

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

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

Petition No.131/2002

In the matter of

Petition for approval of tariff for 400 kV D/C Talcher-Meramundali transmission line in Eastern Region for the period 1.12.2003 to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd.

.... Petitioner

Vs

1. Bihar State Electricity Board, Patna
2. West Bengal State Electricity Board, Kolkata
3. Grid Corporation of Orissa Ltd., Bhubaneswar
4. Damodar Valley Corporation, Kolkata
5. Power Dept., Govt. of Sikkim, Gangtok
6. Jharkhand State Electricity Board, Ranchi

.....Respondents

The following were present:

1. Shri P.C. Pankaj, PGCIL
2. Shri U.K. Tyagi, PGCIL
3. Shri C. Kannan, PGCIL
4. Shri B.C.Paul, PGCIL
5. Shri Rakesh Prasad, PGCIL
6. Shri M.M. Mondal, PGCIL
7. Shri R.B. Sharma, Advocate, BSEB

**ORDER
(DATE OF HEARING: 31.1.2006)**

In this petition, the petitioner, Power Grid Corporation of India Ltd. has sought approval for tariff in respect of 400 kV D/C Talcher-Meramundali transmission line (hereinafter referred to as "the transmission line") in Eastern Region for the period 1.12.2003 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 transmission line was accorded by the Board of Directors of the petitioner company under letter dated 19.1.2001 at an estimated cost of Rs.4686.00 lakh, including IDC of Rs.536.00 lakh. The approval of the revised cost estimates was accorded by the Board of Directors of the petitioner company vide memorandum dated 13.10.2005 at an estimated cost of Rs. 3875.00 lakh (excluding bays at Meramundali) including IDC of Rs. 636.00 lakh. As per the investment approval, the project was to be commissioned within 36 months from that date, that is, by January 2004. The actual date of commercial operation of the transmission line is 1.12.2003. The scope of work included:

Transmission Line

400 kV D/C Talcher-Meramundali Transmission Line

Sub-station

Extension of sub-stations at Talcher (NTPC) and Meramundali (Gridco). The bays at Talcher are owned by NTPC and form part of Talcher STPS Stage II, whereas the terminal bays at Meramundali have been executed by GRIDCO.

3. The estimated completion cost of the transmission line is stated to be Rs.3874.63 lakh. The petitioner has sought approval of transmission charges based on cost of Rs. 3819.88 lakh as on 31.3.2004 as under:

(Rs. in lakh)	
Transmission Tariff	2003-2004
Interest on Loan	104.33
Interest on Working Capital	5.05
Depreciation	32.49
Advance against Depreciation	0.00
Return on Equity	29.50
O & M Expenses	27.71
Total	199.08

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	37.93
O & M expenses	6.93
Receivables	99.54
Total	144.40
Rate of Interest	10.50%
Interest	5.05

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 transmission utility, 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. The petitioner has claimed tariff based on average capital cost of Rs. 3793.08 lakh, after accounting for expenditure from 1.12.2003 to 31.3.2004. Based on the audited expenditure details submitted by the petitioner, the gross block, including IDC of Rs 641.35 lakh is worked out as under:

Expenditure up to the date of commercial operation (30.11.2003)	:	Rs.3766.28 lakh
Gross block on the date of commercial operation	:	Rs. 3766.28 lakh
Expenditure from the date of commercial operation to 31.3.2004	:	Rs. 53.60 lakh
Gross block as on 31.3.2004	:	Rs. 3819.88 lakh
Expenditure from 1.4.2004 to 31.3.2005	:	Rs. 54.75 lakh
Total Estimated completion cost	:	Rs. 3874.63 lakh

Time Over-run

8. The scheduled date of commissioning of the transmission line was January 2004. The transmission line has, however, been declared under commercial operation on 1.12.2003. Thus, there is no delay or time over-run .

Cost over-run

9. The estimated completion cost of the transmission line of Rs. 3874.63 lakh is equal to the revised cost estimate approved by the Board of Directors. Thus, there is no cost over-run.

10. In compliance with directions contained in the order dated 21.2.2006, the petitioner has furnished the following information:

(a) in case of price level of the revised cost estimates approved by letter dated 13.10.2005, the petitioner has clarified that the revised cost estimate was prepared on the basis of actual completed cost of the transmission line. Therefore, the price level of revised cost estimate has no significance.

(b) While explaining the reasons for claiming tariff on average capital cost after inclusion of expenditure from the date of commercial operation to 31.3.2004, against the capital cost of Rs. 3766.28 lakh on the date of commercial operation, the petitioner has clarified that the tariff on additional

capital cost of Rs. 53.60 lakh from the date of commercial operation to 31.3.2004 has been claimed on average basis in addition to capital cost of Rs 3766.28 lakh, since the additional capital cost pertains for the year 2003-04, this is to form the basis for the gross block of the asset as on 1.4.2004 for further tariff calculation for the period 2004-09.

(c) In support of increase in capital cost due to change in tower types, foundations, etc and cost on price variation formula contained in the order placed with the contractor, the petitioner has submitted that the line length and type of towers including extension and foundations in the FR were estimated on the basis of walk-over/preliminary survey. Subsequently, during the detailed survey, it was noted that there were severe ROW problems at Talcher- end and also that NTPC had constructed Helipad along the original route of the line whereas earlier such indication was not in the earlier route alignment. These changes have resulted in provision of more number of `D` types towers, which are much heavier, and also number, of leg extension in the transmission line. Further, at Meramundali end, the transmission line was earlier aligned through shortest route. As a later development, GRIDCO objected to this alignment since the land was earmarked for their colony and the line had to be diverted, which resulted in provision of additional no of angle towers. Thus, on the basis of detailed survey additional `D` type towers, and leg extensions up to 25 meters had to be provided which were not envisaged in the FR. Also, 2 number of Pile type foundations which were not envisaged earlier had to be provided in the transmission line as per detailed survey. Due to the said changes in type of towers and resultant change in foundations and also requirement of 2 pile foundations there has been increase in quantities of

various items from the quantities considered in FR. This has resulted in increase in cost of the equipment portion of the project by Rs. 3.0 crore.

(d) While explaining calculations to support increase in cost on price variation formula contained in the order placed with contractor, the petitioner has clarified that for various items of contracts, the supplies and erection portion of the work is executed over a period of time and for each consignment/portion of work, different PV rates depending upon values of indices prevailing at the point of supply/execution of particular work are applicable.

(e) The petitioner has further given the reasons for increase in IDC from Rs. 536.00 lakh as per the original cost approval to Rs. 641.00 lakh, as per Chartered Accountant certificate, despite deletion of sub-station work. The petitioner has clarified that the reason for increase in IDC is due to change of debt-equity ratio from 80:20 envisaged in original approval to 86:14 in actual deployment as on date of commercial operation.

11. The explanation given by the petitioner has been generally accepted, except in regard to consideration of the average cost for tariff computation. The gross block of Rs. 3766.28 lakh as on the date of commercial operation has been taken on the base for computation of tariff.

ADDITIONAL CAPITALISATION

12 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.

13. As noted in para 7 above, the petitioner has claimed tariff based on average capital cost after considering the capital expenditure from the date of commercial operation to 31.3.2004. The additional capital expenditure of Rs. 53.60 lakh from 1.12.2003 to 31.3.2004 is less than 20% of the approved cost. Accordingly, the additional capital expenditure has not been considered in the present petition. Therefore, tariff has been allowed based on capital cost of Rs. 3766.28 lakh.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

14. 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 86.03:13.97 as actually deployed. Since the actual debt-equity ratio claimed by the petitioner is favourable to the respondents, the same has been considered for determination of tariff in the present petition. Accordingly, a total loan of Rs.3240.00 lakh and equity of Rs. 526.28 lakh, as on the date of commercial operation, are being considered.

INTEREST ON LOAN

15. 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.

16. The interest on loan has been worked out by considering the gross amount of loan, repayments for the year 2003-04 and rates of interest as per the loan details submitted by the petitioner under affidavit dated 18.5.2005.

17. The necessary 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 IX	
Gross Loan -Opening	132.00
Cumulative Repayment up to date of commercial operation	13.20
Net Loan-Opening	118.80
Repayment during the year	0.00
Net Loan-Closing	118.80
Rate of Interest	12.25%
Interest	4.85
Repayment Schedule	10 Annual instalments from 22.08.2003
Bonds XI Option I	
Gross Loan -Opening	842.00
Cumulative Repayment upto date of commercial operation	0.00
Net Loan-Opening	842.00
Repayment during the year	0.00
Net Loan-Closing	842.00
Rate of Interest	9.80%
Interest	27.51
Repayment Schedule	12 Annual instalments from 07.12.2005
Oriental Bank of Commerce	
Gross Loan -Opening	388.00
Cumulative Repayment upto DOCO	0.00

Net Loan-Opening	388.00
Repayment during the year	0.00
Net Loan-Closing	388.00
Rate of Interest (OBC PLR)	8.60%
Interest	11.12
Repayment Schedule	12 Annual instalments from 22.03.2005
PNB II	
Gross Loan -Opening	465.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	465.00
Repayment during the year	0.00
Net Loan-Closing	465.00
Rate of Interest (PNB PLR)	8.60%
Interest	13.33
Repayment Schedule	12 Annual instalments from 08.03.2005
Bond X	
Gross Loan -Opening	880.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	880.00
Repayment during the year	0.00
Net Loan-Closing	880.00
Rate of Interest	10.90%
Interest	31.97
Repayment Schedule	12 Annual instalments from 21.06.2004
Bond XIII (Option-I)	
Gross Loan -Opening	474.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	474.00
Repayment during the year	0.00
Net Loan-Closing	474.00
Rate of Interest - Bond XIII -Option-I	8.63%
Interest	13.64
Repayment Schedule	12 Annual Instalments from 31.07.2006
Bond XII	
Gross Loan -Opening	59.00
Cumulative Repayment up to date of commercial operation	0.00
Net Loan-Opening	59.00
Repayment during the year	0.00
Net Loan-Closing	59.00
Rate of Interest - SBI-I	9.70%
Interest	1.91
Repayment Schedule	12 Annual instalments from 28.03.2006
Total Loan	
Gross Loan -Opening	3240.00
Cumulative Repayment up to date of commercial operation	13.20
Net Loan-Opening	3226.80
Repayment during the year	0.00
Net Loan-Closing	3226.80
Interest	104.33

DEPRECIATION

18. 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.

19. The petitioner has claimed the depreciation based on the capital expenditure considered by it in accordance with the above principles.

20. Depreciation for individual items of capital expenditure has been calculated on the capital cost of Rs. 3766.28 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 2.57% has been worked out. The calculations in support of weighted average rate of depreciation of 2.57% are appended hereinbelow:

(Rs. in lakh)

	Capital Cost	Approved cost	Rate of Depreciation	Depreciation
Capital Expenditures as on 1.12.2003				
Land	0.00		0%	0.00
Building & Other Civil Works	0.00		1.80%	0.00
Sub-Station Equipment	0.00		3.60%	18.90
Transmission Line	3766.28		2.57%	96.79
PLCC	0.00		6.00%	0.00
Total	3766.28	3766.28		
Weighted Average Rate of Depreciation			2.57%	

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

(Rs. in lakh)

		2003-04
Rate of Depreciation	2.57%	
Depreciable Value (90% of the Gross Block)	3389.65	
Balance Useful life of the asset		
Remaining Depreciable Value		3389.65
Depreciation		32.26

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. 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.

23. The petitioner has not claimed Advance Against Depreciation. Accordingly, its entitlement under this head is `nil`.

OPERATION & MAINTENANCE EXPENSES

24. 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:

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.

25. The normalised O & M expenses for Eastern Region have been calculated separately in a number of cases. The following table gives comparison of the normative O&M expenses as calculated by the petitioner and as allowed for the base year 1999-2000 and afterwards:

NORMALIZED O&M EXPENSES FOR EASTERN REGION

(Rs. in lakh)

S. NO.	Items	1995-96	1996-97	1997-98	1998-99	1999-00	Total for five years 95-96 to 99-00	1999-00	2000-01	2001-02	2002-03	2003-04
1	Total O&M expenses(Rs. Lakhs)	2529.29	2601.18	3586.76	4261.31	4490.56						
2	Abnormal O&M expenses	0.00	23.33	0.68	24.78	143.56	192.35					
3	Normal O&M expenses (S.No. 1 -S.NO. 2)	2529.29	2577.85	3586.08	4236.53	4347.00						
4	OML (O&M for lines)= 0.7 X S. NO.3	1770.50	1804.49	2510.25	2965.57	3042.90	12093.71					
5	OMS (O&M for substation) = 0.3XS.NO.3	758.79	773.35	1075.82	1270.96	1304.10	5183.02					
6	Line length at beginning of the year in Kms.	4418.70	4418.70	4418.70	4482.70	4665.70						
7	Line length added in the year in Kms.	0.00	0.00	64.00	183.00	86.00						
8	Line length at end of the year in Kms.	4418.70	4418.70	4482.70	4665.70	4751.70						
9	LL (Average line length in the Region)	4418.70	4418.70	4450.70	4574.20	4708.70	22571.00					
10	NO. of bays at beginning of the year	76	88	88	90	92						
11	NO. of bays added in the year	12	0	2	2	1						
12	NO. of bays at the end of the year	88	88	90	92	93						
13	BN (Average number of bays in the Region)	82.0	88.0	89.0	91.0	92.5	442.50					
14	AVOMLL(OML/LL)	0.40	0.41	0.56	0.65	0.65	2.668					
15	AVOMBN(OMS/BN)	9.25	8.79	12.09	13.97	14.10	58.194					
16	NOMLL(allowable O&M per unit of line length)			0.5335	0.5869	0.6456		0.6456	0.6843	0.7254	0.7689	0.8150
17	NOMBN(Allowable O&M per bay)			11.6389	12.8028	14.0831		14.0831	14.9280	15.8237	16.7731	17.7795
18	NOMLL(as calculated by petitioner)			0.6000				0.7300	0.7700	0.8200	0.8700	0.9200
19	NOMBN(as calculated by petitioner)			13.0500				15.7900	16.7400	17.7400	18.8000	19.9300

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

27. The petitioner has claimed O&M expenses for 102 ckt Km of line length, which have been considered for calculation of O&M expenses.

28. O&M expenses allowed are given hereunder:

2003-04		
Line length in ckt.km	No. of bays	O&M expenses (Rs. in lakh)
102 Km	0	27.71

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. 526.28 lakh has been considered. Accordingly, the petitioner shall be entitled to return on equity of Rs. 28.07 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. Deduction on account 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%, based on annual SBI PLR 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	37.66
Less Capitalised Initial Spares	0.00
	37.66
O & M expenses	6.93
Receivables	98.69
Total	143.28
Rate of Interest	10.50%
Interest	5.01

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	104.33
Interest on Working Capital	5.01
Depreciation	32.26
Advance against Depreciation	0.00
Return on Equity	28.07
O & M Expenses	27.71
Total	197.38

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 rupees five 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. The petitioner shall also recover an amount of Rs. 90,772/- from the respondents in one installment in the ratio of other transmission charges for the expenditure incurred on publication of notices.

34. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's order dated 14.2.2003. 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 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. 131/2002 as also I.A.No. 27/2006.

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

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

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

**sd-/
(ASHOK BASU)
CHAIRPERSON**

New Delhi dated the 9th May 2006