

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram**

1. **Shri Ashok Basu, Chairperson**
2. **Shri K.N.Sinha, Member**
3. **Shri Bhanu Bhushan, Member**
4. **Shri A.H. Jung, Member**

**Petition No. 157/2004  
with I.A. No. 56/2005**

**In the matter of**

Approval of tariff in respect of Singrauli Super Thermal Power Station (2000 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. Uttar Pradesh Power Corporation Ltd., Lucknow
2. Jaipur Vidyut Vitaran Nigam Ltd, Jaipur
3. Ajmer Vidyut Vitaran Nigam Ltd., Ajmer
4. Jodhpur Vidyut Vitaran Nigam Ltd, Jodhpur
5. Delhi Transco Ltd, New Delhi
6. Haryana Vidyut Prasaran Nigam Ltd, Panchkula
7. Punjab State Electricity Board, Patiala
8. Himachal Pradesh State Electricity Board, Shimla
9. Power Development Department, Govt. of J&K, Srinagar
10. Chandigarh Administration, Chandigarh
11. Uttranchal Power Corporation Ltd, Dehradun

**...Respondents**

**The following were present**

1. Shri V.B.K.Jain, NTPC
2. Shri I.J.Kapoor, NTPC
3. Shri S.D. Jha, NTPC
4. Shri Manoj Saxena, NTPC
5. Shri D.G.Salpekar, NTPC
6. Shri A.Sardana, NTPC
7. Shri. Gaurav Maheshwari, NTPC

8. Shri. R Singhal, NTPC
9. Shri S.K Samui, NTPC
10. Shri T.K. Srivastava, UPPCL
11. Shri P.K Gupta, Jodhpur Discom
12. Shri S.K.Yadav, JVVNL
13. Shri. B.K. Paliwal DTL
14. Shri. V.K Malhotra, DTL
15. Shri. T.P.S. Bawa PSEB
16. Shri. R K Arora, HPGCL

**ORDER**  
**(DATE OF HEARING : 21.2.2006)**

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 Singrauli Super Thermal Power Station (2000 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 2000 MW comprises of 5 units of 200 MW each and 2 units of 500 MW each. The date of commercial operation of the first unit was 1.6.1982 and that of the last unit and the generating station as whole was 1.5.1988.

3. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide its order dated 23.7.2003 in Petition No. 39/2001 based on the capital cost of Rs. 108695 lakh. The petitioner filed the instant petition No.157/2004 on 29.10.2004. The tariff claim was based on the capital cost of Rs. 116178 lakh which included admitted capital cost of Rs.108695 lakh as on 1.4.2001,

FERV amounting to Rs. 197 lakh and additional capital expenditure of Rs.7286 lakh for the period 1.4.2001 to 31.3.2004. In the meantime, the Commission vide its order dated 7.7.2005 in Petition No. 190/2004 approved additional capital expenditure of Rs. 5093 lakh on works for the period 2001-04. Subsequently, the petitioner filed IA 56/2005 wherein it has revised the tariff claim based on capital cost of 113985 lakh, which included admitted capital cost of Rs. 108695 lakh as on 1.4.2001, FERV amounting to Rs. 197 lakh and the admitted additional capital expenditure of Rs. 5093 lakh during 2001-04. The IA was also heard along with main petition. All references to the petitioner's claim are to the revised tariff.

4. The details of the revised fixed charges claimed by the petitioner in the present petition are given hereunder:

(Rs. in lakh)

<b>Particulars</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Interest on loan	1374	948	656	466	355
Interest on Working Capital	4323	4354	4326	4358	4391
Depreciation	4423	4423	863	0	0
Advance against Depreciation	0	0	0	0	0
Return on Equity	7979	7979	7979	7979	7979
O & M Expenses	19760	20550	21370	22220	23120
<b>TOTAL</b>	<b>37859</b>	<b>38254</b>	<b>35194</b>	<b>35023</b>	<b>35845</b>

5. The details of working capital furnished by the petitioner and its claim for interest thereon are summarized 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	12941	12941	12941	12976	12941
Oil Stock	644	644	644	646	644
O & M expenses	1647	1713	1781	1852	1927
Spares	2736	2900	3074	3259	3454
Receivables	24209	24275	23765	23785	23874
Total Working Capital	42177	42473	42205	42518	42840
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
<b>Interest on Working capital</b>	<b>4323</b>	<b>4353</b>	<b>4326</b>	<b>4358</b>	<b>4391</b>

6. In addition the petitioner has claimed energy charge of 73.97 paise/kWh. The energy charge claimed is subject to fuel price variation.

7. The reply to the petition was filed by the UPPCL, JDVVNL AVVNL and PSEB. The other respondents have not filed their reply. The petitioner has published notices in accordance with the procedure specified by the Commission. However, no objections or suggestions have been received in response to these notices.

8. A question regarding treatment of depreciation when it exceeds repayment of loan in a year raised by the beneficiaries for the period 1.4.2004 to 31.3.2009. In order dated 5.5.2006 in petition No. 162/2004 (NTPC –Vs- UPPCL and another), the Commission has held that when depreciation recovered in a year is more than the amount of repayment during that year, the entire amount of depreciation is to be considered as repayment of loan for tariff computation. Similar approach has been adopted by the Commission, while approving tariff in respect of the transmission assets of PGCIL In the present case also, where the depreciation recovered in a year

is more than the amount of repayment during that year, the entire amount of depreciation has been considered as repayment of loan for tariff computation as per the above decision.

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

9. The petitioner has de-capitalized 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 while dealing with the petition for additional capitalization. These assets broadly fall under two categories viz. items which were capitalised on accrual basis on 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 allowed tariff on the inflated capital base till 31.3.2004. However, past period calculations towards impact on tariff need not be opened. The same is to be mutually settled between the petitioner and the beneficiaries. 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.

### **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. In the instant case, petitioner had claimed tariff based on the capital cost of 116178 lakh which included admitted capital cost of Rs.108695 lakh as on 1.4.2001, FERV during 01-04 amounting to Rs. 197 lakh and additional capital expenditure of Rs.7286 lakh. Subsequent to the order dated 7.7.2005 in Petition No. 190/2004 admitting the additional capitalisation of Rs. 5093 lakh (excluding FERV) the petitioner vide its IA, No. 56/2005 has reduced its claim towards capital cost to Rs. 113985 lakh including the admitted cost of Rs. 108696 lakh, FERV Rs. 197 lakh and additional capitalisation amounting to Rs. 5093 lakh.

12. The petitioner, vide affidavit filed on 16.12.2005 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 de-capitalized shall be furnished to the Commission along with the claims of capitalisation to be filed separately.

13. The Commission vide its order dated 7.7.2005 in Petition No. 190/2004 has decided that the opening capital cost for the purpose of tariff for the period 2004-09 as on 1.4.2004 shall be Rs. 113789 lakh (excluding FERV). This has been adopted

for the purpose of tariff petition 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 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 which includes the arrears of Rs. 16 lakh outstanding as on 1.4.2001:

(Rs. In lakh)

Particulars	2001-02	2002-03	2003-04	Total
FERV	32	156	9	197

17. The claim of the petitioner has been considered. The petitioner's claim for capitalization of Rs. 197 lakh on account of FERV, is matching with calculations submitted and is in accordance with AS-11 applicable up to 31.3.2004. The claim has accordingly been admitted for tariff calculations.

18. Based on the above, the gross block as on 1.4.2004 comes to Rs. 113985 lakh as per details given hereunder:

(Rs. in lakh)

Capital cost admitted as on 31.3.2001.	108695
Additional Capitalisation as approved during 2001-04	5093
FERV admitted for the tariff period 2001-2004	197
Opening Capital cost as on 1.4.2004 for the tariff period 2004-2009	<b>113985</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 23.7.2003 in Petition No 39/2001 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 and on account of FERV 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. 56992 lakh has been considered as equity as on 1.4.2004.

### **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 of Rs. 56992 lakh after accounting for equity of Rs.98.5 lakh on account of FERV and equity of Rs. 2546.5 lakh on account of additional capitalization for the period 1.4.2001 to 31.3.2004. This claim has been accepted. The return on equity has been worked out on the average normative equity. The petitioner shall recover an amount of Rs. 7979 lakh each year during the tariff period on equity of Rs. 56992 lakh.

## **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 as under in accordance with the methodology specified by the Commission:

- (a) Normative loan of Rs. 54347.5 lakh outstanding as per order dated 23.7.2003 has been considered.
- (b) Notional loan of Rs. 2645 lakh has arisen (in approved D:E ratio) due to additional capitalization approved by the Commission for the period 2001-04 and capitalization of FERV. Thus total outstanding notional loan as on 1.4.2004 is Rs. 56992.5 lakhs.
- (c) Net loan Opening, cumulative repayment of loan of all earlier period loans continuing in the present tariff period have been taken from the order dated 23.7.2003.
- (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) As decided in para 8 above, normative repayment of loan or depreciation whichever is higher has been treated as repayment during the year. In this manner, the entire loan gets repaid during 2006-07.

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

(g) Loan draws upto 31.3.2004 have been considered.

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>Loan- IBRD-O(USD-EQ)INR</b>					
Opening Balance	1151	1068	979	883	779
Addition/Drawl					
Repayment thro' GOI	83	89	96	103	111
Closing Balance	1068	979	883	779	668
Average Loan	1109	1023	931	831	724
Rate of Interest	5.85%	5.85%	5.85%	5.85%	5.85%
Interest	65	60	54	49	42
<b>Loan-2 IBRD A</b>					
Opening Balance	182	136	91	45	0
Addition/Drawl					
Repayment thro'GOI	45	45	45	45	
Closing Balance	136	91	45	0	0
Average Loan	159	113	68	23	0
Rate of Interest	6.64%	6.64%	6.64%	6.64%	6.64%
Interest	10.55	7.53	4.52	1.51	0.00
<b>Loan-3 IBRD B</b>					
Opening Balance	188	141	95	48	1
Addition/Drawl					
Repayment	47	47	47	47	1
Closing Balance	141	95	48	1	0
Average Loan	165	118	71	25	1
Rate of Interest	5.20%	5.20%	5.20%	5.20%	5.20%
Interest	8.56	6.13	3.70	1.28	0.03
<b>GOI</b>					
Opening Balance	3712	1698	494	0	0
Addition/Drawl					
Repayment	2014	1204	494		
Closing Balance	1698	494	0	0	0
Average Loan	2705	1096	247	0	0
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest	277.26	112.34	25.32	0.00	0.00

<b>PFC-III</b>					
Opening Balance					
Addition/Drawl					
Repayment	316.73	316.73	316.73	316.73	316.73
Closing Balance	2592	2276	1959	1642	1325
Average Loan	2751	2434	2117	1800	1484
Rate of Interest	9.00%	9.00%	9.00%	9.00%	9.00%
Interest	247.56	219.05	190.55	162.04	133.53
<b>UCO BANK</b>					
Opening Balance	1100	1021.43	864.29	707.14	550.00
Addition/Drawl					
Repayment	78.57	157.14	157.14	157.14	157.14
Closing Balance	1021	864	707	550	393
Average Loan	1061	943	786	629	471
Rate of Interest	7.306%	7.306%	7.306%	7.306%	7.306%
Interest	77.50	68.89	57.40	45.92	34.44
<b>SBI- I</b>					
Opening Balance	139	118	96	75	54
Addition/Drawl					
Repayment	21.43	21.43	21.43	21.43	21.43
Closing Balance	118	96	75	54	32
Average Loan	129	107	86	64	43
Rate of Interest	9.63%	9.63%	9.63%	9.63%	9.63%
Interest	12	10	8	6	4
<b>ICICI - I TRANCHE - I</b>					
Opening Balance	420	300	180	60	0
Addition/Drawl					
Repayment	120	120	120	60	
Closing Balance	300	180	60	0	0
Average Loan	360	240	120	30	0
Rate of Interest	13.06%	13.06%	13.06%	13.06%	13.06%
Interest	47	31	16	4	0
<b>UNITED BANK OF INDIA</b>					
Opening Balance	200	180	160	140	120
Addition/Drawl					
Repayment	20	20	20	20	20
Closing Balance	180	160	140	120	100
Average Loan	190	170	150	130	110
Rate of Interest	7.306%	7.306%	7.306%	7.306%	7.306%
Interest	13.88	12.42	10.96	9.50	8.04
<b>BONDS II</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL
<b>BONDS III</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL

<b>BONDS VI</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL
<b>BONDS VII</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL
<b>BONDS VIII</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL
<b>BONDS IX</b>					
Net loan - Opening	NIL	NIL	NIL	NIL	NIL
<b>Total Loan</b>					
Opening Balance	10001	7255	5234	3917	3146
Addition/Drawl					
Repayment	2746	2021	1317	771	628
Closing Balance	7255	5234	3917	3146	2518
Average Loan	8628	6245	4576	3531	2832
Rate of Interest	8.80%	8.45%	8.10%	7.90%	7.86%
Interest	760	528	371	279	223

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)

<b>Loan</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Gross loan-Opening	56992	56992	56992	56992	56992
Cumulative repayments of Loans upto previous year	46639	50936	55233	55809	55809
Net loan-Opening	10353	6056	1759	0	0
Increase/ Decrease due to FERV	0	0	0	0	0
Increase/ Decrease due to Additional Capitalization	0	0	0	0	0
Total	10353	6056	1759	0	0
Repayments of Loans during the year	4297	4297	576	0	0
Net loan-Closing	6056	1759	1183	0	0
Average Net Loan	8205	3908	1471	0	0
Rate of Interest on Loan	<b>8.80%</b>	<b>8.45%</b>	<b>8.10%</b>	<b>7.90%</b>	<b>7.86%</b>
<b>Interest on loan</b>	722	330	119	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.** The cost of land including the cost of site leveling in the present case is Rs. 1099 lakh. The gross depreciable value of the asset, excluding land cost, is 0.9 X (Rs. 113985 lakh-Rs. 1190 lakh) = Rs. 101597 lakh. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004, after adjusting the accumulated depreciation

on assets decapitalised is Rs. 92427 lakh. Remaining depreciable value as on 1.4.2004 is thus Rs. 9170 lakh. Since the normative loan is outstanding depreciation is calculated as per weighted average rate of depreciation. Weighted average rate of depreciation calculated based on gross value of assets is 3.77% against the petitioner's claim of 3.788%. The petitioner had considered depreciation rate of 11.25% for 'other electrical installations', satellite communication system and MGR workshop equipment, though the prescribed rate of depreciation in respect of 'other electrical equipment' is 3.6% and this has been adopted. In respect of the remaining two items, depreciation rate has not been specified. Accordingly., the rate of depreciation of corresponding items viz. 6% and 3.6 % have been adopted.

**30.** Accordingly, for the period 1.4.2004 to 31.3.2006 the depreciation works out to 11385 lakh and for the period 1.4.2006 to 31.3.2007 the depreciation works out to Rs. 7766 lakh by applying rate of depreciation of 3.73 %. The entire amount of depreciation recoverable gets recovered during 2006-07. The necessary calculations are shown below:

(Rs.in lakh)						
<b>Details of Depreciation</b>	<b>Up to 31.3.2004</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
As per order dated 23.7.2003	108695					
Addition during 2001-04 due to Additional Capitalisation	5093					
Addition during 2001-04 due to FERV	197					
Gross Block as on 31.3.2004	113985					
Rate of Depreciation		3.77%	3.77%	3.77%	3.77%	3.77%
Depreciable Value	101597					
Remaining Depreciable Value	9170	4873	576		0.00	0.00
<b>Depreciation</b>		4297	4297	576	0	0

## **ADVANCE AGAINST DEPRECIATION**



31. As per sub-clause (b) of clause (ii) of Regulation 56 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 200 MW and 500 MW units-

Year	(Rs. lakh /MW)				
	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses for 220/210MW units	10.40	10.82	11.25	11.70	12.17
O&M expenses for 500MW and above sets	9.36	9.73	10.12	10.52	10.95

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

(Rs. in lakh)

Years	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses	19760	20550	21370	22220	23120

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

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 setting based on the price and GCV of the fuel 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 prayer 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) **Oil Stock:** The oil stock for 2 months as per the operational parameters and weighted average price of oil has been considered. Weighted average price of GCVs of the prices indicated in the petition and considered in the calculation for fuel component in working capital and base energy charges are as under:

Description	As claimed	As allowed
Coal Price (Rs./MT)	1018.64*	1018.93
Coal GCV (Kcal/kg.)	3819.33	3819.33
Price of Secondary fuel oil (Rs./KL)	13794.60	13794.60
GCV of Sec. Fuel oil (Kcal./KL)	10.000	10,000

Accordingly, the fuel component in working capital works out as follows for the period of the tariff

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (leap year)	2008-09
Cost of coal for 1.5 months	11474.83	11474.83	11474.83	11506.27	11474.83
Cost of secondary fuel oil for two months	644.48	644.48	644.48	646.25	644.48

(c) **O&M Expenses:** O&M expenses for working capital have been worked out for 1 month of O&M expenses approved above 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 years 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 IWC calculation are as given below :

(Rs.in lakh)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
<b>Amount claimed for maintenance spares</b>	2736	2900	3074	3259	3454

However, 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. 95300 lakh as on 31.3.1989 (closing date of financial year in which commissioning of the generating station occurred). The value of the spares as on 1.4.2004 works out to Rs. 2284 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:

#### **Computation of receivables component of Working Capital**

Variable Charges	2004-05	2005-06	2006-07	2007-08	2008-09
Coal (Rs/kwh)	0.7100	0.7100	0.7100	0.7100	0.7100

Oil (Rs/kwh)	0.0299	0.0299	0.0299	0.0299	0.0299
Rs./kwh	<b>0.7399</b>	<b>0.7399</b>	<b>0.7399</b>	<b>0.7399</b>	<b>0.7399</b>
Variable Charges per year	95666	95666	95666	95928	95666
Receivables					
Variable Charges - 2 months	<b>15944.25</b>	<b>15944.25</b>	<b>15944.25</b>	<b>15987.94</b>	<b>15944.25</b>
Fixed Charges - 2 months	<b>6111</b>	<b>6182</b>	<b>5658</b>	<b>5689</b>	<b>5845</b>
<b>Receivables (Rs in lakh)</b>	<b>22055</b>	<b>22126</b>	<b>21602</b>	<b>21677</b>	<b>21789</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
Fuel Cost	0	0	0	0	0
Coal Stock- 1.1/2 months	11475	11475	11475	11506	11475
Oil stock -2 months	644	644	644	646	644
O & M expenses	1647	1713	1781	1852	1927
Spares	2284	2421	2566	2720	2883
Receivables	22055	22126	21602	21677	21789
<b>Total Working Capital</b>	<b>38105</b>	<b>38379</b>	<b>38068</b>	<b>38401</b>	<b>38718</b>
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	<b>3906</b>	<b>3934</b>	<b>3902</b>	<b>3936</b>	<b>3969</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	722	330	119	0	0
2	Interest on Working Capital	3906	3934	3902	3936	3969
3	Depreciation	4297	4297	576	0	0
4	Advance against Depreciation	0	0	0	0	0

5	Return on Equity	7979	7979	7979	7979	7979
6	O & M Expenses	19760	20550	21370	22220	23120
	<b>TOTAL</b>	<b>36664</b>	<b>37090</b>	<b>33946</b>	<b>34135</b>	<b>35068</b>

## ENERGY/VARIABLE CHARGES

46. The petitioner has claimed the rate of energy charge at 73.97 paise/kWh based on the operational norms. However, the base rate of energy charge works out to be 73.99 paise/kWh as per the following computations based on fuel prices and GCVs

Gross Station Heat Rate	kCal/kWh	2475.00
Specific Fuel Oil Consumption	ml/kWh	2.00
Aux. Energy Consumption	%	7.75
Weighted Average GCV of Oil	kCal/l	10000.00
Weighted Average GCV of Coal	kCal/Kg	3819.30
Weighted Average Price of Oil	Rs./KL	13794.60
Weighted Average Price of Coal	Rs./MT	1018.93
Rate of Energy Charge from Sec. Fuel Oil	Paise/kWh	2.76
Heat Contributed from SFO	kCal/kWh	20.00
Heat Contributed from Coal	kCal/kWh	2455.00
Specific Coal Consumption	Kg/kWh	0.64
Rate of Energy Charge from Coal	Paise/kWh	65.50
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	73.99

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: -



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

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,

$$\text{A} = \frac{10 \times (\text{SFC}_n) \left\{ (\text{P}_{om}) - (\text{P}_{os}) \right\}}{(100 - \text{AC}_n)}$$

$$\text{B} = \frac{10}{(100 - \text{AC}_n)} \left[ \left\{ (\text{SHR}_n) \left( \text{P}_{cm}/\text{K}_{cm} \right) - (\text{P}_{cs}/\text{K}_{cs}) \right\} - (\text{SFC}_n) \left\{ (\text{k}_{om} \times \text{P}_{cm}/\text{K}_{cm}) - (\text{k}_{os} \times \text{P}_{cs}/\text{K}_{cs}) \right\} \right]$$

Where,

- SFC<sub>n</sub>** – Normative Specific Fuel Oil consumption in l/kWh  
**SHR<sub>n</sub>** – Normative Gross Station Heat Rate in kCal/kWh  
**AC<sub>n</sub>** – Normative Auxiliary Consumption in percentage  
**P<sub>om</sub>** – Weighted Average price of fuel oil on as consumed basis during the month in Rs./KL.  
**K<sub>om</sub>** – Weighted average GCV of fuel oils fired at boiler front for the month in Kcal/Litre  
**P<sub>os</sub>** – 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 190/2004 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 an amount of Rs. 752.40 lakh 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 7.7.2005 in Petition No.190/2004	1249.57	3297.92	545.24
2. Considered for Impact from 1st April of financial year following the financial year to which ACE relates.	0	1249.57	4547.49
3. Equity	0	624.785	2273.745
4. Loan	0	624.785	2273.745
5. Actual Rate of Interest		10.06%	9.93%
Rate of Return on Equity	16%	16%	16%
<b>IMPACT</b>			
(i) Interest on Loan	0	62.85	225.78
(ii) Return on Equity	0	99.97	363.80
<b>Total</b>		162.82	589.58
			<b>752.40</b>

50. The petitioner vide its affidavit dated 9.3.2006 has submitted that expenditure amounting to Rs. 3,14,12/= has been incurred on publication of notices in the newspapers and .has sought approval for the reimbursement of this expenditure. The petitioner shall claim reimbursement of the said expenditure directly from the respondents in one installment in the ratio applicable for sharing of transmission charges, subject to the petitioner filing an affidavit before the Commission. The petitioner shall claim reimbursement of the said expenditure directly from the respondents in one installment in the ratio applicable for sharing of fixed charges. 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.157/2004 and IA. No. 56/2005

**Sd/-**  
**(A.H. JUNG)**  
MEMBER

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

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

**Sd/-**  
**(ASHOKBASU)**  
CHAIRPERSON

**New Delhi dated the 9<sup>th</sup> May 2006**

Summary Sheet						
<b>Name of the Company</b>			<b>NTPC Ltd.</b>			
<b>Name of the Station</b>			<b>Singrauli STPS</b>			
<b>Tarrif setting Period</b>			<b>2004-09</b>			
<b>Petition No.</b>			<b>157/2004</b>			
						Rs.in lakh
<b>1</b>	<b>Capital Cost of the Project as on 31.3.2001</b>					<b>108695</b>
	<b>Cumulative depreciation recovered as on 31.3.2001</b>					<b>80820</b>
<b>2</b>	<b>Admitted Capital Cost as on 01.4.2004 for Calculation of Debt and Equity</b>					<b>113985</b>
<b>3</b>	<b>Additional Capitalisation(works)</b>					<b>5093</b>
	2001-02				1249.57	
	2002-03				3297.92	
	2003-04				545.24	
	Total				5092.73	
<b>4</b>	<b>Additional Capitalisation(FERV)</b>					<b>198</b>
	2001-02				31.92	
	2002-03				156.31	
	2003-04				9.32	
	Total				197.55	
<b>5</b>	<b>Total Capital Cost as on 1.4.2004(2+3+4)</b>					<b>113985</b>
<b>6</b>	<b>Means of Finance<sup>1</sup> :</b>					
	Debt	50.00%			56992.64	
	Equity	50.00%			56992.64	
	Total	100.00%			113985.28	
<b>7</b>	<b>Debt details-Notional Debt (Net) as on 1.4.2004</b>					<b>10353.37</b>
	<b>Notional debt (Net) as on 01.04.2004</b>					
	Notional Debt(Gross i.e.50% of 113985 )				56992.37	
	Repayment upto 31.3.04				46639.00	
	Balance Debt				10353.37	
<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>	
	8.80%	8.45%	8.10%	7.90%	7.86%	
<b>9</b>	<b>Depreciation recovered upto 31.3.2007 :</b>					<b>101597</b>
				<b>Dep</b>	<b>AAD</b>	<b>Total</b>
	Recovered upto 31.3.2001			80820.00	0.00	80820
	1.4.2001 to 31.3.2004			12339.00	0.00	12339
	1.4.2004 to 31.3.2007			9170	0.00	9170
	ERV Impact From 2001-04			12.00	0.00	12.00
	Less Dep.earned due to de-cap.of assets			(-744.00)		
	Total					101597
<b>10</b>	<b>Balance Depreciation to be recovered beyond 31.3.2007 :</b>					<b>0</b>
	<b>Capital cost for the purpose of Depreciation<sup>2</sup></b>					<b>108695</b>
	<b>ACE + FERV</b>					<b>5290</b>
	<b>Capital cost as 1.4.2004</b>					<b>113985</b>
	<b>Less: Land Cost</b>					<b>1099</b>
						<b>112886</b>
	<b>90% of Capital Cost as above</b>					<b>101598</b>
	<b>Cum. Depreciation to be recovered upto 31.3.2007</b>					<b>101597</b>
	<b>Balance</b>					<b>0</b>