

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 245/TT/2013

Coram:

**Shri Gireesh B. Pradhan, Chairperson
Shri A. K. Singhal, Member
Shri A. S. Bakshi, Member**

Date of Hearing : 04.06.2015

Date of Order : 16.02.2016

In the matter of:

Approval of transmission tariff for (i) Kotmikala-Amarkantak-1, 220 kV Line (S. No. 2 of WR) (ii) Kotmikala-Amarkantak-2, 220 kV Line (S. No. 3 of WR) (iii) Raigarh-Budhipadar, 220 kV Line (S. No. 6 of ER-WR) (iv) Korba-Budhipadar, 220 kV Line (S. No. 7 of ER-WR) under Regulation 86 of Central Electricity Regulatory Commission (conduct of Business) Regulations' 1999 and Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations' 2009, for inclusion of these Assets in computation of Point of Connection, Transmission charges & Losses under Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses), Regulations, 2010

And in the matter of:

Chhatisgarh State Power Transmission Company Limited (CSPTCL)
Sewa Bhawan, Dagania
Raipur-492 013

.....Petitioner

Vs

1. NTPC Limited,
NTPC Bhawan, Scope Complex,
7, Institutional Area, Lodhi Road
New Delhi-110 003.

2. Madhya Pradesh Power Management Company Ltd
Shakti Bhawan, Rampur
Jabalpur-482 008.



3. Maharashtra State Electricity Distribution Company Limited,
Prakashgad, 4th floor
Andehri (East), Mumbai-400 052
4. Gujarat Urja Vikas Nigam Ltd.
Sardar Patel Vidyut Bhawan
Race Course Road, Vadodra-390007
5. Electricity Department, Government of Goa,
Vidyut Bhawan, Panaji,
Near Mandvi Hotel, Goa-403 001.
6. Electricity Department,
Administration of Daman & Diu,
Daman-396210.
7. Electricity Department.,
Administration of Dardra Nagar Haveli,
UT., Silvassa-396230,
8. Chhatisgarh State Power Distribution Company Limited
P.o Sunder Nagar, Dangniya, Raipur,
Chhatisgaarh-492013.
9. Jharkhand Urja Sancharan Nigam Ltd (JUSNL)
Engineering Building, HEC, Dhruwa,
Ranchi-834 004
10. Bihar State Electricity Board
Vidyut Bhawan, Bailey Road
Patna-800 001.
11. West Bengal State Electricity Distribution Company Ltd.
Bidyut Bhawan, Bidhan Nagar
Block DJ, Sector-II, Salt Lake City
Calcutta-700 091.
12. Odisha State Electricity Distribution Co. Ltd
Plot No- N1/22, IRC Village, Nayapalli
Bhubneshwar-751 015

.....Respondents

For Petitioner : None

For Respondent : None



ORDER

The petitioner, Chhattisgarh State Power Transmission Company Limited (CSPTCL) is a company registered under the Companies Act, 1956, for the purpose of undertaking the transmission activities in the State of Chhattisgarh. The Company has been declared as State Transmission Utility by the Government of Chhattisgarh vide Notification No. F-21/13/2009/13/2 dated 31.3.2010. The instant petition has been filed by CSPTCL in compliance of the Commission's order dated 14.3.2012 in Petition No. 15/SM/2012 for approval of the annual transmission charges of the transmission assets for inclusion in the Point of Connection charges as per the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter "2009 Tariff Regulations").

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

"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"

4. Under the above provision, the conveyance of electricity from territory of one state to another State is also considered to be a part of inter-State transmission system. In terms of Section 79(1)(d) of the Act, the tariff of these lines are also required to be determined by the Central Commission.

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.

7. We direct the respondents to ensure that the tariff petition 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. Five (5) transmission lines were identified by the Commission in its order dated 14.3.2012 in Petition No. 15/SM/2012 for inclusion in the PoC transmission charges computation. The lines are as under:-

S No.	From	To	Voltage Level (kV)	Connecting States
1	Kotmikala	Amarkantak-1	220	Chhattisgarh-Madhya Pradesh (S. No. 2 of WR)
2	Kotmikala	Amarkantak-2	220	Chhattisgarh-Madhya Pradesh (S. No. 3 of WR)
3	Budhipadar	Raigarh	220	Orissa-Chhattisgarh (S. No. 6 of ER-WR)
4	Budhipadar	Korba -2	220	Orissa-Chhattisgarh (S. No. 7 of ER- WR)
5	Budhipadar	Korba -3	220	Orissa-Chhattisgarh (S. No. 8 of ER- WR)

4. Out of above mentioned five line, the petitioner has submitted line length in ckt. km and the date of commercial operation of four lines owned by it and the details are as follows:-



(a) 220 kV Kotmikala-Amarkantak-1 Line

220 kV Korba-Amarkantak DCSS line was completed in March, 1975. On bifurcation of State in to Madhya Pradesh and Chhattisgarh, the length of line from Korba up to CG Border came under ownership of CSPTCL. 220 kV line was LILoed at 220 kV sub-station at Kotmikala in 2007. Therefore, the line from Kotmikala up to CG Border has been taken in two parts. In first part, line section from Kotmikla to LILo point and in second part, line section from LILo point up to CG border.

(b) 220 kV Kotmikala-Amarkantak-2 Line

Second circuiting of 220 kV Korba-Amarkantak line was done in July, 1979. On bifurcation of State in to Madhya Pradesh and Chhattisgarh, the length of line from Korba up to CG Border came under ownership of CSPTCL. 220 kV Korba-Amarkantak-2 line was LILoed at 220 kV sub-station at Kotmikala in year 2007. Therefore, the line from Kotmikala up to CG Border has been taken in two parts. In first part, line section from Kotmikla to LILo point and in second part, line section from LILo point up to CG border.

(c) 220 kV Raigarh-Budhipadar Line

220 kV Korba-Budhipadar circuit-1 was completed in year 1985 including LILo portion of the line for Raigarh Sub-station. At that time Raigarh Sub-station was proposed to be constructed in future. However, LILo line for Raigarh Sub-station was constructed along with Korba-Budhipadar main line. The line section from Raigarh up to CG-Orissa border is now under the ownership of CSPTCL.



(d) 220 kV Korba-Budhipadar line

220 kV Korba-Budhipadar line (circuit-1) was completed in year 1988. Line section from Korba up to CG border is under ownership of CPSTCL.

5. The matter was listed on 4.6.2015. None appeared on behalf of petitioner and respondents. We have perused the material on record. We proceed to determine the annual fixed charges in respect of the assets covered in the petition.

6. We have considered the submission of the petitioner. The 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 para 2.1.3 of the Annexure-I to Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010, which is extracted hereinafter:-

“The line-wise YTC of the entire network shall be provided by the Transmission Licensees. In case a line is likely to be commissioned during the Application Period, the data in respect of the same, along with the anticipated COD will be provided by the CTU/ Transmission Licensee to the Implementing Agency.

For the determination of the transmission charges based on Hybrid Methodology applicable in the next Application Period, all the above data shall be provided to the Implementing Agency as per the timelines specified by the Implementing Agency.

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 Committee (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 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.

In case line-wise tariff for the RPC certified non-ISTS lines has not been specified by the Appropriate Commission, the tariff as computed for the relevant voltage level and



conductor configuration shall be used. The methodology for computation of tariff of individual asset shall be similar to the methodology adopted for the ISTS transmission licensees and shall be based on ARR of the STU as approved by the respective State Commission.

Certification of non-ISTS lines carrying inter-State power, which were not approved by the RPCs on the date of notification of the Central Electricity Regulatory Commission (Sharing of Transmission Charges and Losses) Regulations, 2009, shall be done on the basis of load flow studies. For this purpose, STU shall put up proposal to the respective RPC Secretariat for approval. RPC Secretariat, in consultation with RLDC, using Web Net Software would examine the proposal. The results of the load flow studies and participation factor indicating flow of Inter State power on these lines shall be used to compute the percentage of usage of these lines as inter State transmission. The software in the considered scenario will give percentage of usage of these lines by home State and other than home State. For testing the usage, tariff of similar ISTS line may be used. The tariff of the line will also be allocated by software to the home State and other than home State. Based on percentage usage of ISTS in base case, RPC will approve whether the particular State line is being used as ISTS or not. Concerned STU will submit asset-wise tariff. If asset wise tariff is not available, STU will file petition before the Commission for approval of tariff of such lines. The tariff in respect of these lines shall be computed based on Approved ARR and it shall be allocated to lines of different voltage levels and configurations on the basis of methodology which is being done for ISTS lines.”

7. Before bifurcation of M. P. State, Kotmikala-Amarkantak-1&2, 220 kV Line (S. No. 2&3 of WR) were in possession of Madhya Pradesh. The Commission has granted the YTC of part of these lines vide order dated 15.10.2015 in Petition No. 217/TT/2013 as claimed by MPPTCL. In the instant petition portion of Chhattisgarh 220 kV S/C Kotmikala- Amarkantak line 1 & 2 have been considered as 220 kV D/C KotmiKala- Amarkantak line. The petitioner has submitted that 220 kV bay at Korba to energize Korba-Budhipadar line is under CG State Power Generation Company. Accordingly, three lines are considered for the purpose of YTC calculation in the instant petition.



8. Details of these three lines considered for the purpose of YTC calculation are given overleaf:-

Sl. No	Name of Line	Part of line used as inter-state (ckt Km.)
1	220 kV DC Kotmikala- Amarkantak line 1 & 2	46.933
2	220 kV DC Raigarh-Budhipadar, Line	21.000
3	220 kV DC Korba-Budhipadar line	123.000

Capital Cost

9. The petitioner was directed vide letter dated 1.1.2014 and 17.6.2014 directed the petitioner to submit the capital cost of the instant assets 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 details of the O&M expenses. In response, the petitioner vide affidavit dated 9.7.2014 has submitted the following information:-

(₹ in lakh)						
S. No.	Name of Lines	Voltage (kV)	Name of work	Part of line used as inter-state line	Cost of transmission lines(book value/ estimated value)	Cost of 220 kV feeder bay lines(book value/ estimated value)
1	220 kV Kotmikala- Amarkantak-1 Line	220	220 kV Korba- Amarkantak (now Kotmikala- Amarkantak-)	23.317	54.94	(Amarkantak-1 Bay at Kotmikala) ₹ 90 lakh
2	220 kV Kotmikala- Amarkantak-2 Line	220	2 nd ckt of 220 kV Korba- Amarkantak Kotmikala- Amarkantak-)	23.616	58.04	(Amarkantak-2 Bay at Kotmikala) ₹90 lakh
3	220 kV Raigarh- Budhipadar, Line	220	220 kV Raigarh- Budhipadar DCDS line	21.000	120.75	(Budhipadar bay at Raigarh) ₹86 lakh
	220 kV Kobra- Budhipadar, Line	220	220 kV Korba- Budhipadar DCDS line	123.000	394.30	Under CSPTCL



10. The petitioner vide affidavits dated 21.1.2014, 9.7.2014, and 6.7.2015, has submitted that the ARR for the 2009-14 tariff periods have been approved by the State Regulatory Commission. The details of the approved ARR and voltage wise length submitted by the petitioner are given hereunder:-

Srl. No	YEAR	₹ in crore
1	2009-10	270.00
2	2010-11	358.36
3	2011-12	468.86
4	2012-13	531.20
5	2013-14	600.10

Voltage-wise length of line in Ckt. kms:-

S. No	Line Type	2009-10	2010-11	2011-12	2012-13	2013-14
1	400 kV S/C	277.00	277.00	277.00	277.00	277.00
2	400 kV D/C TM	---	60.92	306.94	554.32	708.52
3	400 kV D/C QM			124.00	280.68	281.24
4	220 kV D/C	2436.00	2455.00	2585.00	2732.93	2929.24
5	220 kV S/C	168.06	174.084	199.6	243.44	201.10
6	132 kV D/C	2749.25	2758.45	2795.70	2854.51	3055.63
7	132 kV S/C	1795.25	2030.75	2086.34	2245.73	2244.40

Procedure for calculating YTC for the transmission lines

11. The petitioner has submitted that the capital costs of the instant transmission lines are not available. The indicative cost of lines of various configurations owned and operated by PGCIL has been taken for computation purpose. Here, 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 with reference to indicative cost of 400 kV D/C Quad Moose (i.e. by dividing indicative cost of 400 kV D/C Quad Moose by the indicative cost of the line).



12. The yearly break-up of indicative cost of various configurations owned and operated by PGCIL is as hereunder:-

For 2011-12

Type	Cost (₹ in lakh)	Cost (₹ in lakh/ckt.)	Co-efficient	
765 KV D/C	315.25	157.625 (A)	a= D/A	0.64
765 KV S/C	159.25	159.25 (B)	b=D/B	0.63
400 KV D/C Twin Moose	109.50	54.75 (C)	c=D/C	1.84
400 KV D/C Quad Moose	202.00	101 (D)	d=D/D	1.00
400 KV S/C Twin Moose	74.25	74.25 (E)	e=D/E	1.36
220 KV D/C	59.50	29.75 (F)	f=D/F	3.39
220 KV S/C	37.00	37.00 (G)	g=D/G	2.73
132 KV D/C	46.75	23.375 (H)	h=D/H	4.32
132 KV S/C	28.50	28.50 (I)	i=D/I	3.54

For 2012-13

Type	Cost (₹ in lakh)	Cost (₹ in lakh/ckt.)	Co-efficient	
765 KV D/C	357.00	178.5 (A)	a= D/A	0.63
765 KV S/C	179.20	179.20 (B)	b=D/B	0.63
400 KV D/C Twin Moose	122.60	61.3 (C)	c=D/C	1.83
400 KV D/C Quad Moose	224.80	112.4 (D)	d=D/D	1.00
400 KV S/C Twin Moose	84.20	84.20 (E)	e=D/E	1.33
220 KV D/C	67.80	33.9 (F)	f=D/F	3.32
220 KV S/C	41.40	41.40 (G)	g=D/G	2.71
132 KV D/C	53.00	26.5 (H)	h=D/H	4.24
132 KV S/C	32.40	32.40 (I)	i=D/I	3.47

For 2013-14

Type	Cost (₹ in lakh)	Cost (₹ in lakh/circuit)	Co-efficient	
765 kv D/C	412.00	206 (A)	a= D/A	0.56
765 kv S/C	179.80	179.80 (B)	b=D/B	0.65
400 kv D/C Twin Moose	130.40	65.2 (C)	c=D/C	1.78
400 kv D/C Quad Moose	232.60	116.3 (D)	d=D/D	1.00
400 kv S/C Twin Moose	87.00	87.00 (E)	e=D/E	1.34
220 kv D/C	61.40	30.7 (F)	f=D/F	3.79
220 kv S/C	37.80	37.80 (G)	g=D/G	3.08
132 kv D/C	48.40	24.2 (H)	h=D/H	4.81
132 kv S/C	30.00	30.00 (I)	i=D/I	3.88



13. 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:-

$$\left\{ \begin{array}{l} \text{YTC per ckt km} \\ \text{400 kV D/C} \end{array} \right\} = \frac{\text{ARR for FY.....in ₹}}{\left[\begin{array}{l} \text{Quad Moose (Length of 765 kV DC/a)+(Length of 765 kV} \\ \text{SC/b)+(Length of 400 kV DC TM/c)+(Length of 400 kV} \\ \text{DC QM/d)+(Length of 400 kV SC TM/e)+(Length of 220} \\ \text{kV DC/f)+(Length of 220 kV SC/g)+(Length of 132 kV} \\ \text{DC/h)+(Length of 132 kV SC/i)} \end{array} \right]}$$

*value of a, b, c, d, e, f, g, h & i are as given in para 12 and length in ckt km as given in para 10 of this order.

DC-Double Circuit, SC-Single Circuit, QM-Quad Moose, TM-Twin Moose

14. We have not carried out any due diligence of the tariff of these lines (for consideration of PoC calculations) as the tariff of the lines owned by STU has already been determined by the State Electricity Regulatory Commission. We have considered the ARR of the STU as approved by the State Electricity Regulatory Commission and have adopted the methodology as discussed in para 11 and 13 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 has been 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.

15. As per the information submitted by the petitioner i.e. line length in ckt. km and ARR approved by SERC for 2009-10, 2010-11, 2011-12, 2012-13, and 2013-14 and PoC cost data for the respective years, YTC for the assets for 2011-12, F/Y 2012-13 and 2013-14 has been calculated as follows:-



2013-14

Total ARR approved by the SERC = ₹6001000000

(in ₹)

S. No	Asset	For entire system		
		Line length (ckt km)	YTC per ckt km	YTC
1	400 kV D/C TM	708.52	1144685.53	811032588.83
2	400 kV D/C QM	281.240	2041824.029	574242589.80
2	400 kV S/C	277.00	1527417.80	423094731.43
3	220 kV S/C	201.10	663636.70	133457340.49
4	220 kV D/C	2929.24	538985.36	1578817483.74
5	132 kV D/C	3055.63	424867.94	1298239225.35
6	132 kV S/C	2244.40	526695.79	1182116040.36
Total				6001000000.00

2012-13

Total ARR approved by the SRC= ₹5312000000.00

(in ₹)

S. No	Asset	For entire system		
		Line length (ckt km)	YTC per ckt km	YTC
1	400 kV D/C TM	554.320	957771.487	530911890.462
2	400 kV D/C QM	280.68	1756174.798	492923142.204
2	400 kV S/C	277.000	1315568.665	364412520.245
3	220 kV S/C	243.440	646847.301	157468506.934
4	220 kV D/C	2732.930	529664.819	1447536873.418
5	132 kV D/C	2854.510	414044.770	1181894936.151
6	132 kV S/C	2245.730	506228.322	1136852130.585
Total				5312000000.00

2011-12

Total ARR approved by the SERC = ₹4688600000.00

(in ₹)

S. No	Asset	For entire system		
		Line length (ckt km)	YTC per ckt km	YTC
1	400 kV D/C TM	306.94	991140.80	304220756.01
2	400 kV D/C QM	124	1828405.85	226722325.71
3	400 kV S/C	277.00	1344149.85	372329507.62
4	220 kV S/C	199.60	669812.04	133694484.18
5	220 kV D/C	2585.00	538565.09	1392190758.22
6	132 kV D/C	2795.70	423158.29	1183023617.86
7	132 kV S/C	2086.34	515936.30	1076418550.40
Total				4688600000.00



YTC of the three transmission lines

16. YTC per ckt. km, total ARR for the transmission system in Chhattisgarh considered by the CSPTCL is as follows:-

(in ₹)			
Voltage level	2011-12	2012-13	2013-14
220 kV D/C	538565.09	529664.819	538985.36

17. YTC of the three transmission lines calculated on the methodology discussed above is given below:-

(in ₹)					
S. No	Asset	Line Length (Ckt. km)	2011-12	2012-13	2013-14
1	220 kV DC Kotmi kala-Amarkantak line	46.933	8957357	24858759	25296200
2	220 kV DC Raigarh-Budhipadar, Line	21	8482400	11122961	11318693
3	220 kV DC Korba-Budhipadar line	123	49682630	65148773	66295200
	Total		77122386	101130493	102910092

18. The Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010 came into force from 1st July, 2011. Therefore, YTC for the above lines have been calculated from 1.7.2011 to 31.3.2012, 2012-13 and 2013-14.

19. The annual transmission charges allowed for the assets covered in the instant petition shall be considered in the YTC as per the Sharing of Inter-State Transmission Charges and Losses Regulations, 2010 and shall be adjusted against the ARR of the petitioner approved by the State Commission.



20. This order disposes of Petition No. 245/TT/2013.

Sd/-
(A.S. Bakshi)
Member

Sd/-
(A.K. Singhal)
Member

Sd/-
(Gireesh B. Pradhan)
Chairperson

