CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

Petition No. 213/TT/2013

Coram:

Shri Gireesh B. Pradhan, Chairperson Shri A. K. Singhal, Member

Date of Hearing : 25.03.2014 Date of Order : 18.03.2015

In the matter of:

Determination of tariff in respect of RVPNL owned transmission lines/system connecting with other states and intervening transmission lines incidental to inter-State transmission of electricity as per the Central Electricity Regulatory Commission's order dated 14.3.2012 in Petition No.15/Suo-Motu/2012, for inclusion in POC Transmission charges in accordance with Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009.

And in the matter of:

Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPNL) Vidyut Bhawan, Jyoti Nagar, Jaipur-302005Petitioner

Vs

- 1. Power Grid Corporation of India Limited "Saudamani", Plot No.2, Sector-29, Gurgaon -122001 (Haryana).
- 2. Haryana Vidyut Prasaran Nigam, Shakti Bhawan, Sector-6, Panchkula (Haryana)-134109.
- UP Power Transmission Corporation Ltd., Shakti Bhawan, 14, Ashok Marg, Lucknow- 226001.
- 4. Delhi Transco Ltd., Shakti Sadan, Kotla Road, New Delhi-110002.

5. M.P. Power Transmission Company Ltd, Block No-2, Shakti Bhawan, Rampur, Jabalpur, 482008......**Respondents**

For petitioner	:	Shri Pradeep Misra, Advocate,RVPNL Shri Manish Athaiye, RVPNL Shri J.K Bikhla, RVPNL
For respondent	:	Shri Aashish Bernard, Advocate, MPPTCL Shri Sumit Gupta, DTL

<u>ORDER</u>

The instant petition has been filed byRajasthan Rajya Vidyut Prasaran Nigam Limited (RVPNL) for approval of the annual transmission charges of the transmission assets covered in the petitionunder the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter "2009 Tariff Regulations").

The Commission vide order dated 14.3.2012 in Petition No.
 15/SM/2012gave the following directions:-

"5.It has come to the notice of the Central Commission that the some of the owners/developers of the inter-State transmission lines of 132 kV and above in North Eastern Region and 220 kV and above in Northern, Eastern, Western and Southern regions as mentioned in the Annexure to this order have approached the Implementing Agency for including their transmission assets in computation of Point of Connection transmission charges and losses under the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 (hereinafter "Sharing Regulations").

6. As a first step towards inclusion of non-ISTS lines in the POC transmission charges, the Commission proposes to include the transmission lines connecting two States, for computation of POC transmission charges and losses. However, for the disbursement of transmission charges, tariff for such assets needs to be approved by the Commission in accordance with the provisions of Sharing Regulations. Accordingly, we direct the owners of these inter-State lines to file appropriate application before the Commission for determination of tariff for facilitating disbursement.

6. We direct the respondents to ensure that the tariff petitions for determination of tariff is filed by the developers/owners of the transmission line or by State Transmission Utilities where the transmission lines are owned by them in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, by 20.4.2012."

3. Six transmission lines of RRVPNL were identified as inter-State transmission lines, on the basis of the inputs provided by Northern Regional Power Committee (NRPC). RRVPNL was directed to file tariff petition for the six transmission lines (given in the table below) for the purpose of inclusion in the POC charges, vide order dated 14.3.2012 in Petition No.15/SM/2012.

SI. No.	Name of Line	Connecting States
1	220 kV S/C MIA (Alwar)-Badarpur line	Rajasthan-Delhi
2	220 kV S/C Agra-Bharatpur line	Rajasthan-Uttar Pradesh
3	220 kV S/C Kota (Sakatpura)-Badod line	Rajasthan-Madhya Pradesh
4	220 kV S/C Modak-Badod line	Rajasthan-Madhya Pradesh
5	220 kV S/C Khetri –Dadri line-I	Rajasthan-Haryana
6	220 kV S/C Khetri –Dadri line-II	Rajasthan-Haryana

4. The petitioner has claimed tariff for 20 lines in the petition as per the details

given below:-

Srl.	Name of Line	Rationale for including in this petition
No.		
Inter-	state lines owned by RVPN (As per se	ction 2(36) (i) of the Act)
1	220 kV S/C MIA (Alwar)-Badarpur line	Rajasthan-Delhi (131.60 ckt. Km)
2	220 kV S/C Agra-Bharatpur line	Rajasthan-Uttar Pradesh (48.12 ckt. Km)
3	220 kV S/C Kota (Sakatpura)-Badod	Rajasthan-Madhya Pradesh (164.00 ckt.
	line	Km)
4	220 kV S/C Modak-Badod line	Rajasthan-Madhya Pradesh (121.00 ckt.
		Km)
5	220 kV S/C Khetri –Dadri line-I	Rajasthan-Haryana (70.91 ckt. Km)
6	220 kV S/C Khetri –Dadri line-II	Rajasthan-Haryana (77.00 ckt. Km)
7	220 kV S/C Chirawa-Hisar Line	Chirawa-Hissar (Haryana) line is between
		two states
Lines	used for evacuation of power from IS	GS (As per section 2(36) (ii) of the Act)
8	220 kV S/C Anta-Dhara line	For evacuating Anta GTPS
9	220 kV S/C RAPP (B)-Sakatpura line	For evacuating RAPP-B power
10	220 kV S/C RAPP (A)- RAPP (B) line	For evacuating RAPP-B power
11	220 kV S/C RAPP (A)-Debri line	For evacuating RAPP-B power
12	220 kV D/C RAPP (A)-Sakatpura line	For evacuating RAPP-B power

Incide	Incidental lines carrying inter-state lines (As per section 2(36) (ii) of the Act)					
13	400 kV S/C Jodhpur-Merta line-I	RVPN intervening system inter- connecting Kankroli (PG)–Jodhpur (RVPN) 400 kV carrying inter-state power.				
14	400 kV S/C Jodhpur-Merta line-I	RVPN intervening system inter- connecting Kankroli (PG) –Jodhpur (RVPN) 400 kV carrying inter-state power.				
15	400 kV Merta-Ratangarh line	RVPN intervening system inter- connecting Kota (PG)-Merta (RVPN) carrying inter-state power.				
16	400 kV Merta-Heerapura line	RVPN intervening system inter- connecting Kota (PG)-Merta (RVPN) carrying interstate power.				
17	220 kV S/C Bhiwadi (PG)- Bhiwadi(RVPN) line	RVPN intervening system inter- connecting Bhiwadi (PG)-Bhiwadi (RVPN) carrying interstate power.				
18	220 kV S/C Bhiwadi (PG)- Khuskhedaline-I	RVPN intervening system inter- connecting Kota (PG)-Khuskhera (RVPN) carrying interstate power.				
19	220 kV S/C Bhiwadi (PG)- Khuskheda line-II	RVPN intervening system inter- connecting Kota (PG)-Khuskhera (RVPN) carrying interstate power.				
20	220 kV S/C Bhiwadi (PG)-Neemrana line	RVPN intervening system inter- connecting Kota (PG)-Neemrana (RVPN) carrying interstate power.				

5. The petitioner has submitted that out of these 20 transmission lines, 12 lines as indicated in Sr. Nos. 1 to12 above have been commissioned before the financial year 1990 and accurate capital cost of these transmission lines is not available. The petitioner has submitted that it considered the following three options to arrive at the appropriate capital cost of these lines:-

- (a) **Option 1:-** Indicative per km costs available in the CERC document titled "Assumptions in Computation in PoC charges and Losses for 2012-13
- (b) **Option 2:-** Historic RVPN costs
- (c) **Option 3:-** Recent RVPN costs

As regards the Option 1, the petitioner has submitted that in Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 and the Statement of Reasons for the said regulations, indicative cost have been provided only for the purpose of sharing inter-State transmission charges among ISTS beneficiaries and they are not benchmark cost. As regards Option 2, the petitioner is stated to have gathered the cost from old manual records maintained by its field offices. However, the cost was found to be inaccurate as the erstwhile RSEB did not have robust systems, processes and accounting standards for accurate recording of asset wise original capital expenditure, capitalisation of initial spares, additional capital expenditure post commissioning date and capitalisation of investments incurred on Renovation and Modernization of assets. As regards Option 3, the petitioner has submitted that it has arrived at per ckm capital cost figures of ₹19.52 lakh and ₹34.21 lakh per km for 220 kV S/C line and 220 kV D/C lines respectively using capital cost of recently commissioned transmission lines owned by RVPNL. The petitioner has submitted that these estimates being its own, the capital costs may be viewed as more representative than the cost estimates of CTU or any other transmission utility. The petitioner has also submitted that these old lines are delivering good operational performance (e.g. availability) similar to other new lines and this could not have been possible without incurring significant capital expenditure on R&M of these old lines.

6. The petitioner was directed to furnish the reasons for claiming tariff for additional 14 lines in the petition, the reasons for not claiming the tariff of

"Bhiwadi-Badshahpur 220 kV inter-State transmission line between Rajasthan and Haryana" and the details of the cost of the transmission lines submitted for claiming ARR to the Rajasthan Electricity Regulatory Commission (State Commission).

7. In response, the petitioner vide affidavit dated 23.1.2014, has submitted that 14 transmission lines, besides the 6 lines identified by the Commission, are also inter-State transmission lines as defined in clauses (i) or (ii) of Sub-section (36) of Section 2 of the Act and, accordingly, tariff for the said lines has been claimed. As regards the "Bhiwadi-Badshahpur 220 kV inter-State transmission line between Rajasthan and Haryana", the petitioner has submitted that the said line is owned by HVPNL and hence tariff for the said line has not been claimed by the petitioner. As regards the capital cost of these lines, the petitioner has reiterated the submissions made in the petition that the old lines are performing similar to the new lines which is not possible without increasing significant capital expenditure on R&M. The petitioner has further submitted that it should not be deprived of its share of revenue on account of non-availability of accurate capital cost of old lines due to legacy reasons.

8. No comments or suggestions have been received from the general public in response to the notice published by the petitioner under Section 64 of the Electricity Act, 2003 (the Act). None of the respondents have filed any reply to the petition. 9. The matter was heard on 25.3.2014 and the petitioner was directed to submit the capital cost of the assets (if available) certified by an auditor, the funding pattern of the assets, repayment schedule and the interest rate of loans, cumulative depreciation against the assets as on 31.3.2012, details of the ARR approved by the State Commission for the 2009-14 period and the details of the O&M Expenses.

10. In response, the petitioner, vide affidavit dated 15.5.2014, has submitted that the audited capital cost, the actual repayment schedule and interest rates of the loans of the instant assets are not available. Since, the actual debt and equity considered towards the transmission assets as on the date of commercial operation is also not available, the petitioner has considered a notional debt equity ratio of 70:30 for the instant assets. The petitioner has submitted that the State Commission considers the depreciation for the entire transmission assets of the petitioner while approving the Annual Revenue Requirement (ARR) and hence the actual information on cumulative depreciation of these transmission assets is not separately available with the petitioner. It has been further submitted that as per the methodology adopted by the State Commission while calculating depreciation of assets, the life of transmission line has been considered as 35 years with a salvage value of 10% and the applicable depreciation has been calculated for 2012-13 and 2013-14 using Straight Line Method. However, depreciation is claimed for assets older than 35 years. The petitioner has submitted that the ARR and the O&M norms for the 2009-14 tariff period have been approved by the State Commission. The details of the approved ARR furnished by the petitioner are given hereunder:-

TOTAL AMOUNT OF ARR APPROVED BY STATE COMMISSION FOR THE TRANSMISSION LINES FOR THE 2009-14 TARIFF PERIOD							
Line Type*	2009-10	2010-11	2011-12	2012-13	2013-14		
+500kV HVDC	-	-	-	-	-		
+800kV HVDC	-	-	-	-	-		
765kV D/C	-	-	-	-	-		
765kV S/C	-	-	-	-	426.00		
400kV D/C	-	-	-	-	-		
400kV D/C Quad. Moose	-	-	-	-	-		
400 kV S/C	2615.38	2608.00	2755.55	3023.35	3974.75		
220 kV D/C	-	-	-	-	-		
220 kV S/C	10201.19	10521.00	11267.08	11467.03	12543.01		
132 kV D/C	-	-	-	-	-		
132 kV S/C	13600.54	13626.00	14183.70	14727.10	15166.76		
66 kV	-	-	-	-	-		
ARR approved **	101484	120200	145778	166057	200427		

* Line length in ckt.km. **ARR in ₹ in lakh

11. The details of the O&M norms approved by the State Commission for the

2009-14 period, submitted by the petitioner are as given under:-

	O&M Expenses				
		(₹ in lakh p	er ckt. Km.)		
	2009-10	2010-11*	2011-12*	2012-13*	2013-14*
765 kV	1.08	1.14	1.21	1.28	1.35
400 kV	0.68	0.72	0.76	0.80	0.85
220 kV	0.27	0.29	0.30	0.32	0.34
132 kV	0.16	0.17	0.18	0.19	0.20
		O&M Ex	penses		
		(₹ in lakh per l	MVA capacity)		
	0.42	0.44	0.47	0.50	0.52
		O&M Ex			
	(₹ in lakh per feeder bay)				
765 kV	63.06	66.67	70.48	74.51	78.77
400 kV	42.04	44.	46.99	49.67	52.52
220 kV	5.86	6.20	6.55	6.92	7.32
132 kV	3.98	4.21	4.45	4.70	4.97

12. We have heard the representative of the petitioner and have perused the material on record. We proceed to determine the annual fixed charges in respect of the assets covered in the petition.

No. of assets to be covered

13. The petition has been filed in response to the Commission's directions for determination of tariff of transmission lines owned or controlled by the STU which carry power inter-State. Section 2(36) of the Act defines the ISTS as under:-

"2(36) inter-State transmission system includes-

(i) Any system for the conveyance of electricity by means of main transmission line from the territory of one State to another state;
(ii) The conveyance of electricity across the territory of any intervening State

as well as conveyance within the State which is incidental to such inter-State transmission of electricity;

(iii) The transmission of electricity within the territory of a State on a system built, owned, operated, maintained or controlled by a Central Transmission Utility"

The petitioner has submitted that besides the 6 transmission lines identified by the Commission, there are 14 other transmission lines owned by the petitioner which satisfy the conditions of ISTS. Out of these 20 lines, 7 lines are covered under the definition of ISTS under Section 2(36) (i) and remaining 13 lines are covered under Section 2(36)(ii) of the Act. It may be noted that STU lines used for carrying inter-State power can be considered for inclusion in the PoC charges only if it is certified by RPC in terms of Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 which is extracted as under:-

"(g) Overall charges to be allocated among nodes shall be computed by adopting the YTC of transmission assets of the ISTS licensees, deemed ISTS licensees and owners of the non-ISTS lines which have been certified by the respective Regional Power Committees (RPC) for carrying inter-State power. The Yearly Transmission Charge, computed for assets at each voltage level and conductor configuration in accordance with the provisions of these regulations shall be calculated for each ISTS transmission licensee based on indicative cost level provided by the Central Transmission Utility for different voltage levels and conductor configuration. The YTC for the RPC certified non-ISTS lines which carry inter-State power shall be approved by the Appropriate Commission."

14. The certificate of NRPC is available in terms of the above Regulation in respect of six transmission lines which were included in the Commission's order dated 14.3.2012. Since the certification is not available for the 14 transmission lines, we direct the petitioner to approach NRPC for the required certification of these lines for inclusion in the PoC Charges. Accordingly, only the six transmission lines are being considered in this petition for grant of annual transmission charges. Further, since the Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 came into force with effect from 1st July, 2011, Yearly Transmission Charges (YTC) for these six transmission lines have been calculated for the year 2011-12 (1.7.2011 to 31.3.2012), 2012-13 and 2013-14.

Procedure for calculating YTC for the six transmission lines

15. As the petitioner has submitted that the capital costs of the transmission lines are not available, the indicative cost of lines of various configurations owned and operated by PGCIL has been considered for the purpose of computation of capital cost. Indicative cost of 400 kV D/C Quad Moose transmission line has been taken as base and indicative cost of lines with configurations other than 400 kV D/C Quad Moose have been made equivalent to indicative cost of 400 kV D/C

Quad Moose (i.e. by dividing indicative cost of the 400 kV D/C Quad Moose line by the indicative cost of line of other configurations).

For example – the indicative cost of 400 kV D/C Quad Moose is ₹202 lakh/km (cost/ckt km=₹101 lakh) and of 765 kV S/C is ₹159.25 lakh/km. Therefore, the ratio of indicative cost of ckt km of 400 kV D/C Quad Moose and indicative cost of ckt km of 765 kV S/C is 0.63 (i.e.101/159.25) and so on for other configurations. The yearly break up is given hereunder:-

For FY 2011-12:

				(₹ in lakh)
Туре	Cost	Cost /Circuit	Coefficient	Ratio w.r.t. d
(a)	(b)	(c)	(d)	(e)
765 KV D/C	315.25	157.625	а	0.64
765 KV S/C	159.25	159.25	b	0.63
400 KV D/C Twin Moose	109.50	54.75	С	1.84
400 KV D/C Quad. Moose	202.00	101	d	1.00
400 KV S/C Twin Moose	74.25	74.25	е	1.36
220 KV D/C	59.50	29.75	f	3.39
220 KV S/C	37.00	37.00	g	2.73
132 KV D/C	46.75	23.375	h	4.32
132 KV S/C	28.50	28.50	i	3.54

For FY 2012-13:

Туре	Cost (₹ in lakh)	Cost (₹ in lakh) /Circuit	Coefficient	Ratio w.r.t. d
(a)	(b)	(c)	(d)	(e)
765 KV D/C	357.00	178.5	а	0.63
765 KV S/C	179.20	179.20	b	0.63
400 KV D/C Twin Moose	122.60	61.3	С	1.83
400 KV D/C Quad. Moose	224.80	112.4	d	1.00
400 KV S/C Twin Moose	84.20	84.20	е	1.33
220 KV D/C	67.80	33.9	f	3.32
220 KV S/C	41.40	41.40	g	2.71
132 KV D/C	53.00	26.5	h	4.24
132 KV S/C	32.40	32.40	i	3.47

For FY 2013-14:

Туре	Cost (₹ in lakh)	Cost (₹ in lakh) /Circuit	Coefficient	Ratio w.r.t. d
(a)	(b)	(c)	(d)	(e)
765 kV D/C	412.00	206	а	0.56
765 kV S/C	179.80	179.80	b	0.65
400 kV D/C Twin Moose	130.40	65.2	С	1.78
400 kV D/C Quad Moose	232.60	116.3	d	1.00
400 kV S/C Twin Moose	87.00	87.00	е	1.34
220 kV D/C	61.40	30.7	f	3.79
220 kV S/C	37.80	37.80	g	3.08
132 kV D/C	48.40	24.2	h	4.81
132 kV S/C	30.00	30.00	i	3.88

16. After getting ratio with respect to 400 kV D/C Quad Moose, YTC per ckt. km of 400 kV D/C Quad Moose transmission line has been calculated as follows:-

<u>ARR for FY.....in ₹</u>

YTC per ckt km
400 kV D/C
Quad Moose
Length of 765 kV DC/a) + (Length of 765 kV SC/b)+ (Length
of 400 kV DC QM/c) + (Length of 400 kV DC TM /d)
+ (Length of 400 kV SC TM /e) + (Length of 220 kV
DC /f) + (Length of 220 kV SC /g) + (Length of 132
kV DC /h) + (Length of 132 kV SC /i) + (Length of 400
kV DC TS /j)

*value of a, b, c, d, e, f, g, h, i & j are as given in para15 and length in ckt km as given in para10 above of this order. DC-Double Circuit, SC-Single Circuit, AM-Quad Moose, TM-Twin Moose, TS-Triple Snowbird

17. We have not carried out any due diligence of the tariff of these lines (for consideration of PoC calculations) as the jurisdiction to determine the tariff of the lines owned by STU rests with the State Regulatory Commission. We have considered the ARR of the STU as approved by the State Regulatory Commission

and have adopted the methodology as discussed in paras 15 and 16 of this order for the purpose of calculation of PoC charges and apportionment of transmission lines and charges to the transmission system of different configurations of the STU. This methodology shall be adopted uniformly for the lines owned by other STUs used for inter-State transmission of power duly certified by respective RPCs for the purpose of inclusion in the PoC mechanism.

18. Accordingly, on the basis of the line length in ckt. km and the ARR approved by the State Commission for the years 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14 and POC cost data for the respective years, YTC for the instant transmission assets for the period 1.7.2011 to 31.3.2012 and for the years 2012-13 and 2013-14 have been calculated as given under:-

For FY 2011-12:

				(YTC in ₹)
S. No	Asset	F	or entire system	of RRVPNL
		Line Length (ckt. km)	YTC (per ckt. km)	YTC
1	765 kV S/C	0	2263309.13	0.00
2	400 kV S/C	2755.55	1055263.44	2907831179.48
3	220 kV S/C	11267.08	525855.18	5924852421.57
4	132 kv S/C	14183.7	405050.61	5745116398.94
				145778,00,000

Total ARR approved by the State Commission for 2011-12 is ₹14,57,78,00,000

For FY 2012-13:

Total ARR approved by the State Commission for 2012-13 is ₹16,60,57,00,000

(YTC in ₹)

S. No.	Asset	For entire system of RRVPNL			
		Line Length (ckt. km)	YTC (per ckt. km)	YTC	
1	765 kV S/C	0	24,66,508.24	0.00	
2	400 kV S/C	3,023.35	11,58,928.54	35038,46,592.40	
3	220 kV S/C	11,467.03	5,69,829.47	65342,51,635.35	
4	132 kV S/C	14,727.10	4,45,953.50	65676,01,772.25	
				16,60,57,00,000	

For FY 2013-14:

Total ARR approved by the State Commission for 2013-14 is ₹20,04,27,00,000

				(YTC in ₹)
S. No.	Asset	F	For entire system of R	RVPNL
		Line Length (ckt. km)	YTC (per ckt. km)	YTC
1	765 kV S/C	426	26,66,375.48	11358,75,954.02
2	400 kV S/C	3,974.75	12,90,181.68	51281,49,645.88
3	220 kV S/C	12,543.01	5,60,561.70	70311,30,969.86
4	132 kV S/C	15,166.76	4,44,890.24	67475,43,430.24

YTC of the six transmission lines

19. YTC per ckt. km for 220 kV S/C line considered for RVPNL lines is as given

below:-

			(in ₹)
Year	2011-12	2012-13	2013-14
YTC	5,25,855	5,69,829	5,60,562

20. YTC of the six transmission lines calculated on the methodology discussed

above are as follows:-

					(in ₹)
S.	Line Name	Length	2011-12	2012-13	2013-14
No.		(ckt. km)			
1	220kV S/C MIA (Alwar) – Badarpur Line	131.6	5,19,01,889	7,49,89,496	7,37,69,959
2	220kV S/C Agra-Bharatpur Line(Raj-UP)	48.12	1,89,78,107	2,74,20,171	2,69,74,243

3	220kV S/C Kota (Sakatpura)-Badod (Raj- MP)	164.00	6,46,80,165	9,34,51,956	9,19,32,168
4	220kV S/C Modak-Badod (Raj-MP)	121.00	4,77,21,341	6,89,49,309	6,78,28,002
5	220kV S/C Khetri-Dadri Line I (Raj-Haryana)	70.91	2,79,66,284	4,04,06,574	3,97,49,451
6	220kV S/C Khetri-Dadri Line II (Raj-Haryana)	77.00	3,03,68,126	4,38,76,833	4,31,63,274
Total		612.63	24,16,15,911	34,90,94,340	34,34,17,098

*YTC for 9 months has been taken as per Sharing Regulations, 2010 which came into force from 1.7.2011.

21. The annual transmission charges allowed for the assets covered in the petition shall be considered in the YTC as per the Sharing Regulations and shall be adjusted against the ARR of the petitioner approved by the State Commission.

22. This order disposes of Petition No. 213/TT/2013.

sd/-

sd/-

(A. K. Singhal) Member (Gireesh B. Pradhan) Chairperson