

**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. 148/2004
with IA No. 39/2005**

In the matter of

Approval of tariff in respect of Ramagundam Super Thermal Power Station
Stage I and Stage II for the period from 1.4.2004 to 31.3.2009.

And in the matter of

National Thermal Power Corporation Ltd. **Petitioner**

Vs

1. Transmission Corporation of Andhra Pradesh Ltd., Hyderabad
2. Tamil Nadu Electricity Board, Chennai
3. Karnataka Power Transmission Corporation Ltd., Bangalore
4. Kerala State Electricity Board, Thiruvananthapuram
5. Electricity Department, Govt. of Pondicherry, Pondicherry
6. Electricity Deptt., Government of Goa, Panaji **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 M. Saxena, NTPC
5. Shri robin Mazumdar, NTPC
6. Shri D.G. Salpekar, NTPC
7. Ms. Rachna Mehta, NTPC
8. Shri P.B. Venkatesh, NTPC
9. Shri Rajat Singhal, NTPC
10. Shri S.K. Samui, NTPC
11. Shri Ajay Garg, NTPC
12. Shri. Surendra, NTPC
13. Shri Sowmyanarayanan, TNEB
14. Shri S Balaguru, TNEB
15. Shri. T.N. Gopal, PESCOM

ORDER
(DATE OF HEARING : 15.12.2005)

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 Ramagundam Super Thermal Power Station Stage I and Stage II (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”). The petitioner had also prayed that the reimbursement of expenditure by the beneficiaries towards publishing of notices in Newspapers and petition filing fee be approved. No other specific relief is prayed for.

2. The generating station comprises six units, three with capacity of 200 MW each and three with a capacity of 500 MW each. The dates of commercial operation of the units fall between 1.3.1984 and 1.4.1991.

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 24.8.2004 in Petition No 34/2001 based on capital cost of Rs. 223528 lakh as on 31.3.2001

4. Subsequently, the Commission vide its order dated 3.5.2005 in Petition No. 173/2004 has approved the following additional capitalization in respect of the generating station:

(Rs. In lakh)

Year	2001-02	2002-03	2003-04	Total
Additional Capital Expenditure	1431.80	(-)145.11	121.71	1408.41

5. Subsequent to approval of the additional capitalization for the period 2001-02 to 2003-04, the petitioner filed IA No. 39/2005, to amend the petition and also the amended petition. The petitioner's claim considered herein is with reference to the amended petition.

6. The details of the fixed charges claimed by the petitioner are given hereunder:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on Loan	0	0	0	0	0
Depreciation	3857	3857	3857	3857	3857
Advance against Depreciation	0	0	0	0	0
Return on Equity	15967	15967	15967	15967	15967
Interest on Working Capital	4859	4910	4962	5027	5077
O & M Expenses	20280	21087	21930	22800	23727
TOTAL	44963	45821	46716	47651	48628

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

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Coal Stock	13461.6	13461.6	13461.6	13498.48	13461.6
Oil stock	1077.44	1077.44	1077.44	1080.4	1077.44
O & M expenses	1690	1757.25	1827.5	1900	1977.25
Spares	4658.93	4938.46	5234.77	5548.86	5881.79
Receivables	26520.17	26663.03	26812.35	27020.31	27130.9
Total Working Capital	47408.14	47897.78	48413.66	49048.05	49528.98
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest on Working capital	4859	4910	4962	5027	5077

8. In addition, the petitioner has claimed energy charges @ 84.25 paise/kWh. The energy charges claimed are subject to adjustment for fuel price.

9. The reply to the petition was filed by TNEB and KSEB. 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.

CAPITAL COST

10. As per the second proviso to Regulation 17 of the 2004 regulations, in case of the generating stations existing as on 31.3.2004, 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 expenditure of Rs. 228098 lakh which includes admitted capital cost of Rs. 223528 lakh as on 1.4.2001, FERV amounting to Rs. 3162 lakh and additional capitalization amounting to Rs. 1408 lakh.

12. Besides, the petitioner has also decapitalised certain assets during the period 2001-04. These decapitalised assets were removed from the gross block to arrive at admissible additional capitalization for the purpose of capital cost while dealing with Petition No. 173/2004. 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 decapitalised subsequently. But the petitioner has been allowed tariff on the inflated capital base till 31.3.2004. However, as decided by the Commission in other cases, tariff for the previous period has not been reopened, and may be mutually settled between the petitioner and the beneficiaries.

13. The petitioner, vide affidavit filed on 16.11.2005 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.

14. Accordingly, the opening capital cost (excluding FERV) for the purpose of tariff for the period 2004-09 as on 1.4.2004 shall be Rs. 224936 lakh, which includes the capital cost as on 31.3.2001 adopted by the Commission in its order dated 24.8.2004 for the purpose of tariff fixation for 2001-04 and the additional capitalisation of Rs. 1408 lakh on works for the period 2001-04 approved by the Commission in its order dated 3.5.2005 in Petition No. 173/2004. Now we consider the question of 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 spread 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 of any objections by the beneficiaries to the amounts claimed on these counts, they may file an appropriate petition before the Commission.

17. The petitioner has made the following claim towards FERV during the period 2001-04:

(Rs. In lakh)

Year	2001-02	2002-03	2003-04	Total
FERV	-390	2529	1023	3162

18. The amount of FERV is to be restricted to normative loan since the normative loan is considered as actual loan for the purpose of tariff. The normative loan in case of the generating station was fully repaid during 2002-03. Therefore, FERV for the years 2001-02 and 2002-03 is to be considered. A similar approach has been followed in respect of other generating stations owned by the petitioner. Accordingly FERV has been worked out in proportion to the normative loans outstanding at the beginning of each of the year. The details of FERV

worked out and considered in the capital cost for the purpose of tariff calculations is given below.

(Rs. In lakh)				
	2001-02	2002-03	2003-04	
Total actual loan Opening Balance	47188	38028	26085	
Domestic actual loan Opening Balance	9525	6597	4855	
(I) GOI	6508	4917	3325	
(ii) Bonds-VIII Issue	1337	0	0	
(iii) United Bank	180	180	180	
(iv) ICICI Bank	1500	1500	1500	
Foreign actual loan Opening balance	37663	31431	21230	
(I) IBRD	744	710	651	
(ii) IBJ-II	7170	5557	0	
(iii) EXIM	29749	25164	20579	
Percentage of Total Loan(%)				
Domestic actual loan Opening Balance	20.19%			
Foreign actual loan Opening balance	79.81%			
Normative Loan Opening .Balance	17777	8616	0	
Domestic Normative loan Opening Balance	3588	1495	0	
Foreign Normative loan Opening Balance	14189	7121	0	
				Total
FERV claimed by the petitioner	(-)390	2529	1023	3162
FERV worked out in proportion to normative Loan	-146.924	572.995	0	426

19. Based on the above, capital cost considered for the purpose of tariff determination for the block 2004-09 is Rs. 225362 lakh as per the details given below:

(Rs. in lakh)	
Capital cost as admitted by the Commission as on 31.3.2001.	223528
Addl. capitalization for the years 2001-2004	1408
FERV allowed for the years 2001-2004	426
Opening Capital cost as on 1.4.2004 for the tariff period 2004-2009	225362

DEBT-EQUITY RATIO

20. 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.

21. The Commission, while approving tariff vide its order dated 24.8.2004 in Petition No 34/2001 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 capital expenditure on account of works (Rs. 1408 lakh) and FERV (Rs. 426 lakh) are deemed to have been financed in the debt-equity ratio of 50:50. Accordingly, an amount of Rs. 112681 lakh has been considered as equity as on 1.4.2004 over equity of Rs. 111764 lakh considered in the order dated 24.8.2004.

TARGET AVAILABILITY

22. 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

23. 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.

24. The petitioner has claimed an amount of Rs 16332 lakh on account of return on equity after accounting for equity on account of additional capitalization on works and FERV for the period 1.4.2001 to 31.3.2004. The return on equity has been worked out on the average normative equity. Accordingly the petitioner shall be entitled to return on equity of Rs. 15775 lakh each year during the tariff period on the equity base of Rs. 112681 lakh.

INTEREST ON LOAN

25. 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 long-term transmission customers.
 - (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 any moratorium period is availed of by the transmission licensee, 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.

26. 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 mentioned below:

- (a) The normative loan was fully paid in the previous tariff period.
- (b) However, notional loan has arisen (in approved debt-equity ratio) during the tariff period 2004-09 due to additional capitalization and FERV. The entire normative loan gets repaid during 2004-05.

27. Weighted average rates of interest as calculated are appended below:

CALCULATIONS OF WEIGHTED AVERAGE RATE OF INTEREST

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
GOI -I					
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	0	0	0	0	0
Rate of Interest	10.64%	10.64%	10.64%	10.64%	10.64%
Interest	-0	-0	-0	-0	-0
GOI-II					
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	10.68%	10.68%	10.68%	10.68%	10.68%
Interest	-0	-0	-0	-0	-0
GOI-III					
Opening Balance	982	491	0	0	0
Addition/Drawl	0	0	0	0	0
Repayment	491	491	0	0	0
Closing Balance	491	0	0	0	0
Average Loan-INR	736	245	0	0	0
Rate of Interest	10.68%	10.68%	10.68%	10.68%	10.68%
Interest-INR	79	26	-0	-0	-0

GOI - IV					
Opening Balance	968	645	323	0	0
Addition/Drawl	0	0	0	0	0
Repayment	323	323	323	0	0
Closing Balance	645	323	0	0	0
Average Loan	806	484	161	0	0
Rate of Interest	10.75%	10.75%	10.75%	10.75%	10.75%
Interest	87	52	17	0	0
GOI - V					
Opening Balance	67	50	33	17	0
Addition/Drawl	0	0	0	0	0
Repayment	17	17	17	17	0
Closing Balance	50	33	17	0	0
Average Loan	58	42	25	8	0
Rate of Interest	10.68%	10.68%	10.68%	10.68%	10.68%
Interest	6	4	3	1	0
GOI - VI					
Opening Balance	171	137	103	69	34
Addition/Drawl	0	0	0	0	0
Repayment	34	34	34	34	34
Closing Balance	137	103	69	34	0
Average Loan	154	120	86	51	17
Rate of Interest	11.75%	11.75%	11.75%	11.75%	11.75%
Interest	18	14	10	6	2
GOI - VII					
Opening Balance	30	25	20	15	10
Addition/Drawl	0	0	0	0	0
Repayment	5	5	5	5	5
Closing Balance	25	20	15	10	5
Average Loan	28	23	18	13	8
Rate of Interest	11.75%	11.75%	11.75%	11.75%	11.75%
Interest	3	3	2	1	1
TOTAL LOAN					
Opening Balance	2218	1349	479	100	44
Addition/Drawl	0	0	0	0	0
Repayment	870	870	379	56	39
Closing Balance	1349	479	100	44	5
Average Loan	1783	914	290	72	25
Rate of Interest	10.82%	10.88%	11.10%	11.63%	11.75%
Interest	193	99	32	8	3

28. The computations of interest on loan by applying weighted average interest rate are appended hereinbelow:

COMPUTATION OF INTEREST ON LOAN

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2009-04
Gross loan-Opening	112681	112681	112681	112681	112681
Cumulative repayments of Loans up to previous year	111764	112681	112681	112681	112681
Net loan-Opening	917	0	0	0	0
Increase/ Decrease due to FERV	0	0	0	0	0
Increase/ Decrease due to Additional Capitalisation	0	0	0	0	0
Total	917	0	0	0	0
Repayments of Loans during the year	917	0	0	0	0
Net loan-Closing	0	0	0	0	0
Average Net Loan	459	0	0	0	0
Rate of Interest on Loan	5.36%	5.36%	5.36%	5.36%	5.36%
Interest on loan	25	0	0	0	0

DEPRECIATION

29. 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 value 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 capitalisation 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.

30. Since the normative loan was fully paid during 2002-03, the balance depreciation recoverable is to be spread over the balance useful life of the generating station. As per the Commission's order dated 24.8.2004 in Petition No. 34/2001, the balance useful life of the generating station was 10.85 years as on 1.4.2003 Accordingly, the balance useful life as on 1.4.2004 has been taken as 9.85 years for the purpose of spreading the remaining depreciable value of the generating station.

31. The gross depreciable value of the generating station is $0.9 \times (\text{Rs.}225362 \text{ lakh} - \text{Rs.}2640 \text{ lakh}) = \text{Rs.} 200450 \text{ lakh}$. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004 is Rs. 164801 lakh including depreciation on additional capitalization on works and FERV during 2001-04. Remaining depreciable value as on 1.4.2004 is thus Rs. 35649 lakh.

32. Accordingly, for the period 1.4.2004 to 31.3.2009 the depreciation works out to Rs. 3619 lakh each year by spreading the remaining depreciable value over the balance useful life of the asset.

(Rs. in lakh)

Details of Depreciation	Up to 31.3.2004	2004-05	2005-06	2006-07	2007-08	2008-09
As per order dated 24.8.2004	223528					
Addition during 2001-04 due to Additional Capitalisation	1408					
Addition during 2001-04 due to FERV	426					
Gross Block as on 31.3.2004	225362					
Rate of Depreciation		3.62%	3.62%	3.62%	3.62%	3.62%
Depreciable Value	200450					
Remaining Depreciable Value at the end of the year	35649	32030	28411	24791	21172	17553
Depreciation		3619	3619	3619	3619	3619

ADVANCE AGAINST DEPRECIATION

33. 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

34. 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.

35. The petitioner has not claimed Advance Against Depreciation. Accordingly, Advance Against Depreciation in the tariff is nil.

O&M EXPENSES

36. The 2004 regulations have prescribed the following O&M expense norms for 200/210 MW and 500 MW units-

(Rs. lakh /MW)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses for 200/210 MW units	10.40	10.82	11.25	11.70	12.17
O&M expenses for 500 MW units	9.36	9.73	10.12	10.52	10.95

37. 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	20280	21087	21930	22800	23727

38. The petitioner has prayed for a specific deviation pertaining to water charges in O&M expenses. 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.

39. 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.

40. Based on above discussion, year-wise O&M expenses for the generating station work out as follows-

(Rs. in lakh)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses	20280	21087	21930	22800	23727

41. The petitioner has further submitted that the wage revision of its employees is due with effect from 1.1.2007 and the escalation of 4% provided in the O&M expenses would not cover the enhanced employee cost with effect from 1.1.2007. The petitioner has prayed for liberty to seek enhancement in O&M expenses with effect from 1.1.2007 based on actual payments whenever paid. 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

42. 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.

43. 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 1st 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.

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

(a) **Coal stock:** The coal cost has been worked out for 1-1/2 months on the basis of operational parameters and weighted average price of coal.

(b) **Oil Stock:** The oil stock for 2 months as per the operational parameters and weighted average price of secondary fuel oil has been considered. Details of the fuel component in working capital is as under:

(Rs. In lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Cost of coal for 1.5 months	13452.07	13452.07	13452.07	13488.92	13452.07
Cost of secondary fuel Oil for 2 months	771.54	771.54	771.54	773.66	771.54

(a) **O&M Expenses:** O&M expenses for working capital have been worked out for 1 month of O&M expenses approved in para 40 above are considered in tariff of the respective year:

(b) **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. The amount claimed for maintenance spares for the purpose is given below :

(Rs.in lakh).

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Amount	4659	4938	5235	5549	5882

The spares requirement has been worked out based on the historical cost of Rs. 181774 lakh (including initial spares of Rs. 8419 lakh) as on 31.3.1992, the closing date of the financial year in which the generating station was declared under commercial operation. Accordingly, 1% of this

cost has been escalated at the rate of 6% per annum to arrive at permissible spares consumption for the relevant year. However, the cost of initial spares, amount of over-capitalization prior to the date of commercial operation and the additional capitalisation incurred during the period from the date of commercial operation of the generating station to the relevant period has not been considered for computation of maintenance spares. The value of spares as on 1.4.2004 works out to Rs. 3488 lakh.

(c) **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

	2004-05	2005-06	2006-07	2007-08	2008-09
Variable Charges					
Coal (Rs/kWh)	0.7942	0.7942	0.7942	0.7942	0.7942
Oil (Rs/kWh)	0.0342	0.0342	0.0342	0.0342	0.0342
Rs./kWh	0.8284	0.8284	0.8284	0.8284	0.8284
Variable Charges per year	112246	112246	112246	112553	112246
Variable Charges -2 months (Rs in lakh)	18708	18708	18708	18759	18708
Fixed Charges - 2 months (Rs in lakh)	7394	7531	7679	7834	7995
Receivables (Rs in lakh)	26101	26239	26387	26593	26703

45. 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.

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

Calculation of Interest on Working Capital

(Rs. in lakh)

	2004-2005	2005-2006	2006-07	2007-2008	2008-09
Coal Stock	13452	13452	13452	13489	13452
Oil stock	772	772	772	774	772
O & M expenses	1690	1757	1828	1900	1977
Spares	3488	3698	3919	4155	4404
Receivables	26101	26239	26387	26593	26703
Total Working Capital	45503	45917	46357	46910	47307
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest on Working Capital	4664	4707	4752	4808	4849

ANNUAL FIXED CHARGES

47. 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
Interest on Loan	25	0	0	0	0
Interest on Working Capital	4664	4707	4752	4808	4849
Depreciation	3619	3619	3619	3619	3619
Advance Against Depreciation	0	0	0	0	0
Return on Equity	15775	15775	15775	15775	15775
O & M Expenses	20280	21087	21930	22800	23727
TOTAL	44363	45188	46076	47003	47971

ENERGY/VARIABLE CHARGES

48. The petitioner has claimed rate of energy charges of 84.25 paise/kWh based on the following weighted average operational norms for a generating station comprising of three units of 200 MW and three units of 500 MW:

Operational norms		
Secondary oil consumption	MI/kWh	2
Auxiliary consumption	%	7.93
Heat Rate	Kcal/kWh	2464.29

49. The petitioner's claim of energy charges is based on the following weighted average fuel prices and GCV–

GCV of oil (as fired basis)	(Kcal./KL)	9435.30 (HSD+HFO)
GCV of coal (as fired basis)	(Kcal/kg.)	3986.67
Weighted average price of oil (as procured basis)	(Rs./KL)	21963.55 HSD+HFO)
Price of Coal (as procured basis)	(Rs./MT)	1192.97

50. It is observed that HSD/LDO are used only during cold boiler start. Hot start ups and flame stability during low load conditions are taken care of by HFO, which is the main secondary fuel oil. HFO, the main secondary fuel oil only has been considered for computation of working capital requirements and basis of energy charge. Regarding the use of HSD, the petitioner vide affidavit dated 14.11.2005 has submitted as follows:

“the instant station is having front fired boilers where in igniters are oil fired and oil burners are designed for both HSD and HFO separately during low load conditions and for start up. HSD is required for flame stability. Also for any boiler start up. HSD is essentially to be used for firing the oil guns. It is therefore essential to maintain the stock of HSD and use it for the proper plant operation. The weighted average price of fuel oil therefore must be calculated considering HSD price also”

51. However, it is observed that the generating station is normally achieving PLF in the range of 90% and number of cold boiler start ups for such a station is low. As such consumption of HSD for a station operating on such high PLF shall be meager in comparison to the consumption of HFO. As such, working capital corresponding to use of HFO only, which is the main secondary fuel oil, has been allowed.

52. It is also relevant that the Fuel Price Adjustment clause in the notification shall take care of cost of HSD/LDO used at the generating station as on

consumed basis on month to month basis. As such the petitioner is not being denied the reimbursement of HSD/LDO whenever used.

53. Based on the above, base rate of energy charge works out to 82.84 paise/kWh as per the following computations:

Computation of Energy Charges

Description	Unit	As considered
Capacity	MW	2100.00
Gross Station Heat Rate	kCal/kWh	2464.29
Specific Fuel Oil Consumption	MI/kWh	2.00
Aux. Energy Consumption	%	7.93
Weighted Average GCV of oil	kCal/l	10033.00
Weighted Average GCV of Coal	kCal/Kg	3986.67
Weighted Average Price of Oil	Rs/KL	15727.83
Weighted Average Price of Coal	Rs./MT	1192.71
Rate of Energy Charge from Sec. Fuel Oil	Paise/kWh	3.145
Heat Contributed from SFO	kCal/kWh	20.07
Heat Contributed from Coal	kCal/kWh	2444.22
Specific Coal Consumption	Kg/kWh	0.613
Rate of Energy Charge from Coal	Paise/kWh	73.125
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	82.84

54. The base rate of energy charges shall however, be subject to fuel price adjustment as per the formula 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,

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

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

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 capitalization for the years 2001-04

55. In Petition No 173/2004 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 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 1st April of the financial year following the financial year to which additional capital expenditure relates.

56. Based on the above, the petitioner shall be entitled to recover an amount of Rs. 57.94 lakh per annum commencing from 1.4.2004 from the respondents through tariff on account of return on equity and interest on loan on additional equity on account of additional capitalisation on works (total amount Rs. 289.69 lakh).

(Rs. in lakh)

IMPACT OF ADDITIONAL CAPITAL EXPENDITURE DURING 2001-02,2002-03 AND 2003-04 NCTPP- FGUTP-II (420 MW)			
CALCULATIONS			(Rs. in lakh)
	2001-02	2002-03	2003-04
1. Additional capitalisation during the year vide order dated 3.5.2005 in Petition No.173/2004	1431.8	-145.11	121.71
2. Impact from 1st April of financial year following the financial year to which ACE relates.	0	1431.8	1286.69
3. Equity 50% as considered in tariff	0	715.9	643.345
4. Loan	0	715.9	643.345
5. Actual Rate of Interest		5.27%	5.36%
6. Return on Equity allowed in order dated 6.11.2003	16%	16%	16%
IMPACT			
(I) Interest on Loan	0	37.73	34.48
(ii) Return on Equity	0	114.54	102.94
Total		152.27	137.42
Total amount			289.69

57. The petitioner has vide its affidavit dated 8.3.2006 sought approval for the reimbursement of expenditure of Rs. 3,33,110/- incurred on publication of notices in the newspapers. 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.

58. 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.

59. 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.

60. This order disposes of Petition No.148/2004 as also IA No. 39/2005.

Sd/-

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

Sd/-

**(BHANU BHUSHAN)
MEMBER**

Sd/-

**(ASHOK BASU)
CHAIRPERSON**

New Delhi dated the 30th June, 2006

Summary Sheet							
Name of the Company			NTPC Ltd.				
Name of the Station			Ramagundam STPS				
Tarrif setting Period			2004-09				
Petition No.			148/2004				
						(Rs.in lakh)	
1	Capital Cost of the Project as on 31.3.2001					223528	
2	Additional Capitalisation(works)					1408	
		2001-02				1431.80	
		2002-03				-145.11	
		2003-04				121.71	
		Total				1408.40	
3	Additional Capitalisation(FERV)					426	
		2001-02				-146.92	
		2002-03				572.98	
		2003-04				0.00	
		Total				426.06	
4	Total Capital Cost as on 1.4.2004(1+2+3)					225362	
5	Means of Finance¹ :						
		Debt	50.00%			112681.10	
		Equity	50.00%			112681.10	
		Total	100.00%			225362.19	
6	Debt details-Notional Debt (Net) as on 1.4.2004					917.10	
	Notional debt (Net) as on 1.4.2004						
		Notional Debt(Gross i.e.50% of 225362)				112681.10	
		Repayment upto 31.3.2004				111764.00	
		Balance Debt				917.10	
7	Weighted Average Rate of interest-Calculated						
		2004-05	2005-06	2006-07	2007-08	2008-09	
		5.36%					
8	Depreciation recovered upto 31.3.2009 :					182896	
				Dep	AAD	Total	
		Recovered upto 31.3.2001			143852.27	0.00	143852
		1.4.2001 to 31.4.2004			19913.00	1508.00	21421
		1.4.2004 to 31.3.2009			18096	0.00	18096
		ERV Impact from 2001-04			2.41	0.00	2.41
		Less Depreciation earned due to					
		de-capitalisation of assets			(-)475.20	0.00	(-)475.20
		Total					182896
9	Balance Depreciation to be recovered beyond 31.3.2009 :					17554	
		Capital cost for the purpose of Depreciation²					223528
		ACE + FERV					1834
		Capital cost as 1.4.2004					225362
		Less: Land Cost					2640
							222723
		90% of Capital Cost					200450
		Cumulative Depreciation to be recovered upto 31.3.2009					182896
		Balance					17554