

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram**

1. **Shri Bhanu Bhushan, Member**
2. **Shri A.H. Jung, Member**

**Petition No. 128/2004**

**In the matter of**

Approval of tariff in respect of Vindhyachal Super Thermal Power Station Stage-I (1260 MW) for the period from 1.4.2004 to 31.3.2009.

**And in the matter of**

National Thermal Power Corporation Ltd.

**.....Petitioner**

**Vs**

1. Madhya Pradesh State Electricity Board, Jabalpur
2. Maharashtra State Electricity Distribution Company Ltd, Mumbai,
3. Gujarat Urja Vikas Nigam Ltd, Vadodara.
4. Chhattisgarh State Electricity Board, Raipur,
5. Electricity Department, Government of Goa, Panaji,
6. Electricity Department, Administration of Daman & Diu, Daman
7. Electricity Department, Administration of Dadra & Nagar Haveli, Silvassa.

**---Respondents**

**The following were present**

1. Shri V.B.K.Jain, NTPC
2. Shri I.J.Kapoor, NTPC
3. Shri S.K.Johar, NTPC
4. Shri G.S.Agesh, NTPC
5. Shri S.K.Sharma, NTPC
6. Shri A.S.Pandey, NTPC
7. Ms.. Alka Saigal, NTPC
8. Shri.M K Narang, NTPC
9. Shri.S.P.Singh, MPSEB
10. Shri.D.K.Shrivastava, MPSEB.

**ORDER**  
**(DATE OF HEARING : 22.12.2005)**

This petition has been filed by the petitioner, a generating company owned or controlled by the Central Government for approval of tariff in respect of Vindhyachal Super Thermal Power Station, Stage-I (1260 MW) (hereinafter referred to as “the generating station”) for the period from 1.4.2004 to 31.3.2009 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, (hereinafter referred to as “the 2004 regulations”).

2. The generating station with a total capacity of 1260 MW comprises of 6 units of 210 MW each. The dates of commercial operation of different units of the generating station are as under :

Unit-I	1.9.1988
Unit-II	1.1.1989
Unit-III	1.2.1990
Unit-IV	1.9.1990
Unit-V	1.4.1991
Unit-VI	1.2.1992

3. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide its order dated 6.11.2003 in Petition No. 32/2001 based on the capital cost of Rs.139849 lakh. The petitioner’s claim for tariff in the present petition was initially based on the capital cost of Rs.147273 lakh which included admitted capital cost of Rs.139849 lakh as on 1.4.2001, FERV amounting to Rs 92 lakh and additional capital expenditure of Rs.7424 lakh for the period 1.4.2001 to 31.3.2004. In the meantime, the Commission vide its order dated 13.4.2005 in Petition No.169/2004 approved additional capital

expenditure of Rs.5967 lakh on works for the period 2001-04. Subsequently, the petitioner filed I.A No.45/2005 to amend the petition and revised its claim for tariff based on capital cost of Rs 145909 lakh, which included admitted capital cost of Rs.139849 lakh as on 1.4.2001, FERV amounting to Rs.92 lakh and the admitted additional capital expenditure of Rs. 5967 lakh during 2001-04. All references to the petitioner's claim are to the revised tariff, in the amended petition.

4. The year-wise details of additional capitalisation approved by the Commission by order dated 13.4.2005, in Petition No.169/2004 are as under :

(Rs in lakh)

2001-02	935
2002-03	4719
2003-04	313
Total	5967

5. The details of the annual fixed charges claimed by the petitioner as on 1.4.2004 and based on escalated coal prices with effect from 15.6.2004 are given hereunder:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on loan	1285	1091	1067	1001	885
Interest on Working Capital	2907	2936	2970	3011	3020
Depreciation	5267	5267	5267	5267	4081
Advance against Depreciation	0	0	0	0	0
Return on Equity	10214	10214	10214	10214	10214
O&M expenses, excluding water charges.	13104	13633	14175	14742	15334
<b>TOTAL</b>	<b>32777</b>	<b>33142</b>	<b>33693</b>	<b>34234</b>	<b>33535</b>

6. The details of working capital furnished by the petitioner and its claim for interest thereon are summarised hereunder :

(Rs. in lakh)

	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Coal Stock	7665.74	7665.74	7665.74	7665.74	7665.74
Oil Stock	448.63	448.63	448.63	449.86	448.63
O & M expenses	1092.00	1136.10	1181.25	1228.50	1277.85
Spares	3023.58	3205.00	3397.30	3601.14	3817.21
Receivables	16132.43	16193.23	16285.12	16404.53	16258.71
Total Working Capital	28362.39	28648.70	28978.04	29370.77	29468.14
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
<b>Interest on Working capital</b>	<b>2907.14</b>	<b>2936.49</b>	<b>2970.25</b>	<b>3010.50</b>	<b>3020.48</b>

7. In addition, the petitioner has claimed energy charge of 79.67 paise/kWh.

The energy charge claimed is subject to fuel price variation.

8. The reply to the petition was filed by the MPSEB, MSEDCL, The other respondents have not filed their reply. The petitioner has published notices in the newspapers in accordance with the procedure specified by the Commission. However, no objections or suggestions have been received in response to these notices.

### **De-capitalization of Assets**

9. The petitioner has de-capitalised certain assets during the period 2001-04. These de-capitalised assets were removed from the gross block to arrive at admissible additional capitalization for the purpose of capital cost by order dated 13.4.2005 in Petition No.169/2004. These assets broadly fall under two categories viz. items which were capitalised on the date of commercial operation and subsequently withdrawn due to non-materialisation and the physical assets which were not in use. As regards the assets which were withdrawn due to non-materialisation, it is observed that the petitioner is maintaining accounts on

accrual basis. This resulted in inflated capital base in earlier tariff period due to capitalization of liability provision. The expenditure for which provision was made did not materialise and it was de-capitalised subsequently. But the petitioner has been charging tariff on the inflated capital base till 31.3.2004. In these cases, the past period calculations to assess impact on tariff have not been re-opened and are to be mutually settled between the petitioner and the beneficiaries. In case of a dispute, any of the parties may approach the Commission for appropriate relief. As regards the physical assets which are not in use, 90% of the cost of assets or the cumulative depreciation claimed by the petitioner whichever is less has been reduced from cumulative depreciation recovered till 31.3.2004. Accordingly, adjustment of an amount of Rs 564 lakh, has been allowed.

#### **CAPITAL COST**

10. As per the second proviso to regulation 17 of the 2004 regulations, in case of the existing generating stations, the capital cost admitted by the Commission for determination of tariff prior to 1.4.2004 shall form the basis for determination of tariff.

11. The petitioner has claimed tariff based on the capital cost of 145908 lakh which included admitted capital cost of Rs.139849 lakh as on 1.4.2001, FERV during 2001-04 amounting to Rs. 92 lakh and additional capital expenditure of Rs.5967 lakh.

12. The petitioner, vide affidavit filed on 12.1.2006 has confirmed that all the assets included in the balance sheet for 2003-04 of the generating station were

in use as on 1.4.2004. The petitioner has further submitted that the assets that will be out of use in the tariff period 2004-09 will be de-capitalised and the details of such assets not in use/amounts decapitalised shall be furnished to the Commission along with the claims for capitalisation to be filed separately.

13. The Commission vide its order dated 13.4.2005 in Petition No.169/2004 has decided that the opening capital cost (excluding FERV) for the purpose of tariff for the period 2004-09, as on 1.4.2004 shall be Rs.145816 lakh. This has been adopted for the purpose of tariff in this petition. Next we consider the additional capitalisation on account of FERV.

#### **FERV / Extra Rupee Liability during the years 2001-04**

14. Regulation 1.13 (a) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2001 provided as under:

(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

(c) ceiling of permissible return shall be admissible. This as and when paid, may be spread over the twelve-month period in arrears.

15. Regulation 1.7 of the 2001 regulations, further provided that recovery of foreign exchange rate variation would be done directly by the utilities from the beneficiaries without filing a petition before the Commission. In case of any objections by the beneficiaries to the amounts claimed on these counts, they may file an appropriate petition before the Commission.

16. The petitioner has claimed FERV as per the following details :

(Rs. In lakh)				
Particulars	2001-02	2002-03	2003-04	Total
FERV	3	82	6.92	91.92

17. MPSEB has opposed the petitioner's claim for capitalisation of FERV. The claim of the petitioner has been considered. The petitioner's claim for capitalisation of Rs. 91.92 lakh on account of FERV, is matching with calculations submitted and is in accordance with AS-11 applicable upto 31.3.2004. This claim has accordingly been admitted, for tariff calculations.

18. Based on the above, the gross block as on 1.4.2004 comes to Rs.145908 lakh as per details given hereunder:

(Rs. in lakh)	
Capital cost admitted as on 1.4.2004 as per order dated 13.4.2005	145816
FERV admitted for the tariff period 2001-2004	92
Opening Capital cost as on 1.4.2004	<b>145908</b>

## **DEBT-EQUITY RATIO**

19. Clause (1) of Regulation 20 of the 2004 regulations *inter alia* provides that in case of the existing generating stations, debt–equity ratio considered by the

Commission for fixation of tariff for the period ending 31.3.2004 shall be considered for determination of tariff.

20. The Commission, while approving tariff vide its order dated 6.11.2003, in Petition No 32/2001, for the period from 1.4.2001 to 31.3.2004, had considered the normative debt-equity ratio of 50:50. Therefore, for the purpose of present petition, debt-equity ratio of 50:50 has been adopted in the working. The additional capitalisation on works (Rs 5967 lakh) and on account of FERV ( Rs 92 lakh) for the period 1.4.2001 to 31.3.2004 is deemed to have been financed through debt and equity in the ratio of 50:50. Accordingly, an amount of Rs.72954 lakh has been considered as equity as on 1.4.2004, against equity of Rs 69925 lakh considered in the order dated 6.11.2003.

#### **TARGET AVAILABILITY**

21. The petitioner has considered target availability of 80%, based on the provisions of the 2004 regulations. Accordingly, target availability of 80 % has been considered for recovery of full fixed charges and computation of fuel element in the working capital for the period from 1.4.2004 to 31.3.2009.

#### **RETURN ON EQUITY**

22. As per clause (iii) of regulation 21 of the 2004 regulations, return on equity shall be computed on the equity base determined in accordance with regulation 20 @ 14% per annum. Equity invested in foreign currency is to be allowed a return in the same currency and the payment on this account is made in Indian Rupees based on the exchange rate prevailing on the due date of billing.



23. The petitioner has claimed return on equity @ 14%. The return on equity has been worked out on equity of Rs 72954 lakh. The petitioner shall recover an amount of Rs.10214 lakh each year, during the period 2004-09, as return on equity.

### **INTEREST ON LOAN**

24. Clause (i) of regulation 21 of the 2004 regulations *inter alia* provides that,-

(a) Interest on loan capital shall be computed loan-wise on the loans arrived at in the manner indicated in regulation 20.

(b) The loan outstanding as on 1.4.2004 shall be worked out as the gross loan as per regulation 20 minus cumulative repayment as admitted by the Commission for the period up to 31.3.2004. The repayment for the period 2004-09 shall be worked out accordingly on normative basis.

(c) The generating company shall make every effort to swap the loan as long as it results in net benefit to the long-term transmission customers. The costs associated with such swapping shall be borne by the beneficiaries.

(d) The changes to the loan terms and conditions shall be reflected from the date of such swapping and benefits passed on to the beneficiaries.

(e) In case of any dispute, any of the parties may approach the Commission with proper application. However, the beneficiaries shall not withhold any payment as ordered by the Commission to the generating

company during the pendency of the any dispute relating to swapping of loan.

(f) In case any moratorium period is availed of by the generating company, depreciation provided for in the tariff during the years of moratorium shall be treated as repayment during those years and interest on loan capital shall be calculated accordingly.

(g) The Generating Company shall not make any profit on account of swapping of loan and interest on loan.

25. The fixed charges for the period prior to 1.4.2004 were allowed by the Commission on normative loan. Therefore, the interest on loan has been worked out in the manner as mentioned below:

(a) Normative loan considered as per order dated 6.11.2003, has been considered. Additional capital expenditure on works and FERV for the years 2001-02, 2002-03,2003-04 have been added to this notional loan.

(b) Cumulative repayment of loan up to 31.3.2004, amounting to Rs 68458 lakh has been considered as per order dated 6.11.2003,

(c) In case of moratorium period in respect of SBI and UCO Bank loans, depreciation proportionate to the loan has been considered as actual repayment of loan.

(d) Annual repayment of actual loan has been used to calculate normative repayment of loan. Normative repayment has been worked out as per formula below:

$$\text{Normative Repayment} = \frac{\text{Actual Repayment} \times \text{Normative Loan}}{\text{Actual Loan}}$$

(e) Where the normative repayment of the loan is less than the depreciation of the same year, the repayment has been considered to the extent of depreciation in accordance with the order dated 5.5.2006 in Petition No.162/2004. In this manner, the entire (normative) loan gets repaid during 2004-05.

(f) The weighted average rate of interest calculated on actual loan and actual repayment have been applied on normative loan for computation of interest on loan component of tariff.

26. The necessary calculations in support of weighted average rate of interest are appended below:

**CALCULATIONS OF WEIGHTED AVERAGE RATE OF INTEREST**

		( Rs in lakh)				
		2004-05	2005-06	2006-07	2007-08	2008-09
<b>1</b>	<b>Bond 8<sup>th</sup> Issue</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan	0	0	0	0	0
	Rate of Interest	9.05%	9.05%	9.05%	9.05%	9.05%
	Interest	0	0	0	0	0
<b>2</b>	<b>Vijaya Bank</b>					
	Opening Balance	500	0.00	0.00	0.00	0.00
	Addition/Drawl	0	0	0	0	0
	Repayment	500	0.00	0.00	0.00	0.00
	Closing Balance	0	0	0	0	0
	Average Loan	250	0	0	0	0
	Rate of Interest	7.30%	7.30%	7.30%	7.30%	7.30%
	Interest	18	0	0	0	0
	<b>SBI-I</b>					
	Opening Balance	600	579	559	539	520
	Addition/Drawl	0	0	0	0	0
	Repayment(Proportionate to	21.12	20.38	19.66	18.97	18.30

	Dep)					
	Closing Balance	579	559	539	520	502
	Average Loan	589	569	549	529	511
	Rate of Interest %	9.60	9.60	9.60	9.60	9.60
	Interest	57	55	53	51	49
	<b>UCO BANK</b>					
	Opening Balance	400.00	385.92	372.34	359.23	346.58
	Addition/Drawl	0				
	Repayment	14.08	13.58	13.11	12.64	12.20
	Closing Balance	385.92	372.34	359.23	346.58	334.38
	Average Loan	392.96	379.13	365.78	352.91	340.48
	Rate of Interest	7.35	7.35	7.35	7.35	7.35
	Interest	28.88	27.87	26.89	25.94	25.03
3A	<b>IBRD-O(USD-EQ)-INR</b>					
	Opening Balance	575.54	534	490	443	391
	Addition/Drawl	0	0	0	0	0
	Repayment	41.13	44.25	47.60	51.21	55.07
	Closing Balance	534	490	443	391	336
	Average Loan-INR	554.98	512	466	417	364
	Rate of Interest	5.85%	5.85%	5.85%	5.85%	5.85%
	Interest-INR	32	30	27	24	21
3B	<b>IBRD-A (USD)-INR</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR					
	Rate of Interest	6.64%	6.64%	6.64%	6.64%	6.64%
	Interest-INR	0	0	0	0	0
3C	<b>IBRD-B (Tr. A) (EURO)-INR</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0
	Rate of Interest	5.18%	5.18%	5.18%	5.18%	5.18%
	Interest-INR	0	0	0	0	0
3D	<b>IBRD-B (Tr. B) (EURO)-INR</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0.00	0.00	0.00	0.00	0.00
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0

	Rate of Interest	5.59%	5.59%	5.59%	5.59%	5.59%
	Interest-INR	0	0	0	0	0
<b>3</b>	<b>IBRD-Total INR</b>					
	Opening Balance	575.54	534.41	490.16	442.56	391.35
	Addition/Drawl	0.00	0.00	0.00	0.00	0.00
	Repayment	41.13	44.25	47.60	51.21	55.07
	Closing Balance	534.41	490.16	442.56	391.35	336.28
	Average Loan-INR	554.98	512.29	466.36	416.96	363.82
	Rate of Interest	5.85%	5.86%	5.86%	5.86%	5.86%
	Interest-INR	32	30	27	24	21
<b>4A</b>	<b>IBJ-II(SUMITOMO-III)</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0
	Rate of Interest-INR	1.37%	1.37%	1.37%	1.37%	1.37%
<b>4B</b>	<b>IBJ-II(BAHRING)</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0
	Rate of Interest	5.85%	5.85%	5.85%	5.85%	5.85%
	Interest-INR	0.00	0.00	0.00	0.00	0.00
<b>4C</b>	<b>IBJ-II(SBI NY-II)</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0
	Rate of Interest	1.24%	1.24%	1.24%	1.24%	1.24%
	Interest-INR	0	0	0	0	0
<b>4D</b>	<b>IBJ-II (TRANCHE-D)</b>					
	Opening Balance	0	0	0	0	0
	Addition/Drawl	0	0	0	0	0
	Repayment	0	0	0	0	0
	Closing Balance	0	0	0	0	0
	Average Loan-INR	0	0	0	0	0
	Rate of Interest	0.52%	0.52%	0.52%	0.52%	0.52%
	Interest-INR	0	0	0	0	0
<b>4</b>	<b>IBJ-II- Total</b>					

Opening Balance	0	0	0	0	0
Addition/Drawl	0	0	0	0	0
Repayment	0	0	0	0	0
Closing Balance	0	0	0	0	0
Average Loan	0	0	0	0	0
Rate of Interest	100.00%	200.00%	300.00%	400.00%	500.00%
Interest-INR	0	0	0	0	0
<b>TOTAL LOAN</b>					
Opening Balance	2075.54	1499.21	1421.00	1340.63	1257.81
Addition/Drawl	0.00	0.00	0.00	0.00	0.00
Repayment	576.33	78.21	80.37	82.82	85.57
Closing Balance	1499.21	490.16	442.56	391.35	336.28
Average Loan	1787.38	1460.10	1380.82	1299.22	1215.03
Rate of Interest	7.62%	7.70%	7.74%	7.79%	7.85%
Interest	136.21	112.45	106.87	101.18	95.36

27. The computations of interest on notional loan by applying weighted average interest rate are appended herein below:

#### COMPUTATION OF INTEREST ON LOAN

(Rs. in lakh)

Loan	2004-05	2005-06	2006-07	2007-08	2008-09
Gross loan-Opening	72954	72954	72954	72954	72954
Cumulative repayments of loans upto previous year	68458	72954	72954	72954	72954
Net loan-Opening	4496	0	0	0	0
Increase/ Decrease due to FERV	0	0	0	0	0
Increase/ Decrease due to Additional Capitalization	0	0	0	0	0
Total	4496	0	0	0	0
Repayments of loans during the year	4496.26	0.00	0.00	0.00	0.00
Net loan-Closing	0	0	0	0	0
Average Net Loan	2248	0	0	0	0
Rate of Interest on Loan	<b>7.63%</b>	<b>7.74%</b>	<b>7.80%</b>	<b>7.89%</b>	<b>8.03%</b>
<b>Interest on loan</b>	172	0	0	0	0

#### DEPRECIATION

28. Sub-clause (a) of clause (ii) of regulation 21 of the 2004 regulations provides for computation of depreciation in the following manner, namely:

(i) The value base for the purpose of depreciation shall be the historical cost of the asset.

(ii) Depreciation shall be calculated annually based on straight line method over the useful life of the asset and at the rates prescribed in Appendix II to these regulations. The residual life of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the historical capital cost of the asset. Land is not a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the historical cost of the asset. The historical capital cost of the asset shall include additional capitalization on account of Foreign Exchange Rate Variation up to 31.3.2004 already allowed by the Central Government / Commission

(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.

29. Weighted average rate of depreciation calculated, based on gross value of assets is 3.52% against the petitioner's claim of 3.61%. The petitioner has considered depreciation rate of 11.25% for 'other electrical installations' and "satellite communication system" though the depreciation rates, specified as per 2004 regulations, are 3.6% and 6% respectively. Accordingly, the rates of depreciation of 3.6% and 6 % have been adopted.

30. The cost of land in the present case is Rs.2500.84 lakh. The gross depreciable value of the generating station, excluding land cost, is  $0.9 \times (\text{Rs. } 145908.54 \text{ lakh} - \text{Rs } 2500.84 \text{ lakh}) = \text{Rs. } 129066.93 \text{ lakh}$ . Cumulative depreciation and AAD recovered in tariff up to 31.3.2004, after adjusting the depreciation of Rs 564 lakh recovered on assets decapitalised and adding depreciation of Rs 5 lakh recovered on account of FERV for the period 1.4.2001 to 31.3.2004, is Rs.104502 lakh. Remaining depreciable value as on 1.4.2004 is thus Rs.24564 lakh. An amount of Rs 5136 lakh is recoverable as depreciation up to 31.3.2005 by applying depreciation rate of 3.52%. Thus, the balance depreciation recoverable as on 1.4.2005 is Rs 19429 lakh. As the entire loan has been repaid during 2004-05, the balance depreciation of Rs 19429 lakh has been spread over the balance useful life of the generating station. The date of commercial operation of the generating station is taken as 15.4.1990. In this manner, the spent life as on 1.4.2005, works out to 14.96 years, against the total life of 26.54 years. The balance useful life of the generating station is 11.58 years. Depreciation of Rs 19429 lakh has been spread over to 11.58 years. In this manner the petitioner is entitled to recover depreciation of Rs 1678 lakh each year during 2005-06 to 2008-09.

### **ADVANCE AGAINST DEPRECIATION**

31. As per sub-clause (b) of clause (ii) of regulation 21 of the 2004 regulations, in addition to allowable depreciation, the transmission licensee is entitled to Advance Against Depreciation, computed in the manner given hereunder:



AAD = Loan repayment amount as per regulation 56 (i) subject to a ceiling of 1/10th of loan amount as per regulation 54 minus depreciation as per schedule

32. It is provided that Advance Against Depreciation shall be permitted only if the cumulative repayment up to a particular year exceeds the cumulative depreciation up to that year. It is further provided that Advance Against Depreciation in a year shall be restricted to the extent of difference between cumulative repayment and cumulative depreciation up to that year.

33. The petitioner has not claimed Advance Against Depreciation. Therefore, the petitioner's entitlement to Advance Against Depreciation is "nil".

### **O&M EXPENSES**

34. The 2004 regulations have prescribed the following O&M expense norms for a generating station with 200 / 210 MW units :

(Rs.in lakh /MW)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses	10.40	10.82	11.25	11.70	12.17

35. The petitioner has claimed O&M expenses as detailed below:

(Rs. in lakh)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses	13104	13633	14175	14742	15334

36. O&M expenses claimed by the petitioner are in order and are allowed.

37. In addition to the above, the petitioner has prayed for a specific deviation pertaining to water charges in O&M. The petitioner has submitted that in the past years, the State Governments have been resorting to manifold increase in the

rates of water charges / royalty payable, which is not normally based on common commercial principles. Therefore, this increase cannot be covered under the normal O&M expenses allowed in the tariff. The petitioner has, therefore, submitted that any increase in the rates of water charges / royalty etc. by more than 4% per annum over the rates prevailing on 31.3.2004 should be additionally payable by the respondent beneficiaries.

38. The normative O&M expenses were finalized by the Commission after going through the transparent process of hearing and consulting all concerned and were based on the data furnished by the concerned utilities for different components of O&M, including water charges. Further, an escalation of 4% per year is inbuilt in the normative O&M expenses specified by the Commission. There may be other heads in O&M expenses where actual expenses may be less than the normative expenses specified by the Commission. Therefore, we do not consider it to be justified to allow increase under one head, that is, water charges in isolation. As such, recovery of additional O&M expenses on account of any increase in the rates of water charges / royalty etc. during tariff period cannot be allowed. However, the petitioner is at liberty to approach the Commission in accordance with law for recovery of additional water charges with proper justification and details of actual expenses recovered under other heads, if State Governments resort to abnormal increase in the rates of water charges / royalty during the tariff period.

39. The petitioner has submitted that the wage revision of its employees is due with effect from 1.1.2007. Therefore, O &M expenses should be subject to

revision on account of revision of employee cost from that date. In the alternative, it has been prayed that the increase in employee cost due to wage revision be allowed as per actuals for extra cost to be incurred consequent to wage revision. We are not expressing any view, as this issue does not arise for consideration at this stage. The petitioner may approach for a relief in this regard at an appropriate stage in accordance with law.

### **INTEREST ON WORKING CAPITAL**

40. In accordance with clause (v) of Regulation 21 of the 2004 regulations, working capital in case of Coal based/Lignite-fired generating stations shall cover:

- (i) Cost of coal or lignite for 1½ months for pit-head generating stations and two months for non-pit-head generating stations, corresponding to the target availability;
- (ii) Cost of secondary fuel oil for two months corresponding to the target availability;
- (iii) Operation and Maintenance expenses for one month;
- (iv) Maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation; and
- (v) Receivables equivalent to two months of fixed and variable charges for sale of electricity calculated on the target availability.

41. Under the 2004 regulations, the rate of interest on working capital shall be on a normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2004 or on 1<sup>st</sup> April of the year in which the

generating station or a unit thereof is declared under commercial operation, whichever is later. Interest on working capital shall be payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency.

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

(a) **Coal stock:** The petitioner in the amended petition has revised its claim for interest on working capital from July, 2004 onwards urging that the price of coal has increased w.e.f 15.6.2004. As per provisions of the 2004 regulations, interest on working capital has to be frozen as normative number at the beginning of the tariff period based on the price and GCV of the fuel applicable during preceding three months and prevailing applicable rate of interest and is not to be revised based on subsequent revision of the price of fuel or applicable rate of interest. As such, the plea of the petitioner to allow interest on working capital based on escalated fuel price w.e.f 15.6.2004 cannot be accepted. The coal stock has been worked out for 1.5 months on the basis of operational parameters given in the 2004 regulations and weighted average price and GCV of coal.

(b) **Secondary Fuel Oil:** The petitioner has claimed cost of fuel in the working capital based on price and GCV of coal for preceding three months of January 2004 to March 2004 and based on the price and GCV of HFO for the months of October 2003 to December 2003 and HSD for the month of

April 2003. Since HFO is the main secondary fuel oil, it is considered for the computation of working capital and base rate of energy charge.

Accordingly, the fuel component in working capital works out as follows for the tariff period 2004-09 :

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (leap year)	2008-09
Cost of coal for 1.5 months	7293.87	7293.87	7293.87	7313.85	7293.87
Cost of secondary fuel oil for two months.	423.46	423.46	423.46	424.62	423.46

**(c) O&M Expenses:** O&M expenses for working capital has been worked out for 1 month of O&M expenses approved above and are considered in tariff of the respective year.

**(d) Spares:** The petitioner has calculated the value of maintenance spares for the purpose of working capital considering additional capital expenditure in respective year after the date of commercial operation. Starting with the 1% of historical cost as on commercial date of operation, the cost of maintenance spares for a particular year has been calculated by the petitioner, by escalating the previous year's cost by 6% plus 1% of the additional capital expenditure for that particular year. The amounts claimed by the petitioner for maintenance spares for interest on working capital calculation, are as given below :

(Rs.in lakh)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Amount claimed	3039	3221	3414	3619	3836

The 2004 regulations do not provide for taking into account additional capital expenditure for working out the cost of maintenance spares for the working capital. The cost of maintenance spares for the working capital has, therefore, been computed based on historical cost of Rs.133535 lakh, including initial spares of Rs 2606 lakh as on 31.3.1992 (closing date of financial year in which the generating station was declared under commercial operation). The value of the spares as on 1.4.2004 works out to Rs. 2848 lakh.

(e) **Receivables:** The receivables have been worked out on the basis of two months of fixed and variable charges. The supporting calculations in respect of receivables are tabulated hereunder:

(Rs.in lakh)					
<b>Variable Charges</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Coal (Rs/kwh)	0.7262	0.7262	0.7262	0.7262	0.7262
Oil (Rs/kwh)	0.0316	0.0316	0.0316	0.0316	0.0316
Rs./kwh	<b>0.7578</b>	<b>0.7578</b>	<b>0.7578</b>	<b>0.7578</b>	<b>0.7578</b>
Variable Charges per year	60892	60892	60892	61058	60892
Receivables					
Variable Charges -2 months	<b>10148.62</b>	<b>10148.61</b>	<b>10148.61</b>	<b>10176.41</b>	<b>10148.61</b>
Fixed Charges - 2 months	<b>5233</b>	<b>4711</b>	<b>4807</b>	<b>4908</b>	<b>5012</b>
<b>Receivables (Rs in lakh)</b>	<b>15381</b>	<b>14859</b>	<b>14955</b>	<b>15084</b>	<b>15160</b>

43. The average SBI PLR of 10.25% as on 1.4.2004 has been considered as the rate of interest on working capital during the tariff period 2004-05 to 2008-09.

44. The necessary details in support of calculation of interest on working capital are appended below:

### **Calculation of Interest on Working Capital**

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Coal Stock- 1.1/2 months	7293.87	7293.86	7293.86	7313.85	7293.86
Oil stock -2 months	423	423	423	425	423
O & M expenses	1092	1136	1181	1229	1278
Spares	2848	3019	3200	3392	3596
Receivables	15381	14859	14955	15084	15160
<b>Total Working Capital</b>	<b>27039</b>	<b>26732</b>	<b>27054</b>	<b>27443</b>	<b>27751</b>
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	<b>2771</b>	<b>2740</b>	<b>2773</b>	<b>2813</b>	<b>2845</b>

## ANNUAL FIXED CHARGES

45. A statement showing summary of the capital cost and other related matters is annexed to this order. The annual fixed charges for the period 1.4.2004 to 31.3.2009 allowed in this order are summed up as below:

(Rs. in lakh)

	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
1	Interest on Loan	172	0	0	0	0
2	Interest on Working Capital	2771	2740	2773	2813	2845
3	Depreciation	5136	1678	1678	1678	1678
4	Advance against Depreciation	0	0	0	0	0
5	Return on Equity	10214	10214	10214	10214	10214
6	O & M Expenses	13104	13633	14175	14742	15334
	<b>TOTAL</b>	<b>31396</b>	<b>28265</b>	<b>28839</b>	<b>29446</b>	<b>30070</b>

## ENERGY/VARIABLE CHARGES

46. The petitioner has claimed the rate of energy charge at 79.67 paise/kWh. However, the base rate of energy charge works out to be 75.78 paise/kWh as per the following computations based on fuel prices and GCVs

Gross Station Heat Rate	kCal/kWh	2500.00
Specific Fuel Oil Consumption	ml/kWh	2.00
Aux. Energy Consumption	%	9.00
Weighted Average GCV of Oil	kCal/l	9726.67
Weighted Average GCV of Coal	kCal/Kg	4095.33
Weighted Average Price of Oil	Rs./KL	14386.91
Weighted Average Price of Coal	Rs./MT	1091.00
Rate of Energy Charge from Sec. Fuel Oil	Paise/kWh	2.88
Heat Contributed from SFO	kCal/kWh	19.45
Heat Contributed from Coal	kCal/kWh	2480.55
Specific Coal Consumption	Kg/kWh	0.61

Rate of Energy Charge from Coal	Paise/kWh	66.08
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	<b>75.78</b>

47. The Base Energy Charges have been calculated on base value of GCV, base price of fuel and normative operating parameters as indicated in the above table and are subject to fuel price adjustment. The notification dated 26.3.2004 provides for fuel price adjustment for variation in fuel price and GCV of fuels. Accordingly, the base energy charges approved shall be subject to adjustment. The formula applicable for fuel price adjustment shall be as given below: -

$$\mathbf{FPA = A + B}$$

**Where,**

- FPA** – Fuel price Adjustment for a month in Paise/kWh Sent out  
**A** – Fuel price adjustment for Secondary Fuel oil in Paise/kWh sent out  
**B** – Fuel price adjustment for Coal in Paise/kWh sent out

**And,**

$$\mathbf{A = \frac{10 \times (SFC_n)}{(100 - AC_n)} \left\{ (P_{om}) - (P_{os}) \right\}}$$

$$\mathbf{B = \frac{10}{(100 - AC_n)} \left\{ (SHR_n) \left( P_{cm}/K_{cm} - P_{cs}/K_{cs} \right) - (SFC_n) \left[ (k_{om} \times P_{cm}/K_{cm}) - (k_{os} \times P_{cs}/K_{cs}) \right] \right\}}$$

**Where,**

- $SFC_n$  – Normative Specific Fuel Oil consumption in l/kWh  
 $SHR_n$  – Normative Gross Station Heat Rate in kCal/kWh



$AC_n$	–	Normative Auxiliary Consumption in percentage
$P_{om}$	–	Weighted Average price of fuel oil on as consumed basis during the month in Rs./KL.
$K_{om}$	–	Weighted average GCV of fuel oils fired at boiler front for the month in Kcal/Litre
$P_{os}$	–	Base value of price of fuel oils as taken for determination of base energy charge in tariff order in Rs. / KL.
$K_{os}$	–	Base value of gross calorific value of fuel oils as taken for determination of base energy charge in tariff order in Kcal/Litre
$P_{cm}$	–	Weighted average price of coal procured and burnt during the month at the power station in Rs. / MT.
$K_{cm}$	–	Weighted average gross calorific value of coal fired at boiler front for the month in Kcal/Kg
$P_{cs}$	–	Base value of price of coal as taken for determination of base energy charge in tariff order in Rs. /MT
$K_{cs}$	–	Base value of gross calorific value of coal as taken for determination of base energy charge in tariff order in kCal/Kg

## **IMPACT OF ADDITIONAL CAPITALISATION**

48. In Petition No 169/2004, filed by the petitioner for approval of revised fixed charges for additional capitalization for the period 1.4.2001 to 31.3.2004, the Commission has decided that additional capital expenditure be added to the gross block as on 1.4.2001 to arrive at gross block as on 1.4.2004 for the purpose of fixation of tariff for the period 2004-05 to 2008-09. The Commission has further ordered that NTPC would be entitled to earn return on equity @ 16% on equity portion of additional capitalization approved and interest on loan at the rate as applicable during 2001-02 to 2003-04. The return on equity and interest on loan are payable on additional capitalization from 1<sup>st</sup> April of the financial year following the financial year to which additional capital expenditure relates.

49. Based on the above, the petitioner shall be entitled to recover a total amount of Rs. 782.73 lakh (in five yearly installments of Rs.156.55 lakh commencing from 1.4.2001) from the respondents, through tariff on account of return on equity and interest on loan on additional equity and loan on account of additional capitalisation on works :

(Rs. In lakh)

<b>IMPACT OF ADDITIONAL CAPITAL EXPENDITURE</b>			
	<b>2001-02</b>	<b>2002-03</b>	<b>2003-04</b>
1. Additional capitalisation during the year vide order dated 13.4.2005 in Petition No.169/2004	935.35	4719.42	312.83
2. Amount considered for Impact from 1st April of financial year following the financial year to which ACE relates.	0	935.35	5654.77
3. Equity	0	467.675	2827.385
4. Loan	0	467.675	2827.385
5. Actual Rate of Interest		7.42%	7.81%
Rate of Return on Equity	16%	16%	16%
<b>IMPACT</b>			
(i) Interest on Loan	0	34.70	220.82
(ii) Return on Equity	0	74.83	452.38
		109.53	673.20
<b>Total</b>			<b>782.73</b>

50. The petitioner has also sought reimbursement of filing fee of Rs.25 lakh paid. A final view on reimbursement of filing fee is yet to be taken by the Commission for which views of the stakeholder have been called for. The view taken on consideration of the comments received shall apply in the present case as regards reimbursement of filing fee.

51. In addition to the charges approved above, the petitioner is entitled to recover other charges also like incentive, claim for reimbursement of Income-tax, other taxes, cess levied by a statutory authority, and other charges in accordance with the 2004 regulations, as applicable.

52. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's interim directions. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us.

53. This order disposes of Petition No.128/2004.

**(A.H. JUNG)**  
MEMBER

**(BHANU BHUSHAN)**  
MEMBER

**New Delhi, dated the 29<sup>th</sup> June 2006**

Summary Sheet						
<b>Name of the Company</b>			<b>NTPC Ltd.</b>			
<b>Name of the Station</b>			<b>Vindhyachal STPS</b>			
<b>Tarrif setting Period</b>			<b>2004-09</b>			
<b>Petition No.</b>			<b>128/2004</b>			
						Rs.in lakh
<b>1</b>	<b>Capital Cost of the Project as on 31.3.2001</b>					<b>139849.00</b>
	<b>Cumulative depreciation recovered as on 31.3.2001</b>					<b>89971.48</b>
<b>2</b>	<b>Admitted Capital Cost as on 01.4.2004 for Calculation of Debt and Equity</b>					<b>139849.00</b>
<b>3</b>	<b>Additional Capitalisation(works)</b>					<b>5967</b>
	2001-02				935	
	2002-03				4719	
	2003-04				313	
	Total				5967	
<b>4</b>	<b>Additional Capitalisation(FERV)</b>					<b>92</b>
	2001-02				3.00	
	2002-03				82.00	
	2003-04				6.92	
	Total				91.92	
<b>5</b>	<b>Total Capital Cost as on 1.4.2004</b>					<b>145908</b>
<b>6</b>	<b>Means of Finance :</b>					
	Debt	50.00%			72954	
	Equity	50.00%			72954	
	Total	100.00%			145908	
<b>7</b>	<b>Debt details-Notional Debt (Net) as on 1.4.2004</b>					<b>4496</b>
	<b>Notional debt (Net) as on 01.04.2004</b>					
	Notional Debt(Gross i.e.50% of 145908.54 )				72954	
	Repayment upto 31.3.04				68458	
	Balance Debt				4496	
<b>8</b>	<b>Weighted Av. Rate of interest-Calculated</b>					
	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>	
	7.62%	7.70%	7.74%	7.80%	7.92%	
<b>9</b>	<b>Depreciation recovered upto 31.3.2007 :</b>					<b>116349</b>
				<b>Dep</b>	<b>AAD</b>	<b>Total</b>
	Recovered upto 31.3.2001			89971.00	0.00	89971.00
	1.4.2001 to 31.3.2004			15090.00	0.00	15090.00
	1.4.2004 to 31.3.2007			11846.80	0.00	11846.80
	FERV Impact From 2001-04			5.00	0.00	5.00
	Less- Dep.earned due to de-capitalisation of assets			564.00	0.00	564.00
	Total			116912.80	0.00	116912.80
<b>10</b>	<b>Balance Depreciation to be recovered beyond 31.3.2009 :</b>					<b>12718</b>
	<b>Capital cost for the purpose of Depreciation</b>					<b>139849</b>
	<b>ACE + FERV</b>					<b>6059</b>
	<b>Capital cost as 1.4.2004</b>					<b>145908</b>
	<b>Less: Land Cost</b>					<b>2501</b>
						<b>143408</b>
	<b>90% of Capital Cost as above</b>					<b>129067</b>
	<b>Cum. Depreciation to be recovered upto 31.3.2009</b>					<b>116349</b>
	<b>Balance</b>					<b>12718</b>