

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

CORAM:

1. **Shri K.N. Sinha, Member**
2. **Shri Bhanu Bhushan, Member**

Petition No.123/2002

In the matter of

Approval of transmission tariff for 400 kV D/C Vijayavada – Nellore line, 400 kV D/C Nellore-Sriperumbudur line, New 400 kV switching station at Nellore, and extension of Vijaywada and Sriperumbudur sub-station with associated bays under the system strengthening scheme in Southern Region for the period 1.3.2003 to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd. **... Petitioner**

Vs

1. Karnataka Power Transmission Corporation Ltd., Bangalore
2. Transmission Corporation of Andhra Pradesh, Hyderabad
3. Kerala State Electricity Board, Thiruvananthapuram
4. Tamil Nadu Electricity Board, Chennai
5. Electricity Deptt., Govt. of Pondicherry, Pondicherry **.. Respondents**

The following were present:

1. Shri U.C. Misra, Director (Pers), PGCIL
2. Shri Umesh Chandra, ED (Comml), PGCIL
3. Shri J. Sridharan, ED (Fin), PGCIL
4. Shri D.D. Dhayaseelan, DGM, PGCIL
5. Shri P.C. Pankaj, AGM (Comml), PGCIL
6. Shri U.K. Tyagi, DGM, PGCIL
7. Shri C. Kannan, CM (Fin), PGCIL
8. Shri B.S. Chandrashekar, KPTCL
9. Shri S. Sowmyanarayanan, TNEB

**ORDER
(DATE OF HEARING: 15.4.2004)**

The petitioner has filed the present petition for approval of tariff for 400 kV D/C Vijayavada – Nellore line, 400 kV D/C Nellore-Sriperumbudur line, New 400 kV switching station at Nellore, and extension of Vijaywada and Sriperumbudur sub-station with associated bays under the system strengthening scheme in Southern

Region (hereinafter referred to as “the transmission assets”) for the period 1.3.2003 to 31.3.2004 based on the terms and conditions for determination 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 construction of the transmission assets was accorded by the Central Government in Ministry of Power as per letter dated 5.2.2001 at an estimated cost of Rs.39628.00 lakh (1st quarter 2000 price level), including IDC of Rs. 2900.00 lakh.

3. As per the investment approval, the transmission assets were to be commissioned within a period of 24 months from the date of investment approval by the Central Government, that is, by February 2003. The assets have been put under commercial operation on 1.3.2003. Thus, the transmission assets have been commissioned without any delay.

4. The petitioner, in the present petition, has sought approval for transmission charges for the years 2002-03 and 2003-04 based on the notification dated 26.3.2001 based on capital cost of Rs. 34500.39 lakh as under:

	(Rs. in lakh)	
	2002-2003 (Pro rata)	2003-2004
Interest on Loan	230.74	2709.54
Interest on Working Capital	11.70	145.23
Depreciation	75.62	936.96
Advance Against Depreciation	0.00	0.00
Return on Equity	63.12	909.15
O & M Expenses	62.98	801.14
Total	444.18	5502.02

5. In support of its claim for interest on working capital the petitioner has submitted the following details:

	(Rs. in lakh)	
	2002-2003	2003-2004
Spares	325.33	336.48
O & M expenses	62.98	66.76
Receivables	888.35	917.00
Total	1276.66	1320.25
Rate of Interest	11.00%	11.00%
Interest	140.43	145.23
Interest (Pro rata)	11.70	

6. In addition, the petitioner has prayed for approval of other charges like Income Tax, incentive, Development Surcharge, late payment surcharge, other statutory taxes, levies, cess, filing fee, etc in terms of the notification.

CAPITAL COST

7. As laid down in the notification dated 26.3.2001, the project cost 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 capital cost shall include capitalised initial spares for the first 5 years of operation. The notification dated 26.3.2001 further provides that the actual capital expenditure incurred on completion of the project shall be the criterion for fixation of tariff. Where the actual expenditure exceeds the approved project cost, the excesses as approved by the Authority 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 petitioner or its suppliers or contractors. This is subject to the condition 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.

8. As per the auditor's certificate furnished by the petitioner on 7.12.2004, the estimated completion cost of the transmission assets is Rs 34,726.52 lakh, including IDC of Rs 2870.17 lakh, worked out as under:

Expenditure up to date of commercial operation (1.3.2003)	:Rs 33,116.13 lakh
Gross block on date of commercial operation	:Rs 33,116.13 lakh
Expenditure from date of commercial operation to 31.3.2003	:Rs 720.23 lakh
Gross block as on 31.3.2003	:Rs 33,836.36 lakh
Expenditure from 1.4.2003 to 31.3.2004	:Rs 664.03 lakh
Gross block as on 31.3.2004	:Rs 34,500.39 lakh
Balance anticipated expenditure	:Rs. 226.13 lakh
Total completion cost	:Rs 34,726.52 lakh

Value of mandatory spares included in the above cost is Rs. 47.17 lakh.

9. For the purpose of computation of tariff, the Gross Block of Rs. 33,116.13 lakh as on the date of commercial operation as per the auditor's certificate submitted by the petitioner has been considered.

ADDITIONAL CAPITALISATION

10. The notification dated 26.3.2001 provides that tariff revisions during the tariff period on account of capital expenditure within the approved project cost incurred during the tariff period may be entertained by the Commission if such expenditure exceeds 20% of the approved cost. In all cases, where such expenditure is less than 20%, tariff revision shall be considered in the next tariff period.

11. The capital expenditure from the date of commercial operation till 31.3.2004 has not been considered for the purpose of tariff, as this expenditure does not exceed 20% of the approved capital cost.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

12. As per clause 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 Central Government while according the investment approval has not specified the debt-equity ratio for financing the project. The petitioner has claimed tariff by taking actual debt and equity ratio of 86.79:13.21. This is not opposed by the respondents. Therefore, The same debt-equity ratio has been considered for determination of tariff in the present petition. Necessary details in this regard are extracted below:

Debt:	Rs. 28,742.00 lakh
Equity:	Rs. 4,374.13 lakh
Total	Rs. 33,116.13 lakh

INTEREST ON LOAN

13. As per clause 4.4(a) of the notification dated 26.3.2001, Interest on loan capital shall be computed on the outstanding loans, duly taking into account the schedule of repayment, as per the financial package approved by CEA or any independent agency.

14. In the calculation, the interest on loan has been worked by considering the gross amount of loan, repayment for the year 2002-03 and 2003-04 and rate of interest etc. as per the loan details for the assets commissioned after 31.3.2002 as submitted by the petitioner vide affidavit dated 16.2.2005.

15. OBC and PNB II loans carry floating rate of interest and the interest rates as submitted by the petitioner stated to be prevailing as on the date of commercial operation have been taken in the calculation. Any change/resetting of the interest rates of the above loans during the tariff period covered in this petition would require settlement of the same mutually between the parties. In case they are unable to settle the question mutually, any one of them is at liberty to approach the Commission for appropriate decision.

16. For the purpose of tariff we have considered the actual loan of Rs. 28742.00 lakh as on the date of commercial operation.

17. The detailed calculations in support of interest on loan are appended below:

Details of Loan	(Rs in lakh)	
	2002-03	2003-04
No. of days in the Year	365	366
Bond-X		
Gross Loan -Opening	5680.00	5680.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	5680.00	5680.00
Repayment during the year	0.00	0.00
Net Loan-Closing	5680.00	5680.00
Rate of Interest	10.90%	10.90%
Interest	52.58	619.12
Repayment Schedule	12 Annual Instalments from 21.06.2004	

Bond XIII (Option-I)		
Gross Loan -Opening	11000.00	11000.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	11000.00	11000.00
Repayment during the year	0.00	0.00
Net Loan-Closing	11000.00	11000.00
Rate of Interest - Bond XIII -Option-II	8.63%	8.63%
Interest	80.63	949.30
Repayment Schedule	12 Annual Instalments from 31.07.2006	
Bond-IX		
Gross Loan -Opening	980.00	980.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	980.00	980.00
Repayment during the year	0.00	98.00
Net Loan-Closing	980.00	882.00
Rate of Interest	12.25%	12.25%
Interest	10.20	112.74
Repayment Schedule	10 Annual Instalments from 22.08.2003	
Bond-XI Option I		
Gross Loan -Opening	5320.00	5320.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	5320.00	5320.00
Repayment during the year	0.00	0.00
Net Loan-Closing	5320.00	5320.00
Rate of Interest	9.80%	9.80%
Interest	44.28	521.36
Repayment Schedule	12 Annual Instalments from 07.12.2005	
Oriental Bank of Commerce		
Gross Loan -Opening	2449.00	2449.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	2449.00	2449.00
Repayment during the year	0.00	0.00
Net Loan-Closing	2449.00	2449.00
Rate of Interest	8.60%	8.60%
Interest	17.89	210.61
Repayment Schedule	12 Annual Instalments from 22.03.2005	
PNB-II		
Gross Loan -Opening	2939.00	2939.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	2939.00	2939.00

Repayment during the year	0.00	0.00
Net Loan-Closing	2939.00	2939.00
Rate of Interest	8.85%	8.85%
Interest	22.09	260.10
Repayment Schedule	12 Annual Instalments from 08.03.2005	
Bond-XII		
Gross Loan -Opening	374.00	374.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	374.00	374.00
Repayment during the year	0.00	0.00
Net Loan-Closing	374.00	374.00
Rate of Interest	9.70%	9.70%
Interest	3.08	36.28
Repayment Schedule	12 Annual Instalments from 28.03.2006	
Total Loan		
Gross Loan -Opening	28742.00	28742.00
Cumulative Repayment up to Previous Year	0.00	0.00
Net Loan-Opening	28742.00	28742.00
Repayment during the year	0.00	98.00
Net Loan-Closing	28742.00	28644.00
Interest	230.74	2709.51

DEPRECIATION

18. With regard to depreciation, para 4(b) of the notification dated 26.3.2001 provides:

- (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.

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.

19. The petitioner has claimed the depreciation based on the capital expenditure of Rs. 34500.39 lakh as on 31.3.2004 in accordance with above principles. In the calculation of depreciation the capital cost of Rs. 33,116.13 lakh has been considered.

20. Based on the provisions of the notification dated 26.3.2001, the depreciation for individual items of capital expenditure has been calculated on the capital cost for each of the assets at the rates as prescribed in the notification. While approving depreciation component of tariff, the weighted average depreciation rate has been worked out. The break up of the capital cost has been considered as per the details furnished by the petitioner. The necessary calculations in support of weighted average depreciation rate are given hereunder:

Particulars	Capital cost as on date of commercial operation as per C.A. certificate dated 7.12.2004	Approved capital cost	Rate of Depreciation as per the notification Dated 26.3.2001	Depreciation
Date of commercial operation	1.3.2003			
Capital Expenditure as on 1.3.2003				
Land	12.72		0%	0.00
Building & Other Civil Works	371.06		1.80%	6.68
Sub-Station Equipments	4070.09		3.60%	146.52
Transmission Line	28490.17		2.57%	732.20
PLCC	172.09		6.00%	10.33
Total	33116.13	39628.00		895.73
Weighted Average Rate of Depreciation				2.70%

21. The calculations in support of depreciation allowed are appended herein below:

(Rs. in lakh)			
		2002-03 (Pro rata)	2003-04
Rate of Depreciation	2.70%		
Depreciable Value (90% of Gross Block)	29804.52		
Remaining Depreciable Value		29804.52	29729.87
Depreciation		74.64	895.73

ADVANCE AGAINST DEPRECIATION

22. 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 dated 26.3.2001. Advance Against Depreciation is computed in accordance with the following formula:

$$\text{AAD} = \text{Originally scheduled loan repayment amount subject to a ceiling of } 1/12^{\text{th}} \text{ of original loan amount minus depreciation as per schedule.}$$

23. The petitioner has not claimed Advance Against Depreciation.

24. For working out Advance Against Depreciation, 1/12th of the notional loan has been considered while repayment of loan as worked out above has been taken as repayment of the loan during the year. Similarly, depreciation allowed as per para 23 above has been considered. The petitioner is not entitled to Advance Against Depreciation as calculated below:

	(Rs. in lakh)	
	2002-03	2003-04
1/12th of Gross Loan(s)	2395.17	2395.17
Scheduled Repayment of the Loan(s)	0.00	98.00
Minimum of the above	0.00	98.00
Depreciation during the year	74.64	895.73
Advance Against Depreciation	0.00	0.00

OPERATION & MAINTENANCE EXPENSES

25. In accordance with the notification dated 26.3.2001, 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:

O&M expenses per Unit of the line length in Kms (OMLL) =

Expenses for lines (OML)/Average line length in Kms (LL)

O&M expenses for sub-stations (OMBN) = O&M expenses for substations (OMB)/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.

26. Based on the methodology for computation of O&M expenses specified in the notification dated 26.3.2001, the Commission has computed O&M charges per ckt km (NOMLL) and per bay (NOMB) for Southern Region in other petitions. These are extracted below:

NORMALIZED O&M EXPENSES FOR SOUTHERN REGION

(All Figures in Rs. lakhs)

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. lakhs)	2129.83	2220.25	3330.40	3724.36	4701.71						
2	Abnormal O&M expenses	0.00	0.00	0.00	0.00	0.00						
3	Normal O&M expenses (S.No. 1 -S.NO. 2)	2129.83	2220.25	3330.40	3724.36	4701.71						
4	OML (O&M for lines)= 0.7 X S. NO.3	1490.88	1554.17	2331.28	2607.05	3291.20	11274.58					
5	OMS (O&M for sub-station) = 0.3XS.NO.3	638.95	666.07	999.12	1117.31	1410.51	4831.96					
6	Line length at beginning of the year in Kms.	5578.74	5839.71	5839.71	6034.71	6190.71						
7	Line length added in the year in Kms.	260.97	0.00	195.00	156.00	656.33						
8	Line length at end of the year in Kms.	5839.71	5839.71	6034.71	6190.71	6847.04						
9	LL (Average line length in the Region)	5709.23	5839.71	5937.21	6112.71	6518.88	30117.74					
10	NO. of bays at beginning of the year	66	71	74	76	80						
11	NO. of bays added in the year	5	3	2	4	26						
12	NO. of bays at the end of the year	71	74	76	80	106						
13	BN (Average number of bays in the Region)	68.5	72.5	75.0	78.0	93.0	387.00					
14	AVOMLL(OML/LL)	0.26	0.27	0.39	0.43	0.50	1.851					
15	AVOMBN(OMS/BN)	9.33	9.19	13.32	14.32	15.17	61.328					
16	NOMLL(allowable O&M per unit of line length)			0.3703	0.4073	0.4480		0.4480	0.4749	0.5034	0.5336	0.5656
17	NOMBN(Allowable O&M per bay)			12.2656	13.4921	14.8413		14.8413	15.7318	16.6757	17.6763	18.7368
	NOMLL(as calculated by petitioner)			0.4200				0.5100	0.5400	0.5700	0.6000	0.6400
	NOMBN(as calculated by petitioner)			13.9100				16.8300	17.8400	18.9100	20.0400	21.2400

27. The differences in NOMLL and NOMBAN as calculated by the petitioner and as allowed are mainly on account of certain expenses disallowed by us as explained in the respective orders for computation of normative values.

28. In our 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).

29. The details of O&M expenses allowed are given hereunder:

2002-03			2003-04		
Line length in Ckm	No. Of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)
1059.28	8	58.88	1059.28	8	749.02

RETURN ON EQUITY

30. 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. 4374.13 as on 1.3.2003 has been considered. On the above basis, the petitioner shall be entitled to return on equity each year during the tariff period as under:

Year	Amount
2002-03 (Pro rata)	Rs. 58.32 lakh
2003-04	Rs. 699.86 lakh

INTEREST ON WORKING CAPITAL

31. As provided in the notification dated 26.3.2001, 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%.

32. In keeping with the methodology prescribed in the notification dated 26.3.2001, working capital has been worked out. In the calculation, maintenance spares for the years 2002-03 and 2003-04 have been worked out on the basis of capital expenditure up to 28.2.2003, and after deduction of 1/5th of the initial capitalised spares therefrom. This has been escalated @ 6% per annum for the years 2002-03 and 2003-04. The petitioner has claimed interest on working capital at the rate of 11%. However, interest on working capital has been allowed @ 10.75% based on annual SBI PLR for the year 2002-2003, which has been allowed separately by the Commission in certain other petitions. The detailed calculations in support of interest on Working Capital are as under:

Interest on Working Capital

(Rs. In lakh)

Rate of Escalation for maintenance spares		6%	6%
Maintenance Spares	1%	331.16	
Less: Capitalised Initial spares		9.43	
		321.73	323.34
O & M expenses		58.88	62.42
Receivables		867.54	864.76
Total		1,248.15	1,250.51
Rate of Interest		10.75%	10.75%
Interest		11.18	134.43

TRANSMISSION CHARGES

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

(Rs. in lakh)

	2002-03 (Pro rata)	2003-04
Interest on Loan	230.74	2709.51
Interest on Working Capital	11.18	134.43
Depreciation	74.64	895.73
Advance Against Depreciation	0.00	0.00
Return on Equity	58.32	699.86
O & M Expenses	58.88	749.02
Total	433.76	5188.55

34. The difference between the petitioner's claim on account of transmission charges and that allowed by us is primarily on account of difference in gross block considered for the purposes of tariff.

35. 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. This is subject to confirmation that the amount is not already included in the O&M charges.

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

37. The transmission charges approved by us shall be included in the regional transmission tariff for Southern Region and shall be shared by the regional constituents in accordance with the notification dated 26.3.2001.

38. This order disposes of Petition No.123/2002.

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

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

New Delhi dated the 16th March 2005