

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. **Shri Ashok Basu, Chairman,**
2. **Shri K.N.Sinha, Member**
3. **Shri. Bhanu Bhushan, Member**

Petition No.121/2002

In the matter of

Petition for approval of tariff for 400 kV Raipur-Rourkela D/C transmission line along with extension of Raipur and Rourkela sub-stations under Eastern-Western inter-regional link for the period 1.4.2003 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
 6. West Bengal State Electricity Board, Kolkata
 7. Damodar Valley Corporation, Kolkata
 8. Bihar State Electricity Board, Patna
 9. Grid Corporation of Orissa Ltd., Bhubaneswar
 10. Power Dept., Govt. of Sikkim, Gangtok
 11. Jharkhand State Electricity Board, Ranchi
 12. Madhya Pradesh State Electricity Board, Jabalpur
 13. Electricity Department, Admn. Of Daman & Diu, Daman
 14. Gujarat Electricity Board, Vadodara
 15. Electricity Department, Govt of Goa, Panaji, Goa
 16. Electricity Department, Admn. of Dadra and Nagar Haveli, Silvassa
 17. Maharashtra State Electricity Board, Mumbai
 18. Chhattisgarh State Electricity Board, Raipur
-Respondents**

The following were present

1. Shri Umesh Chandra, ED (Comml.), PGCIL
2. Shri P.C. Pankaj, AGM(Comml.), PGCIL
3. Shri C. Kannan, PGCIL
4. Shri U.K. Tyagi, PGCIL
5. Shri K. Gopalakrishnan, KSEB
6. Shri V.K. Singh, BSEB
7. Shri D. Khandelwal, MPSEB

ORDER
(DATE OF HEARING: 16.3.2004)

In this petition, the petitioner, Power Grid Corporation of India Ltd has sought approval for tariff in respect of 400 kV Raipur-Rourkela D/C transmission line along with extension of Raipur and Rourkela sub-stations under Eastern-Western inter-regional link (hereinafter referred to as “the transmission assets”) for the period 1.4.2003 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 petitioner was entrusted with the implementation of the transmission asset. The investment approval and expenditure sanction was accorded by the Central Government in Ministry of Power as per letter dated 1.1. 2001 at an estimated cost of Rs.23738.00 lakh, including IDC of Rs.1525.00 lakh, based on 1st quarter 2000 price level. As per the investment approval, the transmission assets were to be commissioned within 36 months from that date, that is, by January 2004. The actual date of commercial operation of the transmission assets is 1.4.2003. Thus, the transmission assets have been commissioned within the scheduled timeframe.

3. Based on the above-noted facts, the petitioner has sought approval for transmission charges for the period from 1.4.2003 to 31.3.2004 as under on the total cost of Rs. 21169.74 lakh:

(Rs. in lakh)

Transmission Tariff	2003-2004
Interest on Loan	895.98
Interest on Working Capital	68.67
Depreciation	566.05
Advance against Depreciation	0.00
Return on Equity	495.08
O & M Expenses	376.46
Total	2402.24

4. In addition, the petitioner has prayed for approval of other charges like Foreign Exchange Rate Variation, Income Tax, incentive, Development Surcharge, late payment surcharge, other statutory taxes, levies, cess, filing fee, etc in terms of the notification dated 26.3.2001.

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

(Rs in lakh)

	2003-04
Maintenance Spares	192.57
O & M expenses	31.37
Receivables	400.37
Total	624.31
Rate of Interest	11.00%
Interest	68.67

CAPITAL COST

6. 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.

7. As noted above, investment approval was accorded by the Central Government in Ministry of Power as per letter dated 1.1. 2001 at an estimated cost of

Rs.23738.00 lakh, including IDC of Rs.1525.00 lakh, based on 1st quarter 2000 price level. As per the auditor's certificate furnished by the petitioner on 3.12.2004, the estimated completion cost of the transmission line is Rs 21169.74 lakh. Based on the audited expenditure details submitted by the petitioner, the gross block, including IDC of Rs 1220.33 lakh (indicated in the Auditor's certificate), is worked out as under:

Expenditure up to the date of commercial operation (31.3.2003):	Rs 21059.49 lakh
Gross block on the date of commercial operation:	Rs 21059.49 lakh
Expenditure from 1.4.2003 to 31.3.2004:	Rs 110.25 lakh
Total Estimated completion cost:	Rs 21169.74 lakh

(The above includes initial spares for Rs 94.60 lakh)

8. As on 1.4.2003, the date of commercial operation, the petitioner has incurred a total expenditure of Rs.21059.49 lakh. The additional expenditure incurred during the tariff period, that is, up to 31.3.2004 is less than 20% of the approved project cost. It is not being considered for the purpose of tariff.

9. In view of the above, the tariff is being computed based on the gross block of Rs. 21059.49 lakh as on the date of commercial operation.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

10. 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. Debt-equity ratio or financial package for the asset

covered in the present petition is not given separately in the investment approval. The petitioner has claimed tariff by taking debt and equity in the ratio of 85.91:14.09. Since the debt-equity ratio claimed by the petitioner is favourable to the respondents and none of them has questioned this ratio, the same has been considered for determination of tariff in the present petition. Based on this ratio, a total loan of Rs.18091.90 lakh and equity of Rs.2967.59 lakh, as on the date of commercial operation, are being considered.

INTEREST ON LOAN

11. 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. In keeping with this provision, while calculating Interest on loan, closing balance of the notional loan as on 31.3.2001 has been taken as opening balance of the loan as on 1.4.2001.

12. The interest on loan has been worked out by considering the gross amount of loan, repayments up to the year 2002-03 submitted by the petitioner under affidavit and rates of interest as per the loan details given in the petition.

13. 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
ADB-II uv	
Gross Loan -Opening	7108.97
Cumulative Repayment up to Previous Year	0.00
Net Loan-Opening	7108.97
Repayment during the year- 15 th June	0.00
	7108.97
Repayment during the year- 15 th December	0.00
Net Loan-Closing	7108.97
Rate of Interest	7.54%
Interest	536.02
Repayment Schedule	Equal Half yearly instalments from 15.6.2006
ADB-II Ib	
Gross Loan -Opening	10856.93
Cumulative Repayment up to Previous Year	0.00
Net Loan-Opening	10856.93
Repayment during the year- 15 th June	0.00
	10856.93
Repayment during the year- 15 th December	0.00
Net Loan-Closing	10856.93
Rate of Interest	3.22%
Interest	349.59
Repayment Schedule	Equal Half yearly instalments from 15.6.2006
Bond-XII	
Gross Loan -Opening	126.00
Cumulative Repayment up to Previous Year	0.00
Net Loan-Opening	126.00
Repayment during the year	0.00
Net Loan-Closing	126.00
Rate of Interest	9.70%
Interest	12.22
Repayment Schedule	12 Annual Instalments from 28.3.2006
Total Loan	
Gross Loan -Opening	18091.90
Cumulative Repayment up to Previous Year	0.00
Net Loan-Opening	18091.90
Repayment during the year	0.00
Net Loan-Closing	18091.90
Interest	897.83

14. It is noted that the petitioner has considered the exchange rate of Rs.47.73/USD as on 2.4.2003 in the petition. However, exchange rate of Rs.47.83/USD as on 31.3.2003 is considered in the calculation on the basis of loan allocation details submitted by the petitioner.

15. ADB-II uv and ADB-II lb loans carry floating rates of interest. For the purpose of computation of interest on loan, the interest rates as submitted by the petitioner have been taken into consideration. In view of this, any changes/resetting of the interest rate of the above loans during the tariff period covered in this petition would be settled mutually between the parties and in case of their inability to do so, any one of them may approach the Commission for the appropriate decision.

DEPRECIATION

16. 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 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.
- (iii)* 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.

17. The petitioner has claimed the depreciation on the capital expenditure of Rs. 21169.74 lakh in accordance with the above principles.

18. Based on the above, depreciation for individual items of capital expenditure has been calculated on the capital cost of Rs. 21059.49 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 2.67% has been worked out. The calculations in support of weighted average rate of depreciation of 2.67% are appended hereinbelow:

(Rs. in lakh)

	Capital Cost	Approved cost	Rate of Depreciation	Depreciation
Capital Expenditures as on 31.3.2003				
Land	0.00		0%	0.00
Building & Other Civil Works	48.72		1.80%	0.88
Sub-Station Equipment	1946.68		3.60%	70.08
Transmission Line	18994.03		2.57%	488.15
PLCC	70.06		6.00%	4.20
Total	21059.49	23738.00		563.31
Weighted Average Rate of Depreciation			2.67%	

19. Accordingly, depreciation has been allowed as calculated below:

(Rs. in lakh)

		2003-04
Rate of Depreciation	2.67%	
Depreciable Value (90% of the Gross Block)	18953.54	
Balance Useful life of the asset		
Remaining Depreciable Value		18953.54
Depreciation		563.31

ADVANCE AGAINST DEPRECIATION

20. 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.

21. 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.

22. 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 and 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)	1507.66
Scheduled Repayment of the Loan(s)	0.00
Minimum of the above	0.00
Depreciation during the year	563.31
Advance Against Depreciation	0.00

OPERATION & MAINTENANCE EXPENSES

23. 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.

24. The petitioner has claimed O & M expenses for this inter-regional link as applicable to Western Region. The normalised O & M expenses for Western Region have been calculated by the Commission separately in a number of cases pertaining to that Region. The following table gives comparison of the normative O&M expenses as calculated by the petitioner and as per our calculations allowed for the base year i.e. 1999-2000 and afterwards:

NORMALIZED O&M EXPENSES FOR WESTERN REGION

S. NO.	Items	(Rs. in Lakh)										
		1995-96	1996-97	1997-98	1998-99	1999-2000	Total for five years 95-96 to 99-00	2000-01	2001-02	2002-03	2003-04	
1	Total O&M expenses(Rs. Lakhs)	1116.94	1107.24	2230.12	3136.76	3905.44						
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)	1116.94	1107.24	2230.12	3136.76	3905.44						
4	OML (O&M for lines)= 0.7 X S. NO.3	781.86	775.07	1561.08	2195.73	2733.81	8047.55					
5	OMS (O&M for substation) = 0.3XS.NO.3	335.08	332.17	669.03	941.03	1171.63	3448.94					
6	Line length at beginning of the year in Kms.	4520.00	5322.00	5322.00	7668.00	7681.00						
7	Line length added in the year in Kms.	802.00	0.00	2346.00	13.00	1487.00						
8	Line length at end of the year in Kms.	5322.00	5322.00	7668.00	7681.00	9168.00						
9	LL (Average line length in the Region)	4921.00	5322.00	6495.00	7674.50	8424.50	32837.00					
10	NO. of bays at beginning of the year	53	53	54	101	102						
11	NO. of bays added in the year	0	1	47	1	15						
12	NO. of bays at the end of the year	53	54	101	102	117						
13	BN (Average number of bays in the Region)	53.0	53.5	77.5	101.5	109.5	395.00					
14	AVOMLL(OML/LL)	0.16	0.15	0.24	0.29	0.32	1.155					
15	AVOMBN(OMS/BN)	6.32	6.21	8.63	9.27	10.70	41.135					
16	NOMLL(allowable O&M per unit of line length)			0.2311	0.2542	0.2796		0.2796	0.3142	0.3330	0.3530	
17	NOMBN(Allowable O&M per bay)			8.2269	9.0496	9.9546		9.9546	11.1850	11.8561	12.5675	
18	NOMLL(as calculated by petitioner)			0.28				0.34	0.38	0.40	0.41	
19	NOMBN(as calculated by petitioner)			10.06				12.17	13.67	14.49	15.36	

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

26. In the calculations the escalation factor of 6% per annum has been used. In accordance with the notification, 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).

27. The petitioner has claimed O&M expenses for 824.65 Kms of line length and 4 bays, which have been considered for calculation of O&M expenses.

28. O&M expenses allowed are given hereunder:

2003-04		
Line length in ckm	No. of bays	O&M expenses (Rs. in lakh)
824.65	4	341.37

RETURN ON EQUITY

29. In accordance with the notification, the petitioner is entitled to return on equity at the rate of 16% per annum. For the purpose of tariff equity of Rs. 2967.59 lakh has been considered. On the above basis, the petitioner shall be entitled to return on equity of Rs. 474.81 lakh during 2003-04.

INTEREST ON WORKING CAPITAL

30. 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%.

31. 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. The value of maintenance spares has been escalated @ 6% per annum for the years 2002-03 and 2003-04. Deduction of 1/5th of the initial capitalised spares has been considered in the calculations. As it results in negative quantity, spares have been considered 'nil' for calculation of interest on working capital. The petitioner has claimed interest on working capital at the rate of 11%. However, in our calculations interest rate of 10.75% as applicable on the date of commercial operation 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%	210.59
Less Capitalised Initial Spares		18.92
		191.67
O & M expenses		28.45
Receivables		390.49
Total		610.62
Rate of Interest		10.75%
Interest		65.64

TRANSMISSION CHARGES

32. 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	897.83
Interest on Working Capital	65.64
Depreciation	563.31
Advance against Depreciation	0.00
Return on Equity	474.81
O & M Expenses	341.37
Total	2342.97

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 Eastern and Western Regions in the ratio of 50:50 and shall be shared by the regional beneficiaries in accordance with the notification dated 26.3.2001. The beneficiaries in Southern Region shall pay wheeling charges based on usage for the energy transmitted in accordance with the notification dated 26.3.2001, as already directed vide order dated 2.4.2003.

36. This order disposes of Petition No.121/2002.

Sd/-
(BHANU BHUSHAN)
MEMBER

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRMAN

New Delhi dated the 4th April 2005