

**CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi**

Review Petition No. 11/RP/2021

in

Petition No. 85/TT/2019

Coram:

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

Date of Order: 15.05.2022

In the matter of:

Review Petition under Section 94(1) (f) of the Electricity Act, 2003 read with Regulation 103 of the Central electricity Regulatory Commission (Conduct of Business) Regulations, 1999, seeking review and modification of order dated 25.1.2021 in Petition No. 85/TT/2019.

And in the matter of:

Power Grid Corporation of India Limited,
'SAUDAMINI', Plot No-2, Sector-29,
Gurgaon-122001 (Haryana).

.....Review Petitioner

Versus

1. Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Vidyut Bhawan, Vidyut Marg,
Jaipur-302005 (Rajasthan).
2. Ajmer Vidyut Vitran Nigam Limited,
132 kV GSS RVPNL Sub-station Building,
Caligiri Road, Malviya Nagar,
Jaipur-302017 (Rajasthan).
3. Jaipur Vidyut Vitran Nigam Limited,
132 kV GSS RVPNL Sub-station Building,
Caligiri Road, Malviya Nagar,
Jaipur-302017 (Rajasthan).
4. Jodhpur Vidyut Vitran Nigam Limited,
132 kV GSS RVPNL Sub-station Building,
Caligiri Road, Malviya Nagar,
Jaipur-302017 (Rajasthan).
5. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House Complex Building-II,
Shimla-171004 (Himachal Pradesh).



6. Punjab State Electricity Board,
The Mall, Patiala-147 001.
7. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6,
Panchkula-134109 (Haryana).
8. Power Development Department,
Government of Jammu & Kashmir,
Mini Secretariat,
Jammu-180001.
9. Uttar Pradesh Power Corporation Limited,
(Formerly Uttar Pradesh State Electricity Board),
Shakti Bhawan, 14, Ashok Marg,
Lucknow-226001(Uttar Pradesh).
10. Delhi Transco Limited,
Shakti Sadan, Kotla Road,
New Delhi-110002.
11. BSES Yamuna Power Limited,
BSES Bhawan, Nehru Place,
New Delhi.
12. BSES Rajdhani Power Limited,
BSES Bhawan, Nehru Place,
New Delhi-110019.
13. Tata Power Delhi Distribution Limited,
33 kV Sub-station, Building,
Hudson Lane, Kingsway Camp,
North Delhi-110009.
14. Chandigarh Administration,
Sector-9,
Chandigarh-160009.
15. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road,
Dehradun-248 001 (Uttarakhand).
16. North Central Railway,
Allahabad (Uttar Pradesh).
17. New Delhi Municipal Council,
Palika Kendra, Sansad Marg,
New Delhi-110002.

.....Respondent(s)



For Review Petitioner : Shri V. P. Rastogi, PGCIL
Shri S. S. Raju, PGCIL
Shri D. K. Biswal, PGCIL
Shri A. K. Verma, PGCIL

For Respondents : None

ORDER

Power Grid Corporation of India Limited (hereinafter referred to as the “PGCIL/ Review Petitioner) has filed the present Review Petition No. 11/RP/2021 seeking review and modification of the order dated 25.1.2021 in Petition No. 85/TT/2019 under Section 94(1)(f) of the Electricity Act, 2003 read with Regulation 103 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999.

Background

2. PGCIL filed Petition No. 85/TT/2019 for approval of transmission tariff in respect of Asset-I: +/-200 MVAR STATCOM (Static Synchronous Compensator) at 400/220 kV Nalagarh Sub-station and Asset-II: +/-300 MVAR STATCOM at 400 kV Lucknow Sub-station under “Provision of STATCOM at Nalagarh and Lucknow in Northern Region” under Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as the “2014 Tariff Regulations”). Since Asset-II was not declared under commercial operation during 2014-19 tariff period, PGCIL was granted liberty to file a fresh petition for approval of tariff in respect of Asset-II under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019. Thus, the Commission vide order dated 25.1.2021 allowed tariff in respect of Asset-I i.e. +/- 200 MVAR STATCOM at 400/220 kV Nalagarh Sub-station (hereinafter referred to as the “transmission asset”).



3. The Petitioner claimed Initial Spares @6% of the plant and machinery cost, categorising the transmission asset as “transmission sub-station (Brown Field)”. However, Commission vide order dated 25.1.2021 in Petition No. 85/TT/2019 restricted Initial Spares to 4% of the plant and machinery cost as provided under Regulation 13(d)(iv) of the 2014 Tariff Regulations. Relevant excerpts of the order dated 25.1.2021 are as follows:

“37. We have considered the submissions made by the Petitioner and Respondents. The Petitioner has claimed initial spares in respect of the Asset-I under brown field sub-station. The Petitioner has taken approval for STATCOM as a separate element. The basic purpose of STATCOM is to provide compensation and as per Regulation 13(d)(iv) of the 2014 Tariff Regulations, the allowable ceiling for compensation devices is 4%. We find that the initial spares claimed by the Petitioner are higher than the ceiling as per the 2014 Tariff Regulations and, therefore, we restrict it to 4% as provided under Regulation 13(d)(iv) of the 2014 Tariff Regulations. We find no reason to invoke provisions of Regulation 54 of the 2014 Tariff Regulations.

38. The expenses incurred on initial spares up to COD have been considered in the COD cost. The amount towards balance initial spares liabilities shall be considered as part of additional capital expenditures beyond 2014-19 tariff period. The Initial Spares allowed for the purpose of tariff of 2014-19 period, after considering the Plant and Machinery cost excluding IDC, IEDC and Land expenses are as under:

Asset	Element	Plant and Machinery Cost up to the cut-off date (excluding IDC and IEDC, land cost and cost of civil works) (₹ in lakh)	Initial Spares claimed (₹ in lakh)	Norms as per the 2014 Tariff Regulations (in %)	Initial Spares allowed (₹ in lakh)
I	Transmission System - Series Compensation Devices	15698.06	1071.23	4.00	609.45

4. Aggrieved with the Commission’s order dated 25.1.2021, the Review Petitioner has filed the present review petition contending that the Commission has erred by considering STATCOM as a ‘Series Compensation Device’ under Regulation 13(d)(iv) of the 2014 Tariff Regulations whereas STATCOM requires more Initial Spares in comparison to ‘Series Compensation Device’ as such it ought to have been categorized as ‘Brown Field Transmission Sub-station’ under Regulation 13(d)(iii) of the 2014 Tariff Regulations and allowed 6% Initial Spares. Categorizing the STATCOM in order dated 25.1.2021 as



compensation device under Regulation 13(d)(iv) of the 2014 Tariff Regulations and allowing 4% Initial Spares is an error apparent on record and the same is required to be modified.

5. The Review Petitioner has made the following prayers in the Review Petition:

- “a) Review and modify the Impugned Order dated 25.1.2021, passed by this Hon'ble Commission in Petition No. 85/TT/2019, in terms of the submissions set out in the present petition;*
- b) Sanction a 6% rate for the initial spares applicable as per Regulation 13(d)(iii) of Tariff Regulations, 2014 in the instant asset; and*
- c) Pass such other order(s) and/or direction(s) as this Hon'ble Commission may deem just and proper in the facts and circumstances of the case.”*

6. The matter was heard through video conference on 20.1.2021 and order was reserved.

Submissions of the Review Petitioner

7. The gist of submissions made by the Review Petitioner in the Review Petition is as follows:

- (a) While determining transmission tariff in respect of the instant project, certain crucial technical differences among various categories of Initial Spares used in a transmission system were erroneously overlooked as a result of which STATCOM was erroneously categorized as a compensation device and a ceiling of 4% was imposed on it which is defined for “Series Compensation Device” in the 2014 Tariff Regulations. However, STATCOM is a compensation device but it is a shunt compensation device. There is no separate categorisation of STATCOM/shunt compensation defined in the 2014 Tariff Regulations. This approach is in clear contravention of the Commission's own binding precedents and the factual technical position.



- (b) The Commission while allowing transmission tariff vide order dated 25.1.2021, did not allow the permissible ceiling of 6% for Initial Spares in respect of the transmission asset by terming STATCOM as compensation device in terms of Regulation 13(d)(iv) of the 2014 Tariff Regulations.
- (c) The findings of the Commission in order dated 25.1.2021 are erroneous as STATCOM ought to be categorised under “Transmission Sub-station (Brown Field)” in terms of Regulation 13(d)(iii) of the 2014 Tariff Regulations. Accordingly, a ceiling norm of 6% of the Plant and Machinery Cost with respect to Initial Spares ought to have been allowed to be capitalised under the Brown Field Transmission Sub-station head instead of restricting the cost of STATCOM to 4% under Regulation 13(d)(iv) as “Series Compensation Devices”. This constitutes an error apparent on the face of record, and is a valid ground for review and modification of the order dated 25.1.2021.
- (d) The Review Petitioner claimed a sum of ₹1071.23 lakh as Initial Spares and calculated allowable Initial Spares of ₹933.63 lakh @ 6%. However, Initial Spares of ₹609.45 lakh @ 4% was allowed by the Commission which resulted in under recovery of ₹324.18 lakh to the Review Petitioner.
- (e) The Commission’s order dated 25.1.2021 is erroneous as it overlooked the technical differences i.e. functions and construction of STATCOMs which are shunt connected compensators and not a series compensation device.
- (f) Series compensation and shunt compensation devices differentiate from each other on numerous grounds as far as their application and construction features are concerned in the power network. Series compensation devices that are being used widely across the utilities in the world are Fixed Series Compensation (FSC), Thyristor Controlled Series Compensator (TCSC) and Static Synchronous



Series Compensator (SSSC), while the shunt compensation devices that are being used are Static Var Compensator (SVC) and STATCOM (Static Compensator). The primary purpose of series compensation devices is to regulate the power flow in the transmission lines. In an FSC, series capacitors are installed along with by-pass breakers, MOV, damping circuit etc. on a transmission line between two sub-stations. The location of these devices may be at either end or in the middle of a line. By decreasing the overall impedance of a line, a higher power-flow is achieved. Further, there is no dynamic control in FSC. TCSC is a similar device with the exception that it is able to vary its impedance that it additionally helps in damping the inter area oscillations.

- (g) On the other hand, shunt compensating devices like SVC and STATCOM are used for providing voltage support and dynamic support during network contingencies which otherwise would lead to a voltage collapse in the network. Shunt devices like these have completely different function as compared to the series compensation devices and the choice of selection of these at a particular location in the power network depends upon the function they have to perform and neither of them can be taken as an alternative to each other.
- (h) STATCOM is used to provide dynamic VAR compensation into the grid to increase overall stability of the grid whereas a series compensator is provided to increase power flow capability of a line by reducing the line inductance. AC power transmission over long lines, are primarily limited by the series reactive impedance of the line. Series capacitors are used to partially offset the effects of the series inductances of transmission lines. The net effect is a lower load angle for a given power-transmission level and, therefore, a higher-stability margin and ultimately a higher transmission capacity.



- (i) A shunt connected compensation device, like an STATCOM, and series compensation device are significantly different from each other, not only from the standpoint of the point at which they are placed, but also in terms of the function that they perform.
- (j) The Project in question pertains to an existing sub-station and does not conceive of setting up a greenfield sub-station. The Statement of Reasons of the 2014 Tariff Regulations dated 24.4.2014 clearly establish that a STATCOM, such as in the instant case, which forms a part of an existing sub-station, will fall under the brownfield sub-station asset category. The relevant excerpts are as follows:

“15.13

...

b) Initial spares have been claimed only for certain number of sub-station assets. It is observed that though the expenses claimed were higher than the norms, the same were restricted by the Commission based on the norms. It is further observed that due to higher scale of procurement, per unit cost of spares is less in case of new sub-stations. The Commission considered it appropriate to segregate total sub-station assets under analysis into greenfield and brownfield sub-station assets.

In case of greenfield sub-station assets, it is observed that around 86% of the assets are having initial spares up to 4% of plant & machinery cost. Accordingly, it is considered appropriate to fix the ceiling limit of initial spares as 4% of plant and machinery cost. In case of brownfield sub-station assets, the average claim towards initial spares for majority of assets is found to be around 6% of the plant and machinery cost. Therefore, it is considered appropriate to fix the ceiling limit as 6% in case of Transmission Sub-stations (brownfield).”

- (k) The Commission should, therefore, modify order dated 25.1.2021 and hold that 6% Initial Spares are allowed for capitalisation in respect of the STATCOM in question in terms of Regulation 13(d)(iii) of the 2014 Tariff Regulations. Further, Nalagarh Sub-station was executed in the year 1999 and STATCOM was executed on 31.3.2019. As STATCOM at Nalagarh Sub-station executed at existing sub-station, Initial Spares pertaining to STATCOM at Nalagarh Sub-station should be treated in ‘brownfield’ category.



- (l) The Commission under Regulation 23(d)(vi) of the 2019 Tariff Regulations has fixed allowable Initial Spares ceiling at 6% for “Static Synchronous Compensator (STATCOM)” while separate norm for allowable ceiling has been fixed for Initial Spares with respect to “Series Compensation Device and HVDC”.

Analysis and decision

8. We have heard representative of the Review Petitioner and have perused the record including order dated 25.1.2021. The representative of the Review Petitioner contended that in the original petition i.e. Petition No. 85/TT/2019, PGCIL claimed Initial Spares @ 6.83% as against the ceiling of 6% of the plant and machinery cost for STATCOM at Nalagarh as it is a brownfield sub-station in terms of Regulation 13(d)(iii) of the 2014 Tariff Regulations. However, the Commission vide order dated 25.1.2021 allowed Initial Spares @4% of the plant and machinery cost as per Regulation 13(d)(iv) of the 2014 Tariff Regulations considering STATCOM a Series Compensation Device and the same is an error apparent on record which needs to be modified. The representative of the Review Petitioner further contended that Regulation 13(d) (iv) of the 2014 Tariff Regulations provides for Initial Spares with respect to ‘Series Compensation Device’ while STATCOM is not a ‘Series Compensation Device’ and as such the requirement of Initial Spares in case of STATCOM is higher than a Series Compensation Device like FSCs and other equipment. He further contended that equipment such as coupling transformer, MV bus, mechanically switched capacitor/reactor, valves, valve hall and other necessary auxiliary facilities are required for installation of STATCOMs. This is the reason that related Initial Spares requirement is high and it should be treated as a shunt compensation device and Initial Spares @ 6% may be allowed for the same. The representative of the Review Petitioner contended that in the present case, Initial Spares @ 6% may be allowed as the Commission



vide order dated 18.10.2021 in Petition No. 658/TT/2020 and order dated 18.1.2022 in Petition No. 481/TT/2020 has already allowed Initial Spares @ 6% for STATCOM.

9. On perusal of record, we find that the Review Petitioner claimed Initial Spares in respect of the transmission asset under brown field sub-station category. It is also observed that the Review Petitioner took approval for STATCOM as a separate element. It is fact that norms for STATCOM are not specified in the 2014 Tariff Regulations. The Commission has observed in the order dated 25.1.2021 that basic purpose of STATCOM is to provide compensation and as per Regulation 13(d)(iv) of the 2014 Tariff Regulations, the ceiling for Initial Spares for compensation device is fixed at 4%. The Review Petitioner, however, has brought out that the primary purpose of series compensation devices is to regulate the power flow in the transmission lines, whereas shunt compensating devices are used for providing voltage support and dynamic support during network contingencies and, therefore, a shunt connected compensation device, like an STATCOM, and series compensation device are significantly different from each other. Therefore, neither of them can be taken as an alternative to each other.

10. We also notice that Nalagarh Sub-station is an existing sub-station which was executed in the year 1999 and STATCOM was executed on 31.3.2019. Thus, there is a case for treating the same under the brownfield category under Regulation 13(d) (iii) of the 2014 Tariff Regulations instated of treating it under Regulation 13(d)(iv) of the 2014 Tariff Regulations.

11. Accordingly, considering the fact that (i) STATCOM is a shunt connected compensation device and is significantly different from a series compensation device and (ii) the STATCOM at Nalagarh Sub-station is installed on 31.3.2019 and that Nalagarh Sub-station is existing sub-station, we are of the view that it would be correct to allow Initial



Spares @ 6% of the plant and machinery cost up to cut-off date in terms of Regulation 13(d)(iii) of the 2014 Tariff Regulations. Thus, the order dated 25.1.2021 in Petition No. 85/TT/2019 is modified to this extent.

12. In view of above discussions, we allow the review petition. Accordingly, the Review Petitioner may approach the Commission for revision of tariff of the transmission asset at the time of truing up of tariff of the 2014-19 tariff period.

13. The Review Petition No. 11/RP/2021 is disposed of accordingly.

sd/-
(Arun Goyal)
Member

sd/-
(I. S. Jha)
Member

sd/-
(P. K. Pujari)
Chairperson

