

**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.79/2005

In the matter of

Approval of tariff in respect of Kawas Gas Power Station for the period 1.4.2004 to 31.3.2009.

And in the matter of

National Thermal Power Corporation Ltd.

.... **Petitioner**

Vs

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

.... **Respondents**

The following were present

1. Shri S.K. Johar, NTPC
2. Shri A.S.Pandey, NTPC
3. Shri S.K. Sharma, NTPC
4. Shri A.K. Garg, MPPTC

ORDER

(Date of Hearing: 22.6.2006)

The petitioner, National Thermal Power Corporation Ltd, has filed this petition for approval of tariff in respect of Kawas Gas Power Station (656.20 MW) (hereinafter referred to as “the generating station”) for the period from 1.4.2004 to 31.3.2009 in terms of 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 capacity of 656.20 MW comprises of four gas turbines of 106 MW each and two steam turbines of 116.1 MW each. The date of commercial operation of the generating station is 1.11.1993.

3. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide order dated 7.4.2005 in Petition 31/2001, based on capital cost of Rs.151319 lakh as on 1.4.2001. Subsequently, vide order dated 9.5.2006, in Petition No. 110/2005, the Commission approved the additional capital expenditure of Rs 75.75 lakh as against the petitioner’s claim of additional capitalisation of Rs 4351 lakh, for the period 2001-04 and arrived at the capital base of Rs 151395 lakh (excluding FERV) for the purpose of determination of tariff as on 1.4.2004.

4. The petitioner filed the amended petition on account of change in capital cost as on 1.4.2004 and price of Naptha. This order is on the claim made in the context of the amended petition.

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

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Depreciation	6617	6617	6617	6617	6617
Interest on loan	0	0	0	0	0
Return on equity	11428	11428	11428	11428	11428
Advance Against Depreciation	0	0	0	0	0
Interest on Working Capital	5156	5181	5208	5249	5287
O&M Expenses	6743	7013	7293	7585	7888
Total	29944	30239	30546	30879	31220

6. The details of Working Capital furnished by the petitioner and its claim of interest thereon are as hereunder:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Fuel Cost	11569	11569	11569	11600	11569
Liquid fuel stock	7075	7075	7075	7094	7075
Spares	2965	3143	3332	3532	3744
O&M expenses	562	584	608	632	657
Receivables	28128	28177	28228	28346	28337
Total working capital	50299	50548	50812	51206	51382
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	5156	5181	5208	5249	5267

7. In addition, the petitioner has claimed the energy charges as under, subject to adjustment for fuel price:

Description	Unit	Combined cycle	Open Cycle
Rate of Energy Charge ex-bus per kWh sent (Gas)	Paise/ kWh	102.88	146.23
Rate of Energy Charge ex-bus per kWh sent (Naphtha)	Paise/ kWh	380.66	541.03

8. Replies to the petition have been filed by MSEDCL, GUVNL and MPSEB. In response to the public notices published by the petitioner in accordance with the procedure specified by the Commission, no objections or suggestions have been received from the general public.

CAPITAL COST

9. As per the second proviso to Regulation 17 of the CERC (Terms and Conditions of Tariff) Regulations, 2004, in case of the existing generating stations, the capital cost admitted by the Commission prior to 1.4.2004 shall form the basis for determination of tariff.

10. In the instant case, the petitioner had claimed tariff based on the capital cost of Rs 163263 lakh as on 1.4.2004.

11. As already noted, the Commission vide order dated 7.4.2005 in Petition No. 31/2001, has approved capital cost of Rs 151319 lakh as on 31.3.2004, for the period 2001-04.

12. The Commission vide its order dated 9.5.2006 in Petition No. 110/2005, has approved the additional capitalisation for the period 2001-04, for the purposes of tariff for the period 2004-2009 as follows :

(Rs in lakh)

2001-2002	41.13
2002-2003	45.10
2003-2004	(-) 10.47
Total	75.75

13. In view of the above, the capital cost for the purpose of tariff for the period 2004-09, as on 1.4.2004, shall be Rs.151395 lakh (excluding FERV).

14. The petitioner in its affidavit dated 25.11.2005 has confirmed that all the assets included in the balance sheet of the generating station for 2003-04 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-capitalised shall be furnished separately along with the claims for capitalisation to be filed separately.

DE-CAPITALIZATION OF ASSETS

15. The Commission by its order dated 9.5.2006 in Petition No.110/2005 had allowed de-capitalisation of certain assets amounting to Rs.2.66 lakh transferred to other stations of the petitioner, during 2001-04. Reduction of cumulative depreciation of these assets amounting to Rs 2.66 lakh has not been considered here as the corresponding adjustment in cumulative depreciation of other

stations of the petitioner where assets have been transferred, has not been carried out.

FERV/Extra Rupee Liability during the years 2001-04

16. Regulation 1.13 (a) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2001 provides 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

17. Regulation 1.7 of the 2001 regulations further provides 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.

18. The petitioner has claimed capitalisation of Rs.7593 lakh on account of FERV during the period 2001-04 as per the details given below, based on actual foreign currency loan outstanding:

Year	2001-02	2002-03	2003-04	Total
FERV (Rs in lakh)	1147	5162	1284	7593

19. As per the methodology followed by the Commission in other cases and for the reasons given in the order dated 18.8.2006 in Petition No. 7/2006 (GUVNL Vs NTPC and others), FERV is to be restricted to normative loan. In this case normative loan was fully liquidated in the year 2000-01 and therefore, the question of capitalisation of FERV does not arise. Consequently, the gross block as on 1.4.2004 after adjustment of additional capitalisation on account of works and FERV works out as under:-

(Rs in lakh)	
Admitted cost for 2001-04	151319
Admitted Additional Capitalisation during 2001-04	75.75
FERV for 2001-04 as calculated on normative loan	Nil
Gross Block as on 1.4.2004	151395

DEBT-EQUITY RATIO

20. Clause (1) of Regulation 20 of the 2004 regulations 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. Debt-equity ratio of 50:50 was considered by the Commission in its order dated 7.4.2005 in Petition No.31/2001 for the tariff period 1.4.2001 to 31.3.2004. In accordance with the provision of Regulation 20(1) as amended, debt-equity ratio of 50:50 has been adopted for computation of tariff for the period 1.4.2004

to 31.3.2009. Accordingly, for the purpose of tariff, an amount of Rs.75697 lakh has been considered as equity as on 1.4.2004, after accounting for additional capitalisation on works for the period 1.4.2001 to 31.3.2004.

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 Regulation 21(iii) of 2004 regulations, return on equity shall be computed @14% per annum on the equity base determined in accordance with Regulation 20. The return on equity worked out @14% per annum on the normative equity works out to Rs.10598 lakh per annum.

INTEREST ON LOAN

24. 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, for the period up to 31.3.2004. The repayment for the period 2004-09 shall be worked out 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 beneficiaries. The costs associated with such re-financing shall be borne by the beneficiaries;

(d) The changes to the loan terms and conditions shall be reflected from the date of such re-financing 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 any dispute relating to re-financing 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 re-financing 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.

25. Computation of interest on loan has been examined in terms of clause (i) of regulation 21 of the 2004 regulations as amended. It is observed that the fixed

charges for the period prior to 1.4.2004 were allowed by the Commission on normative loan. The normative loan has been fully repaid during 2000-2001. However, notional loan has arisen during the current tariff period because of additional capitalisation approved by the Commission for the period 2001-04. The weighted average rate of interest considered for calculating the interest on loan is that of Bonds actually outstanding in the books of accounts of the petitioner. These Bonds replaced the high interest bearing GOI loans considered in earlier tariff period. For the reasons recorded in order dated 5.5.2006 in Petition No.162/2004, interest on loan has been allowed by considering the interest of the Bonds, though the petitioner has claimed interest with reference to GOI loans. Financial charges incurred towards Surveillance fee by the petitioner have been allowed and taken into consideration for calculation for interest on loan. The loan drawals up to 31.3.2004 have only been considered.

26. The 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		
GOI loan-I(Refinanced by Bonds XIV series)							
Opening Balance	3143	3143	3143	1571	0	RP	2
Addition/Drawl	0	0	0	0	0	MP	4
Repayments	0	0	1571	1571	0	Total	6
Closing Balance	3143	3143	1571	0	0	Fin Charges	0%
Average Loan	3143	3143	2357	786	0	Sur.fee	0%
Rate of Interest	8.08%	8.08%	8.08%	8.08%	8.08%	Rol	8.05%
Interest on loan	254	254	190	63	0	Rol + FC	8.08%
GOI loan-II(Refinanced by Bonds XIII series)							
Opening Balance	15	15	15	15	15	RP	10
Addition/Drawl	0	0	0	0	0	MP	2
Repayments	2	2	2	2	2	Total	12

Closing Balance	14	14	14	14	14	Fin Charges	0%
Average Loan	14	14	14	14	14	Sur.ff	0.03%
Rate of Interest	9.58%	9.58%	9.58%	9.58%	9.58%	Rol	9.55%
Interest on loan	1.37	1.37	1.37	1.37	1.37	Rol + FC	9.58%
GOI loan(Refinanced by Bonds)							
Opening Balance	3158	3158	3158	1586	15		
Addition/Drawl	0	0	0	0	0		
Repayments	2	2	1573	1573	2		
Closing Balance	3157	3157	1585	14	14		
Average Loan	3157	3157	2371	800	14		
Rate of Interest	8.09%	8.09%	8.09%	8.11%	9.58%		
Interest on loan	255	255	192	65	1		
French credit							
Opening Balance	10498	0	0	0	0		
Addition/Drawl	0	0	0	0	0	RP	12
Repayments	10498	0	0	0	0	MP	2
Closing Balance	0	0	0	0	0	Total	14
Average Loan	5249	0	0	0	0	Fin Charges	0.00%
Rate of Interest	4.36%	4.36%	4.36%	4.36%	4.36%	FC/Year	0.00%
Interest on loan	229	0	0	0	0	Rol	4.3575%
FERV						Rol + FC	4.3575%
Belgian credit							
Opening Balance	1461	0					
Addition/Drawl	0	0				RP	12
Repayments	1461	0				MP	2
Closing Balance	0	0				Total	14
Average Loan	731	0				Fin Charges	0.00%
Rate of Interest	4.36%	4.36%	4.36%	4.36%	4.36%	FC/Year	0.00%
Interest on loan	32	0	0	0	0	Rol	4.36%
FERV						Rol + FC	4.36%
TOTAL LOAN							
Opening Balance	15117	3158	3158	1586	15		
Addition/Drawl	0	0	0	0	0		
Repayments	11961	2	1573	1573	2		
Closing Balance	3157	3157	1585	14	14		
Average Loan	9137	3157	2371	800	14		
Rate of Interest	5.65%	8.09%	8.09%	8.11%	9.58%		
Interest on loan	516	255	192	65	1		
FERV							

27. The computation of interest on notional loan by applying weighted average interest rate as determined above is given below:

COMPUTATION OF INTEREST ON NOTIONAL LOAN

	(Rs. in lakh)				
	2004-05	2005-06	2006-07	2007-08	2008-09
Gross loan-Opening	75697	75697	75697	75697	75697
Cumulative repayments of Loans up to previous year	75659	75697	75697	75697	75697
Net loan-Opening	38	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	38	0	0	0	0
Repayments of Loans during the year	38	0	0	0	0
Net loan-Closing	0	0	0	0	0
Average Net Loan	19	0	0	0	0
Rate of Interest on Loan	6.43%	8.09%	8.09%	8.11%	9.58%
Interest on loan	1	0	0	0	0

DEPRECIATION

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

- (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 the 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.

29. The cost of land in the present case is Rs.735 lakh. The gross depreciable value of the asset, excluding land cost, as per (ii) above, is $0.9 \times (\text{Rs.}151395 \text{ lakh} - \text{Rs.}735 \text{ lakh}) = \text{Rs.}135594 \text{ lakh}$.

30. The petitioner has submitted that an amount of Rs. 13632 lakh of fixed charges could not be recovered on account of availability being lower than the Target Availability during the years 1993-94 to 1996-97. Consequently the depreciation recovered till 31.3.2001 works out to be Rs. 74717 lakh as against the depreciation of Rs. 79038 lakh included in the fixed charges. The petitioner has prayed that the short recovery of depreciation due to non-achieving of target availability up to 31.3.2001 should be allowed to be compensated by the beneficiaries. When the regulations provide for disincentive for not meeting the target availability norms by proportionate reduction in fixed charges, which includes depreciation, accepting the petitioner's plea will amount to undoing the effect of the generating station not achieving the normative target availability during the previous tariff period and thereby incurring disincentive. We are of the considered view that depreciation as part of fixed charges recoverable in a year disallowed because of non-fulfillment of a condition of eligibility, cannot be passed on to subsequent year as it would amount to deferment and not a disincentive as envisaged in the tariff regulations. Hence, cumulative depreciation as already computed remains unchanged.

31. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004 is Rs.94090 lakh, including depreciation on additional capitalisation/de-capitalisation for the period 1.4.2001 to 31.3.2004. After adjustment of cumulative depreciation due to additional capitalisation/de-capitalisation, the balance depreciable value as on 1.4.2004 comes to Rs.41504 lakh.

32. The petitioner has calculated the weighted average depreciation rate (excluding cost of land) of 5.33% based on asset-wise depreciation corresponding to a gross block of Rs 160659 lakh. This has not been considered since the entire normative loan was initially repaid during the tariff period 2001-04. Therefore, depreciation has been spread over to the balance useful life of the generating station in accordance with the 2004 regulations. The balance useful life of the generating station works out to 8.39 years as on 1.4.2004. The balance depreciable value of Rs 41504 lakh has been spread over the balance useful life of the generating station. In this manner the petitioner is entitled to recover depreciation of Rs. 4947 lakh each year during 2004-05 to 2008-09.

ADVANCE AGAINST DEPRECIATION

33. The petitioner has not claimed advance against depreciation and even as per norms is not entitled to AAD as the cumulative repayment of loan does not exceed cumulative depreciation.

O & M EXPENSES

34. O&M Expenses as claimed by the petitioner are as detailed below:

(Rs in lakh)

Years	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses	6743	7013	7293	7585	7888

35. The petitioner has stated that the normative O&M expenses of Rs. 5.2 lakh/MW specified under the 2004 regulations are highly inadequate in the case of gas power generating stations and if allowed to be implemented on ground, it would have a serious bearing on the life of the generating station. The petitioner has, therefore, submitted that O&M expenses for the generating station should be based on actual O&M expenditure of preceding 5 years i.e. 1999-2000 to 2003-04. The petitioner has further submitted that 10 year warranty period has expired in March, 2002 and O&M charges claimed are higher than the normative O&M expenses as per the 2004 regulations due to higher repair and maintenance (R&M) expenses on account of aging, higher replacement cost of spares, equipment failure etc.

36. In addition, the petitioner has prayed for a specific deviation pertaining to water charges in normal O&M expenses on the ground that the State Govts. have been resorting to manifold increase in the rates of water charges / royalty which can not be covered under normal O&M expenses allowed in the tariff. The normative O&M expenses finalized by the Commission, after 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. Of the number of heads in the O&M expenses, there could be increase in some of the heads and decrease in other heads in comparison to the norms. Therefore, it would not be justified to allow increase in

one head in isolation of other heads of O&M. As such, the direct recovery of additional O&M expenses on account of any increase in the rates of water charges / royalty etc. during tariff period may not be allowed. However, in case State Governments resort to manifold increase in the rates of water charges / royalty, the petitioner is free to approach the Commission with a separate petition with justification as per regulations.

37. The petitioner has also submitted that the salary/wage revision of the employees is due from 1.1.2007 and the escalation of 4% provided in the O&M expenses would not cover the enhanced employee cost from 1.1.2007. On this count also the petitioner may approach the Commission as per tariff regulations based on actual payments whenever made.

38. The Commission vide order dated 16.2.2006 directed the petitioner to place on record certain information for taking a comprehensive view on the revision of O&M expenses for the gas-based generating stations. Till such time a comprehensive view is taken on the issue, O&M expenses are allowed on the basis of existing norms as contained in the 2004 regulations, which work out as follows:

	(Rs.in lakh)				
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses as worked out	3412	3550	3688	3839	3990

INTEREST ON WORKING CAPITAL

39. (a) **Fuel Cost:** The petitioner has claimed following cost for fuel component in working capital-

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (Leap year)	2008-09
Cost of Fuel for 1 months (25% gas+75% Naphtha)	11569	11569	11569	11600	11569
Liquid fuel stock (1/2 month) (100% Naphtha)	7075	7075	7075	7094	7075

Fuel Component in working capital computed by considering the operating pattern for 2003-04 as 25% by Gas and 75% by Naphtha furnished by the petitioner is as under:

Particulars	2004-05	2005-06	2006-07	2007-08 (Leap year)	2008-09
Cost of Fuel for 1 months (25% gas+75% Naphtha)	11562	11562	11562	11594	11562
Liquid fuel stock (1/2 month) (75% Naphtha)	5303	5303	5303	5318	5303

- (a) **O&M Expenses:** Operation and maintenance expenses (cash) for one month as permissible has been considered in tariff of the respective year.
- (c) **Spares:** The value of maintenance spare has been calculated by the Petitioner considering the additional capital expenditure in respective years after COD (1.11.1993). The regulation 21(v) clause (a) (iv) of 2004 regulations regarding maintenance spares for working capital, for Gas Turbine/ Combined Cycle generating stations provides for maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation. The regulations do not provide for taking into account additional capital expenditure for working out the cost of

- maintenance spares for the working capital. Accordingly, the cost of maintenance spares for working capital has to be worked out based on historical cost as on COD (1.11.1993) or the oldest available cost on record admitted by GOI or the CERC. As such, maintenance spares has been computed based on capital cost of Rs. 127589 lakh as on 31.3.1994 as per Gol tariff Notification dated 30.4.1994.
- (b) **Receivables:** Receivables have been worked out on the basis of two months of fixed and variable charges. For this purpose, the operational parameters and weighted average price of gas have been considered.
- (c) **Working Capital Margin:** - Though the Commission allowed the working capital margin of Rs.2030 lakhs vide its order dated 07.04.2005 in petition no. 31/2001, working capital margin for the current tariff period has not been considered as there is no provision for working capital margin in 2004 regulations.

40. As per 2004 regulations, rate of interest on working capital shall be on 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. SBI PLR of 10.25% as on 1.4.2004 has been considered for computation for interest on working capital .

Calculation of Interest on Working Capital

(Rs.in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Fuel Cost (One month)	11562.18	11562.18	11562.18	11593.86	11562.18
Naptha stock	5303	5303	5303	5318	5303
O & M expenses	284	296	307	320	333
Spares	2285	2422	2567	2721	2885
Recievables	27079	27104	27130	27224	27188
Total Working Capital	46513	46688	46871	47177	47270
Total Working Capital allowed	46513	46688	46871	47177	47270
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest on Working Capital	4768	4785	4804	4836	4845

ANNUAL FIXED CHARGES

41. A summary sheet showing the details of capital cost, depreciation, etc is annexed with this order. The annual fixed charges for the period 1.4.2004 to 31.3.2009 allowed in this order are summed up below:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on Loan	1	0	0	0	0
Interest on Working Capital	4768	4785	4804	4836	4845
Depreciation	4947	4947	4947	4947	4947
Advance against Depreciation	0	0	0	0	0
Return on Equity	10598	10598	10598	10598	10598
O & M Expenses	3412	3550	3688	3839	3990
TOTAL	23725	23880	24037	24219	24380

RATE OF ENERGY CHARGE

42. The energy charges claimed are based on the naphtha prices, inclusive of sales tax, during January, February and March 2004. The energy charges in Paise/kWh sent out as calculated by the petitioner is as follows:

(Paise/kWh)

Combined Cycle	
Energy Charges (Gas)	102.88
Energy Charges (Naphtha)	380.66
Open Cycle	
Energy Charges (Gas)	146.23
Energy Charges ((Naphtha)	541.03

43. The operational parameters as per 2004 regulations considered in tariff calculation are as follows:

Combined Cycle	
Gross Station Heat Rate(Kcal/kWh)	2075.00
Auxiliary Consumption (%)	3.00
Open Cycle	
Gross Station Heat Rate(Kcal/kWh)	3010.00
Auxiliary Consumption(%)	1.00

44. The petitioner has procured three types of liquid fuels, namely, Naphtha, HSD and Hi-Tech, during the period Jan 04 to March 04 and has calculated the weighted average price of liquid fuel on procurement basis. It is observed that the price of HSD is significantly high by Rs.8447/MT in comparison to Naphtha. As such the weighted average price of the fuel-mix gets increased significantly if HSD is procured in more quantity. Real time consumption of HSD is very less in comparison to Naphtha and calculating the weighted average price on procurement basis will lead to inflated liquid fuel oil price. Hi-Tech oil essentially required for burning Naphtha has been considered as consumed basis for calculating base energy charge with Naphtha. As such, the base energy charges with Naphtha have been calculated on the combined weighted average prices and GCV of Naphtha and Hi-Tech Oil on as consumed basis. The energy charge so calculated shall be subject to fuel price adjustment for variation in GCV and prices of fuels on month to month basis and will automatically cover the cost of HSD as and when consumed in the ratio of actual consumption of HSD and naphtha.

45. In the case of gas fuel the petitioner has taken simple average of gas prices for the period Jan 04 to March 04 instead of taking weighted average price. Accordingly, the prices and GCV of the fuel as indicated in the petition and as adopted in tariff calculation herein for base energy charges are as hereunder:-

Description	As considered in petition	As adopted
Gas price (Rs./1000 SCM)	4772.57	4770.53
Gas GCV (kcal/SCM)	9923.33	9923.33
Price of Liquid Fuel (Rs./MT)	20139.78	20129.08
GCV of Liquid Fuel (Kcal/Kg)	11317.84	11318.28

46. Based on the operational parameters, fuel prices and GCV mentioned above, the base energy charges for different fuel operations works out as follows in comparison to the energy charges as claimed by the petitioner-

Description	Paise /kWh	
	As calculated	As per petition
Combined cycle mode using Gas	102.84	102.88
Combined cycle mode using Naphtha	380.44	380.66

47. The Base Rate of Energy Charges (BREC) have been calculated on base value of GCV, base price of fuel and normative operating parameters as indicated above and are subject to fuel price adjustment. The 2004 regulations provide for fuel price adjustment for variation in fuel price and GCV of fuels. The fuel price adjustment for fuel price and GCV variation (gas and liquid fuel) shall be as per following formula:

$$FPA = \frac{10 \times (SHR_n) \times (P_m/K_m) - (P_s/K_s)}{(100 - AC_n)}$$

Where,

FPA = Fuel price Adjustment for a month in Paise/kWh Sent out

SHR_n = Normative Gross Station Heat Rate expressed in kCal/kWh

- AC_n = Normative Auxiliary Consumption in percentage
- P_m = Weighted average price of Gas or Liquid fuel as per PSL for the month in Rs. / 1000 SCM of Rs./ KL or Rs./MT
- K_m = Weighted average gross calorific value of Gas or Liquid fuel for the month in Kcal/ SCM or kCal/ Litre or kCal/ Kg
- P_s = Base price of Gas or Liquid fuel as taken for determination of base energy charge in tariff order in Rs. / 1000 SCM of Rs./ KL or Rs./MT
- K_s = Base value of gross calorific value of Gas or Liquid fuel as taken for determination of base energy charge in tariff order in Kcal/ SCM or kCal/ Litre or kCal/ Kg

48. FPA shall further be subjected to adjustment for monthly operating pattern adjustment (MOPA) for percentage open cycle operation as certified by REB/SLDC and corresponding to Gross Station Heat Rate of 3010 kCal/kWh and auxiliary energy consumption of 1%, as per formula given below:

$$\mathbf{MOPA} = (\mathbf{BEC} + \mathbf{FPA}) \times \left[\frac{\{(SHR_{no})/(100-AC_{no})\}}{\{(SHR_{nc})/(100-AC_{nc})\}} - 1 \right] \times \mathbf{POCM}/100$$

Where,

- MOPA** - Monthly Operating Pattern Adjustment in Paise/kWh Sent Out
- BEC** - Base Energy Charge as per tariff order in Paise/kWh sent out
- FPA** - Fuel price Adjustment for a month in Paise/kWh Sent out
- SHR_{no}** - Normative Gross Station Heat Rate for Open cycle operation expressed in kCal/kWh (3010 kCal/kWh)

- SHR_{nc} - Normative Gross Station Heat Rate for Combined cycle operation expressed in kCal/kWh (2075 kCal/kWh)
- AC_{no} - Normative Auxiliary Consumption for Open cycle operation in percentage (1%)
- AC_{nc} - Normative Auxiliary Consumption for Combined cycle operation in percentage (3%)
- POCM - Open cycle generation during the month in percentage

49. Since there is provision for monthly operating pattern adjustment to take care of open cycle operation, there is no need for specifying base energy charges for open cycle operation.

IMPACT OF ADDITIONAL CAPITALISATION FOR THE YEARS 2001-04

50. In petition No 110/2005 filed by the petitioner for approval of for additional capitalisation 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 petitioner would be entitled to earn return on equity @ 16% on equity portion of additional capitalisation approved and interest on loan at the rate as applicable during 2001-02 to 2003-04, payable on additional capitalisation from 1st April of the financial year following the financial year to which additional capital expenditure relates.

51. Based on the above, the petitioner shall be entitled to recover Rs 17.27 lakh from the respondents through tariff in five equal instalments during 2004-09

on account of return on equity and interest on loan on account of additional capitalisation on works as worked out below:

IMPACT OF ADDITIONAL CAPITAL EXPENDITURE DURING 2001-04

	(Rs. in lakh)		
	2001-02	2002-03	2003-04
Additional capitalisation during the year vide order dated .09.05.2006 in Petition No.110/2005	41.13	45.1	-10.47
Considered for Impact from 1st April of financial year following the year to which ACE relates.	0	41.13	86.23
Equity 50% as considered in tariff	0	20.565	43.115
Loan 50%	0	20.565	43.115
Actual Rate of Interest allowed in Order dated 6.11.2003		11.05%	11.15%
Return on Equity allowed in Order dated 01.08.2003	16%	16%	16%
IMPACT			
(I) Interest on Loan	0	2.27	4.81
(ii) Return on Equity	0	3.29	6.90
Total		5.56	11.71
Total amount due for the years 2001-02 to 2003-04		17.27	

52. The petitioner has sought approval for the reimbursement of expenditure of Rs. 2,63,917/- 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.

53. 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.

54. 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.

55. This order disposes of Petition No 79/2005.

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

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

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

New Delhi dated the 16th November,2006

Summary Sheet	
Name of the Company	NTPC Ltd.
Name of the Station	Kawas GPS
Tarrif setting Period	2004-09
Petition No.	79/2005

							Rs.in lakh
1	Capital Cost of the Project as on 31.3.2001						151319
	Cumulative depreciation recovered as on 31.3.2001						79038
2	Admitted Capital Cost as on 1.4.2004 for Calculation of Debt and Equity						151395
3	Additional Capitalisation(works)						75.75
	2001-02				41.13		
	2002-03				45.10		
	2003-04				-10.48		
	Total				75.75		
4	Additional Capitalisation(FERV)						0
5	Total Capital Cost as on 1.4.2004(2+3+4)						151395
6	Means of Finance						
	Debt		50.00%		75697.38		
	Equity		50.00%		75697.38		
	Total		100.00%		151394.75		
7	Debt details-Notional Debt (Net) as on 1.4.2004						38.10
	Notional Debt(Gross i.e.50% of 151395)					75697.38	
	Repayment upto 31.3.2004					75659.28	
	Balance Debt					38.10	
8	Weighted Av. Rate of interest-Calculated						
	2004-05	2005-06	2006-07	2007-08	2008-09		
	6.43%	8.09%	8.09%	8.11%	9.58%		
9	Depreciation recovered upto 31.3.2009 :						118824
				Dep	AAD	Total	
	Recovered upto 31.3.2001			79038	0.00	79038	
	From 1.4.2001 to 31.4.2004			15052.43	0.00	15052	
	From 1.4.2004 to 31.3.2009			24734	0	24734	
	ERV Impact From 2001-04			0.00	0.00	0.00	
	Adjustment of depreciation due to de-capitalisation			0.00	0.00	0.00	
	Total					118824	
10	Balance Depreciation to be recovered beyond 31.3.2009 :						16770
	Capital cost for the purpose of Depreciation					151319	
	ACE + FERV+Additional FERV due to Normative Loan					75.75	
	Capital cost as 1.4.2004					151395	
	Less: Land Cost					735	
						150660	
	90% of Capital Cost as above					135594	
	Cum. Depreciation to be recovered upto 31.3.2009					118824	
	Balance					16770	