CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

<u>Coram</u>

- 1. Shri Ashok Basu, Chairman,
- 2. Shri K.N.Sinha, Member

Petition No.53/2002

In the matter of

Petition for approval of tariff for one 315 MVA 400/230 kV Auto Transformer at Hyderabad and one 50 MVAR Reactor at Cuddapah in Southern 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. 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 Department, Govt. of Pondicherry, Pondicherry
- 6. Electricity Department, Govt. of Goa, Panaji

.....Respondents

The following were present:

- 1. Shri R.G. Yadav, ED (SO), PGCIL
- 2. Shri P.C. Pankaj, AGM, PGCIL
- 3. Shri U.K. Tyagi, DGM, PGCIL
- 4. Shri C. Kannan, Chief Manager, PGCIL
- 5. Shri D.D. Dhayasee, PGCIL
- 6. Shri V. Mittal, AGM (SO), PGCIL
- 7. Shri Sunil Agrawal, DGM (SO), PGCIL
- 8. Shri K. Gopalakrishnan, KSEB
- 9. Shri R Balachandran, KSEB
- 10. Shri S. Sowmyanarayanan, Consultant, TNEB

ORDER (DATE OF HEARING: 23.9.2003)

In this petition, the petitioner, Power Grid Corporation of India Ltd has sought approval for tariff for one 315 MVA 400 kV/230 kV Auto Transformer at Hyderabad

and one 50 MVAR Reactor at Cuddapah, forming part of Central Transmission Project Augmentation in Southern 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. In connection with Central Transmission Project Augmentation, the Board of Directors of the petitioner company in its meeting held on 18.3.1994 accorded its approval, under the powers delegated to the powers of public enterprises, for capital outlay of Rs.38.57 crore, including IDC of Rs.3.50 crore, for creation of the following assets:
 - (a) Installation of 2 No 315 MVA, 400/230 kV transformers along with associated equipment, one each at Khammam and Hyderabad sub-stations.
 - (b) Installation of 2 No 50 MVAR reactors, along with associated equipment, one each at Gazuwaka and Cuddapah.
- 3. In accordance with the approved implementation schedule, the petitioner commenced commercial operation of the assets given below in respect of which approval for tariff has been sought from different dates as shown below against each:

	<u>Asset</u>	Date of commercial operation
i)	One No 315 MVA, 400/230 kV Auto- Transformer along with associated equipment at Hyderabad sub-station	1.4.1995
ii)	One No. 50 MVAR Reactor along with associated equipment at Cuddapah sub-station	1.4.1997

4. The apportioned approved cost of the above noted elements is stated to be Rs 603.00 lakh and Rs. 1100.00 lakh respectively for 50 MVAR Reactor at Cuddapah and 315 MVA 400 kV/230 kV Auto Transformer at Hyderabad sub-station. The petitioner has sought approval for transmission charges as under:

(Rs. in lakh)

	50	MVAR Re	actor	315 MVA	Auto Tran	sformer
Transmission	2001-02	2002-03	2003-04	2001-02	2002-03	
Tariff						2003-04
Interest on Loan	22.45	21.17	19.82	9.25	7.41	5.57
Interest on	2.76	2.82	2.89	3.81	3.89	3.97
Working Capital						
Depreciation	24.93	24.93	24.93	30.13	30.13	30.13
Advance Against	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation						
Return on Equity	60.46	60.46	60.46	62.36	62.36	62.36
O & M Expenses	18.91	20.04	21.24	18.91	20.04	21.24
Total	129.51	129.42	129.34	124.46	123.83	123.27

5. The details of the petitioner's claim for interest on working capital are as given below:

(Rs. In lakh)

	50 N	315 MV	315 MVA Auto Transforme			
Working Capital	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
Spares	0.82	1.30	1.81	10.82	11.47	12.16
O & M expenses	1.58	1.67	1.77	1.58	1.67	1.77
Receivables	21.58	21.57	21.56	20.75	20.64	20.55
Total	23.98	24.54	25.14	33.15	33.78	34.48
Rate of Interest	11.50%	11.50%	11.50%	11.50%	11.50%	11.50%
Interest	2.76	2.82	2.89	3.81	3.88	3.97

6. 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

- 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 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 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. The transmission tariff in respect of 315 MVA Auto Transformer at Hyderabad sub-station and 50 MVAR Reactor at Cuddapah sub-station was approved by the Commission vide its order dated 26.7.2002 in petition No 78/2000 for the period up to 31.3.2001 at a total admitted cost of Rs. 710.14 lakh and Rs. 635.20 lakh respectively. Therefore, for the purpose of present petition, the capital cost as considered by the Commission in its order dated 26.7.2002 has been adopted.

<u>ADDITIONAL CAPITALISATION</u>

9. 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.

10. The petitioner has not claimed any additional capital expenditure for the period after 1.04.2001 in the petition. Accordingly, the additional capitalisation has not been considered.

EXTRA RUPEE LIABILITY

- 11. 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.
- 12. The petitioner has claimed FERV in accordance 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)

- 13. The amount of FERV arrived at in the above manner is added in the capital cost as on 1.4.2001 (base capital cost for the tariff period) and depreciation is worked out on the above capital cost. For the claim of Advance Against Depreciation, 1/12th of gross loan and repayment of foreign loan is worked out by the petitioner by multiplying the foreign currency with exchange rate as on 31.03.2001. In addition, the petitioner has claimed FERV based on the outstanding loan as on 31.3.2001 in foreign currency and multiplying the same with difference in exchange rate as on 31.3.2001 and as on the date of commercial operation. This results into double claim of FERV
- 14. We have considered the matter. On consideration of the fact that the method up to 31.03.2001 to allow the FERV was on repayment of loan and payment of interest on actual basis, we have decided that FERV to be capitalised for adding in the Gross Block as on 01.04.2001 would be arrived in the following manner:

Foreign Loan outstanding as on 31.03.2001 x (Exchange Rate as on 31.03.2001 - Exchange Rate as on DOCO/01.04.1992 as given in the petition).

15. FERV amount calculated in the above manner is shown below:

IBRD Loan	50 MVAR Reactor	315 MVA Auto Transformer
Outstanding balance as on 31.03.2001	7.29 (lakh in USD)	8.19 (lakh in JPY)
Exchange Rate as on 31.03.2001	46.88	46.88
Exchange Rate as on the date of commercial operation	36.18	31.71
FERV on the outstanding loan as on 31.03.2001 (Rs in lakh)	78.00	124.24

16. The above FERV amount has been added to the loan and equity as on 01.04.2001 in the ratio, in which the last tariff was approved by the Commission. The capital expenditure considered in the calculations for tariff is under:

(Rs. in lakh)

	(,				
	50 MVAR Reactor	315 MVA Auto Transformer			
Capital Expenditure up to 31.03.2001 as per previous tariff setting	635.20	710.14			
FERV up to 31.03.2001	78.00	124.24			
Capital Expenditure up to 31.03.2001	713.20	834.38			
Additional Capital Expenditure after 31.03.2001	0.00	0.00			
Capital Expenditure considered for determination of Tariff	713.20	834.38			

17. 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 the date of commercial operation of the respective transmission element 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.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

18. 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, 315 MVA 400/230 kV Auto Transformer at Hyderabad sub-station was commissioned before 1.4.1997 and the Commission while notifying tariff vide order dated 26.7.2002 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 16.12.1997 as amended vide notification dated 8.4.1999. Therefore, the debt-equity ratio of 50:50 as considered earlier has been considered for determination of tariff in respect of this asset. 50 MVAR Reactor at Cuddapah was commissioned on 1.4.1997. In this case, actual debt-equity employed by the petitioner was considered by the Commission in its order dated 26.7.2002. The debt and equity for this asset has been considered in the same ratio as considered earlier in the order dated 26.7.2002.

INTEREST ON LOAN

- 19. 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. The petitioner has claimed interest on foreign loan by calculating the same in foreign currency and multiplying with exchange rate as on 31.03.2001. This would amount to working out the interest on foreign loan on revalued foreign loan at the exchange rate as on 31.03.2001 and results into double claim.
- 20. In keeping with the provisions of the notification dated 26.3.2001, 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.

21. Based on the above methodology, repayments of loan during 2001-2002 to 2003-2004 have been arrived as under:

(Rs. in lakh)

	50 MVAR Reactor	315 MVA Auto Transformer
2001-02	18.45	15.95
2002-03	17.68	15.32
2003-04	18.69	16.17

22. 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 is given below:

CALCULATION OF WEIGHTAGE AVERAGE RATE OF INTEREST

50 MVAR Reactor along with associated elements at Cuddapah sub-station in Southern Region

(Rs. in Lakh)

2001-02	2002-03	2003-04		
365	365	366		
296.17	296.17	296.17		
32.70	48.91	64.45		
263.47	247.26	231.72		
8.86	7.63	8.20		
254.61	239.63	223.52		
7.35	7.91	8.22		
		215.30		
		6.11%		
		13.57		
Half-yearly Installments 01.06.2001, 01.12.2001, 01.06.2002, 01.12.2002, 01.06.2003 and 01.12.2003				
36.37	36.37	36.37		
0.00	2.24	4.38		
36.37	34.13	31.99		
1.22	1.05	1.13		
35.15	33.08	30.85		
1.02	1.09	1.13		
34.13	31.99	29.72		
6.11%	6.11%	6.11%		
2.14	2.01	1.87		
Presumed	to be same	as of IBRD loan		
	332.54	332.54		
	51.15	68.83		
	365 296.17 32.70 263.47 8.86 254.61 7.35 247.26 6.11% 15.50 Half-yearly 01.12.2001 01.06.2003 36.37 0.00 36.37 1.22 35.15 1.02 34.13 6.11% 2.14	365 365 296.17 296.17 32.70 48.91 263.47 247.26 8.86 7.63 254.61 239.63 7.35 7.91 247.26 231.72 6.11% 6.11% 15.50 14.56 Half-yearly Installment 01.12.2001, 01.06.200 01.06.2003 and 01.12. 36.37 36.37 0.00 2.24 36.37 34.13 1.22 1.05 35.15 33.08 1.02 1.09 34.13 31.99 6.11% 6.11%		

Net Loan-Opening		281.39	263.71
Repayment during the year	18.45	17.68	18.69
Net Loan-Closing	281.39	263.71	245.02
Interest	17.64	16.57	15.45

315 MVA 400 kV/230 kV Autotransformer along with associated Equipment at Hyderabad Sub-station in Southern Region

(Rs. in lakh)

(. 10	(NS. III IANII)						
2001-02	2002-03	2003-04					
291.73	291.73	291.73					
32.03	47.98	63.29					
259.70	243.75	228.44					
15.95	15.32	16.17					
243.75	228.44	212.27					
251.73	236.10	220.35					
6.11%	6.11%	6.11%					
Half-yearly	Installments	3 01.06.2001,					
	,	, ,					
01.06.2003	and 01.12.	2003					
291.73	291.73	291.73					
32.03	47.98	63.29					
259.70	243.75	228.44					
15.95	15.32	16.17					
243.75	228.44	212.27					
251.73	236.10	220.35					
6.11%	6.11%	6.11%					
15.38	14.43	13.46					
	291.73 32.03 259.70 15.95 243.75 251.73 6.11% 15.38 Half-yearly 01.12.2001 01.06.2003 291.73 32.03 259.70 15.95 243.75 251.73 6.11%	291.73 291.73 32.03 47.98 259.70 243.75 15.95 15.32 243.75 228.44 251.73 236.10 6.11% 6.11% 15.38 14.43 Half-yearly Installments 01.12.2001, 01.06.200 01.06.2003 and 01.12 291.73 291.73 32.03 47.98 259.70 243.75 15.95 15.32 243.75 228.44 251.73 236.10 6.11% 6.11%					

23. Accordingly, the interest on notional loan as admissible as an element of tariff by applying weighted average rate of interest, has been calculated as under:

INTEREST ON NOTIONAL LOAN

(Rs in lakh)

	50 MVAR Reactor		R Reactor	315 MVA Auto T		ransformer	
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	
Gross Loan -Opening	332.54	332.54	332.54	389.75	389.75	389.75	
Cumulative Repayment up							
to Previous Year	32.70	51.15	68.83	223.27	239.22	254.53	
Net Loan-Opening	299.84	281.39	263.71	166.48	150.53	135.22	
Repayment during the year	18.45	17.68	18.69	15.95	15.32	16.17	
Net Loan-Closing	281.39	263.71	245.02	150.53	135.22	119.04	
Average Loan	17.64	16.57	15.45	158.51	142.88	127.13	
Rate of Interest	332.54	332.54	332.54	6.1100%	6.1100%	6.1100%	
Interest	32.70	51.15	68.83	9.68	8.73	7.77	

- 24. IBRD loan carries floating rate of interest and the interest rate stated to be prevailing as on 01.04.2001 has been taken in the calculation. In view of the above, any changes/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 they are unable to resolve the issue, any one of them is at liberty to approach the Commission for appropriate decision.
- 25. It is noted that the amount of repayment of IBRD considered in the petition and allowed from the details of loan submitted by the petitioner is different as shown below:

(USD in lakh)

Date of Repayment			A 400 kV Transfo		50 MVAR Reactor		
		2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
1st June	As claimed	0.25	0.22	0.23	0.23	0.19	0.21
	As allowed	0.2750	0.2370	0.2550	0.245	0.211	0.227
1st December	As claimed	0.21	0.23	0.24	0.19	0.20	0.22
	As allowed	0.2280	0.2460	0.2550	0.203	0.219	0.227
Total	As claimed	0.46	0.45	0.47	0.42	0.39	0.43
	As allowed	0.5030	0.4830	0.5100	0.4481	0.4294	0.4539

26. However, in the calculation, repayment amount as worked out has been considered for working out interest on loan in one no. 50 MVAR Reactor along with

associated equipment at Cuddapah sub-station and weighted average rate of interest for one no. 315 MVA 400 kV/230 kV Auto Transformer along with associated equipment at Hyderabad sub-station.

- 27. In respect of one number 50 MVAR Reactor along with associated equipment at Cuddapah sub-station the following additional issues need to be noted:
 - (a) As per Accounting Standard 11 of the Institute of Chartered Accountant of India, exchange difference arising 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 allowed should be added to the respective head of gross block, which was financed, from the foreign loan on which FERV is proposed to be allowed. The above details are not available. Therefore, FERV amount has been 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 sub-station only.
 - (b) It is noted that amount of IBRD loan was shown as Rs.263.47 lakh in the petition of previous tariff setting, which was allowed by the Commission in its order. But as per the details of loan submitted by the petitioner, the amount works out to Rs. 263.75 lakh, which has been claimed in this petition. The difference being of minor nature, amount of Rs.263.47 lakh has been considered for working out interest on loan as allowed by the Commission in its order of previous tariff setting.

(c) As the notional loan has arisen due to revaluation of the outstanding balance as on 31.03.2001 of IBRD loan, repayment of the notional loan has been worked out in proportion to repayment of IBRD loan and ratio of the notional loan to IBRD loan and rate of interest of IBRD loan is applied to the notional loan.

DEPRECIATION

- 28. 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 prorata 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.
- 29. The petitioner has claimed the depreciation on the capital expenditure in accordance with above principles, which works out to Rs.24.93 crore for the years 2001-02, 2002-03 and 2003-04 for Auto transformer at Hyderabad and Rs.30.13 crore for those years for 50 MVA Reactor.
- 30. The calculations in support of depreciation allowed are appended hereinbelow:

(Rs. in lakh)

		50 MVAR Reactor				315 MVA Auto Transformer			
		2001-02	2002-03	2003-04		2001-02	2002-03	2003-04	
Gross Block Rate of					3.61%				
Depreciation	3.48%								
Depreciable Value					750.94				
	641.88								
Balance Useful life									
of the asset									
Remaining			426.83	401.99		472.80			
Depreciable Value		451.67					442.66	412.53	
Depreciation		24.84	24.84	24.84		30.13	30.13	30.13	

31. From the above, read with para 4, it may be seen that the depreciation allowed by the Commission is lower than the one claimed by the petitioner in the case of 50 MVA reactor. This is on account of the fact that the Commission has allocated the foreign exchange variation to various components of the asset whereas the petitioner had dumped the FERV. In the case of Auto transformer at Hyderabad, the petitioner has allocated the FERV asset-wise as is done by the Commission and, therefore, there is no difference.

ADVANCE AGAINST DEPRECIATION

32. 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.

- 33. 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 the Commission in its order dated 26.7.2002 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.
- 34. For working out Advance Against Depreciation, 1/12th of the actual/notional loan has been considered while repayment of loan as worked out at para 20 above has been taken as repayment of the loan during the year. The petitioner is entitled to Advance Against Depreciation as calculated below:

(Rs. in lakh)

	()								
	50	MVAR Re	actor	315 MVA Auto Transforme					
Advance Against Depreciation	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04			
1/12th of Gross			27.71						
Loan(s)	27.71	27.71		32.48	32.48	32.48			

Scheduled Repayment			18.69			
of the Loan(s)	18.45	17.68		15.95	15.32	16.17
Minimum of the above	18.45	17.68	18.69	15.95	15.32	16.17
Depreciation during the			24.84			
year	24.84	24.84		30.13	30.13	30.13
Advance Against			0.00			
Depreciation	0.00	0.00		0.00	0.00	0.00

OPERATION & MAINTENANCE EXPENSES

- 35. 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:
 - Where O&M expenses, excluding abnormal O&M expenses, if any, on sub-station (OMS) and line (OML) are separately available for each region, these shall be normalised by dividing them by number of bays and line length respectively. Where data as aforesaid is not available, O&M expenses in the region are to be apportioned to the sub-station and lines on the basis of 30:70 ratio and these are to be normalised as below:

O&M expenses per Unit of the line length in Kms (OMLL) = Expenses for lines (OML)/Average line length in Kms (LL)

O&M expenses for sub-stations (OMBN) = O&M expenses for substations (OMB)/Average number of bays (BN)]

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.

- 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.
- 36. 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

37. 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 grat*ia 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.

38. 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. 25.11 lakh and Rs. 137.56 lakh paid for Southern 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. 200.55 lakh and Rs.146.41 lakh for Southern 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

39. Repair & maintenance expenses as claimed by the petitioner have been considered. It was noted that in case of Southern Region system for the year 1998-99 the increase over the previous year (1997-98) was 86.89%. The petitioner was asked to explain the individual items of expenditure in which variation over the previous year was more than 20%. The petitioner has explained that the excess of 86.89% in the year 1998-99 under "repair and maintenance" head over the previous year was due to major repair of circuit breaker at Cuddapah sub-station and two towers in the Ramagundam- Chandrapur transmission line undertaken during 1998-99. Major repair is not a regular phenomenon, and hence expenses on this account have to be excluded from the process of normalisation. Therefore, "repair and maintenance" expenses in 1998-99 have been limited to Rs.328.79 lakh (20% over and above the "repair and maintenance" expenses for the year 1997-98). 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

40. 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 Southern Regional Transmission System (for short "the SRTS") 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 Southern Region. As power charges for the residential colony need to be recovered from the employees, admissibility of power charges in case of the SRTS has been limited to 80% of the total claim.

Insurance

- 41. 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.
- 42. 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.
- 43. 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.

44. 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 SRTS as well as Corporate Office.

Other Expenses

- 45. In case of the SRTS, the other expenses as claimed by the petitioner have been considered for the calculation. However, 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, 1898-99 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

46. The details of the recoveries for the SRTS 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 SRTS. 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 SRTS 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 SRTS.

Allocation of Corporate Office Expenses to Various Regions

47. 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.
- 48. 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 SOUTHERN REGION

(All Figures in Rs. Lakhs)

	(All Li)						rigules III NS. Lakiis)				
	1995-96		1996-97		1997-98		1998-99		1999	-2000	
Items	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	769.63	649.53	1136.39	921.70	1334.83	1333.85	1574.20	1592.55	2211.72	1928.38	
Repair & Maintenance	235.50	235.50	246.70	246.70	273.99		512.07	328.79	404.38	404.38	
Power Charges	305.98	244.78	358.13	286.50	415.20	332.16	418.15	334.52	488.85	391.08	
Training & Recruitment	18.54	18.54	16.53	16.53	13.13	13.13	7.13	7.13	12.98	12.98	
Communications	63.46	63.46	60.08	60.08	73.54	73.54	67.67	67.67	71.27	71.27	
Travelling	205.46	205.46	231.33	231.33	288.09	288.09	290.72	290.72	318.89	318.89	
Printing & Stationery	18.47	18.47	18.38	18.38	22.87	22.87	22.70	22.70	24.79	24.79	
Rent	12.26	12.26	11.38	11.38	14.23	14.23	17.72	17.72	20.80	20.80	
Miscellaneous Expenses	185.42	185.42	200.45	200.45	244.80	244.80	272.85	272.85	322.12	322.12	
Insurance	7.22	7.22	11.60	11.60	272.68	272.68	158.87	158.87	219.00	219.00	
Others	59.61	59.61	41.61	41.61	48.66	48.66	167.97	167.97	401.65	401.65	
Corporate Expenses Allocation	454.10	444.48	532.15	261.90	508.85	438.93	485.91	484.84	745.19	602.61	
TOTAL	2335.65	2144.74	2864.73	2308.17	3510.87	3356.93	3995.96	3746.33	5241.64	4717.95	
Less : Recoveries		14.91		87.92		26.53		21.97		16.24	
Net O&M	2335.65	2129.83	2864.73	2220.25	3510.87	3330.40	3995.96	3724.36	5241.64	4701.71	
Expenses											

Method of Normalizing O&M Expenses

49. 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

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 $\mathsf{O\&M}$ expenses for the lines and for the substations for the i^{th} year respectively.

LL_i and and BN_i are the total line length in Ckt. km and total number of bays in the ith year respectively.

50. 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:

NORMALIZED O&M EXPENSES FOR SOUTHERN REGION

(All Figures in Rs. Lakhs)

S. NO.	Items	1995-96	1996-97	1997-98	1998-99	1999-2000	Total for five years 95-96		2000-01	2001-02	2002-03	2003-04
							to 99-00					
	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	OML (O&M for lines)= 0.7 X S. NO.3	1490.88	1554.17	2331.28	2607.05	3291.20	11274.58					
5	OMS (O&M for substation) = 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	5839.71	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	30117.74					
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	387.00					
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	16 NOMLL(allowable O&M per unit of line length)		0.3703	0.4073	0.4480		0.4480	0.4749	0.5034	0.5336	0.5656	
17	17 NOMBN(Allowable O&M per bay)			12.2656	13.4921	14.8413		14.8413	15.7318	16.6757	17.6763	18.7368
	NOMLL(as calculated by petitioner)			0.4200				0.5100	0.5400	0.5700	0.6000	0.6400
	NOMBN(as calculated by petitioner)			13.9100				16.8300	17.8400	18.9100	20.0400	21.2400

- 51. The differences in NOMLL and NOMBN 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.
- 52. 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).
- 53. The details of O&M expenses allowed are given hereunder:

	2001-02			2		2003-04			
	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expense s (Rs. in lakh)	•	bays	O&M expens es (Rs. in lakh)
50 MVAR Reactor	0	1	16.6757	0	1	17.6763	0		18.7368
315 MVA Auto Transformer	0	1	16.6757	0	1	17.6763	0	1	18.7368

RETURN ON EQUITY

54. 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.

- 55. For Auto transformer at Hyderabad, the petitioner has claimed Rs.62.36 crore as ROE. This has been found to be correct and therefore, allowed. However, in the case Reactor at Cuddapah, the petitioner has claimed ROE of Rs.60.46 crore. The Commission has computed this to be Rs.60.91 crore. The difference is on account of the fact that the petitioner has allocated the FERV in the ratio of Debt:Equity :: 50:50, whereas the actual Debt:Equity ratio, which is the basis of tariff for the asset in question, is 47:53.
- 56. The petitioner has claimed return on the basis of equity as was admitted in by the Commission in its order dated 26.7.2002 along with notional equity arising out of FERV claimed. The same methodology has been followed for working out the return on equity. The details of equity considered for the purpose are indicated herein below:

(Rs. in lakh)

		(113. III lakii)
	50 MVAR	315 MVA 400 kV/230 kV
	Reactor	Auto Transformer
Equity as per the Commission's order dated 27.6.2002	339.03	327.63
Additional Equity on account of	41.63	62.12
FERV up to 31.3.2001	41.03	02.12
Total equity including FERV up to 31.3.2001	380.66	389.75
Addition to equity on account of additional capitalisation	0.00	0.00
Total	380.66	389.75

57. On the above basis, the petitioner shall be entitled to return on equity of Rs. 60.91 lakh each year during the tariff period in respect of 50 MVAR Reactor and Rs. 62.36 lakh each year in respect of 315 MVA 400 kV/230 kV Auto Transformer.

INTEREST ON WORKING CAPITAL

- 58. 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%.
- 59. The petitioner has claimed the maintenance spares on the basis of maintenance spares allowed by the Commission in its order dated 26.7.2002 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.
- 60. 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 per Ministry of Power notification dated 1.12.1998 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)

	50 MVAR Reactor			315 MVA Auto Transform				
Working Capital		2001-02	2002-03	2003-04		2001-02	2002-03	2003-04
Escalation for Maintenance					6%			
Spares	6%							
	1.00							
	7.59							
	0.00							
Spares	7.59				10.19			
Less: 1/5 th of Initial Spares	7.23				0.00			
Maintenance Spares	0.36	0.38	0.40	0.43	10.19	10.80	11.44	12.13
O & M expenses		1.39	1.47	1.56		1.39	1.47	1.56
Receivables		20.44	20.43	20.42		20.43	20.46	20.49
Total		22.21	22.30	22.41		32.62	33.37	34.18
Rate of Interest		11.50%	11.50%	11.50%		11.50%	11.50%	11.50%
Interest		2.55	2.56	2.58	•	3.75	3.84	3.93

61. The difference in "receivables" component claimed and that allowed is primarily on account of difference in Annual Transmission Charges allowed qua those claimed.

TRANSMISSION CHARGES

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

TABLE (Rs. in lakh)

		(1 to: III laitii)					
	50 MV	AR Read	ctor	315 MVA Auto Transformer			
Transmission Tariff	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	
Interest on Loan	17.64	16.57	15.45	9.68	8.73	7.77	
Interest on Working Capital	2.55	2.56	2.58	3.75	3.84	3.93	
Depreciation	24.84	24.84	24.84	30.13	30.13	30.13	
Advance against Depreciation	0.00	0.00	0.00	0.00	0.00	0.00	
Return on Equity	60.91	60.91	60.91	62.36	62.36	62.36	
O & M Expenses	16.68	17.68	18.74	16.68	17.68	18.74	
Total	122.61	122.56	122.51	122.61	122.74	122.93	

- 63. 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 filing fee is not already included in the O&M charges.
- 64. 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.

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

66. This order disposes of Petition No.53/2002.

Sd/-(K.N. SINHA) MEMBER Sd/-(ASHOK BASU) CHAIRMAN

New Delhi dated the 20th February 2004