected to the same making Kudankulam – Turicorin PS 400kV Quad D/c line. This arrangement shall facilitate two termination points viz. Tirunelveli & Turicorin PS for evacuation of power from KKNPP-1&2 and shall avoid operational difficulties in case of any bus fault at either Tirunelveli or Tuticorin pooling stations.

8. With regard to the planning of transmission system incorporating risk mitigation measures in case of similarly placed generators is as per CEA transmission planning criteria.

"In case of transmission system associated with a nuclear power station there shall be two independent sources of power supply for the purpose of providing start-up power. Further, the angle between start-up power source and the generation switchyard should be, as far as possible, maintained within 10 degrees.

The evacuation system for sensitive power stations viz., nuclear power stations, shall generally be planned so as to terminate it at large load centres to facilitate islanding of the power station in case of contingency."

Accordingly, the evacuation system for Kaiga APP stage-I was also planned at two points i.e. Kaiga – Davangere 400kV D/c line and Kaiga – Narendra 400kV D/c line. The minutes of the 8th SCM of SR are enclosed.

Further, the evacuation system for RAPP Unit 5&6 (440 MW) was also planned in similar lines consisting of RAPP – Kankroli 400 kV D/c line & RAPP – Kota 400 kV S/c line to meet any single as well as double contingency of 400kV line."

9. Thus, it is evident as has been observed by the Commission in the impugned order, that the instant transmission assets, which were put into commercial operation by the Review Petitioner, were only an interim arrangement. These assets would require rearrangement on commissioning of Units 3 and 4 of the Kudankulam Nuclear Power Projects. In terms of clause (2) of Regulation 24 of the 2014 Tariff Regulations, additional RoE of 0.5% is not allowed for such interim arrangements. Therefore, we find no error apparent in the face of the impugned order and review on this count fails.

10. In view of the above, Review Petition No.31/RP/2018 is disposed of.

sd/-	**sd/-**
(Dr. M.K. Iyer)	**(P.K. Pujari)**
Member	**Chairperson**