CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

Petition No. 246/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 : 17.09.2015

In the matter of:

Determination of tariff in respect of HVPNL 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 charges in accordance with Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009.

And in the matter of:

Haryana Vidyut Prasaran Nigam Limited (HVPNL) Shakti Bhawan, Sector-6 Panchkula, Haryana-134109

.....Petitioner

Vs

- 1. Power Grid Corporation of India Limited "Saudamani", Plot No.2, Sector-29, Gurgaon -122001 (Haryana).
- Himachal Pradesh State Electricity Board., Shimla
- BBMB.,
 Sector 19B,
 Madhya Marg Chandigarh .
- RRVPN Vidyut Bhawan, Janpath, Jaipur Rajasthan.

.....Respondents

For petitioner : None

For respondents: Shri A.K. Gupta, Respondent No.2



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ORDER

The petitioner, Haryana Vidyut Prasaran Nigam Limited (HVPNL) is a company registered under the Companies Act, 1956 and holds a transmission licence for the State of Haryana granted by Haryana Electricity Regulatory Commission. It has been declared as the State Transmission Utility (STU) by the Government of Haryana. The instant petition has been filed by HVPNL for approval of the annual transmission charges of the transmission assets covered in the petition under the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter "2009 Tariff Regulations") in compliance of the Commission's order dated 14.3.2012 in Petition No.15/SM/2012.

- 2. The Commission vide order dated 14.3.2012 in Petition No. 15/SM/2012 gave 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.
 - 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. Four transmission lines of HVPNL were identified as inter-State transmission lines, on the basis of the inputs provided by Northern Regional Power Committee (NRPC) and HVPNL was directed to file tariff petition for the following four transmission lines for the

purpose of inclusion in the POC charges, vide order dated 14.3.2012 in Petition No.15/SM/2012.

Srl. No.	From	То	Voltage Level (kV)	Connecting States
1	Baddi	Panchkula	220	Himachal Pradesh-Haryana (SNO. 12 of NR of order dated 14.3.12)
2	Kunihar	Panchkula	220	Himachal Pradesh-Haryana (SNO. 13 of NR of order dated 14.3.12)
3	Bhiwadi	Rewari	220	Rajasthan-Haryana (SNO. 21 of NR of order dated 14.3.12)
4	Bhiwadi	Badshahpur	220	Rajasthan-Haryana (SNO. 28 of NR of order dated 14.3.12)

4. The petitioner has submitted line length in ckt km and their date of commercial operation of the instant transmission lines and they are as follows-:-

Srl. No.	Name of Line	Connecting States	Length (ckt. km)	COD
1	220 kV D/C Kunihar-Baddi- Panchkula	HP-Haryana	81.00	3.5.1990
2	220kV S/C Bhiwadi-Rewari	Rajasthan-Haryana	23.761	7.2.2009
3	220 kV S/C Bhiwadi-Badshahpur	Rajasthan-Haryana	46.637	21.11.2008

5. The petitioner has submitted that Bhiwadi-Badshahpur line is currently not being used as ISTS line as the stringing of LILO of 2nd ckt. for 220 kV Badshahpur-Rewari line at 400 kV sub-station of PGCIL (Bhiwadi) has been completed but has not been commissioned due to pending bay work at the sub-station. Hence, Badshahpur-Bhiwadi line has not been considered as ISTS line. The petitioner has submitted that the following lines are presently being used as ISTS lines:-

Sr.	Name of Line	Connecting States	Length	COD
No.			(ckt. km)	
1	220 kV D/C Kunihar-	Himachal Pradesh-	81.00	3.5.1990
	Baddi-Panchkula	Haryana		
2	220kV S/C Bhiwadi-Rewari	Rajasthan-Haryana	23.761	7.2.2009
3	220 kV S/C Bhiwadi-Mau	Rajasthan-Haryana	14.067	18.6.2011

6. The petitioner has submitted that out of four lines, three lines are being used as ISTS while 220 kV S/C Bhiwadi-Badshahpur is not being used as an ISTS because of

non-completion of work at POWERGRID (Bhiwadi) Sub-station. Further, the petitioner has submitted 220 kV S/C Bhiwadi-Mau line be considered to be included in PoC computation charges as it is being used as an ISTS.

7. 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

8. 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 inter-State power. 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 four transmission lines identified by the Commission, there is one more transmission line owned by the petitioner which satisfies the conditions of ISTS. 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:-

"XXX

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."

9. The certificate of NRPC is available in terms of the above Regulation in respect of four transmission lines which were included in the Commission's order dated 14.3.2012. Since the certification is not available for the 220 kV S/C Bhiwadi-Mau line, we direct the petitioner to approach NRPC for the required certification of these lines for inclusion in the PoC Charges. Accordingly, only three 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 three transmission lines have been calculated for the year 2011-12 (1.7.2011 to 31.3.2012), 2012-13 ,2013-14 and 2014-15.

Capital Cost

- 10. The petitioner has submitted that the capital cost of Kunihar-Baddi-Panchkula is not available. Hence, it has considered the following three options to arrive at the appropriate capital cost of these lines:-
 - (a) Option 1:- Historic HVPNL costs
 - (b) Option 2:- Recent HVPNL costs
 - (c) Option 3:- Indicative per km costs available in the CERC document titled "Assumptions in Computation in PoC charges and Losses for 2012-13"

As regards the Option 1, the petitioner has submitted the benchmark capital cost of the old transmission line commissioned during 1990 is not being maintained/approved by the State Commission as such this option is not adopted for filling the instant petition. As regards Option 2, the petitioner submitted that it may calculate per km capital cost figures using capital cost of recently commissioned transmission lines or adopt replacement cost

being old lines delivering good operation performance similar to other new lines. Petitioner has submitted that the said option is also not adopted in the instant case. The indicative per km cost available in the Commission's document titled "Assumption in Computation in PoC charges and losses for 2012-13" has been considered in case of 220 kV D/C Kunihar-Baddi-Panchkula line and the actual cost as on 31.3.2012 in case of 220kV S/C Bhiwadi-Rewari & 220 kV S/C Bhiwadi-Mau line is claimed in the instant petition as given hereunder:-

Srl. No.	Name of Line	Connecting States	Cost (₹ in lakh)	Remarks
1	220 kV D/C Kunihar- Baddi-Panchkula	HP-Haryana	2025.00	As per cost provided in PoC Regulation i.e. ₹.50 lakh/km
2	220kV S/C Bhiwadi- Rewari	Rajasthan- Haryana	406.62	As per FAR of HVPNL as on 31.3.2012
3	220 kV S/C Bhiwadi- Mau	Rajasthan- Haryana	330.91	As per FAR of HVPNL as on 31.3.2012

- 11. The petitioner vide letter dated 17.6.2014 was directed to submit the following information:-
 - "a) Capital cost, duly certified by an auditor, if available;
 - b) Funding pattern of the assets, i.e. the actual debt and equity considered towards the transmission assets as on date of commercial operation;
 - c) Repayment schedule and interest rates of the loan(s) availed as per Form-13 with supporting documents;
 - d) Cumulative depreciation against the assets as on 31.3.2012;
 - e) Details of ARR approved by the SERC for FY 2009-10, 2010-11, 2011-12, 2012-13 & 2013-14, and details as per Table given herein below, separately for the respective years, containing total amount approved for the respective years:-

	(FY) ARR	(Rs. Lakh)
S. No.	Line Type	Length*(CKt- Km)
1.	<u>+</u> 500 kV HVDC	
2.	<u>+</u> 800 kV HVDC	
3.	765 kV D/C	
4.	765 kV S/C	
5.	400 kV D/C	
6.	400 KV D/C Quad. Moose	
7.	400 kV S/C	
8.	220 kV D/C	
9.	220 kV S/C	

10.	132 kV D/C	
11.	132 kV S/C	
12.	66 kV	

^{*}Total length in the State for which ARR has been approved

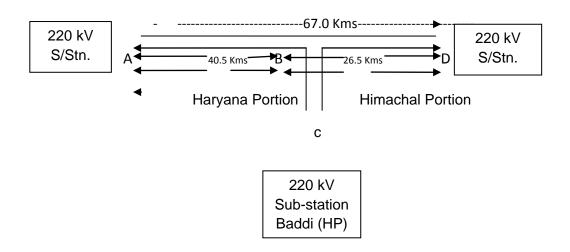
- f) In case norms for O&M have not been finalized by the SERC, actual audited O&M expenses for that fiscal year may be furnished."
- 12. In response, the petitioner, vide affidavit dated 9.9.2014, has made the following submissions:-
 - (a) The ARR filed with State Commission is based on the total capital cost of all the elements and as such the element wise capital cost as submitted in the petition is not being certified. Total capital cost of all the assets of HVPNL is ₹620.21 crore for 2012-13 and the same is enclosed herewith.
 - (b) Details of ARR approved by the SERC for the years 2009-10, 2010-11, 2011-12, 2012-13 and 2013-14 are as under:-

FY	ARR
	(₹ in millions)
2009-10	6597.07
2010-11	9751.5+663.88 (arrear)
2011-12	8687.18
2012-13	6305.99
2013-14	5695.44
2014-15	10099.22

Line Type	Line Length in ckt km as on January, 2014
400 kV	818.222
220 kV	4796.112
132 kV	4128.343
66 kV	2621.546
Total	12364.123

13. During hearing on 4.6.2015, the petitioner was directed to furnish the actual length and configuration of Baddi-Panchkula and Kunihar-Panchkula transmission lines. In response, the petitioner vide affidavit dated 1.7.2015 submitted following information:-

Srl.	Name of Line	Total length of line (km)		Configuration	Remark	
No.		Haryana Portion	Himachal Portion	Total	of conductor	
1	220 kV D/C Madanpur (Panchkula)- Kunihar (HP) line with LILO of one Ckt. at 220 kV Baddi (HP) Sub- station	40.5	26.5	67.0	Zebra	The lines are being maintained by HVPVNL and HPSEB in their territory.
2.	LILO portion up to 220 kV Baddi Sub-station		2.0	2.0	Zebra	



Length of lines owned by Haryana and Himachal Pradesh

Sr No.	Section	Length (in km)
1.	A to B (up to TL No. 151)	40.5 (Haryana portion)
2.	B to C	02.0 (Himachal Portion)
3.	B to D	26.5 (Himachal Portion)
	TOTAL	69.0 km.

The 220 kV D/C Kunihar-Baddi-Panchkula line is now changed to 220 kV D/C Panchkula-Kunhihar with LILO at Baddi i.e two lines mentioned in Petition No.15/SM/2012 (220 kV Baddi-Panchkula and 220 kV Kunhihar-Panchkula) becomes one D/C line.

14. Petitioner has submitted the configuration of lines along with the actual length of lines vide its letter dated 27.8.2015 and it is as given overleaf:-

Sr. No	Line Voltage	Configuration	_	of line as on .3.2014	_	of line as on .3.2015
			Ckt. km	Total Ckt. km	Ckt. km	Total Ckt. km
1	400 kV	S/C	Nil	900.83	Nil	900.83
		D/C	900.83		900.83	
2	220 kV	S/C	1020.471	4726.08	1020.471	4923.132
		D/C	3705.609		3902.661	
3	132 kV	S/C	2642.87	4193.28	2676.44	4338.52
		D/C	1550.41		1662.08	
4	66 kV	S/C	1262.14	2688.68	1262.14	2812.36
		D/C	1426.54		1550.22	
Grand Total		S/C	4925.481	12508.87	4959.051	12974.842
		D/C	7583.389		8015.791	

15. Annual transmission tariff for 220 kV S/C Bhiwadi-Rewari Line (Rajasthan-Haryana) and 220 kV D/C Madanpur (Panchkula)-Kunihar (HP) line with LILO of one Ckt. at 220 kV Baddi (HP) Sub-station are determined in this order.

Procedure for calculating YTC for the transmission lines

16. The indicative cost of lines of various configurations owned and operated by PGCIL has been considered for the purpose of computation of capital cost of the inter-State transmission lines owned by other entities. Similar approach has been adopted in the instant case. 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). The petitioner also owns lines of 66 kV level but the indicative cost data provided by PGCIL is for voltage level up to 132 kV level. Therefore, line lengths of 66 kV level to 132 kV level have been added and considered the indicative cost of 132 kV level as indicative cost for all the transmission lines having voltage level 132 kV and below. The indicative cost of lines of various configurations owned and operated by PGCIL are as follows:-

For FY 2011-12:

(₹in lakh)

Type	Cost	Cost /Circuit	Coefficient	Ratio w.r.t. "d"
(a)	(b)	(c)	(d)	(e)
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	101.00 (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	23.37 (H)	h=D/H	4.32
132 KV S/C	28.50	28.50 (I)	i=D/I	3.54

For FY 2012-13:

Туре	Cost	Cost/Circuit	Coefficient	Ratio w.r.t. d
(a)	(b)	(c)	(d)	(e)
765 KV D/C	357.00	178.50	а	0.63
765 KV S/C	179.20	179.20	b	0.63
400 KV D/C Twin Moose	122.60	61.30	С	1.83
400 KV D/C Quad. Moose	224.80	112.40	d	1.00
400 KV S/C Twin Moose	84.20	84.20	е	1.33
220 KV D/C	67.80	33.90	f	3.32
220 KV S/C	41.40	41.40	g	2.71
132 KV D/C	53.00	26.50	h	4.24
132 KV S/C	32.40	32.40	i	3.47

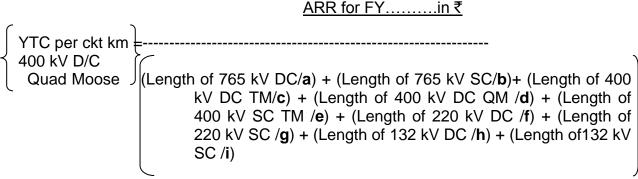
For FY 2013-14:

Туре	Cost	Cost/Circuit	Coefficient	Ratio w.r.t. "(d)"
(a)	(b)	(c)	(d)	(e)
765 kV D/C	412.00	206.00	а	0.56
765 kV S/C	179.80	179.80	b	0.65
400 kV D/C Twin Moose	130.40	65.20	С	1.78
400 kV D/C Quad Moose	232.60	116.30	d	1.00
400 kV S/C Twin Moose	87.00	87.00	е	1.34
220 kV D/C	61.40	30.70	f	3.79
220 kV S/C	37.80	37.80	g	3.08
132 kV D/C	48.40	24.20	h	4.81
132 kV S/C	30.00	30.00	i	3.88

For FY 2014-15:

Туре	Cost	Cost /Circuit	Coefficient	Ratio w.r.t (d)
(a)	(b)	(c)	(d)	(e)
765 kV D/C	450	225	а	0.53
765 kV S/C	180	180	b	0.67
400 kV D/C Twin	135	67.5	С	1.78
Moose				
400 kV D/C Quad	240	120	d	1.00
Moose				
400 kV S/C Twin	88	88	е	1.36
Moose				
220 kV D/C	56	28	f	4.29
220 kV S/C	35	35	g	3.43
132 kV D/C	44	22	h	5.45
132 kV S/C	28	28	i	4.29

17. 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:-



*value of a, b, c, d, e, f, g, h, & i are as given in para 15 and length in ckt km as given in para 14 above of this order.

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

18. 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 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 16 and 17 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.

- 19. We have considered the submission of the petitioner vide affidavit dated 9.9.2014, 1.7.2015 and vide letter dated 27.8.2015. The petitioner has submitted the actual total line length and configuration in Haryana system as on March, 2014 and as on March, 2015. However, the petitioner has also submitted the ARR for 2009-10, 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15.
- 20. As per the information submitted by the petitioner i.e. line length in ckt. km as on March, 2014 and March, 2015 and ARR approved by HERC for the 2009-10, 2010-11, 2011-12, 2012-13, 2013-14 and 2014-15 and PoC cost data for the same year, YTC for the assets for 2011-12, 2012-13, 2013-14 and 2014-15 has been calculated as under:-

For FY 2011-12

Total ARR approved by the HERC= ₹8,68,71,80,000.00

Srl.	Asset		For entire system (Haryana)			
No.		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC (in ₹)		
1	400 kV D/C	900.830	12,57,601	1,13,28,84,723		
2	220 kV D/C	3,705.609	6,83,354	2,53,22,42,645		
3	220 kV S/C	1,020.471	8,49,886	86,72,83,626		
4	132 kV D/C	2,976.950	5,36,921	1,59,83,86,916		
5	132 kV S/C	3,905.010	6,54,642	2,55,63,82,090		
	1		8,68,71,80,000			

FY 2012-13

Total ARR approved by the HERC= ₹6,30,59,90,000.00

Srl.	Asset	For entire system (Haryana)			
No.		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC (in `)	
1	400 kV D/C	900.830	9,02,117	81,26,54,125	
2	220 kV D/C	3,705.609	4,98,887	1,84,86,79,900	
3	220 kV S/C	1,020.471	6,09,260	62,17,32,310	
4	132 kV D/C	2,976.950	3,89,985	1,16,09,66,914	
5	132 kV S/C	3,905.010	4,76,812	1,86,19,56,752	
		6,30,59,90,000			

FY 2013-14:

Total ARR approved by the HERC= ₹5,69,54,40,000.00

Srl.	Asset	Fo	r entire system (Ha	ryana)
No.		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC (in ₹)
1	400 kV D/C	900.830	9,27,748	83,57,42,906
2	220 kV D/C	3,705.609	4,36,838	1,61,87,51,673
4	220 kV S/C	1,020.471	5,37,866	54,88,76,617
5	132 kV D/C	2,976.950	3,44,348	1,02,51,06,928
6	132 kV S/C	3,905.010	4,26,878	1,66,69,61,876
				5,69,54,40,000

FY 2014-15

Total ARR approved by the HERC= ₹10,09,92,20,000.00

Srl.						
No.		Line Length (Ckt. km)	YTC (Per ckt. km)	YTC (in ₹)		
1	400 kV D/C	900.830	17,62,640	1,58,78,39,237		
2	220 kV D/C	3,902.661	7,31,169	2,85,35,05,905		
3	220 kV S/C	1,020.471	9,13,962	93,26,71,331		
4	132 kV D/C	3,212.300	5,74,490	1,84,54,34,751		
5	132 kV S/C	3,938.580	7,31,169	2,87,97,68,775		
			TOTAL	10,09,92,20,000		

YTC of the two transmission lines

21. YTC per ckt. km for 220 kV S/C and D/C line considered for HVPNL lines is as follows:-



Year	2011-12	2012-13	2013-14	2014-15
YTC(S/C)	8,49,885.62	6,09,260.15	5,37,865.96	9,13,961.62
YTC(D/C)	6,83,353.98	4,98,886.93	4,36,838.23	7,31,169.30

22. YTC of the two transmission lines calculated on the methodology discussed above are as follows:-

(in ₹)

Srl. No.	Line Name	Length (Ckt km)	2011-12*	2012-13	2013-14	2014-15
1	220 kV S/C Bhiwadi- Rewari line (Rajasthan- Haryana)	23.761	1,51,45,599	1,44,76,630	1,27,80,233	2,17,16,642
2	220 kV D/C Madanpur (Panchkula)- Kunihar (HP) line with LILO of one Ckt. At 220 kV S/S Baddi (HP) [Haryana Portion =40.5 Km=81 Ckt. kM]	81	4,15,13,754	4,04,09,841	3,53,83,897	5,92,24,713
	Total		5,66,59,353	5,48,86,472	4,81,64,130	8,09,41,355

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

23. The annual transmission charges allowed for the assets covered in the instant 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.

24. This order disposes of Petition No. 246/TT/2013.

sd/- sd/- sd/
(A.S. Bakshi) (A. K. Singhal) (Gireesh B. Pradhan)

Member Member Chairperson