

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. **Shri Ashok Basu, Chairman,**
2. **Shri G.S. Rajamani, Member**
3. **Shri K.N.Sinha, Member**

Petition No. 15/2002

In the matter of

Petition for approval of tariff for 400 kV D/C Singrauli-Vindhyachal transmission line along with (2 x 250 MW) HVDC back-to-back station at Vindhyachal in Northern Region and Western Region for the period 1.4.2001 to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd.

.... Petitioner

Vs

1. Rajasthan Rajya Vidyut Prasaran Nigam Ltd, Jaipur
2. Himachal Pradesh State Electricity Board, Shimla
3. Punjab State Electricity Board, Patiala
4. Haryana Vidyut Prasaran Nigam Ltd, Panchkula
5. Power Development Department, Govt. of J&K, Srinagar
6. Uttar Pradesh Power Corporation Ltd., Lucknow
7. Delhi Vidyut Board, New Delhi
8. Chandigarh Administration, Chandigarh
9. Uttaranchal Power Corporation Ltd., Dehradun
10. Madhya Pradesh State Electricity Board, Jabalpur
11. Maharashtra State Electricity Board, Mumbai
12. Gujarat Electricity Board, Vadodara
13. Electricity Department, Govt of Goa, Panaji, Goa
14. Electricity Department, Admn. of Dadra and Nagar Haveli, Silvassa
15. Electricity Department, Admn. Of Daman & Diu, Daman
16. Chhattisgarh State Electricity Board, Raipur

.....Respondents

The following were present:

1. Shri S. S. Sharma, PGCIL
2. Shri A.K. Nagpal, PGCIL
3. Shri S.K. Jain, Manager (Law), PGCIL
4. Shri R Prasad, PGCIL
5. Shri Mahesh Kumar, PGCIL
6. Shri R.K. Vohra, ED (CommI), PGCIL
7. Shri M.K. Kulshrestha, PGCIL
8. Shri R.N Pathak, ACE (CommI-LD), RVPNL
9. Shri K.K. Mitta, XEN (ISP), RVPNL

10. Shri R.K. Arora, XEN(Tariff), HVPNL
11. Shri Mahendra Kumar, EE, UPPCL
12. Shri D.D. Chopra, Advocate, UPPCL
13. Shri T.P.S Bawa, SE, PSEB
14. Shri Deepak K Shrivastava, EE (Comml), MPSEB

ORDER
(DATE OF HEARING: 13.12.2002)

In this petition, the petitioner, Power Grid Corporation of India Ltd has sought approval for tariff for 400 kV D/C Singrauli-Vindhyachal transmission line along with (2 x 250 MW) HVDC back-to-back station at Vindhyachal in Northern Region and Western Region for the period from 1.4.2001 to 31.3.2004 based on 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 approval for Central Transmission Project – I in Northern Region, Western Region and Southern Region was accorded by Ministry of Power vide its letter dated 7.1.1984 at a total capital investment of Rs.35485.00 lakh. However, a fresh approval for revised cost estimate of Rs.38805.00 lakh was accorded by the Central Government in Ministry of Power vide its letter dated 21.8.1987. The cost was further revised to Rs.51650.00 lakh vide its Ministry of Power letter dated 16.6.1993. The apportioned approved cost of different elements of the Central Transmission Project I is as given below:

	(Rs. in lakh)
a) Central Transmission Project A/C line (To be shared by Southern Regional Constituents)	27033.00
b) Ramagundam-Chandrapur line (To be shared by Southern Regional and Western Regional Constituents)	5295.00
c) Vindhyachal back-to-back HVDC station and Vindhyachal-Singrauli line (To be shared by Northern and Western Regional Constituents)	19322.00

3. In the present petition, we are concerned with approval of tariff in respect of Vindhyachal back-to-back HVDC station and Vindhyachal-Singrauli Transmission line which was declared under commercial operation with effect from 6.6.1989. The tariff in respect of this line was notified by the Central Government in Ministry of Power vide its notifications dated 20.7.1998, 16.11.1998 and 14.5.1999, valid up to 31.3.2002. The admitted capital cost of the transmission system as considered by Ministry of Power is Rs.16626.73 lakh. However, as the terms and conditions for determination of tariff notified by the Commission have come into effect on 1.4.2001, the transmission charges approved by Ministry of Power were rendered valid up to 31.3.2001. The present petition for approval of tariff for the period from 1.4.2001 to 31.3.2004 has been filed against the above backdrop.

4. Based on the above-noted facts, the petitioner has sought approval for transmission charges as under:

(Rs. in lakh)			
Transmission Tariff	2001-2002	2002-2003	2003-2004
Interest on Loan	2.38	0.00	0.00
Interest on Working Capital	63.71	67.72	67.87
Depreciation	629.64	629.64	629.64
Advance against Depreciation	0.00	103.06	0.00
Return on Equity	887.39	887.39	887.39
O & M Expenses	338.16	358.50	380.03
Total	1921.28	2046.31	1964.93

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.

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 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 the criterion for the fixation of tariff. Where the actual expenditure exceeds the approved project cost the excesses 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. As already noticed, the tariff for the Transmission System was notified by Ministry of Power by considering cost of Rs. 16625.73 lakh. Therefore, for the purpose of present petition, the capital cost as considered by Ministry of Power has been adopted as the base for computation of tariff by the Commission.

ADDITIONAL CAPITALISATION

8. 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 only 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.

9. The petitioner has not claimed any additional capital expenditure for the period after 01.04.2001 in the petition. Accordingly, the question of considering additional capitalisation does not arise.

EXTRA RUPEE LIABILITY

10. The notification dated 26.3.2001 provides that

- (a) Extra rupee liability towards interest payment and loan repayment actually incurred, in the relevant year shall be admissible; provided it directly arises

out of foreign exchange rate variation and is not attributable to Utility or its suppliers or contractors. Every utility shall follow the method as per the Accounting Standard-11 (Eleven) as issued by the Institute of Chartered Accountants of India to calculate the impact of exchange rate variation on loan repayment.

- (b) Any foreign exchange rate variation to the extent of the dividend paid out on the permissible equity contributed in foreign currency, subject to the ceiling of permissible return shall be admissible. This as and when paid, may be spread over the twelve-month period in arrears.

11. The petitioner has claimed FERV with the following method:

Outstanding loan as on 31.3.2001 (in foreign currency) X (exchange rate as on 31.3.2001 - exchange rate as on date of commercial operation/1.4.92)

12. We have considered the matter and followed the same principle ie as per para 11 above. FERV amount calculated in the above manner comes to Rs. 959.17 lakh as calculated below:

IBJ – II (Tranche D)	
Outstanding balance as on 31.03.2001 (in JPY lakh)	1420.19
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on 1.04.1992	0.235571
FERV on the outstanding loan as on 31.03.2001 (Rs. in lakh)	200.86
Commerz Bank (Tranche B&C IBJ-II replacement)	
Outstanding balance as on 31.03.2001 (in JPY lakh)	1629.04
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on 1.04.1992	0.235571
FERV on the outstanding loan as on 31.03.2001 (Rs. in lakh)	230.39
ING Bank (Tranche B&C IBJ-II replacement)	
Outstanding balance as on 31.03.2001 (in JPY lakh)	3732.76
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on 1.04.1992	0.235571
FERV on the outstanding loan as on 31.03.2001 (Rs. in lakh)	527.92
Total FERV = 200.86 + 230.39 + 527.92	959.17

13. As per Accounting Standard 11 of the Institute of Chartered Accountant of India, exchange difference arising out of repayment of liabilities incurred for the purpose of acquiring fixed assets, which are carried in terms of historical cost, should be adjusted in the carrying amount of the respective fixed assets. In other words, FERV as above should be added in the respective head of gross block, which was financed, from the foreign loan on which FERV is proposed to be allowed. As the above details are not available, FERV amount is allocated to all the heads of gross block in proportion to their ratio to the total gross block, though the petitioner has allocated FERV amount claimed on transmission line, sub-station and PLCC only.

14. The approval of FERV is subject to the condition that the petitioner shall furnish a certificate within four weeks of this order that there has been no drawl of the foreign loan after 01.04.1992 of the respective transmission elements claimed in the petition. If petitioner fails to submit the certificate within stipulated time, no amount on account of FERV would be allowed as pass through in tariff of concerned line.

15. The capital expenditure considered in the calculations for tariff is under:

	(RS. in lakh)
Capital expenditure up to 31.3.2001 as per previous tariff setting	16625.73
FERV up to 31.3.2001	959.17
Capital expenditure up to 31.3.2001 including FERV	17584.90
Additional Capital Expenditure after 31.3.2001	0.00
Total Capital expenditure considered for tariff determination	17584.90

SOURCES OF FINANCING. DEBT – EQUITY RATIO

16. 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. The petitioner has claimed tariff by taking debt and equity in the ratio of 50:50 of the net fixed assets as on 1.4.1997. It is pointed out on behalf of the respondents that taking debt and equity as claimed by the petitioner will result into higher return on equity (ROE). The respondents have submitted that equity of 20% should be considered for the purpose of fixation of tariff. In the present case, the assets were commissioned before 01.4.1997 and Ministry of Power while notifying tariff had considered debt and equity on notional basis in the ratio of 50:50 of the Net Fixed Assets as on 1.4.1997 in view of the notification dated 26.3.2001 dated 16.12.1997. Therefore, the debt-equity ratio of 50:50 as considered by Ministry of Power has been maintained for determination of tariff in the present petition. FERV allowed has been added to the loan and equity as on 01.04.2001 in the ratio of 50:50, in which the last tariff was determined by Ministry of Power.

INTEREST ON LOAN

17. 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 31.03.2001 has been taken as opening balance of the loan as on 1.4.2001. Repayment of the loan during the year has been worked out in accordance

with the following formula or as per the actual repayment during the year as claimed by the petitioner, whichever is higher:

Actual repayment during the year x normative net loan at the beginning of the year/ actual net loan at the beginning of the year.

18. Based on the above methodology, repayments of loan during 2001-2002 and 2002-2003 have been arrived at Rs. 359.16 lakh and Rs. 180.73 lakh respectively and have been considered. The loan gets liquidated during 2002-03 and as such no repayment during 2003-04 needs to be considered.

19. On the basis of actual rate of interest on actual average loans based on information available in the petition and the loan allocation details, the weighted rate of interest on loan has been worked out and the same has been applied on the normative average loan during the year to arrive at the interest on loan. The details of calculation of weighted average rate of interest are as given below:

Calculation of Weightage Average Rate of Interest

(Rs. in Lakh)

Details of Loan	2001-02	2002-03	2003-04
IBJ-II (Tranche D)			
Gross Loan -Opening ¹	1254.58	1254.58	1254.58
Cumulative Repayment up to the previous year	920.03	1087.31	1254.58
Net Loan-Opening	334.56	167.28	0.00
Repayment during the year	167.28	167.28	0.00
Net Loan-Closing	167.28	0.00	0.00
Average Loan	250.92	83.64	0.00
Rate of Interest	0.5225%	0.5225%	0.5225%
Interest	1.31	0.44	0.00
Repayment Schedule-Equal Half yearly	24.09.2001, 24.03.2002, 24.09.2002 and 24.03.2003		
Commerz Bank (Tranche B&C IBJ-II replacement)			

Gross Loan -Opening ¹	671.57	671.57	671.57
Cumulative Repayment up to Previous Year	287.82	479.69	671.57
Net Loan-Opening	383.75	191.88	0.00
Repayment during the year	191.88	191.88	0.00
Net Loan-Closing	191.88	0.00	0.00
Average Loan	287.82	95.94	0.00
Rate of Interest	1.73%	1.73%	1.73%
Interest	4.98	1.66	0.00
Repayment Schedule-Equal Half yearly	24.09.2001, 24.03.2002, 24.09.2002 and 24.03.2003		
ING Bank (Tranche B&C IBJ-II replacement)			
Gross Loan -Opening ¹	879.33	879.33	879.33
Cumulative Repayment up to the previous year	0.00	0.00	879.33
Net Loan-Opening	879.33	879.33	0.00
Repayment during the year	0.00	879.33	0.00
Net Loan-Closing	879.33	0.00	0.00
Average Loan	879.33	439.67	0.00
Rate of Interest	0.8475%	0.8475%	0.8475%
Interest	7.45	3.73	0.00
Repayment Schedule-Bullet on	24.03.2003		
Total Loan			
Gross Loan -Opening	2805.48	2805.48	2805.48
Cumulative Repayment up to the previous year	1207.84	1567.00	2805.48
Net Loan-Opening	1597.64	1238.48	0.00
Repayment during the year	359.16	1238.48	0.00
Net Loan-Closing	1238.48	0.00	0.00
Average Loan	1418.06	619.24	0.00
Rate of Interest	0.9691%	0.9403%	
Interest	13.74	5.82	0.00

¹ Amount of loan outstanding as on 31.03.1992 in the transferor books (as per the affidavit filed on 26.03.2003 on behalf of the petitioner)

20. On the basis of above details, interest on loan has been worked out as under:

	(Rs. in lakh)		
	2001-02	2002-03	2003-04
Gross Loan -Opening	5546.19	5546.19	5546.19
Cumulative Repayment up to the previous Year	5006.30	5365.46	5546.19
Net Loan-Opening	539.88	180.73	0.00
Repayment during the year	359.16	180.73	0.00
Net Loan-Closing	180.73	0.00	0.00
Average Loan	360.30	90.36	0.00
Rate of Interest	0.9691%	0.9403%	0.0000%
Interest	3.49	0.85	0.00

21. IBJ-II (Tranche D) and ING Bank (Tranche B&C IBJ-II replacement) loan carry floating rate of interest and the interest rate as submitted by the petitioner stated to be prevailing as on 01.04.2001 has been taken in the calculation. In view of the above, any change/resetting of the interest rate of the above loan during the tariff period covered in this petition would require settlement of the same mutually between the parties. In case the parties are unable to resolve the issue, any one of them may approach the Commission for appropriate decision.

DEPRECIATION

22. 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.

23. The petitioner has claimed the depreciation on the capital expenditure in accordance with above principles.

24. It is noted that repayment of the entire notional loan considered for tariff calculation is over in the year 2003-04. Therefore, depreciation for the year 2003-04 is to be calculated by spreading the same over the balance useful life of the asset.

25. The assets had thus been in operation for about 12 years as on 1.4.2001. As per the notification dated 26.3.2001, the useful life of the transmission line at 66 kV and above is 35 years, for sub-station equipment 25 years. The life prescribed for communication equipment is (PLCC) is 15 years and that of building is 50 years. The assets covered in the present petition are transmission lines, sub-stations and the communication equipment. Therefore, the useful life of the transmission system is to be the average life of all the assets. The weighted average life of the transmission system has been calculated by taking the completion cost of the different assets as given below:

Item	Completion cost (Rs in lakh)	Useful life (Years)
Transmission Line	203.00	35
Sub-station	16324.73	25
PLCC	13.00	15
Building	85.00	50

Weighted Average Life = $203 \times 35 + 16324.73 \times 25 + 13 \times 15 + 85 \times 50$ /
 $(203 + 16324.73 + 13 + 85) = 25.24$ years (Say, 25 years)

26. The balance useful life as on 1.4.2001 has thus been arrived at 13 (25 - 12) years.

27. Based on the above, the depreciation for individual items of capital expenditure has been calculated on the capital cost of Rs. 17584.90 lakh at the rates as prescribed in the notification dated 26.3.2001. While approving depreciation component of tariff, the weighted average depreciation rate of 3.58% has been worked out. For working out cumulative depreciation, the depreciation as per considered by Ministry of Power for the previous tariff setting has been taken into consideration. The break up of the capital cost has been considered as per the details furnished by the petitioner. The necessary calculations in support of calculation of weighted average rate of depreciation are as under:

	Total	FERV UP TO 31.3.2001	Total Cost including FERV	Approved capital cost	Rate of Depreciation	Depreciation
Capital Expenditure as on 31.03.2001						
Land	0.00	0.00	0.00		0%	0.00
Building & Other Civil Works	85.00	4.90	89.90		1.80%	1.62
Transmission Line	203.00	11.71	214.71		2.57%	5.52
Sub-Station Equipments	16324.73	941.80	17266.53		3.60%	621.60
PLCC	13.00	0.75	13.75		6.00%	0.82
Total	16625.73	959.17	17584.90	19322.00		629.56
Weighted Average Rate of Depreciation	16625.73	959.17				3.58%

28. The calculations in support of depreciation allowed are appended hereinbelow:

(Rs. in lakh)

		2001-02	2002-03	2003-04
Rate of Depreciation	3.58%			
Depreciable Value	15826.41			
Balance Useful life of the asset	13.00	13.00	12.00	11.00
Remaining Depreciable Value		4153.30	3523.75	2894.19
Depreciation		629.56	629.56	263.11

ADVANCE AGAINST DEPRECIATION

29. 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 1/12th of original loan amount minus depreciation as per schedule.

30. The petitioner has claimed advance against depreciation on the basis of

- (i) 1/12th of gross loan worked out from 50% of the gross block as was admitted by Ministry of Power along with capitalisation of FERV claimed,
- (ii) repayment of actual loans (excluding notional loan arising out of FERV claimed as per para 2 above) during the year, and
- (iii) depreciation as claimed in the petition.

31. For working out Advance against depreciation, 1/12th of the notional loan has been considered while repayment of loan as worked out at para 16 above has been taken as repayment of the loan during the year. The petitioner is entitled to Advance Against Depreciation as calculated below:

Advance Against Depreciation	2001-02	2002-03	2003-04
1/12th of Gross Loan(s)	462.18	462.18	462.18
Scheduled Repayment of the Loan(s)	359.16	180.73	0.00
Minimum of the above	359.16	180.73	0.00
Depreciation during the year	629.56	629.56	263.11
Advance Against Depreciation	0.00	0.00	0.00

OPERATION & MAINTENANCE EXPENSES

32. The subject matter of the present petition form the inter-regional assets shared by Northern and Western Regions. The petitioner has however, claimed O & M expenses applicable to Northern Region. Accordingly, O & M expenses as calculated for Northern Region have been considered for tariff purposes.

33. 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.

34. The different elements of Operation & Maintenance expenses have been considered in the succeeding paragraphs in the light of provisions of the notification dated 26.3.2001 based on the data available since 1995-96.

Employee Cost

35. The petitioner has, inter alia, claimed incentive and *ex gratia* as a part of employee cost. The petitioner was asked to specify the amount of minimum statutory bonus paid to its employees under the Payment of Bonus Act. The petitioner vide its affidavit dated 6.2.2003 has stated that the incentive paid to employees does not include minimum statutory bonus. The petitioner has further stated that the *ex gratia* was being paid in lieu of bonus, as is customary and a normal practice followed in private and public sectors. The petitioner has also furnished a write-up on Incentive scheme in support of the claim. It has been clarified on behalf of the petitioner that even the top management of the petitioner company is paid incentive and *ex gratia* included as a part of employee cost in O&M expenses claimed. The payment of incentive other than the statutory minimum bonus is at the discretion of the petitioner company and should be borne out of its profits or incentive earned from the respondents for higher availability of the Transmission System. In view of the above, the incentive and *ex gratia* payments made by the petitioner to its employees have been kept out of consideration for calculation of employee cost.

36. The petitioner was directed to furnish details of the arrears on account of pay and allowances for the period prior to 1995-96, but paid between 1995-96 to 1999-2000. The petitioner has submitted the details of such arrears, amounting to Rs. 14.99 lakh and Rs 19.33 lakh paid for Northern Region during 1995-96 and 1996-97. Similarly, the arrears for the previous years included in the employee cost for 1995-96 and 1996-97 for Corporate Office were stated to be Rs. 9.61 lakh and Rs. 35.60 lakh. The petitioner has also submitted that the arrears on account of pay revision from 01.01.97 to 31.03.2000 have been paid during the years 2000-01 and 2001-02 also. The amounts of these arrears as claimed by the petitioner are Rs. 362.56 lakhs and Rs. 263.86 lakhs for Northern Region and Rs. 297.13 lakh and Rs. 109.95 lakh for the Corporate Office for the years 2000-01 and 2001-02 respectively. The petitioner has prayed that the arrears on account of pay and allowances for the period prior to 1995-96 should be deducted while those pertaining to the period from 1995-96 to 1999-2000 but paid subsequent to 1999-2000 should be added to O&M charges. The petitioner has argued that since these pay arrears pertain to the period being considered for fixation of normative O&M, the arrears should be considered while fixing the normative O&M. We find the submission of the petitioner to be logical and have considered the submission in the calculation of employee cost.

Repair & Maintenance Expenses

37. The petitioner has submitted that the increase of 152.77 % in Repair & Maintenance expenses in 1997-98 (Rs 1121.85 lakh) over the previous year (Rs 443.82 lakh) is due to major repair of converter transformer under HVDC project. HVPNL has prayed for exclusion of such abnormal charges for calculating average O&M expenses. It is noted that the converter transformers in the Rihand-Dadri HVDC

project have been under outage several times, which is not a normal phenomenon. It may be mentioned that in view of repeated outages in converter transformers, the petitioner has procured 3rd spare transformer for which the Commission has approved the tariff. In view of this, such major repair has been considered as abnormal and hence increase in expense has been limited to Rs 532.58 lakh (i.e. 20% over the previous year). In the next year i.e. 1998-99, the petitioner has claimed Repair and Maintenance expenses of the same order (Rs 1131.38 lakh) as in 1997-98. Thus, the Repair and Maintenance expenses in 1998-99 are also substantially high. Hence, in this year also the increase has been limited to Rs 639.10 lakh (i.e. 20% over the expenses considered admissible in previous year) for the purpose of normalisation. The abnormal increase of Repair and Maintenance expenses during 1997-98 and 1998-99 is evident from the O&M expenses for the year 1999-2000, which is Rs. 602.4 lakh. However, if any major repairs are undertaken during the tariff period covered by this order, the petitioner may approach the Commission with proper justification to claim the actual expenses as a part of O&M expenses.

Power Charges

38. In case of Corporate Office, the power charges as claimed by the petitioner have been considered in the calculation of O&M expenses. As regards Northern Regional Transmission System (for short “ the NRTS”) the petitioner was directed to submit break up of power charges between sub-station facilities and residential colonies. The petitioner expressed its inability to furnish the data as it was not maintained. However, the petitioner has furnished details of power consumption for the residential colony in Western and Eastern Regions, which work out to be in the range of 20% of the total power charges. On the same basis, the power charges for

the residential colony have been considered as 20% of total power charges claimed for Northern Region. As power charges for the residential colony need to be recovered from the employees, admissibility of power charges in case of the NRTS has been limited to 80% of the total claim.

Insurance

39. It has been noted that the petitioner has a policy of self-insurance for which it has created the insurance reserve. The insurance charges claimed by the petitioner are credited to the insurance reserve. The petitioner was directed to furnish the management policy on creation of insurance reserve, items of loss secured and the conditions thereto. The petitioner has submitted insurance policy of the petitioner company under affidavit dated 6.2.2003. The key features of the policy submitted by the petitioner are as under:

- (a) Insurance reserve is created @ 0.1% on gross value of fixed assets at the close of the year, to meet the future losses arising from uninsured risks, except machinery breakdown for valve hall of HVDC, and fire risk of HVDC equipment and SVC sub-stations.
- (b) The policy generally covers following:
 - (i) Fire, lightning, explosion/implosion, and bush fire
 - (ii) Natural calamity: flood, earthquake, storm, cyclone, typhoon, tempest, hurricane, tornado, subsidence and landslide
 - (iii) Riot, strike/ malicious and terrorist damage

- (iv) Theft, burglary, Missile testing equipment, impact damage due to rail/ road or animal, aircraft and articles dropped there from.
- (c) The losses of assets caused by the above causes are adjusted against insurance reserve as per the corporation guidelines.
- (d) The amount so set aside in the insurance reserve has not been separately claimed from the respondents and the expenses have been met from the permitted O&M charges under the tariff.

40. The petitioner has stated that the policy of self-insurance has also been followed by NHPC, where 0.5% per annum of the gross block of O&M projects is transferred to self-insurance reserve account. It has also been informed that the rate of 0.1% as booked under O&M expenses towards self-insurance reserve is lower than the insurance premium (0.22%) being charged by the insurance companies for the risks covered in the self-insurance policy. In support of this claim, the petitioner has placed on record a letter from Reliance General Insurance Company quoting for the insurance rate of the assets covered in the self-insurance policy of the petitioner company.

41. In view of the explanation furnished on behalf of the petitioner, the insurance charges as claimed have been considered in O&M expenses. We, however, make it explicit that the self-insurance provided by the petitioner is for replacement of the damaged assets and the beneficiaries shall not be charged anything in case of damage due to any of the events mentioned in the insurance policy.

42. In case of Training & Recruitment expenses, Communication expenses, Traveling, Rent, and Miscellaneous Expenses as claimed by the petitioner have been considered for calculation, both in the case of the NRTS as well as Corporate Office.

Other Expenses

(iv) 41. In case of NRTS, under the subhead "provisions", the petitioner has claimed amount of Rs 10.69 lakh, Rs 30.08 lakh and Rs 5.71 lakh for the years 1997-98, 1998-99 and 1999-2000 respectively for loss of stores. Similarly, amount of Rs 5.15 lakh in 1998-99 has been claimed on account of writing off of advance. These have not been considered admissible, since, these items are controllable by the petitioner and reflect the managerial efficiency of the petitioner. In case of Corporate Office, following expenses have not been admitted for reimbursement:

(a) Donation of Rs. 0.05 lakh, Rs. 30 lakh, Rs. 34.78 lakh and Rs. 600.03 lakh for the years 1995-96, 1996-97, 1998-99 and 1999-2000, as these donations are not related to transmission business. The expenditure on account of the donations need be borne by the petitioner out of other profits of the corporation.

(b) Provisions of Rs. 1107.61 lakh, Rs. 385.8 lakh and Rs. 0.27 lakh for the year 1996-97, 1997-98 and 1999-2000. These provisions were made for the loss of stores in Eastern Region and North Eastern Region, for bad and doubtful debt in Northern Region and for shortage of store in North Eastern Region. As all these items are controllable by the petitioner and reflect the managerial efficiency. However, an amount of

Rs. 11.14 lakh on account of fire at the corporate office in 1998-99 has been considered as admissible under the head provisions.

- (c) Legal expenses amounting to Rs. 2.65 lakh in the Corporate Office on legal opinion on CERC matters have not been allowed in line with the Commission's policy of allowing only the fees for the petitions filed in the Commission. However, other legal expenses for disputes related to compensation, contracts, service matters and labour cases have been admitted.

Recoveries

43. The details of the recoveries for the NRTS and the Corporate Office were furnished by the petitioner vide affidavit dated 6th February 2003. The petitioner in the aforesaid affidavit also furnished the "complete details" of the recoveries for the NRTS. According to the petitioner, the income from sale of bid documents has already been adjusted for under the sub-head Tender Expenses under the head Other Expenses. Hence, income under this sub-head has not been considered in the recovery for the NRTS as well as Corporate Office. Similarly, electricity charges recovered from employees residential buildings and other residential buildings have not been considered under the head "recovery" as 20% of the power charges for colony consumption have been deducted in case of the NRTS.

Allocation of Corporate Office Expenses to Various Regions

44. The petitioner has submitted the method for allocation of Corporate Office expenses to various Regions. The key steps in the apportionment of Corporate Office expenses among the regions are as under:

- i) Expenses booked under Training & Recruitment, Directors sitting fees, provisions, R&D, Write off of fixed assets/ non-operating expenses and donations are considered exclusively as O&M expenses.
- ii) After deducting these exclusive O&M expenses, the balance Corporate Office expenses are allocated in the ratio of Transmission charges to annual Capital outlay to obtain expenses allocated to O&M and construction activity.
- iii) The allocation to O&M activity obtained in step (ii) is added to exclusive O&M expenses obtained in step (i) to arrive at total O&M expenses in the Corporate Office.
- iv) RLDC expenses are then deducted from the total O&M expenses obtained in step (iii) to arrive at O&M expenses allocated to transmission business.
- v) O&M expenses allocated to transmission business are then allocated to various regions in the ratio of their respective transmission charges.

45. The methodology adopted by the petitioner for allocation of Corporate Office O&M expenses has been approved and followed in the calculation of O&M expenses. The comparative statement of O&M expenses claimed by the petitioner and those allowed and considered for the years 1995-96 to 1999-2000 for the purpose of computation of O&M expenses for the tariff period are given herein below:

DETAILS OF O&M EXPENSES FOR POWERGRID SYSTEM IN NORTHERN REGION

(Rs. in Lakh)

Items	1995-96		1996-97		1997-98		1998-99		1999-2000	
	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for
Employee Cost	1475.76	1312.61	1651.14	1485.26	2224.24	2266.33	2686.78	2701.83	3287.71	2929.61
Repair & Maintenance	373.53	373.53	443.82	443.82	1121.85	532.58	1131.38	639.10	602.04	602.04
Power Charges	351.00	280.80	501.27	401.02	486.21	388.97	497.64	398.11	602.04	481.63
Training & Recruitment	7.88	7.88	9.54	9.54	11.57	11.57	13.29	13.29	11.57	11.57
Communications	81.37	81.37	69.53	69.53	100.32	100.32	85.82	85.82	75.13	75.13
Traveling	201.61	201.61	208.75	208.75	274.35	274.35	329.98	329.98	347.30	347.30
Printing & Stationery	25.14	25.14	33.62	33.62	30.15	30.15	26.65	26.65	27.59	27.59
Rent	14.93	14.93	15.79	15.79	24.54	24.54	23.48	23.48	20.86	20.86
Miscellaneous Expenses	342.46	342.46	402.74	402.74	495.03	495.03	619.64	619.64	632.82	632.82
Insurance	406.59	406.59	542.03	542.03	719.81	719.81	640.90	640.90	725.33	725.33
Others	215.95	215.95	150.09	150.09	292.18	281.49	188.39	145.16	237.43	231.72
Corporate Expenses Allocation	949.51	929.40	1216.57	598.75	1191.95	1028.16	1068.85	1066.49	1348.99	1090.89
TOTAL	4445.73	4192.27	5244.89	4360.93	6972.20	6153.30	7312.80	6690.45	7918.81	7176.49
Less : Recoveries		44.79		24.31		52.45		13.88		39.17
Net O&M Expenses	4445.73	4147.48	5244.89	4336.62	6972.20	6100.85	7312.80	6676.57	7918.81	7137.32

Method of Normalizing O&M Expenses

46. The following formulae for calculation of normative O&M expenses as per the notification dated 26.3.2001, as amended vide Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2003 published in the Gazette of India on 2.6.2003 have been followed

$$AVOMLL = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OML_i|}{|LL_i|}$$

$$AVOMBN = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OMS_i|}{|BN_i|}$$

Where:

AVOMLL and AVOMBN are average normalized O&M expenses per Ckt. km of line length and per bay respectively.

OML_i and OMS_i are O&M expenses for the lines and for the sub-stations for the i^{th} year respectively.

LL_i and BN_i are the total line length in Ckt. km and total number of bays in the i^{th} year respectively.

47. As per the above method, AVOMLL and AVOMBN are calculated based on the data for the years 1995-96 to 1999-2000. These normalized averages correspond to the year 1997-98. After escalating these averages by 10% per annum for two years, the normative O&M expenses for the base year 1999-2000 have been obtained. Normative O&M expenses for subsequent years are obtained by escalating these normative figures by 6% per annum. 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:

NORMALISED O&M EXPENSES FOR NORTHERN REGION

(Rs. in Lakh)

S. NO.	Items	1995-96	1996-97	1997-98	1998-99	1999-2000	Total for five years 95-96 to 99-00	99-00	2000-01	2001-02	2002-03	2003-04
1	Total O&M expenses(Rs. in lakh)	4147.48	4336.62	6100.85	6676.57	7137.32						
2	Abnormal O&M expenses	0.00	0.00	57.64	107.13	99.08	263.85					
3	Normal O&M expenses (S.No. 1 -S.NO. 2)	4147.48	4336.62	6043.21	6569.44	7038.24						
4	OML (O&M for lines)= 0.7 X S. NO.3	2903.24	3035.63	4230.25	4598.61	4926.77	19694.50					
5	OMS (O&M for substation) = 0.3XS.NO.3	1244.24	1300.99	1812.96	1970.83	2111.47	8440.49					
6	Line length at beginning of the year in Kms.	9622.13	9622.13	9743.48	10561.88	10819.55						
7	Line length added in the year in Kms.	0.00	121.35	818.40	257.67	1705.07						
8	Line length at end of the year in Kms.	9622.13	9743.48	10561.88	10819.55	12524.62						
9	LL (Average line length in the Region)	9622.13	9682.81	10152.68	10690.72	11672.09	51820.43					
10	NO. of bays at beginning of the year	157	157	161	183	185						
11	NO. of bays added in the year	0	4	22	2	31						
12	NO. of bays at the end of the year	157	161	183	185	216						
13	BN (Average number of bays in the Region)	157.0	159.0	172.0	184.0	200.5	872.50					
14	AVOMLL(OML/LL)	0.302	0.314	0.417	0.430	0.422	1.884					
15	AVOMBN(OMS/BN)	7.925	8.182	10.540	10.711	10.531	47.890					
16	NOMLL (allowable O&M per unit of line length)			0.3768	0.4145	0.4560		0.4560	0.4833	0.5123	0.5431	0.5756
17	NOMBN (Allowable O&M per bay)			9.5780	10.5358	11.5894		11.5894	12.2847	13.0218	13.8031	14.6313
	NOMLL (as calculated by petitioner)			0.42				0.51	0.54	0.57	0.60	0.64
	NOMBN (as calculated by petitioner)			10.75				13.01	13.79	14.62	15.50	16.43

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

49. In our calculations the escalation factor of 6% per annum has been used. In accordance with the notification dated 26.3.2001, if the escalation factor computed from the observed data lies in the range of 4.8% to 7.2%, this variation shall be absorbed by the petitioner. In case of deviation beyond this limit, adjustment shall be made on by applying actual escalation factor arrived at on the basis of weighted price index of CPI for industrial workers (CPI_IW) and index of selected component of WPI (WPI_TR).

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

2001-02			2002-03			2003-04		
Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)
3.34	23	301.213	3.34	23	319.286	3.34	23	338.443

RETURN ON EQUITY

51. As per the notification dated 26.3.2001, return on equity shall be computed on the paid up and subscribed capital and shall be 16% of such capital. It further provides that premium raised by the Transmission Utility while issuing share capital & investment of internal resources created out of free reserve of the existing utility, if any, for the funding of the project, shall also be reckoned as paid up capital for the purpose of computing the return on equity, provided such premium amount and

internal resources are actually utilised for meeting the capital expenditure of the Transmission project and forms part of the approved financial package as set out in the techno-economic clearance accorded by the Authority.

52. The petitioner has claimed return on the basis of equity as was admitted in Ministry of Power notification while notifying tariff, along with notional equity arising out of FERV claimed. The same methodology has been followed for working out the return on equity. Thus the following amount of equity has been considered in the calculation of return of equity:

(Rs. in lakh)

Equity as allowed by Ministry of Power in previous tariff setting	5066.60
Notional Equity arising on account of FERV	479.59
TOTAL	5546.19

53. On the above basis, the petitioner shall be entitled to return on equity of Rs. 887.39 lakh each year during the tariff period.

INTEREST ON WORKING CAPITAL

54. 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%.

55. The petitioner has claimed the maintenance spares on the basis of maintenance spares allowed in Ministry of Power for the year 1997-98 escalating the same as per weighted price index taking into account 60% of weightage for WPI & 40% of CPI and @ 6% p.a. for the years 2001-02 to 2003-04 and deducting the 1/5th of the initial capitalized spares therefrom.

56. In keeping with the methodology prescribed in the notification dated 26.3.2001, working capital has been worked out. The value of maintenance spares for 1997-98 has been taken as considered by Ministry of Power and the same has been escalated up to 2000-01 as per respective WPI/CPI and thereafter the same has been further escalated @ 6% per annum for the tariff period 2001-02 to 2003-04. The petitioner has claimed interest on working capital at the rate of 11.5%, based on annual SBI PLR for the year 2001-2002, which has been allowed separately by the Commission in certain other petitions and, therefore, the same has been allowed here also despite the objection of some of the respondents. The detailed calculations in support of interest on Working Capital are as under:

Interest on Working Capital

(Rs. in lakh)

Working Capital		2001-02	2002-03	2003-04
Escalation for Maintenance Spares	6%			
Spares	193.89			
Less: 1/5 th of Initial Spares	0.00			
Maintenance Spares	193.89	205.52	217.85	230.93
O & M expenses		25.10	26.61	28.20
Receivables		314.05	316.94	258.07
Total		544.67	561.40	517.20
Rate of Interest		11.50%	11.50%	11.50%
Interest		62.64	64.56	59.48

TRANSMISSION CHARGES

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

TABLE

(Rs. in lakh)

Transmission Tariff	2001-02	2002-03	2003-04
Interest on Loan	3.49	0.85	0.00
Interest on Working Capital	62.64	64.56	59.48
Depreciation	629.56	629.56	263.11
Advance against Depreciation	0.00	0.00	0.00
Return on Equity	887.39	887.39	887.39
O & M Expenses	301.21	319.29	338.44
Total	1884.29	1901.64	1548.42

58. In addition to the transmission charges, the petitioner shall be entitled to other charges like Development Surcharge, 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.

59. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's notification dated 4.4.2001 as extended from time to time. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us.

60. The transmission charges approved by us shall be included in the regional transmission tariff for Northern Region and Western Region and shall be shared by the respondents in accordance with the notification dated 26.3.2001.

61. This order disposes of Petition No. 15/2002.

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(G.S. RAJAMANI)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRMAN

New Delhi dated the 17th July 2003