

**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.132/2002**

**In the matter of**

Approval of transmission tariff for (A) HVDC terminal station at Talcher and Kolar related with Pole-II, (B) 400 kV D/C Kolar-Hossur transmission line along with associated bays at Kolar and Hossur and (C) 400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet etc. under transmission system associated with Talcher Super Thermal Power Station Stage-II 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 of transmission tariff for (A) HVDC terminal station at Talcher and Kolar related with Pole-II, (B) 400 kV D/C Kolar-Hossur transmission line along with associated bays at Kolar and Hossur, and (C) 400 kV S/C Salem-Udumalpet transmission line along with the associated bay extensions

at Salem and Udumalpet etc. under transmission system associated with Talcher Super Power Station Stage-II for the period 1.3.2003 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 associated with Talcher Super Thermal Power Station Stage-II was accorded by the Central Government in Ministry of Power as per letter dated 9.2.2000 at an estimated cost of Rs.386561.00 lakh (2<sup>nd</sup> quarter 1998 price level), including IDC of Rs. 39107.00 lakh. The scope of work included:

#### **Transmission Lines**

- (i) Talcher-Kolar  $\pm$  500 kV, 2000 MW HVDC bi-pole,
- (ii) Kolar-Hoody 400 kV D/C with Quad. Bersimis conductor,
- (iii) Kolar-Madras 400 kV S/C line,
- (iv) Kolar-Hosur 400 kV D/C line,
- (v) Hossur-Salem 400 kV S/C line,
- (vi) Salem-Udumalpet 400 kV S/C line, and
- (vii) LILO of Cuddapah – Somanahalli 400 kV S/C at Kolar.

#### **Sub-stations**

- (i) Talcher Converter Station (New),
- (ii) Kolar Converter Station (New) with 4x167 MVA, 400/220 kV single phase transformers,
- (iii) Extension of existing 400/220 kV Hoody sub-station of Karnataka, Power Transmission Corporation Ltd,
- (iv) Hossur 400/220 kV sub-station with 2x315 MVA transformer (New),
- (v) Extension of existing 400/220 kV Salem sub-station of POWERGRID,
- (vi) Extension of existing 400/220 kV Udumalpet sub-station of POWERGRID, and
- (vii) Extension of existing 400 kV Madras sub-station of POWERGRID.

3. The apportioned approved cost for the different assets covered in the present petition as indicated by the petitioner are as under:

Particulars	Apportioned Approved cost (Rs in lakh)
HVDC terminal station at Talcher and Kolar related to Pole-II	70542.00
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	12716.00
400 k V S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	

4. The dates of commercial operation of different assets as given by the petitioner are as hereunder:

HVDC terminal station at Talcher and Kolar related to Pole-II	1.3.2003
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	1.4.2003
400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	1.6.2003

5. The petitioner, in the present petition, has sought approval for transmission charges from the date of commercial operation of the respective transmission asset to 31.3.2004 as under:

	(Rs. in lakh)			
	HVDC terminal station at Talcher and Kolar related Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	
	2002-2003 (1.3.2003 to 31.3.2003)	2003-2004	2003-2004	2003-2004 (1.6.2003 to 31.3.2004)
Interest on Loan	295.58	3521.14	379.84	280.24
Interest on Working Capital	14.70	185.40	23.91	17.56
Depreciation	197.32	2484.43	143.21	117.46
Advance Against Depreciation	0.00	0.00	0.00	0.00
Return on Equity	189.62	2446.79	210.53	193.81
O & M Expenses	26.76	340.40	163.60	102.91
<b>Total</b>	<b>723.98</b>	<b>8978.16</b>	<b>921.00</b>	<b>711.98</b>

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

(Rs. in lakh)

	HVDC terminal station at Talcher and Kolar related to Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	
	2002-03 (1.3.2003 to 31.3.2003)	2003-04	2003-04 (1.6.2003 to 31.3.2004)	
Spares	128.50	160.76	50.25	48.00
O & M expenses	26.76	28.37	13.63	10.29
Receivables	1447.97	1496.36	153.50	142.40
<b>Total</b>	<b>1603.23</b>	<b>1685.49</b>	<b>217.38</b>	<b>200.69</b>
Rate of Interest	11.00%	11.00%	11.00%	10.50%
<b>Interest</b>	176.36	185.40	23.91	21.07
<b>Interest (pro rata)</b>	14.70	185.40	23.91	17.56

7. 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**

8. 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.

9. As per the auditor's certificate furnished by the petitioner on 22.9.2004, the actual completion cost of the transmission assets is worked out as under and the petitioner has claimed tariff accordingly:

(Rs in lakh)			
	HVDC terminal station at Talcher and Kolar related Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet
Expenditure up to the date of commercial operation	64872.07 (1.3.2003)	5246.92 (1.4.2003)	4844.62 (1.6.2003)
Gross block on date of commercial operation	64872.07	5246.92	4844.62
Expenditure from date of commercial operation to 31.3.2003	1731.49	N.A.	N.A.
Gross block as on 31.3.2003	66603.56	5246.92	N.A.
Expenditure from 1.4.2003 to 31.3.2004	10.38	69.16	744.93(1.6.2003 to 31.3.2004)
Gross block as on 31.3.2004	66613.94	5316.08	5589.55
Balance anticipated expenditure	680.98	22.20	-
Total estimated completion cost	67294.92	5338.28	5589.55
Initial spares included up to the date of commercial operation	2644.37	24.02	24.01

10. The respondent, TNEB has raised an objection that reduction in IDC is not in proportion to the reduction in the loan taken and reduction in the capital cost as per original and amended petition. In this connection, the petitioner has submitted that the amended petition is based on the actual utilisation of loan and prevailing interest rates.

11. The respondent, TNEB has raised a further objection that amounts of Rs.338.40 lakh and 302.14 lakh have been included towards building and PLCC equipment respectively in respect of Pole-II in the amended petition, which was not considered in the original petition. The petitioner has submitted that the cost of PLCC was inadvertently included under the 'sub-station' head and after finalisation of the accounts, the assets

were capitalised under different heads, building, sub-station and PLCC and the expenditure is correctly reflected in the amended petition.

12. The reasons given by the petitioner are found to be in order.

13. For the purpose of computation of tariff, the gross block as on the respective date of commercial operation as per the auditor's certificate submitted by the petitioner and tabulated under para 9 above, has been considered.

#### **ADDITIONAL CAPITALISATION**

14. 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.

15. The petitioner has claimed additional capital expenditure for the period on or after the date of commercial operation. 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**

16. 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. Ministry of Power while according the administrative

approval had not specified the debt-equity ratio for financing the project. The petitioner has claimed tariff by taking actual debt and equity ratio. This is not opposed by the respondents. Therefore, the same debt-equity ratio has been considered for determination of tariff in the present petition. The necessary details of debt-equity ratio, amounts of loan and equity considered for determination of tariff are extracted below:

(Rs in lakh)

	Debt: Equity Ratio	Debt	Equity	Total
HVDC terminal station at Talcher and Kolar related to Pole-II	79.41:20.59	52439.00	13433.07	64872.07
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	75.23:24.77	3947.00	1299.92	5246.92
400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	69.15:30.85	3350.00	1494.62	4844.62

### **INTEREST ON LOAN**

17. 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.

18. It is noted that the petitioner has submitted loan details for the assets commissioned after 31.3.2003. The loan reconciliation along with comments have been considered by the Commission.

19. In the loan reconciliation details, the petitioner has stated that in case of Salem-Udumalpet transmission line, Bonds XII to the extent of Rs. 17.00 lakh and Bonds XIII (Option 1) to the extent of Rs. 500.00 lakh allocated earlier to this asset have been refinanced with project- specific PSDP II/ IBRD II loan drawn subsequently. The PSDP II/ IBRD II has been claimed and accounted for on 31.3.2004, but actual disbursement was made by IBRD on 6.4.2004. These loans have not been considered as refinanced.

Further, PSDP II/ IBRD II loans bear floating interest rate and Bonds XII and XIII (Option 1) bear fixed interest rate.

20. In the calculation, the interest on loan has been worked out by considering the gross amount of loan, repayment of installments for the years 2002-2003 and 2003-2004 and rate of interest etc. as per the loan allocation details for the assets commissioned after 31.3.2004 as submitted by petitioner vide affidavit dated 18.5.2005.

21. The difference in the figures of interest on loan submitted by the petitioner is due to new loan considered by the petitioner and due to the difference in the repayment installment of KFW loan.

22. The detailed calculations in support of interest on loan allowed in tariff in respect of following assets are appended below:

(Rs in lakh)

		HVDC terminal station at Talcher and Kolar related Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	
	Details of Loan	2002-03	2003-04	2003-04	2003-04
	No. of days in the Year	365	366	366	366
	1) Bonds IX				
	Gross Loan -Opening	2526.00	2526.00	339.00	352.00
	Cumulative Repayment up to date pf commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	2526.00	2526.00	339.00	352.00
	Repayment during the year	0.00	252.60	33.90	35.20
	Net Loan-Closing	2526.00	2273.40	305.10	316.80
	Rate of Interest	12.25%	12.25%	12.25%	12.25%
	Interest	26.28	290.58	39.00	33.31
	Repayment Schedule	10 Annual Installments from 22.8.2003			

2	Bonds X				
	Gross Loan -Opening	4804.00	4804.00	644.00	671.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	4804.00	4804.00	644.00	671.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	4804.00	4804.00	644.00	671.00
	Rate of Interest	10.90%	10.90%	10.90%	10.90%
	Interest	44.47	523.64	70.20	60.95
	Repayment Schedule	12 Annual Installments from 21.06.2004			
3	Bonds XI Option 1				
	Gross Loan -Opening	3508.00	3508.00	470.00	490.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	3508.00	3508.00	470.00	490.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	3508.00	3508.00	470.00	490.00
	Rate of Interest	9.80%	9.80%	9.80%	9.80%
	Interest	29.20	343.78	46.06	40.02
	Repayment Schedule	12 Annual Installments from 07.12.2005			
4	Bonds XII				
	Gross Loan -Opening	247.00	247.00	33.00	34.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	247.00	247.00	33.00	34.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	247.00	247.00	33.00	34.00
	Rate of Interest	9.70%	9.70%	9.70%	9.70%
	Interest	2.03	23.96	3.20	2.75
	Repayment Schedule	12 Annual Installments from 28.03.2006			
5	Bonds XIII Option 1				
	Gross Loan -Opening	13015.00	13015.00	1210.00	500.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	13015.00	13015.00	1210.00	500.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	13015.00	13015.00	1210.00	500.00
	Rate of Interest	8.63%	8.63%	8.63%	8.63%
	Interest	95.39	1123.19	104.42	35.96
	Repayment Schedule	12 Annual Installments from 31.07.2006			
6	PNB - II				

	Gross Loan -Opening	1028.00	1028.00	627.00	653.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	1028.00	1028.00	627.00	653.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	1028.00	1028.00	627.00	653.00
	Rate of Interest	8.85%	8.85%	8.85%	8.85%
	Interest	7.73	90.98	55.49	48.16
	Repayment Schedule	12 Annual Installments from 08.03.2005			
7	OBC				
	Gross Loan -Opening	1616.00	1616.00	624.00	650.00
	Cumulative Repayment up to date of commercial operation	0.00	0.00	0.00	0.00
	Net Loan-Opening	1616.00	1616.00	624.00	650.00
	Repayment during the year	0.00	0.00	0.00	0.00
	Net Loan-Closing	1616.00	1616.00	624.00	650.00
	Rate of Interest	8.60%	8.60%	8.60%	8.60%
	Interest	11.80	138.98	53.66	46.58
	Repayment Schedule	12 Annual Installments from 22.03.2005			
8	KFW Hermis Loan (Fixed Rate)				
	Gross Loan -Opening	17519.67	17519.67	-	-
	Cumulative Repayment up to date of commercial operation	0.00	0.00	-	-
	Net Loan-Opening	17519.67	17519.67	-	-
	Repayment during the year	0.00	875.99	-	-
	Net Loan-Closing	17519.67	16643.68	-	-
	Rate of Interest	3.91%	3.91%	-	-
	Interest	58.25	685.71	-	-
	Repayment Schedule	Half yearly Installments for 10 years from 31.03.2004			
9	KFW Hermis Loan (Floating Rate)				
	Gross Loan -Opening	2921.41	2921.41	-	-
	Cumulative Repayment up to date of commercial operation	0.00	0.00	-	-
	Net Loan-Opening	2921.41	2921.41	-	-
	Repayment during the year	0.00	227.49	-	-
	Net Loan-Closing	2921.41	2693.92	-	-
	Rate of Interest	1.1725%	1.1725%	-	-
	Interest	2.91	34.25	-	-
	Repayment Schedule	Half yearly Installments for 10 years from 31.03.2004			

10	KFW Commercial Loan (Fixed Rate)				
	Gross Loan -Opening	3359.47	3359.47	-	-
	Cumulative Repayment up to date of commercial operation	0.00	0.00	-	-
	Net Loan-Opening	3359.47	3359.47	-	-
	Repayment during the year	0.00	175.45	-	-
	Net Loan-Closing	3359.47	3184.02	-	-
	Rate of Interest	5.54%	5.54%	-	-
	Interest	15.81	186.09	-	-
	Repayment Schedule	Half yearly Installments for 10 years from 31.03.2004			
11	KFW Commercial Loan (Floating Rate)				
	Gross Loan -Opening	894.45	894.45	-	-
	Cumulative Repayment up to date of commercial operation	0.00	0.00	-	-
	Net Loan-Opening	894.45	894.45	-	-
	Repayment during the year	0.00	52.34	-	-
	Net Loan-Closing	894.45	842.11	-	-
	Rate of Interest	2.0125%	2.0125%	-	-
	Interest	1.53	18.00	-	-
	Repayment Schedule	Half yearly Installments for 10 years from 31.03.2004			
	Total Loan				
	Gross Loan -Opening	51439.00	51439.00	3947.00	3350.00
	Cumulative Repayment up to Previous Year	0.00	0.00	0.00	0.00
	Net Loan-Opening	51439.00	51439.00	3947.00	3350.00
	Repayment during the year	0.00	1583.87	33.90	35.20
	Net Loan-Closing	51439.00	49855.12	3913.10	3314.80
	Interest	295.40	3459.15	372.03	267.72

### **DEPRECIATION**

23. 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.

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

25. 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 for each of the asset as on the respective date of commercial operation as indicated in the table at para 13 above 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.

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

(Rs. in lakh)					
Name of the Asset	Year	Rate of Depreciation	Depreciable Value (90% of Gross Block)	Remaining Depreciable Value	Depreciation
HVDC terminal station at Talcher and Kolar related to Pole-II	2002-03 (1.3.2003 to 31.3.2003)	3.60%	58384.86	58384.86	194.73
	2003-04			58190.14	2336.70
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	2003-04	2.60%	4722.23	4722.23	136.28
400 k V S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	2003-04 (1.6.2003 to 31.3.2004)	2.68%	4360.16	4360.16	108.35

### **ADVANCE AGAINST DEPRECIATION**

27. 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<sup>th</sup> of original loan amount minus depreciation as per schedule.

28. The petitioner has not claimed Advance Against Depreciation.

29. For working out Advance Against Depreciation, 1/12<sup>th</sup> 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)

	HVDC terminal station at Talcher and Kolar related to Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 k V S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	
	2002-03(1.3.2003 to 31.3.2003)	2003-04	2003-04 2003-04 (1.6.2003 to 31.3.2004)	
1/12th of Gross Loan(s)	4286.58	4286.58	328.92	279.17
Scheduled Repayment of the Loan(s)	0.00	1583.87	33.90	35.20
Minimum of the above	0.00	1583.87	33.90	35.20
Depreciation during the year	194.73	2336.70	136.28	108.35
<b>Advance Against Depreciation</b>	0.00	0.00	0.00	0.00

### **OPERATION & MAINTENANCE EXPENSES**

30. 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:

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

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

- (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.

31. The assets forming part of Talchar-Kolar HVDC Pole-II are inter-regional assets, being common to Eastern and Southern Regions. However, the benefits out of these assets are drawn by states in Southern Region. Accordingly, O&M expenses for these assets have been calculated with reference to O&M charges applicable to Southern Region.

32. 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**

S. NO.	Items	1995-96	1996-97	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)	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	<b>OML</b> (O&M for lines)= 0.7 X S. NO.3	1490.88	1554.17	2331.28	2607.05	3291.20	<b>11274.58</b>					
5	<b>OMS</b> (O&M for sub-station) = 0.3XS.NO.3	638.95	666.07	999.12	1117.31	1410.51	<b>4831.96</b>					
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	<b>30117.74</b>					
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	<b>387.00</b>					
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	<b>NOMLL(Allowable O&amp;M per unit of line length)</b>			<b>0.3703</b>	<b>0.4073</b>	<b>0.4480</b>		<b>0.4480</b>	<b>0.4749</b>	<b>0.5034</b>	<b>0.5336</b>	<b>0.5656</b>
17	<b>NOMBN(Allowable O&amp;M per bay)</b>			<b>12.2656</b>	<b>13.4921</b>	<b>14.8413</b>		<b>14.8413</b>	<b>15.7318</b>	<b>16.6757</b>	<b>17.6763</b>	<b>18.7368</b>
	<b>NOMLL(As calculated by petitioner)</b>			<b>0.4200</b>				<b>0.51</b>	<b>0.54</b>	<b>0.57</b>	<b>0.60</b>	<b>0.64</b>
	<b>NOMBN(As calculated by petitioner)</b>			<b>13.9100</b>				<b>16.83</b>	<b>17.84</b>	<b>18.91</b>	<b>20.04</b>	<b>21.24</b>

33. The differences in NOMLL and NOMBAN 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.

34. In the calculations the escalation factor of 6% per annum has been used, in accordance with the notification dated 26.3.2001. However, the escalation factor from the observed data has been computed by the Commission in its order dated 28.2.2005 in petition No. 196/2004. Therefore, O & M expenses approved in this order will be adjusted after applying the actual escalation factor as approved.

35. For the assets 400 kV D/C Kolar-Hossur transmission line along with associated bays at Kolar and Hossur, the petitioner claimed O&M expenses for four bays. However, vide affidavit dated 5.2.2004, the petitioner has made a submission to consider only two number of bays instead of four number of bays as these bays have been taken inadvertently by the petitioner. Therefore, only two bays have been considered for this asset. In respect of other assets, the line length and bays as claimed in the petition have been permitted.

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

(Rs. in lakh)

	2002-03 (1.3.2003 to 31.3.2003)			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)
HVDC terminal station at Talcher and Kolar related to Pole-II	-	17	25.04	0	17	318.53
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	-	-	-	138	2	115.52
400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	-	-	-	137.91	2	96.23

## **RETURN ON EQUITY**

37. 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 as on the date of commercial operation as given in the table under para 16 above, has been considered.

38. The petitioner has claimed return on equity on the basis of capital cost up to 31.3.2004. For the purpose of tariff, equity on the basis of the capital cost up to date of commercial operation has been considered as given below:

Name of the Asset	Equity	(Rs. in lakh) Return on equity	
		2002-03	2003-04
HVDC terminal station at Talcher and Kolar related to Pole-II	13433.07	179.11 (1.3.2003 to 31.3.2003)	2149.29
400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	1299.92	-	207.99
400 k V S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	1494.62	-	199.28 (1.6.2003 to 31.3.2004)

## **INTEREST ON WORKING CAPITAL**

39. 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 1/5<sup>th</sup> 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%.

40. In keeping with the methodology prescribed in the notification dated 26.3.2001, working capital has been worked out. In the calculation, maintenance spares have been worked out on the basis of capital expenditure on the date of commercial operation and after deduction of 1/5<sup>th</sup> of the initial capitalised spares therefrom. This has been escalated @ 6% per annum for the year 2003-04 in the case of HVDC terminal station at Talcher and Kolar. The petitioner has claimed interest on working capital at the rate of 11% and 10.50% stated to be based on annual SBI PLR for the respective year. Interest on working capital has been allowed by the Commission in certain other petitions at the rate as applicable on the date of commercial operation for the assets commissioned during 2001-02 to 2003-04 and, therefore, the same principle has been followed here also. The detailed calculations in support of interest on Working Capital are as under:

### Interest on Working Capital

(Rs. In lakh)

	HVDC terminal station at Talcher and Kolar related to Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 kV S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet
	2002-2003 (1.3.2003 to 31.3.2003)	2003-2004	2003-2004 (1.6.2003 to 31.3.2004)
<b>Maintenance Spares</b>	<b>648.72</b>	<b>651.96</b>	<b>52.47</b>
<b>Less Capitalised Initial spares</b>	<b>528.87</b>	<b>528.87</b>	<b>4.80</b>
	<b>119.85</b>	<b>123.09</b>	<b>47.67</b>
O & M expenses	25.04	26.54	9.63
Receivables	1416.53	14.05.14	142.21
Total	1561.41	1554.77	199.50
Rate of Interest	10.75%	10.75%	10.75%
<b>Interest</b>	<b>13.99</b>	<b>167.14</b>	<b>21.45</b>

## TRANSMISSION CHARGES

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

**TABLE**

(Rs. in lakh)

	HVDC terminal station at Talcher and Kolar related to Pole-II	400 kV D/C Kolar-Hossur transmission line, along with associated bays at Kolar and Hossur	400 k V S/C Salem-Udumalpet transmission line along with associated bay extension at Salem and Udumalpet	
	<b>2002-2003 (1.3.2003 to 31.3.2003)</b>	<b>2003-2004</b>	<b>2003-2004 (1.6.2003 to 31.3.2004)</b>	
Interest on Loan	295.40	3459.15	372.03	267.72
Interest on Working Capital	13.99	167.14	21.45	16.71
Depreciation	194.73	2336.70	136.28	108.35
Advance Against Depreciation	0.00	0.00	0.00	0.00
Return on Equity	179.11	2149.29	207.99	199.28
O & M Expenses	<b>25.04</b>	<b>318.53</b>	<b>115.52</b>	<b>96.23</b>
<b>Total</b>	<b>708.26</b>	<b>8430.81</b>	<b>853.26</b>	<b>688.29</b>

42. 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.

43. 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.

44. 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.

45. 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.

46. This order disposes of Petition No.132/2002.

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

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

**Sd/-**  
**(A.K.BASU)**  
**CHAIRMAN**

New Delhi dated the 3rd August 2005