

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. **Shri A.K.Basu, Chairman**
2. **Shri K.N.Sinha, Member**
3. **Shri. Bhanu Bhushan, Member**
4. **Shri A.H.Jung, Member**

Petition No.192/2004

In the matter of

Approval of tariff for Agra (Powergrid)-Agra (UPPCL) 400 kV inter-connection in Northern Region for the period 1.7.2003 to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd.

.... **Petitioner**

Vs

- 1.Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Jaipur
- 2.Ajmer Vidyut Vitran Nigam Ltd., Ajmer
- 3.Jaipur Vidyut Vitran Nigam, Jaipur
- 4 Jodhpur Vidyut Vitran Nigam Ltd.,Jodhpur
- 5.Himachal Pradesh State Electricity Board, Shimla
- 6.Punjab State Electricity Board, Patiala
- 7.Haryana Vidyut Prasaran Nigam Ltd, Panchkula
- 8.Power Development Department, Govt. of J&K, Jammu
- 9.Uttar Pradesh Power Corporation Ltd., Lucknow
- 10 Delhi Vidyut Board, New Delhi
- 11.Chief Engineer, Chandigarh Administration, Chandigarh
- 12.Uttranchal Power Corporation Ltd, Dehradun
13. Northern Railway, Baroda House, New Delhi

.....**Respondents**

The following were present:

1. Shri M.M. Mondal CM, PGCIL
2. Shri U.K. Tyagi, DGM, PGCIL
3. Shri C. Kannan, CM (Fin), PGCIL
4. Shri Anand Mohan, PGCIL
5. Shri K.K.Mittal, XEN (ISD), RVPN
6. Shri A.K. Tandon, EE, UPPCL
7. Shri T.K.Srivastava,EE, UPPCL
8. Shri T.P.S. Bawa, OSD (Comm.), PSEB
9. Shri R.K. Arora, XEN, HVPN
10. Shri S.R.G. Sabal,AVVNL,

ORDER
(DATE OF HEARING: 16.6.2005)

In this petition, the petitioner, Power Grid Corporation of India Ltd has sought approval for tariff for Agra (Powergrid)-Agra (UPPCL) 400 kV inter-connection in Northern Region for the period 1.7.2003 to 31.3.2004. The tariff is to be regulated based on the terms and conditions of tariff contained in the Commission's notification dated 26.3.2001, (hereinafter referred to as "the notification dated 26.3.2001").

2. The investment approval for the construction of transmission line was accorded by the Board of Directors of the petitioner company as per Memorandum dated 4.4.2001 at an estimated cost of Rs.4178.00 lakh, including IDC of Rs.241.00 lakh, based on 1st quarter 2000 price level. The scope of work includes:

Transmission line

400 kV D/C Agra (Powergrid)- Agra (UPPCL) transmission line 29.52 kms

Sub-station

(a) Extension of Agra (Powergrid) sub-station line bays: 2 Nos.

(b) Extension of Agra (UPPCL) sub-station line bays: 2 Nos

3. The transmission line has been declared under commercial operation w.e.f. 1.7.2003. The estimated completion cost of these assets is stated to be Rs. 3246.99 lakh.

4. The actual expenditure up to 1.7.2003 is Rs. 3174.75 lakh against the approved cost of Rs. 4178.00 lakh. Based on the estimated completion cost of Rs.3246.99 lakh, the petitioner has claimed transmission tariff of Rs. 411.00 lakh for the period from 1.7.2003 to 31.3.2004 as per the following details:

(Rs. in lakh)	
Interest on Loan	188.98
Interest on Working Capital	9.76
Depreciation	71.29
Advance against Depreciation	0.00
Return on Equity	71.59
O & M Expenses	69.38
Total	411.00

5. The petitioner has claimed interest on working capital as per the details given below:

(Rs in lakh)	
Maintenance Spares	24.95
O & M expenses	7.71
Receivables	91.34
Total	124.00
Rate of Interest	10.50%
Interest	9.76

CAPITAL COST

6. As laid down in the notification dated 26.3.2001, the project cost, which includes capitalised initial spares for the first 5 years of operation, as approved by CEA or an appropriate independent agency, other than Board of Directors of the generating company, as the case may be, shall be the basis for computation of tariff. The notification dated 26.3.2001 further provides that the actual capital expenditure incurred on completion of the project shall be criterion for the fixation of tariff. Where the actual expenditure exceeds the approved project cost the expenditure as approved by the CEA or an appropriate independent agency, as the case may be, shall be deemed to be the actual capital expenditure for the purpose of determining the tariff, provided that excess expenditure is not attributable to the `Transmission Utility` or its suppliers or contractors and provided further that where a transmission services agreement entered into between the Transmission Utility and the

beneficiary provides a ceiling on capital expenditure, the capital expenditure shall not exceed such ceiling.

7. As per the auditor's certificate furnished by the petitioner in September 2004, the actual completion cost of the transmission line on the date of commercial operation is Rs 3194.42 lakh. Based on the audited expenditure submitted by the petitioner, the gross block, including IDC of Rs 367.89 lakh (indicated in the auditor's certificate), is worked out as under:

Expenditure up to date of commercial operation (1.7.2003):	Rs 3174.75 lakh
Gross block on date of commercial operation:	Rs 3174.75 lakh
Expenditure from date of commercial operation to 31.3.2004:	Rs 19.67 lakh
Gross block as on 31.3.2004 :	Rs 3194.42 lakh
Expenditure from 1.4.2004 to 31.6.2004:	Nil
Balance estimated expenditure :	Rs 52.57 lakh
Estimated completion cost :	Rs 3246.99 lakh

(Initial spares included in above is Rs.34.47 lakh.)

8. For the purpose of tariff, the capital cost of Rs. 3174.75 lakh as on the date of commercial operation has been considered.

TIME OVERRUN

9. As per the original investment approval dated 4.4.2001 accorded by Board of Directors of the petitioner company, the assets were scheduled for commissioning within fifteen months from that date, that is, by July 2002. However, these assets have been declared under commercial operation w.e.f 1.7.2003. Thus, there has been a delay of about 11 months. The petitioner has furnished the detailed explanation, discussed hereinbelow:

(a) The construction of transmission line towers were taken up after obtaining right of way and Gazette notification as per provisions of I.E. Act. The work was awarded in August 2001. Subsequently, during course of construction, the Additional Civil Judge granted stay on 21.3.2002 in a case filed by a villager. In view of the stay, decision was taken on 31.7.2002 to divert route causing 4 months delay.

(b) During the process, another land owner approached district Court, Agra and got stay order on 8.8.2002 for status-quo. The matter was resolved on 25.3.2003 and thereafter foundation work was again started. This resulted in further delay of 9 months in making the foundation.

10. We are satisfied that the reasons for delay were beyond the control of the petitioner. In any case, the capital cost being considered is less than the approved cost of the transmission line.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

11. As per Para 4.3 of the notification-dated 26.3.2001, capital expenditure of the transmission system shall be financed as per approved financial package set out in the techno-economic clearance of CEA or as approved by an appropriate independent agency, as the case may be. The petitioner has claimed tariff by taking debt and equity in the ratio of 81.52:18.48.

12. As per the approval of the petitioner's Board of Directors, the transmission assets have been funded with domestic borrowings and the petitioner's internal resources, without specifying the exact debt-equity ratio. The petitioner has claimed

the tariff for the assets on the basis of debt and equity actually employed to which the respondents have not objected. Accordingly, an amount of Rs.586.75 lakh has been considered towards equity and an amount of Rs. 2588.00 lakh towards loan, as claimed by the petitioner.

INTEREST ON LOAN

13. As provided in the notification dated 26.3.2001, interest on loan capital is to be computed on the outstanding loans, duly taking into account the schedule of repayment, as per financial package approved by CEA or any independent agency.

14. The methodology prescribed under the notification dated 26.3.2001 has been adopted for computation of interest of loan. The details of calculation of interest on loan are as given below:

Calculation of Interest on Loan

(Rs. in lakh)	
Details of Loan	2003-04
No.of days in the Year	366
Bonds X	
Gross Loan -Opening	415.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	415.00
Repayment during the year	0.00
Net Loan-Closing	415.00
Rate of Interest	10.90%
Interest	33.99
Repayment Schedule	12 Annual Instalments from 21.06.2004
Bond XI Option I	
Gross Loan -Opening	443.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	443.00
Repayment during the year	0.00
Net Loan-Closing	443.00

Rate of Interest	9.80%
Interest	32.62
Repayment Schedule	12 Annual Installments from 07.12.2005
Bonds XII	
Gross Loan -Opening	1281.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	1281.00
Repayment during the year	0.00
Net Loan-Closing	1281.00
Rate of Interest	9.70%
Interest	93.36
Repayment Schedule	12 Annual Installments from 28.03.2006
PNB-II	
Gross Loan -Opening	245.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	245.00
Repayment during the year	0.00
Net Loan-Closing	245.00
Rate of Interest	8.60%
Interest	15.83
Repayment Schedule	12 Annual Installments from 08.03.2005
OBC	
Gross Loan -Opening	204.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	204.00
Repayment during the year	0.00
Net Loan-Closing	204.00
Rate of Interest	8.60%
Interest	13.18
Repayment Schedule	12 Annual Installments from 22.03.2005
Total Loan	
Gross Loan -Opening	2588.00
Cumulative Repayment upto Previous Year	0.00
Net Loan-Opening	2588.00
Repayment during the year	0.00
Net Loan-Closing	2588.00
Interest	188.98

DEPRECIATION

15. Based on the notification dated 26.3.2001, the petitioner is entitled to claim depreciation. The salient provisions for calculation of depreciation as per the notification dated 26.3.2001 are reproduced below:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually as per straight-line method at the rate of depreciation as prescribed in the Schedule attached to the notification dated 26.3.2001:

Provided that the total depreciation during the life of the project shall not exceed 90% of the approved original cost. The approved original cost shall include additional capitalisation on account of foreign exchange rate variation also.

- (iii) On repayment of entire loan, the remaining depreciable value shall be spread over the balance useful life of the asset.
- (iv) Depreciation shall be chargeable from the first year of operation. In case of operation of the asset for part of the year, depreciation shall be charged on pro-rata basis.
- (v) Depreciation against assets relating to environmental protection shall be allowed on case-to-case basis at the time of fixation of tariff subject to the condition that the environmental standards as prescribed have been complied with during the previous tariff period.

16. The petitioner has claimed depreciation of Rs. 71.29 lakh in accordance with the above principles.

17. Based on the above, depreciation for individual items of capital expenditure has been calculated on the capital cost of Rs. 3174.75 lakh as considered by us for the purpose of tariff at the rates as prescribed in the notification dated 26.3.2001. While approving depreciation component of tariff, the weighted average depreciation rate of 2.99% has been worked out. The calculations in support of weighted average rate of depreciation of 2.99% are appended hereinbelow:

(Rs. in lakh)

	Capital Cost	Approved cost	Rate of Depreciation	Depreciation
Capital Expenditures as on 1.7.2003				
Land	0.00		0%	0.00
Building & Other Civil Works	0.00		1.80%	0.00
Sub-Station Equipment	903.14		3.60%	31.51
Transmission Line	2158.13		2.57%	55.46
PLCC	113.48		6.00%	6.81
Total	3174.75	4178.00		94.79
Weighted Average Rate of Depreciation			2.99%	

18. Accordingly, depreciation of Rs. 71.09 lakh has been allowed as calculated below:

(Rs. in lakh)

		2003-04
Rate of Depreciation	2.99%	
Depreciable Value (90% of the Gross Block)	2857.28	
Balance Useful life of the asset		
Remaining Depreciable Value		2857.28
Depreciation		71.09

ADVANCE AGAINST DEPRECIATION

19. In addition to allowable depreciation, the petitioner becomes entitled to Advance Against Depreciation when originally scheduled loan repayment exceeds the depreciation allowable as per schedule to the notification. Advance Against Depreciation is computed in accordance with the following formula:

AAD = Originally scheduled loan repayment amount subject to a ceiling of 1/12th of original loan amount minus depreciation as per schedule.

20. The petitioner has claimed Advance Against Depreciation on the basis of
- (i) 1/12th of gross loan worked out as per the gross block admitted by the Commission in the petition for previous tariff setting,
 - (ii) Repayment of loans during the year and in case of foreign currency loan multiplying the repayment with exchange rate as on 31.3.2001 and depreciation on FERV as repayment during the year in the case of notional loan, and
 - (iii) Depreciation as claimed in the petition.

21. The entitlement of the petitioner has been considered in accordance with the notification dated 26.3.2001. In the calculation, Advance Against Depreciation has been worked out on the basis of gross loan, repayment and depreciation as worked out above. The petitioner is not entitled to Advance Against Depreciation as calculated below:

(Rs. in lakh)

Advance Against Depreciation	2003-04
1/12th of Gross Loan(s)	215.67
Scheduled Repayment of the Loan(s)	0.00
Minimum of the above	0.00
Depreciation during the year	71.09
Advance Against Depreciation	0.00

OPERATION & MAINTENANCE EXPENSES

22. In accordance with the notification, Operation and Maintenance expenses, including expenses on insurance, if any, are to be calculated as under:

- i) Where O&M expenses, excluding abnormal O&M expenses, if any, on sub-station (OMS) and line (OML) are separately available for each region, these shall be normalised by dividing them by number of bays and line length respectively. Where data as aforesaid is not available, O&M expenses in the region are to be apportioned to the sub-station and lines on the basis of 30:70 ratio and these are to be normalised as below:

$$\text{O\&M expenses per Unit of the line length in Kms (OMLL)} = \frac{\text{Expenses for lines (OML)}}{\text{Average line length in Kms (LL)}}$$

$$\text{O\&M expenses for sub-stations (OMBN)} = \frac{\text{O\&M expenses for substations (OMB)}}{\text{Average number of bays (BN)}}$$

- ii) The five years average of the normalised O&M expenses for lines and for bays for the period 1995-96 to 1999-2000 is to be escalated at 10% per annum for two years (1998-99 and 1999-2000) to arrive at normative O&M expenses per unit of line length and per bay for 1999-2000.

- iii) The normative O&M per unit length and normative O&M per bay for the year 1999-2000 for the region derived in the preceding paragraph is to be escalated @ 6% per annum to obtain normative values of O&M expenses per unit per line length and per bay in the relevant year. These normative values are to be multiplied by line length and number of bays (as the case may be) in a given system in that year to compute permissible O&M expenses for the system.
- iv) The escalation factor of 6% per annum is to be used to revise normative base figure of O&M expenses. Any deviation of the escalation factor computed from the actual inflation data that lies within 20% of the notified escalation factor of 6% shall be absorbed by utilities/beneficiaries.

23. The normalized O & M expenses for Northern Region have been considered in a number of other petitions based on the above noted methodology. Following table gives a comparison of the normative O&M expenses as calculated by the petitioner and as allowed by the Commission in the past for the base year i.e. 1999-2000 and afterwards:

NORMALISED O&M EXPENSES FOR NORTHERN REGION

(Rs. in Lakh)

S. NO.	Items	1995-96	1996-97	1997-98	1998-99	1999-2000	Total for five years 95-96 to 99-00	99-00	2000-01	2001-02	2002-03	2003-04
1	Total O&M expenses(Rs. in lakh)	4147.48	4336.62	6100.85	6676.57	7137.32						
2	Abnormal O&M expenses	0.00	0.00	57.64	107.13	99.08	263.85					
3	Normal O&M expenses (S.No. 1 -S.NO. 2)	4147.48	4336.62	6043.21	6569.44	7038.24						
4	OML (O&M for lines)= 0.7 X S. NO.3	2903.24	3035.63	4230.25	4598.61	4926.77	19694.50					
5	OMS (O&M for substation) = 0.3XS.NO.3	1244.24	1300.99	1812.96	1970.83	2111.47	8440.49					
6	Line length at beginning of the year in Kms.	9622.13	9622.13	9743.48	10561.88	10819.55						
7	Line length added in the year in Kms.	0.00	121.35	818.40	257.67	1705.07						
8	Line length at end of the year in Kms.	9622.13	9743.48	10561.88	10819.55	12524.62						
9	LL (Average line length in the Region)	9622.13	9682.81	10152.68	10690.72	11672.09	51820.43					
10	NO. of bays at beginning of the year	157	157	161	183	185						
11	NO. of bays added in the year	0	4	22	2	31						
12	NO. of bays at the end of the year	157	161	183	185	216						
13	BN (Average number of bays in the Region)	157.0	159.0	172.0	184.0	200.5	872.50					
14	AVOMLL(OML/LL)	0.302	0.314	0.417	0.430	0.422	1.884					
15	AVOMBN(OMS/BN)	7.925	8.182	10.540	10.711	10.531	47.890					
16	NOMLL(allowable O&M per unit of line length)			0.3768	0.4145	0.4560		0.4560	0.4833	0.5123	0.5431	0.5756
17	NOMBN(Allowable O&M per bay)			9.5780	10.5358	11.5894		11.5894	12.2847	13.0218	13.8031	14.6313
	NOMLL(as calculated by petitioner)			0.42				0.51	0.54	0.57	0.60	0.64
	NOMBN(as calculated by petitioner)			10.75				13.01	13.79	14.62	15.50	16.43

24. The differences in NOMLL and NOMBN as calculated by the petitioner and as allowed are mainly on account of certain expenses disallowed by the Commission. Using these normative values, O&M charges have been calculated.

25. In the Commission's calculations the escalation factor of 6% per annum has been used. In accordance with the notification dated 26.3.2001, if the escalation factor computed from the observed data lies in the range of 4.8% to 7.2%, this variation shall be absorbed by the petitioner. In case of deviation beyond this limit, adjustment shall be made on by applying actual escalation factor arrived at on the basis of weighted price index of CPI for industrial workers (CPI_IW) and index of selected component of WPI (WPI_TR).

26. Based on the above methodology, the Commission has allowed O&M expenses per unit of line length and per bay for Northern Region for 2003-04 as under which have been considered for computation of the petitioner's entitlement to O&M expenses:

(Rs. in lakh)	
Allowable O&M per km (of line length)	0.58
Allowable O&M per Bay	14.63

27. The petitioner has claimed O&M expenses for 59.04 Kms of line length and 4 bays, which have been considered for calculation of O&M expenses. O&M expenses allowed are given hereunder:

2003-04 (1.7.2003 to 31.3.2004)		
Line length in ckm	No. of bays	O&M expenses (Rs. in lakh)
59.04	4	69.38

RETURN ON EQUITY

28. In accordance with the notification dated 26.3.2001, the petitioner is entitled to return on equity at the rate of 16% per annum. For the purpose of tariff equity of Rs. 586.75 lakh has been considered. On the above basis, the petitioner shall be entitled to return on equity of Rs. 70.41 lakh during 2003-04.

INTEREST ON WORKING CAPITAL

29. As provided in the notification, the interest on working capital shall cover:

- (a) Operation and maintenance expenses (cash) for one month;
- (b) Maintenance spares at a normative rate of 1% of the capital cost less 1/5th of the initial capitalised spares. Cost of maintenance spares for each subsequent year shall be revised at the rate applicable for revision of expenditure on O & M of the transmission system; and
- (c) Receivables equivalent to two months' average billing calculated on normative availability level, which is 98%.

30. In keeping with the above methodology, working capital has been worked out, on the basis of capital expenditure as on the date of commercial operation. Deduction of 1/5th of the initial capitalised spares has been considered in the calculations. The petitioner has claimed interest on working capital at the rate of 10.50%, as applicable on the date of commercial operation, which has been allowed. The detailed calculations in support of interest on working capital are as under:

Interest on Working Capital

(Rs. in lakh)

		2003-04
Maintenance Spares	1%	31.75
Less Capitalised Initial Spares		6.89
		24.85
O & M expenses		7.71
Receivables		91.02
Total		123.58
Rate of Interest		10.50%
Interest		9.73

TRANSMISSION CHARGES

31. In the light of above discussion, we approve the transmission charges as given in the Table below:

TABLE

(Rs. in lakh)

Transmission Tariff	2003-04
Interest on Loan	188.98
Interest on Working Capital	9.73
Depreciation	71.09
Advance against Depreciation	0.00
Return on Equity	70.41
O & M Expenses	69.38
Total	409.60

32. The difference between the petitioner's claim and the transmission charges allowed by us is primarily for the reason that the petitioner's claim is based on capital cost of Rs. 3246.99 lakh as against the gross block of Rs.3174.75 lakh considered by us for the purpose of tariff in the present petition.

33. In addition to the transmission charges, the petitioner shall be entitled to other charges like income-tax, incentive, surcharge and other cess and taxes in accordance with the notification dated 26.3.2001 subject to directions if any, of the superior courts. The petitioner shall also be entitled to recovery of filing fee of Rs 2 lakh, which shall be

recovered from the respondents in five monthly installments of Rupees forty thousand each and shall be shared by the respondents in the same ratio as other transmission charges.

34. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's interim order. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us.

35. The transmission charges approved by us shall be included in the regional transmission tariff for Northern Region and shall be shared by the regional beneficiaries in accordance with the notification dated 26.3.2001.

36. This order disposes of Petition No.192/2004.

**Sd/-
(A.H.JUNG)
MEMBER**

**Sd/-
(BHANU BHUSHAN)
MEMBER**

**Sd/-
(K.N.SINHA)
MEMBER**

**Sd/-
(ASHOK BASU)
CHAIRMAN**

New Delhi dated the 21st July 2005