

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram :**

- 1. Shri. Ashok Basu, Chairperson**
- 2. Shri Bhanu Bhushan, Member**
- 3. Shri A.H. Jung, Member**

**Petition No. 120/2005**

**In the matter of**

Approval of tariff in respect of Kahalgaon Super Thermal Power Station, Stage-I, (840 MW) for the period from 1.4.2004 to 31.3.2009.

**And in the matter of**

NTPC Ltd.

.....**Petitioner**

**Vs**

1. West Bengal State Electricity Board, Kolkata
2. Bihar State Electricity Board, Patna
3. Jharkhand State Electricity Board, Ranchi
4. Grid Corporation of Orissa Ltd, Bhubaneshwar
5. Damodar Valley Corporation, Kolkata
6. Power Department, Govt of Sikkim, Gangtok
7. Tamil Nadu Electricity Board, Chennai
8. Kerala State Electricity Board, Thiruvananthapuram
9. Electricity Department, Union Territory of Pondicherry, Pondicherry
10. Uttar Pradesh Power Corporation Ltd, Lucknow
11. Power Development Department, Govt of J & K, Srinagar
12. Delhi Transco Ltd, New Delhi
13. Power Department, Union Territory of Chandigarh, Chandigarh
14. Madhya Pradesh State Electricity Board, Jabalpur
15. Maharashtra State Electricity Distribution Company Ltd, Mumbai
16. Gujarat Urja Vikas Nigam Ltd, Baroda
17. Electricity Department, Administration of Daman & Diu, Daman
18. Electricity Department, Administration of Dadra & Nagar Haveli, Silvassa.

**---Respondents**

**The following were present**

1. Shri S.K. Johar, NTPC
2. Shri Satya Prakash, NTPC
3. Shri S.K. Sharma, NTPC
4. Shri V.B.K. Jain, NTPC
5. Shri I.J. Kapoor, NTPC
6. Shri G.S. Aghesh, NTPC
7. Shri M. Saxena, NTPC
8. Shri Anil Kumar, NTPC
9. Shri Guryog Singh, NTPC
10. Shri A. Sardana, NTPC

11. Shri Ratnesh, NTPC
12. Shri R.Datt, NTPC
13. Shri N.N.Sadasivan, NTPC
14. Ms. Rita Saigal, NTPC
15. Shri Vivek Kumar, NTPC
16. Shri S.N.Banerji, WBSEB
17. Shri D.D.Khandelwal, MPSEB
18. Shri Deepak Srivastava, MPSEB
19. Shri U.V.Jiwan, MSEDCL
20. Shri R.Krishnaswami, TNEB

**ORDER  
(DATE OF HEARING : 9.3.2006)**

This petition has been filed by the petitioner, NTPC Limited, a generating company owned or controlled by the Central Government for approval of tariff in respect of Kahalgaon Super Thermal Power Station, Stage-I (840 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 840 MW comprises of 4 units of 210 MW each. The date of commercial operation of the generating station is 1.8.1996.

3. The tariff for the generating station for the period from 1.4.2001 to 31.3.2004 was approved by the Commission vide its order dated 4.8.2005 in Petition No. 37/2001, based on the capital cost of Rs. 195975 lakh. The petitioner’s claim for tariff in the present petition is based on the capital cost of Rs.203084 lakh which includes admitted capital cost of Rs.195975 lakh as on 1.4.2001.

4. The Commission vide its order dated 9.5.2006 in Petition No.146/2005, has approved additional capital expenditure of Rs.5522 lakh on works (excluding FERV) for the period 1.4.2001 to 31.3.2004.

5. The year-wise details of additional capitalisation approved by the Commission are as under :

( Rs in lakh)

2001-2002	2551.86
2002-2003	2824.29
2003-2004	146.28
<b>Total</b>	<b>5522.44</b>

6. The details of the annual fixed charges claimed by the petitioner 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	4149	3191	2377	1545	704
Interest on Working Capital	2890	2902	2919	2942	2956
Depreciation	7636	7636	7636	7636	7636
Advance against Depreciation	0	0	0	0	0
Return on Equity	14216	14216	14216	14216	14216
O&M expenses	8736	9089	9450	9828	10223
<b>TOTAL</b>	<b>37627</b>	<b>37034</b>	<b>36598</b>	<b>36166</b>	<b>35735</b>

7. 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	7485	7485	7485	7506	7485
Oil Stock	275	275	275	275	275
O & M expenses	728	757	788	819	852
Spares	3181	3372	3574	3789	4016
Receivables	16526	16427	16355	16311	16211
<b>Total Working Capital</b>	<b>28195</b>	<b>28317</b>	<b>28476</b>	<b>28700</b>	<b>28839</b>
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
<b>Interest on Working capital</b>	<b>2890</b>	<b>2902</b>	<b>2919</b>	<b>2942</b>	<b>2956</b>

8. In addition, the petitioner has claimed energy charge of 109 paise/kWh from April 2004 to June 2004 and 115 paise/kWh from July 2004 onwards based on escalated coal price effective from 15.6.2004.

9. Replies to the petition have been filed by the TNEB, MPSEB, MSEDCL, GUVNL and WBSEB. 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.

### **DECAPITALISATION OF ASSETS.**

10. The petitioner has de-capitalised certain assets during the period 1997-2004. These de-capitalised assets were removed from the gross block to arrive at admissible additional capitalization by order dated 9.5.2006 in Petition No.146/2005. The assets de-capitalised 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. It is observed that the petitioner is maintaining accounts on accrual basis and 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 was de-capitalised subsequently. 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. This is 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. The total amount decapitalised in this category is Rs.311.09 lakh. As regards the physical assets not in use, depreciation recovered up to the date of decapitalisation has been reduced from cumulative depreciation recovered till

31.3.2004. The petitioner has decapitalised assets during the period 1997-2004, to the tune of Rs 213.36 lakh and the depreciation charged on these assets till decapitalisation amounts to Rs.170.34 lakh. The claim of the petitioner towards reduction of cumulative depreciation of this amount has been considered for adjustment. In addition, the petitioner has also transferred assets amounting to Rs.39.14 lakh to other generating stations during the said period. Reduction of cumulative depreciation on account of these transfers has not been considered as the corresponding adjustment in cumulative depreciation of other generating stations of the petitioner where assets have been transferred, has not been carried out.

### **CAPITAL COST**

11. 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 for 2004-09.

12. The petitioner has claimed tariff based on the capital cost of Rs 203084 lakh, including FERV amounting to Rs.539 lakh, during 2001-04, and the additional capital expenditure, on works of Rs.6570 lakh during 1.4.2001 to 31.3.2004.

13. The petitioner, vide affidavit filed on 23.3.2006 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.

14. The Commission vide its order dated 9.5.2006 in Petition No.146/2005 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.201497 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**

15. 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 claimed over the twelve-month period in arrears.

16. 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 beneficiaries have any objection to the amount claimed on this count, they may file an appropriate petition before the Commission.

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

(Rs. In lakh)				
Particulars	2001-02	2002-03	2003-04	Total
FERV	(-) 64	598	5	539

18. The petitioner has stated that the FERV liability for the purpose of capitalisation during the period 2001-04 is Rs.539 lakh and the same has been claimed based on the actual outstanding foreign loans as per its book of accounts, after taking into account the opening balance in Capital Work in Progress of Rs.36 lakh and the closing balance in Capital Work in Progress of Rs Nil.

19. In the present case, the normative loan is more than the actual loan. The interest on loan is allowed on the normative loan. Hence computation of FERV is based on normative loan. Based on normative loan outstanding, FERV works out to Rs.1207 lakh, as follows, which has been admitted for tariff calculations:

(Rs. In lakh)				
Particulars	2001-02	2002-03	2003-04	Total
FERV	(-) 143	1339	11	1207

20. Based on the above, the gross block as on 1.4.2004 comes to Rs.202704.41 lakh as per details given hereunder:

(Rs. in lakh)	
Capital cost admitted as on 1.4.2004	195974.71
FERV admitted for the tariff period 2003-2004	1207.27
Additional capitalization approved by the Commission for the period 2001-04	5522.43
<b>Opening Capital cost as on 1.4.2004</b>	<b>202704.41</b>

### **DEBT-EQUITY RATIO**

21. 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.

22. The Commission, while approving tariff vide its order dated 4.8.2005, in Petition No 37/2001, for the period from 1.4.2001 to 31.3.2004, had considered the normative

debt-equity ratio of 50:50. For the purpose of present petition, debt-equity ratio of 50:50 has been adopted in the working. Accordingly, an amount of Rs.101352 lakh has been considered as equity as on 1.4.2004.

### **TARGET AVAILABILITY**

23. 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**

24. 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.

25. The petitioner has claimed return on equity @ 14%. The return on equity has been worked out on equity of Rs.101352 lakh. The petitioner shall recover an amount of Rs.14189 lakh each year, during the period 2004-09, as return on equity.

### **INTEREST ON LOAN**

26. Clause (i) of regulation 21 of the 2004 regulations, as amended, *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, or any other authority having power to do so, 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 re-finance the loan as long as it results in net benefit to the long-term transmission customers. The costs associated with such refinancing 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 refinancing 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 refinancing of loan and interest on loan.

(h) The generating company may, at its discretion, swap loans having floating rate of interest with loans having fixed rate of interest or vice –versa, at its own cost and gains or losses as a result of such swapping shall accrue to the generating company.

Provided that the beneficiaries shall be liable to pay interest for the loans initially contracted, whether on floating or fixed rate of interest.

27. 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 4.8.2005, has been considered. 50% of additional capital expenditure on works and FERV for the years 2001-04 have been added to this notional loan.

(b) Net loan opening, cumulative repayment of loan up to 31.3.2004, has been considered as per order dated 4.8.2005. In case of foreign loans the same have been considered after taking into consideration the effect of FERV. In case of IBRD Main, FERV has been calculated on current cost basis and in others , it has been calculated on temporal/historical cost basis.

(c) All calculations of actual repayment have been done on average basis, taking into consideration terms and conditions of loan drawal as furnished by the petitioner. FIFO method of repayment adopted by the petitioner has not been accepted in this case also as in other cases of the petitioner.

(d) Rate of interest considered in calculation in case of all loans is on annual rest basis.

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

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

(f) The Financial Charges of 0.05% for SBI, UCO Bank, United Bank of India and Government guarantee fee at 1%, for IBRD Main, IBRD-A and IBRD-B loans, have been allowed for calculation of interest on loan.

(g) Interest rate prevailing as on 1.4.2004 has been considered for interest computation for the period 1.4.2004 onwards. However, some of the loans viz, IDBI Main , SBI carry floating rate of interest. The parties shall mutually settle interest on loan based on actual rate of interest.

(h) Loan draws upto 31.3.2004 have been considered.

(i) Repayment in case of foreign loan has been considered as per schedule submitted by the petitioner and the rate of exchange as on 31.3.2004.

(j) 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 filed by the petitioner.

(k) 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.

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

#### CALCULATIONS OF WEIGHTED AVERAGE RATE OF INTEREST

( Rs in lakh)

Details of Loan	2004-05	2005-06	2006-07	2007-08	2008-09
<b>United Bank of India</b>					
Net Loan-Opening	250.00	214.29	178.57	142.86	107.14
Repayment during the year	35.71	35.71	35.71	35.71	35.71
Net Loan-Closing	214.29	178.57	142.86	107.14	71.43
Average Loan	232.14	196.43	160.71	125.00	89.29
Rate of Interest	7.36%	7.36%	7.36%	7.36%	7.36%
Interest	17.08	14.45	11.82	9.20	6.57
Rep Schedule	14 HALF YEARLY instalments wef 26.08.2004				
<b>GOI-17%</b>					
Net Loan-Opening	1500.00	1200.00	900.00	600.00	300.00
Repayment during the year	300.00	300.00	300.00	300.00	300.00
Net Loan-Closing	1200.00	900.00	600.00	300.00	0.00
Average Loan	1350.00	1050.00	750.00	450.00	150.00
Rate of Interest	17.00%	17.00%	17.00%	17.00%	17.00%

Interest	229.50	178.50	127.50	76.50	25.50
Rep Schedule	10 YEARLY instalments wef 27.01.2000				
<b>UCO Bank-Drawal-5</b>					
Net Loan-Opening	100.00	85.71	71.43	57.14	42.86
Repayment during the year	14.29	14.29	14.29	14.29	14.29
Net Loan-Closing	85.71	71.43	57.14	42.86	28.57
Average Loan	92.86	78.57	64.29	50.00	35.71
Rate of Interest	7.40%	7.40%	7.40%	7.40%	7.40%
Interest	6.87	5.81	4.76	3.70	2.64
Rep Schedule	14 HALF YEARLY instalments wef 26.08.2004				
<b>State Bank of India</b>					
Net Loan-Opening	100.00	100.00	85.71	71.43	57.14
Repayment during the year	0.00	14.29	14.29	14.29	14.29
Net Loan-Closing	100.00	85.71	71.43	57.14	42.86
Average Loan	100.00	92.86	78.57	64.29	50.00
Rate of Interest	9.65%	9.65%	9.65%	9.65%	9.65%
Interest	9.65	8.96	7.58	6.20	4.83
Rep Schedule	14 HALF YEARLY instalments wef 03.07.2005				
<b>IBRD-MAIN</b>					
Net Loan-Opening	177.89	165.18	151.51	136.80	120.97
Repayment during the year	12.71	13.67	14.71	15.83	17.03
Net Loan-Closing	165.18	151.51	136.80	120.97	103.94
Average Loan	171.53	158.35	144.16	128.89	112.46
Rate of Interest	5.85%	5.85%	5.85%	5.85%	5.85%
Interest	10.03	9.26	8.43	7.54	6.58
Rep Schedule	15 YEARS-SEMI ANNUAL PROGRESSIVELY INCREASING instalments wef 15.12.98				
<b>IBRD-A</b>					
Net Loan-Opening	45.77	34.32	22.88	11.44	0.00
Repayment during the year	11.45	11.44	11.44	11.44	0.00
Net Loan-Closing	34.32	22.88	11.44	0.00	0.00
Average Loan	40.05	28.60	17.16	5.72	0.00
Rate of Interest	6.64%	6.64%	6.64%	6.64%	6.64%
Interest	2.66	1.90	1.14	0.38	0.00
Rep Schedule	6 YEARS-SEMI ANNUAL instalments wef 15.06.02				
<b>IBRD-B</b>					
Net Loan-Opening	71.36	53.63	35.90	18.17	0.45
Repayment during the year	17.73	17.73	17.73	17.72	0.45
Net Loan-Closing	53.63	35.90	18.17	0.45	0.00
Average Loan	62.50	44.77	27.04	9.31	0.23
Rate of Interest	5.20%	5.20%	5.20%	5.20%	5.20%
Interest	3.25	2.33	1.41	0.48	0.01
Rep Schedule	6 YEARS-SEMI ANNUAL instalments wef 15.06.02(Tr.I) & 15.12.02(Tr.II)				
Net Loan-Opening	2245.02	1853.13	1446.00	1037.84	628.56
Repayment during the year	391.89	407.13	408.17	409.28	381.77

Net Loan-Closing	1853.13	1446.00	1037.84	628.56	246.80
Average Loan	2049.08	1649.57	1241.92	833.20	437.68
Rate of Interest	13.6180%	13.4105%	13.0959%	12.4823%	10.5388%
<b>Interest</b>	279.04	221.22	162.64	104.00	46.13

29. The computation of interest on notional loan by applying weighted average interest rate is appended below:

#### COMPUTATION OF INTEREST ON LOAN

(Rs. in lakh)

Loan	Upto 1.4.2004	2004-05	2005-06	2006-07	2007-08	2008-09
Gross loan as per earlier tariff order	97987					
Addition due to Additional Capitalisation	2761					
Addition due to FERV	604					
Gross Normative loan	101352	101352	101352	101352	101352	101352
Cumulative repayments of loans upto previous year		93941	100953	101352	101352	101352
Net loan-Opening		7862	399	0	0	0
Repayments of loans during the year		7462	399	0	0	0
Net loan-Closing		399	0	0	0	0
Average Net Loan		4131	200	0	0	0
Rate of Interest on Loan		<b>13.6180%</b>	<b>13.4105%</b>	<b>13.0959%</b>	<b>12.4823%</b>	<b>10.5388%</b>
<b>Interest on loan</b>		562	27	0	0	0

#### DEPRECIATION

30. 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.

31. Weighted average rate of depreciation calculated, based on gross value of assets is 3.68% against the petitioner's claim of 3.76%. The rate has been calculated based on gross value of asset as furnished by the petitioner at applicable rates as per Appendix-II to the 2004 regulations and applied on pro-rata basis on admitted capital cost. For certain assets which are not listed in Appendix-II, the rates considered are as applicable to similar assets in Appendix-II. The depreciation recovered in tariff up to 31.3.2004, has been taken as per order dated 4.8.2005 in Petition 37/2001, with changes on account of decapitalisation and addition of depreciation recovered on account of impact of FERV.

32. The petitioner has also adopted depreciation rate of 25% on assets amounting to Rs.133 lakh, not owned by it on the ground that the assets are to be amortized during four years irrespective of useful life of the assets. As the adoption of the rate of 25%, would result in recovery of accelerated depreciation, it has been decided to allow the depreciation at the rates corresponding to the useful life of the assets.

33. The cost of land in the present case is Rs.2719 lakh. The gross depreciable value of the generating station, excluding land cost, is  $0.9 \times (\text{Rs. } 202704 \text{ lakh} - \text{Rs}$

2719 lakh) = Rs 179987 lakh. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004, after adding depreciation of Rs 61 lakh recovered on account of FERV for the period 1.4.2001 to 31.3.2004, and adjustment of cumulative depreciation due to decapitalisation of Rs 170 lakh is Rs.95948 lakh. Remaining depreciable value as on 1.4.2004 is thus Rs.84039 lakh. The petitioner is entitled to recover depreciation of Rs 7462 lakh for the period 1.4.2004 to 31.3.2005 and 1.4.2005 to 31.3.2006. As the entire loan gets repaid during 2005-06, the balance depreciation of Rs 69115 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 1.8.1996. In this manner, the spent life as on 1.4.2004 is 8.52 years, against the total life of 26.08 years. The balance useful life of the generating station is 17.55 years. The remaining depreciable value of Rs.69115 lakh has been spread over to 15.55 years as on 1.4.2006. In this manner the petitioner is entitled to recover depreciation of Rs. 4445 lakh each year during 2006-07 to 2008-09. The details of calculation of depreciation are as given below:

(Rs in lakh)

	<b>Upto 01.04.2004</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Capital cost as on 31.3.2004	195975					
Addition during 2001-04 due to Additional Capitalisation	5522					
Addition during 2001-04 due to FERV	1207					
Gross Block as on 1.4.2004	202704	202704	202704	202704	202704	202704
Rate of Depreciation	3.68%					
Depreciable Value.	90%	179987	179987	179987	179987	179987
Balance Useful life	17.55	17.55	16.55	15.55	14.55	13.55
Remaining Depreciable Value		84039	76577	69115	64670	60225
Depreciation		7462	7462	4445	4445	4445

### **ADVANCE AGAINST DEPRECIATION**

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

AAD = Loan repayment amount as per regulation 21(i) subject to a ceiling of 1/10th of loan amount as per regulation 20 minus depreciation as per schedule

35. 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.

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

### **O&M EXPENSES**

37. The 2004 regulations prescribe the following Norms for O&M expenses for a generating station of 210 MW :

	(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

38. 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	8736	9089	9450	9828	10223

39. O&M expenses claimed by the petitioner are as per norms and are allowed.

40. 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.

41. The normative O&M expenses finalized by the Commission after going through the transparent process of hearing and consulting all concerned and based on the data furnished by the concerned utilities for different components of O&M, including water charges, provides for an escalation of 4% per year. 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, if State Governments resort to abnormal increase in the rates of water charges / royalty during the tariff period, 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.

42. The petitioner has submitted that the wage revision of its employees is due with effect from 1.1.2007 and therefore, O &M expenses should be subject to revision on account of revision of employee cost from that date. On this count, the petitioner may approach at an appropriate stage in accordance with law.

#### **INTEREST ON WORKING CAPITAL**

43. 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.
44. 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.
45. Working capital has been calculated considering the following elements:
- (a) **Coal stock:** The petitioner 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 is 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 one and half 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 secondary fuel oils ( LDO & HFO) procured and burnt for preceding three months of January 2004 to March 2004. Since HFO is the main secondary fuel oil, it is considered for the computation of working capital and base rate of energy charge.

Based on weighted average GCV(2698.33 kCal/Kg for coal and 9905 kCal/l for HFO only) and price of fuels (coal at 1043.75 Rs/MT and HFO at 13997.47 Rs /KL) the fuel component in working capital works out as follows :

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (leap year)	2008-09
Cost of coal for one and half months	7059.43	7059.43	7059.43	7078.77	7059.43
Cost of secondary fuel oil for two months.	274.66	274.66	274.66	275.42	274.66
Energy charges for two months	9687.24	9687.24	9687.24	9713.78	9687.24

( 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 date of commercial 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
<b>Amount claimed</b>	3181	3372	3574	3789	4016

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.183586 lakh, after deducting the amount of Rs 311 lakh towards decapitalisation of capital assets up to the date of commercial operation of the generating station. The value of the maintenance spares as on 1.4.2004 works out to Rs.2871 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)					
Variable Charges	2004-05	2005-06	2006-07	2007-08	2008-09
Coal (Rs/kwh)	1.0543	1.0543	1.0543	1.0543	1.0543
Oil (Rs/kwh)	0.0308	0.0308	0.0308	0.0308	0.0308
Rs./kwh	<b>1.0850</b>	<b>1.0850</b>	<b>1.0850</b>	<b>1.0850</b>	<b>1.0850</b>
Variable Charges per year					
Receivables					
Variable Charges -2 months	9687	9687	9687	9714	9687
Fixed Charges - 2 months	5606	5579	5128	5196	5267
<b>Receivables (Rs in lakh)</b>	<b>15294</b>	<b>15266</b>	<b>14815</b>	<b>14910</b>	<b>14954</b>

46. 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.

47. 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	7059	7059	7059	7079	7059
Oil stock -2 months	275	275	275	275	275
O & M expenses	728	757	788	819	852
Spares	2871	3043	3226	3419	3624
Receivables	15294	15266	14815	14910	14954
<b>Total Working Capital</b>	<b>26227</b>	<b>26401</b>	<b>26162</b>	<b>26503</b>	<b>26764</b>
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	<b>2688</b>	<b>2706</b>	<b>2682</b>	<b>2717</b>	<b>2743</b>

### ANNUAL FIXED CHARGES

48. 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	562	27	0	0	0
2	Interest on Working Capital	<b>2688</b>	<b>2706</b>	<b>2682</b>	<b>2717</b>	<b>2743</b>
3	Depreciation	7462	7462	4445	4445	4445
4	Advance against Depreciation	0	0	0	0	0
5	Return on Equity	14189	14189	14189	14189	14189
6	O & M Expenses	8736	9089	9450	9828	10223
	<b>TOTAL</b>	<b>33638</b>	<b>33473</b>	<b>30766</b>	<b>31179</b>	<b>31600</b>

### ENERGY/VARIABLE CHARGES

49. The petitioner has claimed the rate of energy charge at 109 paise/kWh based on fuel prices for the preceding three months of January 2004 to March 2004. The energy charge has been revised by the petitioner from 109 paisa/kWh to 115 paise/kWh based on the prices & GCV of coal for the month of July 2004 to September 2004, due to increase in prices of coal with effect from 15.6.2004. "Fuel Price Adjustment " clause in the Regulations takes care of the revision of energy charges on subsequent revision of coal price on month to month basis and base rate of energy charge need not be reworked on the basis of increased coal price. Further we allow HFO as secondary fuel oil which is the main secondary fuel, for the purpose

of base rate of energy charges. The base rate of energy charge works out to 108.50 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	9905.00
Weighted Average GCV of Coal	kCal/Kg	2698.33
Weighted Average Price of Oil	Rs./KL	13997.47
Weighted Average Price of Coal	Rs./MT	1043.75
Rate of Energy Charge from Sec. Fuel Oil	Paise/kWh	2.80
Heat Contributed from SFO	kCal/kWh	19.81
Heat Contributed from Coal	kCal/kWh	2480.19
Specific Coal Consumption	Kg/kWh	0.92
Rate of Energy Charge from Coal	Paise/kWh	95.94
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	<b>108.50</b>

50. 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,**

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

$$\mathbf{B = \frac{10}{(100 - AC_n)} \left\{ (SHR_n) \left( P_{cm}/K_{cm} - (P_{cs}/K_{cs}) \right) \right.}$$

$$\left. \left\{ - (SFC_n) \left( k_{om} \times P_{cm}/K_{cm} - (k_{os} \times P_{cs}/K_{cs}) \right) \right\} \right\}$$

**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**

51. In Petition No 146/2005, 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 of Rs 5522 lakh 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 petitioner 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.

52. Based on the above, the petitioner shall be entitled to recover Rs 1114.73 lakh, in five yearly installments of Rs. 222.94 lakh for the years 2004-05 to 2008-09, on account of return on equity and interest on loan on additional equity and loan on account of additional capitalisation on works as shown hereunder:

(Rs. In lakh)

Period		2001-02	2002-03	2003-04	Total
<b>Additional Capitalisation</b>		<b>2551.86</b>	<b>2824.29</b>	<b>146.28</b>	<b>5522.43</b>
<b>Financing of Additional Capitalisation</b>					
Notional Loan		1275.93	1412.15	73.14	2761.22
Notional Equity		1275.93	1412.15	73.14	2761.22
<b>Effective Additional Capitalisation</b>					
Opening Loan Balance		0.00	1275.93	2688.08	
Addition of Loan		1275.93	1412.15	73.14	2761.22
Repayment of Loan		0.00	0.00	0.00	<b>0.00</b>
Closing Loan Balance		1275.93	2688.08	2761.22	
Effective Loan			1275.93	2688.08	
Weighted Average Rate of Interest on Loan			7.4110%	14.3569%	
Effective Equity			1275.93	2688.08	
Interest on Loan			94.56	385.93	<b>480.48</b>
Return on Equity	16%		204.15	430.09	<b>634.24</b>
<b>Impact of Additional Capitalisation</b>			298.71	816.02	<b>1114.73</b>

53. The petitioner vide its affidavit dated 8.3.2006 has submitted that the expenditure amounting to Rs.7,41,869/- has been incurred towards publication of notices in the newspapers and has sought approval for 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 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.



54. 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.

55. 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.

56. This order disposes of Petition No.120/2005.

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

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

Sd/-  
**(ASHOK BASU)**  
CHAIRPERSON

**New Delhi, dated the 23<sup>th</sup> November, 2006**

Summary Sheet				
<b>COMPANY</b>			<b>NTPC Ltd.</b>	
<b>POWER STATION</b>			<b>Kahalgaon (840 MW)</b>	
<b>PETITION NO.</b>			<b>120/2005</b>	
<b>Tariff Setting Period</b>			<b>2004-09</b>	
<b>(Rs.in lacs)</b>				
<b>1</b>	<b>Capital Cost of the Project as on 31.3.2004</b>			<b>195975</b>
<b>2</b>	<b>Additional Capitalisation(Works)</b>			<b>5522</b>
	2001-02		2552	
	2002-03		2824	
	2003-04		146	
	Total		5522	
<b>3</b>	<b>Additional Capitalisation(FERV)</b>			<b>1207</b>
	2001-02		(-) 143	
	2002-03		1339	
	2003-04		11	
	Total		1207	
<b>4</b>	<b>Total Capital Cost as on 1.4.2004(1+2+3)</b>			<b>202704</b>
<b>5</b>	<b>Means of Finance<sup>1</sup> :</b>			
	Debt	50.00%	101352	
	Equity	50.00%	101352	
	Total	100.00%	202704	
<b>6</b>	<b>Normative Loan as on 1.4.2004</b>			<b>7862</b>
	Normative Loan outstanding as on 31.3.2004		4497	
	Normative Loan due to ACE+FERV in 2001-04		3365	
	Total normative loan as on 1.4.2004		7862	
<b>7</b>	<b>Cumulative Repayment upto 31.3.2009 :</b>			<b>101352</b>
	Repaid up to 31.3.2004		93941	
	1.4.2001 to 31.3.2004 (ACE & FERV)		0	
	1.4.2004 to 31.3.2009		7862	
	Total		101352	
<b>8</b>	<b>Balance Normative Loan to be repaid beyond 31.3.2009 :</b>			<b>0</b>
<b>9</b>	<b>Depreciation recovered upto 31.3.2009 :</b>			<b>124206</b>
		<b>Dep</b>	<b>AAD</b>	<b>Total</b>
	Recovered upto 31.3.2004	94091	1966	96057
	1.4.2001 to 31.3.2004 (ACE & FERV)	61	0	61
	1.4.2004 to 31.3.2009	28259	0	28259
	Adj.of Cum.Dep.due to decapitalisation	(-) 170	0	(-) 170
	Total			124206
<b>10</b>	<b>Balance Depreciation to be recovered beyond 31.3.2009 :</b>			<b>55781</b>
	<b>Capital cost for the purpose of Depreciation</b>		<b>195975</b>	
	<b>ACE + FERV</b>		<b>6730</b>	
	<b>Capital cost as 1.4.2004</b>		<b>202704</b>	
	<b>Less: Land Cost</b>		<b>2719</b>	
			<b>199986</b>	
	<b>90% of Capital Cost as above</b>		<b>179987</b>	
	<b>Cum. Depreciation to be recovered upto 31.3.2009</b>		<b>124206</b>	

	<b>Balance Depreciation to be recovered beyond 31.3.2009</b>	<b>55781</b>	
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