CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

Coram:

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

Petition No. 188/2004

In the matter of

Approval for transmission tariff for Khammam-Nagarjunasagar 400 kV S/C transmission line alongwith extension of Khammam & Nagarjunasagar 400/220 kV substations under scheme for strengthening of Grid System and evacuation of power from Ramgundam Stage-III in Southern Region for the period up to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd.

Petitioner

. . . .

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

The following were present:

- 1. Shri M.M. Mondal, CM(Fin.), PGCIL
- 2. Shri U.K. Tyagi, PGCIL
- 3. Shri C. Kannan, PGCIL
- 4. Shri S. Sowmynarayanan, Consultant, TNEB

ORDER (DATE OF HEARING: 21.6.2005)

The petitioner has filed this present petition for approval of transmission tariff for Khammam-Nagarjunasagar 400 kV S/C transmission line along with extension of Khammam and Nagarjunasagar 400/220 kV sub-stations under scheme for strengthening of Grid System and evacuation of power from Ramgundam Stage-III in Southern Region for the period up to 31.3.2004. The tariff is to be regulated 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 system was accorded by the Central Government in Ministry of Power as per letter dated 29.8.2001 at an estimated cost of Rs. 39012.00 lakh (4th quarter 2000 price level), including IDC of Rs. 4204.00 lakh. The scope of work included:

(A) Transmission Line

- (i) Ramagundam-Hyderabad 400 kV D/C transmission line -200 KM
- (ii) Hyderabad-Kurnool-Gooty 400 kV S/C transmission line -300 KM
- (iii) Gooty-Nelamangala 400 kV S/C transmission line with 50 MVAR line reactor at Nelamangala end -250 KM
- (iv) Khammam-Nagarjunasagar 400 kV S/C transmission line -150 KM

(B) Sub-stations

- (i) Extension of Hyderabad 400/220 kV sub-station
- (ii) Extension of Kurnool 400/220 kV sub-station
- (iii) Extension of Gooty 400/220 kV sub-station
- (iv) Extension of Nelamangala 400/220 kV sub-station (KEB)
- (v) Extension of Khammam 400/220 kV sub-station
- (vi) Extension of Nagarjunasagar 400/220 kV sub-station
- (C) Capacitors 375 MVAR

3. In the present petition, the petitioner seeks approval of tariff in respect of the following transmission assets, whose apportioned approved cost is stated to be Rs. 5768.00 lakh:

Transmission Line

Khammam – Nagarjunasagar 400 kV S/C transmission line

Sub-stations

(i) Extension of Khammam 400/220 kV sub-station, and

(ii) Extension of Nagarjunasagar 400/220 kV sub-station.

4. The actual date of commercial operation of the above transmission assets is 1.3.2004. The estimated completion cost of the transmission assets covered in the present petition is stated to be Rs.5275.48 lakh. The petitioner has sought approval of transmission charges based on cost of Rs.4743.11 lakh as on 31.3.2004 as under:

(Rs. in lakh)

	2003-2004
Interest on Loan	12.21
Interest on Working Capital	1.17
Depreciation	10.60
Advance Against Depreciation	0.00
Return on Equity	11.30
O & M Expenses	9.94
Total	45.22

5. 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.

6. The details in support of interest on working capital submitted by the petitioner are extracted below:

	(Rs in lakh)
2003-2004	
	37.08
	9.94
	90.45
	137.47
	10.25%
	14.09
	1.17
	2003-2004

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CAPITAL COST

7. 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 then 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.

8. As per the auditor's certificate furnished by the petitioner on 22.9.2004, the estimated completion cost of the transmission line is Rs 5275.48 lakh. Based on the audited expenditure details submitted by the petitioner, the gross block, including IDC of Rs 179.48 lakh (indicated in the Auditor's certificate), is worked out as under:

Expenditure up to the date of commercial operation		
(1.3.2004)	:	Rs 4586.99 lakh
Gross block on the date of commercial operation	:	Rs 4586.99 lakh
Expenditure from the date of commercial operation		
to 31.3.2004	:	Rs 156.12 lakh
Gross block as on 31.3.2004	:	Rs 4743.11 lakh
Balance anticipated Expenditure	:	Rs 532.37 lakh
Total Estimated completion cost	:	Rs 5275.48 lakh

(The above includes initial spares of the value of Rs. 47.84 lakh)

Time Overrun

9. As per original investment approval accorded by the Central Government the assets were scheduled for commissioning by August 2005. However, the transmission assets have been declared under commercial operation w.e.f. 1.3.2004 as per the decision of the 10th Standing Committee meeting of Power System Planning in Southern Region. Thus, there has not been time overrun.

Cost Overrun

10. There is no cost overrun as it is seen that the estimated completion cost of the transmission scheme (Rs. 5275.48 lakh) is less than the apportioned approved cost (Rs.5768.00 lakh). There is, in fact, reduction in cost by Rs. 492.00 lakh.

Gross Block

11. For the purpose of computation of tariff, the gross block of Rs 4586.99 lakh as on the date of commercial operation as per the auditor's certificate submitted by the petitioner has been considered.

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. The petitioner has claimed additional capital expenditure for the period on or after the date of commercial operation in the present petition as per para 8 above. This additional expenditure is less than 20% of the apportioned approved cost. Accordingly, the additional capitalisation has not been considered in the present petition.

SOURCES OF FINANCING: DEBT – EQUITY RATIO

14. 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.

15. Debt-equity ratio or financial package for the entire transmission system noted at para 2 above is 80:20, though debt equity ratio for assets 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 83.22:16.78. Since the 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. Based on this ratio, a total loan of Rs.3817.27 lakh and equity of Rs.769.72 lakh, as on the date of commercial operation, are being considered.

INTEREST ON LOAN

16. 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.

17. In the calculation, the interest on loan has been worked by considering the gross amount of loan, repayment of instalments etc and rate of interest etc. as per the loan details for the assets commissioned after 31.3.2003 submitted by the petitioner.

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

(Rs in lakh)		
Details of Loan	2003-04	
No.of days in the Year	366	
Bond-X		
Gross Loan -Opening	15.00	
Additions during the year	0.00	
Cumulative Repayment upto Previous	0.00	
Year/DOCO		
Net Loan-Opening	15.00	
Repayment during the year	0.00	
Net Loan-Closing	15.00	
Rate of Interest	10.90%	
Interest	0.14	
Repayment Schedule	12 Annual	
	Instalments from	
	21.06.2004	
Bond XIII (Option-I)		
Gross Loan -Opening	412.00	
Additions during the year	0.00	
Cumulative Repayment upto Previous	0.00	
Year/DOCO		
Net Loan-Opening	412.00	
Repayment during the year	0.00	
Net Loan-Closing	412.00	
Rate of Interest - Bond XIII -Option-II	8.63%	
Interest	3.01	
Repayment Schedule	12 Annual	
	Instalments from	
	31.07.2006	
Bond-XI Option I		
Gross Loan -Opening	16.00	
Additions during the year	0.00	
Cumulative Repayment upto Previous	0.00	
Year/DOCO		
Net Loan-Opening	16.00	
Repayment during the year	0.00	
Net Loan-Closing	16.00	
Rate of Interest	9.80%	

Interest	0.13
Repayment Schedule	12 Annual Instalments from 07.12.2005
Oriental Bank of Commerce	
Gross Loan -Opening	7.00
Additions during the year	0.00
Cumulative Repayment upto Previous Year/DOCO	0.00
Net Loan-Opening	7.00
Repayment during the year	0.00
Net Loan-Closing	7.00
Rate of Interest (Floating)	8.60%
Interest	0.05
Repayment Schedule	12 Annual Instalments from 22.03.2005
PNB-II	
Gross Loan -Opening	9.00
Additions during the year	0.00
Cumulative Repayment upto Previous Year/DOCO	0.00
Net Loan-Opening	9.00
Repayment during the year	0.00
Net Loan-Closing	9.00
Rate of Interest (Floating)	8.60%
Interest	0.07
Repayment Schedule	12 Annual Instalments from 08.03.2005
Bond-XII	
Gross Loan -Opening	1.00
Additions during the year	0.00
Cumulative Repayment upto Previous Year/DOCO	0.00
Net Loan-Opening	1.00
Repayment during the year	0.00
Net Loan-Closing	1.00
Rate of Interest	9.70%
Interest	0.01
Repayment Schedule	12 Annual Instalments from 28.03.2006
ADB-II uv	
	47 70
Gross Loan -Opening	47.79

Additions during the year	0.00
Cumulative Repayment upto Previous	0.00
Year/DOCO	0.00
Net Loan-Opening	47.79
Repayment during the year- 15 th June	0.00
	47.79
Repayment during the year- 15 th December	0.00
Net Loan-Closing	47.79
Rate of Interest (Floating)	7.51%
Interest	0.30
Repayment Schedule	Equal Half yearly
	instalments from
	15.06.2006
ADB-II Ib	
Gross Loan -Opening	3309.49
Additions during the year	0.00
Cumulative Repayment upto Previous	0.00
Year/DOCO	
Net Loan-Opening	3309.49
Repayment during the year- 15 th June	0.00
the second se	3309.49
Repayment during the year- 15 th December	0.00
Net Loan-Closing	3309.49
Rate of Interest (Floating)	3.03%
Interest	8.49
Repayment Schedule	Equal Half yearly
	instalments from
	15.06.2006
Total Loan	
	3817.27
Gross Loan -Opening	
Additions during the year	0.00
Cumulative Repayment upto Previous Year/DOCO	0.00
Net Loan-Opening	3817.27
Repayment during the year	0.00
Net Loan-Closing	3817.27
Interest	12.21

19. It is noted that certain loans are carrying floating rate of interest and the interest rate as submitted by the petitioner stated to be prevailing on the date of commercial operation has been taken into consideration. Any change/resetting of interest rate during the tariff period covered in this petition would be settled mutually between the parties

and in case of their inability to do so, either of them may approach the Commission for appropriate relief.

DEPRECIATION

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

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

22. Based on the provisions of the notification dated 26.3.2001, the depreciation for individual items of capital expenditure considered for computation of tariff has been calculated on the capital cost as on the date of commercial operation as indicated at para 11 above at the rates as prescribed in the notification. While approving depreciation component of tariff, the weighted average depreciation rate has been worked out, as shown below:

	Capital Cost	Approved cost	Rate of Depreciation	Depreciation
Capital Expenditures as on 1.3.2004				
Land	0.00		0%	0.00
Building & Other Civil Works	0.00		1.80%	0.00
Sub-Station Equipment	598.48		3.60%	21.55
Transmission Line	3953.92		2.57%	101.62
PLCC	34.59		6.00%	2.08
Total	4586.99	5768.00		125.25
Weighted Average Rate of Depreciation			2.73%	

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

		(Rs. in lakh)
		2003-04
Rate of Depreciation	2.73%	
Depreciable Value (90% of the		
Gross Block)	4128.29	
Balance Useful life of the asset		
Remaining Depreciable Value		4128.29
Depreciation		10.44

ADVANCE AGAINST DEPRECIATION

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

25. The petitioner has not claimed Advance Against Depreciation.

26. 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 22 above has been considered. 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)	318.11
Scheduled Repayment of the Loan(s)	0.00
Minimum of the above	0.00
Depreciation during the year	10.44
Advance Against Depreciation	0.00

OPERATION & MAINTENANCE EXPENSES

27. 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 substation (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.

28. 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 number of other petitions. These are extracted below:

NORMALIZED O&M EXPENSES FOR SOUTHERN REGION

									(Rs. in l				-
S. NO.	Items	1995-96		6-97	1997-98	1998-99	1999-2000	Total for five years 1995-1996 to 1999-00	1999-00	2000-01	2001-02	2002-03	2003-04
1	Total O&M expenses (Rs. lakhs)		2220.2	5	3330.40	3724.36	4701.71						
2	Abnormal O&M expenses	0.00	0.00		0.00	0.00	0.00						
	Normal O&M expenses (S.No. 1 -S.NO. 2)		2220.2	5	3330.40	3724.36	4701.71						
4	OML (O&M for lines)= 0.7 X S. NO.3	1490.88	1554.1	7	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	5839.7	1	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	5839.7	1	6034.71	6190.71	6847.04						
9	LL (Average line length in the Region)	5709.23	5839.7	1	5937.21	6112.71	6518.88	30117.74					
	NO. of bays at beginning of the year		71		74	76	80						
11	NO. of bays added in the year	5	3		2	4	26						
	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		0.26	0.27		0.39	0.43	0.50	1.851					
15	· · · · · · · · · · · · · · · · · · ·	9.33	9.19		13.32	14.32	15.17	61.328	1			T	
16	NOMLL(Allowable O&M	per unit o	f line lei	ngth)	0.3703	0.4073	0.4480		0.4480	0.4749	0.5034	0.5336	0.5656
17	NOMBN(Allowable O&N	l per bay)			12.2656	13.4921	14.8413		14.8413	15.7318	16.6757	17.6763	18.7368
	NOMLL(As calculated b				0.4200				0.51	0.54	0.57	0.60	0.64
	NOMBN(As calculated b	by petition	er)		13.9100				16.83	17.84	18.91	20.04	21.24

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29. 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 as explained in the respective orders for computation of normative values.

30. The petitioner has claimed O&M expenses for 144.58 ckt Kms of line length and 2 bays, which have been considered for calculation of O&M expenses.

31. O&M expenses allowed are given hereunder:

		2003-04	
Line length in ckt.km	No. of bays	O&M expenses (Rs. in lakh)	
144.58	2	9.94	

32. In our calculations the escalation factor of 6% per annum has been used. In accordance with the notification. The Commission in its order dated 28.2.2005 in petition No 196/2004 (suo motu) has decided the actual escalation factor applicable against the normative escalation factor of 6%. O&M expenses approved in this order shall be re-adjusted based on the actual escalation factor.

RETURN ON EQUITY

33. 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 769.72 lakh as on the date of commercial operation has been considered. On the

above basis, the petitioner shall be entitled to return on equity of Rs 10.26 lakh during 2003-04.

INTEREST ON WORKING CAPITAL

34. 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%.

35. 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 year 2003-04 have been worked out on the basis of capital expenditure up to the date of commercial operation, and after deduction of 1/5th of the initial capitalised spares therefrom. The petitioner has claimed interest on working capital at the rate of 10.25%, based on annual SBI PLR applicable on the date of commercial operation. This 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%	45.87
Less Capitalised Initial Spares		9.57
		36.30
O & M expenses		9.94
Receivables		87.98
Total		134.23
Rate of Interest		10.25%
Interest		1.15

TRANSMISSION CHARGES

36. 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	12.21
Interest on Working Capital	1.15
Depreciation	10.44
Advance against Depreciation	0.00
Return on Equity	10.26
O & M Expenses	9.94
Total	43.99

37. 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. 38. 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.

39. 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.

40. 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.

41. This order disposes of Petition No.188/2004.

Sd/-	Sd/-	Sd/-	Sd/-
(A.H.JUNG)	(BHANU BHUSHAN)	(K.N. SINHA)	(ASHOK BASU)
MEMBER	MEMBER	MEMBER	CHAIRMAN

New Delhi dated the 18th August 2005