

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram:**

- 1. Shri D.P. Sinha, Member**
- 2. Shri G.S. Rajamani, Member**
- 3. Shri K.N. Sinha, Member**

**Petition No.35/2002**

**In the matter of**

Approval of revised fixed charges from 1.4.1997 to 31.10.1997 and tariff from 1.11.1997 to 31.3.2001 of Vindhyachal Super Thermal Power Station

**And in the matter of**

National Thermal Power Corporation Ltd. ....Petitioner

Vs

1. Madhya Pradesh State Electricity Board, Jabalpur
2. Maharashtra State Electricity Board, Mumbai
3. Gujarat Electricity Board, Vadodara
4. Chhattisgarh State Electricity Board, Raipur
5. Electricity Department, Govt of Goa, Panaji, Goa
6. Electricity Department, Admn. Of Daman & Diu, Daman
7. Electricity Department, Admn. of Dadra and Nagar Haveli, Silvassa .....Respondents

The following were present:

1. Shri K.K. Garg, GM (Comml), NTPC
2. Shri M.S. Chawla, DGM (Comml), NTPC
3. Shri C. Asokan, Sr. Manager, NTPC
4. Shri B. Dubey, Sr. Law Officer, NTPC
5. Shri S.P. Degwekar, Commercial Officer, MPSEB
6. Shri Rohit K. Singh, Advocate, MPSEB

**ORDER  
(DATE OF HEARING 14.3.2002)**

The petitioner has filed this petition for approval of revised fixed charges for the period 1-4-1997 to 31-10-1997 on account of additional capitalisation and FERV and approval of fixed charges in respect of Vindhyachal Super Thermal Power Station (Vindhyachal STPS) for the period from 1.11.1997 to 31.3.2001.

2. Vindhyachal STPS was declared under commercial operation on 1.2.1992 which corresponds to the date of commercial operation of Unit VI of the plant, though the date of commercial operation of Unit I is 1.9.1988. The tariff for Vindhyachal STPS for the entire capacity of the project, that is, 1260 MW was last notified by Ministry of Power vide notification dated 2.11.1992, which was subsequently amended vide notifications dated 15.12.1995, 30.11.1998 and 14.5.1999 to account for change in rate of depreciation, increase in return on equity from 12% to 16% and additional capitalisation based on audited accounts up to 1996-97. The notification dated 2.11.1992 was valid up to 31.10.1997, but was continued on ad hoc basis beyond 31.10.1997 in view of Clause 6 thereof.

3. The petitioner had filed Petition No. 75/2000 to claim revised fixed charges due to additional capital expenditure and FERV capitalised in respect of Vindhyachal STPS for the years 1997-98 to 2000-01. The said petition was disposed of vide the Commission's order dated 2.1.2002. The Commission directed the petitioner to file fresh petition for determination of tariff for the period from 1.11.1997 to 31.3.2001 based on the terms and conditions notified by Ministry of Power as per the notification dated 2.11.1992. The present petition has been filed in pursuance of these directions of the Commission contained in the order dated 2.1.2002.

4. Reply to the petition has been filed on behalf of Respondent No. 1 (MPSEB). It has been contended on behalf of Respondent No.1 that before undertaking the process of determination of tariff for the period from 1.11.1997 to 31.3.2001, the Commission should decide the terms and conditions of tariff for that period under

Section 28 of the Electricity Regulatory Commissions Act, 1998. It has been stated that the terms and conditions of tariff notified by Ministry of Power on 2.11.1992 applicable to Vindhyachal STPS was valid for a period of 5 years and it expired on 31.10.1997. This issue has already been considered by the Commission. The Commission in its order dated 21.12.2000, while laying down the terms and conditions of tariff, directed that these terms and conditions would be applicable with effect from 1.4.2001 and for the period prior to that, the terms and conditions earlier notified by the Central Government in Ministry of Power would continue to apply. Therefore, the terms and conditions of tariff in respect of Vindhyachal STPS for the period from 1.11.1997 to 31.3.2001 are not required to be determined by the Commission afresh. Accordingly, while disposing of Petition No. 75/2000, the Commission in its order dated 2.1.2002 had directed the petitioner to file the petition based on terms and conditions decided by Ministry of Power. The present petition has been filed in compliance with those directions. Therefore, we do not find any merit in the preliminary submission made on behalf of Respondent No.1.

5. It has been contended by Respondent No.1 that debt and equity should be in the ratio of 70:30 as applicable to IPPs, though as per notification dated 2.11.1992, debt and equity have been taken in the ratio of 50:50. It is further contended that ROE should be payable at 12% as there was no justification to increase ROE to 16% with effect from 1.11.1998. Similarly, on the question of depreciation, it has been submitted that prior to 1992, depreciation was charged at the rate of 3.4%. However, this was increased to 7.4% after 1994. Respondent No.1 has prayed that depreciation should be charged at the rate applicable prior to 1992. It is also contended that the respondents should not meet the income-tax liability of the petitioner who should pay it

out of its own profits. We do not find any force in any of these submissions made on behalf of Respondent No.1. We have already noted that the petition has been filed based on the terms and conditions contained in Ministry of Power's notification dated 2.11.1992. Respondent No.1 has not been able to pin point any deviation on account of ROE, debt-equity ratio, depreciation and incentive from the said notification. In view of earlier decisions, we are bound to follow the terms and conditions for determination of tariff in respect of Vindhyaachal STPS based on notification dated 2.11.1992.

6. Respondent No.1 has also raised the issues of interest on loan, interest on working capital, O&M expenses and the water charges. We have taken these submissions into account while considering the impact of these components on tariff. Respondent No.1 has also raised certain issues regarding the applicability of operational norms like specific fuel oil consumption, auxiliary energy consumption, etc. These aspects are not being considered in this petition as the Commission has already decided to follow the GOI project specific tariff notification up to 31.3.2001. We now proceed to examine the different components of tariff separately.

### **CAPITAL COST**

7. The investment approval for the project was accorded by the Central Government vide letter dated 20.11.1990 at a revised cost of Rs.1443.72 crores, excluding working capital margin (WCM). Subsequently, CEA accorded its approval for R&M of the station on Environmental Action Plan (EAP) vide its letter dated 14.7.1996 at a cost of Rs.38.70 crores. Thus, the approved cost of the project adds up to Rs.1482.42 crores including R&M.

8. Ministry of Power while issuing tariff notification dated 2.11.1992 considered the project cost of Rs.1357.07 crores, which included initial spares of Rs.26.06 crores for the year 1992-93. However, in the years 1993-94 to 1997-98 the gross block taken for purposes of computation of tariff is Rs.1331.01 crores. The average gross block considered by Ministry of Power works out to Rs.1335.35 crores.. This average gross block has been considered for the purpose of calculation of tariff in the present petition. Ministry of Power had allowed additional capitalisation of Rs.37.61 crores and FERV of Rs.2.23 crores during 1992-93 to 1996-97. Therefore, the total admitted cost of the project, including the initial spares works out to Rs.1375.19 crores as on 31.3.1997 and has been considered as the opening gross block for the purposes of present tariff petition.

9. The petitioner has claimed the following amounts on account of additional capitalisation during the period from 1997-98 to 2000-01 as detailed below:

(Rs.in lakhs)

<b>Financial Years</b>	<b>1997-98</b>	<b>1998-99</b>	<b>1999-00</b>	<b>2000-01</b>	<b>Total</b>
1. New work					
(a) Within the scope of RCE	115.52	831.24	395.85	376.93	1719.54
(b) EAP	316.60	0.00	23.41	0.00	340.01
(c) Not in the scope of RCE	29.04	345.86	275.35	207.04	857.29
<b>Total (a+b+c+d)</b>	<b>461.16</b>	<b>1177.10</b>	<b>694.61</b>	<b>583.97</b>	<b>2916.84</b>
2. Balance Payments	105.51	-119.31	-190.95	515.09	310.34
<b>Total (1+2)</b>	<b>566.67</b>	<b>1057.79</b>	<b>503.66</b>	<b>1099.06</b>	<b>3227.18</b>

10. Against the above claim, no specific justification has been furnished by the petitioner in support of balance payments, though the petitioner has furnished justification for the following expenditure under the New Works in the respective years:

(Rs.in lakhs)

<b>Financial Years</b>	<b>1997-98</b>	<b>1998-99</b>	<b>1999-00</b>	<b>2000-01</b>	<b>Total</b>
1. New work					
(a) Within the scope of RCE	115.52	831.24	395.85	376.93	1719.54
(b) EAP	316.60	0.00	23.41	0.00	340.01
(c) Not in the scope of RCE	29.04	345.84	275.35	207.03	857.26
<b>Total (a+b+c)</b>	<b>461.16</b>	<b>1177.08</b>	<b>694.61</b>	<b>583.96</b>	<b>2916.81</b>

11. The following methodology has been adopted for allowing or disallowing the claim of the petitioner for additional capitalisation:

### **New Works**

(a) The expenditure on any works, which was in the scope of approved project cost but undertaken after the date of commercial operation has been allowed.

(b) The expenditure incurred for the replacement of existing equipment/facility due to technology becoming obsolete or the equipment having outlived its utility in the normal course of operation, has also been allowed for capitalisation.

(c) The expenditure on the works undertaken/on purchase of additional equipment/facility which is giving benefit exclusively to the petitioner without any apparent benefit to the beneficiaries has not been allowed, unless it is found that expenditure was necessary for the benefit of the employees for giving necessary facilities at the remote location of the power project.

(d) Any mandatory expenditure arising out of statutory obligation due to change of law, etc., has been allowed.

**Balance Payments**

(a) Pertaining to works undertaken or order placed before the date of commercial operation which are presumed to be within the scope of approved project cost have been allowed.

(b) Pertaining to works undertaken or order placed after the date of commercial operation which might have been admitted by the Central Government in the previous tariff period have been allowed.

(c) Pertaining to works undertaken or order placed after the date of commercial operation which has been claimed as new works in the relevant years in the tariff period under consideration and allowed by the Commission, the balance payments in subsequent years pertaining to these new works have also been allowed.

(d) Other balance payments not falling in any of the above categories have been disallowed.

12. Based on the above methodology, the entire amount of R&M expenditure on EAP as well as New works within the scope of RCE has been allowed. The petitioner has not claimed capitalisation of any other R&M expenditure.

13. During the financial year 2000-01, the petitioner has sought capitalisation of capital spares to the extent of Rs.5.93 crores as balance payments. It has been clarified by the petitioner that the capitalisation of spares is in accordance with the revised accounting standard, which became mandatory with effect from 1.4.1999. As per the present practice, only initial spares up to a certain amount, say 5% of the project cost are allowed to be capitalised. We would like to point out that maintaining accounts as per accounting standard is one thing and treating any expenditure to be eligible for tariff computation is another. The expenditure on spares subsequent to the date of commercial operation is to be accounted for as a part of O&M expenses in so far as tariff computation is concerned. Therefore, we do not allow the capitalisation of spares purchased after the date of commercial operation for tariff purpose. However, the petitioner should maintain a separate account for the yearly consumption of spares so that the same could be accounted for in the actual O&M for the respective years for the purpose of tariff.

14. In the year 1999-2000 in the balance payments, there are number of A/C Code adjustments totalling to Rs. 1,21,101. However, net effect of these adjustments should be nil. As such this amount has not been allowed for capitalisation.

15. Based on above discussion, we allow the year-wise additional capitalisation as given below:

(Rs.in lakhs)					
<b>Financial Years</b>	<b>1997-98</b>	<b>1998-99</b>	<b>1999-00</b>	<b>2000-01</b>	<b>Total</b>
1. New works					
(a) Within the scope of RCE	115.52	831.24	395.85	376.93	1719.54
(b) EAP	316.60	0.00	23.41	0.00	340.01
(c) Not in the scope of RCE	16.31	345.84	0.00	207.03	569.18
<b>Total (a+b+c)</b>	<b>448.43</b>	<b>1177.08</b>	<b>419.26</b>	<b>583.96</b>	<b>2628.73</b>
2. Balance Payments	-6.79	-195.03	-274.88	-106.62	-583.33
<b>Total (1+2)</b>	<b>441.64</b>	<b>982.05</b>	<b>144.38</b>	<b>377.34</b>	<b>2045.4</b>

16. The petitioner's claim for additional capitalisation on account of FERV has also been considered. The petitioner has claimed FERV as per the details given below:

(Rs. in lakhs)

1997-98	45
1998-99	157
1999-2000	150
2000-2001	(-) 63

17. FERV claimed is on account of IBRD loan which consists of IBRD- EQ loan, IBRD-USD loan, IBRD-DEM (Tranche-A loan) and IBRD-DEM (Tranche-B loan) and IBJ-II loan. It has been submitted on behalf of the petitioner that in IBRD pool loan, all currencies disbursed in individual loans are pooled in the central disbursement account and every loan is assigned a share of total of each currency outstanding, proportional to its share of the total outstanding in the pool. Thus at all times each loan reflects the same currency composition as that of the pool. Under the pool system, withdrawal outstanding are revalued at current value arrived at by applying exchange adjustments calculated by IBRD on daily basis which is informed to the borrowers at the end of a month. The exchange adjustments are, however, applied to loan balances and informed to the borrowers at the close of each year. As per this system, the historical balance of the loan could be different from the current balance of the loan calculated by IBRD after adjustment of exchange fluctuations. Since debt management is at corporate level, we accept the above methodology.

18. IBJ-II loan was partly refinanced by Sumi-tomo-I & III loan, SBI NY-II and ING(PGCIL). We have considered only the repayment against the original IBJ-II loan for working out the FERV and interest on loan.

19. FERV on account of IBRD-loan has been worked out for the years 1999-2000 and 2000-01 considering the opening balance as on 1.4.1999 of IBRD-EQ loan, IBRD-USD loan, IBRD-DEM (Tranche A) loan, IBRD-DEM (Tranche B) loan. As far as FERV on account of IBJ-II loan is concerned, it has been worked out for the years 1997-98 to 2000-01. While considering FERV the claim on that account has, however, been restricted to the amount capitalised and claimed in the petition. Accordingly, we allow the FERV as under:

(Rs. In lakhs)

Year	1997-98	1998-99	1999-2000	2000-01
FERV	45	157	150	(-)67

20. In view of the above, the following items of capital cost for the purpose of tariff are allowed:

(Rs. in lakhs)

		1997-98	1998-99	1999-2000	2000-01
(i)	Opening Capital cost as on 1 <sup>st</sup> April	137519	138005	139144	139439
(ii)	Additions during the year due to				
(a)	Additional capitalisation	442	982	144	377
(b)	FERV	45	157	150	(-)67
(iii)	Closing Capital Cost as on 31 <sup>st</sup> March of the year	138005	139144	139439	139749

### **DEBT-EQUITY RATIO**

21. Ministry of Power in its notification dated 2.11.1992 had considered the normative debt-equity ratio of 50:50. For the purpose of calculation of fixed charges in this petition same debt-equity ratio has been adopted and accepted by the Commission.

## **RETURN ON EQUITY (ROE)**

22. ROE of 12% per annum for the period from 1.11.1997 to 31.10.1998 and thereafter, ROE @ 16% per annum has been allowed as provided in the notification issued by Ministry of Power. The charges payable by the respondents on account of return on equity works out as under:

	(Rs. in lakhs)*
1997-98(1.11.1997 to 31.3.1998)	8266
1998-99(1.4.1998 to 31.10.1998)	8314
1998-99 (1.11.1998 to 31.3.1999)	11086
1999-2000	11143
2000-2001	11168

\* The amount relates to the whole year. For part of the year, pro-rata payments shall be made.

## **INTEREST ON LOAN**

23. The normative loan amount has been worked out as per the debt-equity ratio given in Para 21 above. The annual repayment of loan up to 31.3.1997 as per the notification dated 2.11.1992 has been considered. The annual repayment amount for the years 1997-98 to 2000-01 have been worked out as per the following formula.

$$\frac{\text{Annual actual repayment during the year} \times \text{normative loan at the beginning of the year}}{\text{Actual loan at the beginning of the year.}}$$

The amount of annual repayment for calculation of interest on loan is considered as worked out by the above formula, or as given in the petition, whichever is higher.

24. For the purpose of calculation of amount of interest on loan, the weighted rate of interest on loan has been worked out on the basis of actual rate of interest on actual average loans and the same is applied on the normative average loan during

the year. The charges payable by the respondents on account of interest on loan are as under:

(Rs. in lakhs)\*

Particulars	As worked out - For Full Year				
	1997-98	1998-99		1999-2000	2000-01
	From 1.11.97 to 31.3.98	From 1.4.98 to 31.10.98	From 1.11.98 to 1.4.99		
Loan					
Gross loan-Opening	68759	69002		69572	69719
Cumulative repayments of Loans upto previous year	32270	53798		59360	64805
Net loan-Opening	36489	15204		10212	4914
Increase/Decrease due to FERV	22	79		75	(-)34
Increase/Decrease due to Additional Capitalisation	221	491		72	189
Total	36732	15774		10359	5070
Repayments of Loans during the year	21528	5562		5445	273
Net loan-Closing	15204	10212		4914	4797
Average Net Loan	25847	12708		7563	4855
Weighted Rate of Interest on Loan	9.41%	8.74%		7.68%	7.42%
Interest on loan*	2432	1111		581	360

\* The amount relates to full year. For part of the year, pro-rata payments shall be made.

## **DEPRECIATION**

25. Before 1-11-1992 the single part tariff was applicable and the petitioner has not furnished the depreciation amount recovered in single part tariff upto 31.10.1992. Therefore, the details of depreciation amount as furnished by the petitioner up to 31.10.1992 as per the accounts maintained have been taken into account. Depreciation recovered in tariff from 1.11.1992 to 31.10.1997 as notified by Ministry of Power has also been taken into account. Ministry of Power had allowed depreciation @ 7.37% and the same rate has been followed for the purpose of calculation of fixed charges from 1.11.1997 to 31.3.2001. The year-wise amount of depreciation to be

recovered from respondents in tariff are detailed below:

	Asset Value	Rate	(Rs. in lakhs) Depreciation***
1997-98(1.11.1997 to 31.3.1998)	137519	7.37%	10135
1998-99(1.4.1998 to 31.10.1998)	138005	7.37%	10171
1998-99 (1.11.1998 to 31.3.1999)			10171
1999-2000	139144	7.37%	10255
2000-2001	139439	7.37%	10277

\*\*\* The figures relate to full year. For part of the year pro-rata payment shall be made.

### **O&M EXPENSES**

26. Keeping in view the methodology adopted by the Ministry of Power for various stations of NTPC, the actual O&M expenses of Rs.6991 lakhs including water charges for the year 1996-97 as per the audited balance sheet in respect of Vindhyachal STPS has been taken as the base and an escalation factor of 10% per annum has been applied to work out O&M expenses for the year 1997-98 to 2000-01. In the light of the above, water charges have not been considered separately. Based on this methodology, the charges payable by the beneficiaries on account of O&M are as under:

	(Rs. in lakhs) @
1997-98(1.11.1997 to 31.3.1998)	7690
1998-99(1.4.1998 to 31.10.1998)	8459
1998-99 (1.11.1998 to 31.3.1999)	8459
1999-2000	9305
2000-2001	10236

@ The amount relates to full year. For part of the year, pro-rata payments shall be made.

## **INTEREST ON WORKING CAPITAL**

27. Working capital has been calculated considering the following elements:

(a) Fuel Cost, Coal Stock and Oil stock: The petitioner has furnished the details of Calorific Value (CV) of Coal/Oil, in Form 18 corresponding to the GOI notification. In view of this, we could not assess the working capital requirement corresponding to the tariff period of this petition. Accordingly, we took a conscious view to provide for these items, on the same basis as was provided for in the calculation of tariff in the previous tariff setting by Govt of India in this tariff period.

(b) O&M Expenses: O&M expenses for working capital has been considered for 1 month of the respective year.

(c) Spares: In Ministry of Power Notification dated 2-11-1992, the actual spares of the last year i.e. 1991-92 less 1/5<sup>th</sup> initial capitalized spares were considered. In accordance with the above methodology adopted by Ministry of Power, the actual spares for the year 1996-97 as per the audited balance sheet of Vindhyachal STPS has been considered in the working for the years 1997-98 to 2000-01.

(d) Receivables: Receivables have been worked out on the basis of two months of fixed and variable charges. In view of the position explained in sub-para (a) above, variable charges component of the receivables in the working capital have been estimated on the basis of variable charge in the previous tariff period, that is, Rs.0.3474 per kwh at ESO 6801 Mu/annum. The fixed

charge component of the receivables are based on the calculations for the current tariff period.

28. Ministry of Power in its notification had considered the working capital margin of Rs.1390 lakhs. The same has been adopted for the purpose of calculating working capital for the years 1997-98 to 2000-01. 50% of the working capital margin has been treated as equity and remaining 50% has been treated as loan by retaining the debt-equity ratio of 50:50 and respective return and interest is allowed thereon. The average SBI PLR of the respective year has been considered as the rate of interest on working capital. The rate of interest adopted during the years 1997-98, 1998-99, 1999-2000 and 2000-01 is 14%, 13%, 12% and 11.5% respectively. Based on the above methodology, the year-wise details of interest on working capital payable by the respondents to the petitioner are as under:

(Rs. in lakhs) @@

1997-98(1.11.1997 to 31.3.1998)	2002
1998-99(1.4.1998 to 31.10.1998)	1861
1998-99 (1.11.1998 to 31.3.1999)	1951
1999-2000	1821
2000-2001	1774

@@ The amount relates to the whole year. For part of the year, pro-rata payments shall be made.

29. The impact of additional capitalisation & FERV in the fixed charges for the period 1-4-1997 to 31-10-1997 (date of expiry of validity period of Ministry of Power tariff notification dated 2-11-1992) is as under:

(Rs. in lakhs)

	Addl. Capitalisation	FERV
Depreciation	0	0
Interest on loan	14	1
Return on Equity	13	1
Total	27	2

We, therefore, allow the following impact on fixed charges for the period 1.4.1997 to 31.10.1997:

(Rs. in lakhs)	
Impact due to additional capitalisation	27 x 7/12
Impact due to FERV	2 x 7/12

30. Annual fixed charges for the period 1.11.1997 to 31.3.2001 allowed are summed up as below:

		(Rs. in Lacs)				
	Particulars	1997-98	1998-99		1999-2000	2000-01
		From 1.11.97	Upto 31.10.98	From 1.11.98		
1	Interest on Loan	2432	1111	1111	581	360
2	Interest on Working Capital	2002	1861	1951	1821	1774
3	Depreciation	10135	10171	10171	10255	10277
4	Return on Equity	8266	8314	11086	11143	11168
5	O & M Expenses	7690	8459	8459	9305	10236
	<b>TOTAL</b>	<b>30525</b>	<b>29916</b>	<b>32778</b>	<b>33105</b>	<b>33815</b>

The payments for part of the year shall be made on pro-rata basis.

31. The fixed charges decided by us in the preceding paras shall be shared by the respondents in the ratio of energy drawn from Vindhyachal STPS during the relevant period. The petitioner has already recovered fixed charges from the respondents in view of continuation of tariff notification dated 2.11.1992 on ad-hoc basis beyond 31.10.1997. The amount already recovered shall be adjusted against the fixed charges decided by us through this order.

32. The fixation of tariff inter alia means fixation of fixed charges as well as energy charges for the period in question i.e. 1.11.1997 to 31.3.2001. Fixation of fixed

charges has already been dealt with in foregoing paras in this order of the Commission. In so far as the payment of energy charges is concerned, it has been observed that petitioner has indicated a energy charge of paise 34.66 per kwh sent out based on the coal prices of Rs.495.68 per metric tonne, oil price of Rs.4659.35 per kilo litre, GCV of coal of 4105 kCal per Kg, GCV of oil of 9916 kCal per litre indicated to be as per Ministry of Power tariff notification dated 2.11.1992. As per the said tariff notification these are the prices and GCV prevailing on 30.9.1992. The operational norms of Station Heat Rate, Auxiliary Energy Consumption and Specific Fuel Oil Consumption adopted are 2500 kCal/kwh, 9.5% and 3.5 ml/kwh respectively. In the absence of latest/actual data having been furnished by the petitioner, we allow the same as the base energy charge. This shall be subject to fuel price variation.

33. This order disposes of Petition No. 35/2002.

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

**Sd/-**  
**(G.S. RAJAMANI)**  
**MEMBER**

**Sd/-**  
**(D.P. SINHA)**  
**MEMBER**

New Delhi dated the 24<sup>th</sup> October, 2002