

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

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

**Petition No 147/2004
With IA No.38/2005**

In the matter of

Approval of tariff in respect of Kayamkulam Combined Cycle Power Project, for the period from 1.4.2004 to 31.3.2009

And in the matter of

National Thermal Power Corporation Ltd., New Delhi**Petitioner**

Vs

1. Kerala State Electricity Board, Thiruvanthapuram
2. Tamilnadu Electricity Board, Chennai**Respondents**

The following were present

1. Shri V.B.K. Jain, NTPC
2. Shri Sameer Agarwa, NTPC
3. Ms. Rachna Mehta, NTPC
4. Ms. Alka Saigal, NTPC
5. Shri N.K. Narang, NTPC
6. Shri Ajay Garg, NTPC
7. Shri G.S. Aghesh, NTPC
8. Shri E. Surendra, NTPC
9. Shri S.K. Samui, NTPC
10. Shri Balaji Dubey, NTPC
11. Shri R. Balachandran, KSEB
12. Shri V. Ramesh Babu, DCE, KSEB

**ORDER
(DATE OF HEARING : 17.1.2006)**

This petition has been filed by the petitioner, a generating company owned and controlled by the Central Government for approval of tariff in respect of Kayamkulam Combined Cycle Power Project with a capacity of 359.6 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 comprises of two gas turbine (GT) units (116.6 MW each) and one steam turbine (ST) unit (126.4 MW). The dates of commercial operation of GT-I, GT-II and ST, are 1.1.1999, 1.5.1999 and 1.3.2000 respectively. Thus, the date of commercial operation of the generating station is 1.3.2000.

3. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide its order dated 5.3.2004 read with order dated 18.5.2004 in Petition No 22/1999 based on capital cost of Rs. 112531 lakh as on 31.3.2001. In the petition, the petitioner had claimed additional capitalisation on works for the years 2001-02, 2002-03 and 2003-04 based on budgetary projections. This additional capitalisation claimed by the petitioner was not considered in the order dated 5.3.2004 read with order dated 18.5.2004 for tariff determination. Subsequently, vide order dated 4.4.2005 in Petition No 141/2004, the Commission approved the additional capital expenditure of Rs. 1008 lakh for the period 1.4.2001 to 31.3.2004 and arrived at the capital base of Rs. 113539 lakh (excluding impact of FERV) as on 31.3.2004, for the purpose determination of tariff as on 1.4.2004. The Commission further ordered that the cost of servicing of investment on the additional expenditure would be reimbursed to the petitioner during tariff for 2004-09. The details of the capital expenditure approved are given hereunder:

(Rs. in lakh)	
2001-2002	1386.13
2002-2003	(-) 1623.01
2003-2004	1245.01
Total	1008.13

4. Consequent to approval of the additional capital expenditure by order dated 4.4.2005, the petitioner filed IA No.38/2005 and the amended petition to claim tariff for the period 2004-05 to 2008-09. This order is in the context of the amended petition subsequently filed.

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	5830	5830	5830	5830	5830
Interest on Loan	3022	2309	1773	1397	1128
Return on Equity	4967	4967	4967	4967	4967
Advance against Depreciation	2448	2448	462	218	0
Interest on Working Capital	2807	2808	2777	2787	2787
O & M Expenses	2805	2917	3034	3155	3281
TOTAL	21878	21278	18843	18354	17994

6. The details of interest on 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
Spares	1569	1663	1762	1868	1980
O & M expenses	234	243	253	263	273
Receivables	16183	16083	15677	15630	15535
Stock of Liquid Fuel					
Total Working Capital	27387	27390	27094	27189	27191
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	2807	2808	2777	2787	2787

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 (NAPTHA)	Paise/ kWh	307.72	437.18

8. The reply to the petition before amendment was filed by the respondents. 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.

9. The petitioner has de-capitalised assets valued at Rs.2.94 lakh during the period 2001-04. These de-capitalised assets were removed from the gross block to arrive at admissible additional capitalization for the purpose of capital cost in the order dated 4.4.2005. The petitioner is maintaining accounts on accrual basis. This resulted in inflated capital base in earlier tariff periods due to capitalization of liability provision. The expenditure for which provision was made did not materialise and it was de-capitalised subsequently. But the petitioner has been allowed tariff on the inflated capital base till 31.3.2004. However the past period calculations towards impact on tariff have not been opened and may be mutually settled between the petitioner and the beneficiaries.

10. There is a general issue regarding treatment of depreciation when it exceeds repayment of loan in a year. The Commission in its order dated 5.5. 2006 in Petition No 162/2004 (NTPC Vs UPPCL and Another) has decided that when depreciation recovered in a year is more than the amount of repayment during that year, the entire amount of depreciation is to be considered as repayment of loan for tariff computation. Similar approach has been adopted by the Commission, while approving tariff in respect of the transmission assets of PGCIL, and in the interest of consistency and continuity of approach same methodology needs to be followed in case of the

petitioner also. Accordingly, the decision arrived at in the order dated 5.5.2006 in Petition No 162/2004 will be followed in this case.

CAPITAL COST

11. As per the second proviso to Regulation 17 of the 2004 regulations in case of the generating stations existing up to 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.

12. The petitioner has considered the capital expenditure of Rs. 118257 lakh after accounting for additional capitalization of Rs. 1008 lakh on works already approved over the capital expenditure of Rs. 112531 lakh admitted by the Commission in the order dated 5.3.2004 read with order dated 18.5.2004 *ibid* and FERV of Rs. 4718 lakh. The petitioner has claimed FERV as per the following details:

(Rs. in lakh)				
Year	2001-02	2002-03	2003-04	Total
FERV	1688	3526	(-)496	4718

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 decapitalised and the details of such assets not in use/amounts decapitalized shall be furnished to the Commission along with the claims of capitalisation to be filed separately.

14. The Commission vide its order dated 4.4.2005 in Petition No.141/2004 has decided that the opening capital cost for the purpose of tariff for the period 2004-09 as

on 1.4.2004 shall be Rs. 113539 lakh. This has been adopted for the purpose of tariff determination in the present 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 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's claim for capitalization of Rs.4718 lakh on account of FERV is matching with calculations submitted and is in accordance with AS-11 applicable up to 31.3.2004. The claim has accordingly been admitted for tariff calculations.

18. Based on the above, after adjustment of FERV of Rs 4718 lakh, the gross block as on 1.4.2004 comes to Rs.118257 lakh as claimed as per details given hereunder:

(Rs. in lakh)

Capital cost admitted as on 31.3.2001.	112531
Additional Capitalization as approved for the years 2001-2004	1008
FERV admitted for the tariff period 2001-2004	4718
Opening Capital cost as on 1.4.2004 for the tariff period 2004-2009	118257

19. The petitioner has submitted that 220 kV Switchyard is to be transferred by PGCIL to it as per the order of the Central Government and the value of the assets to be transferred is of the order of Rs.74 crore. The petitioner has sought liberty to approach the Commission for the revision of tariff after transfer of switchyard.

20. The petitioner has included an amount of Rs.26.99 crore for the power station switchyard as a part of capital cost pending transfer of the switchyard from PGCIL. During the last hearing on 17.1.2006 the petitioner clarified that this is the GIS inter-connection facility from GT to Switchyard already included in the scope of works. In view of the explanation, the petitioner is granted liberty to approach the Commission for the revision of tariff after transfer of the switchyard.

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, vide its order dated 5.3.2004 read with order dated 18.5.2004 in Petition No 22/1999 while approving tariff for the period from 1.4.2001 to 31.3.2004 had considered the normative debt-equity ratio of 70:30. Therefore, for the purpose of present petition, debt-equity ratio of 70:30 has been adopted in the working. Additional capitalisation on account of Works has been apportioned between debt and equity in the ratio of 70:30. Accordingly, for the purpose of tariff, an amount of Rs. 35477 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 of Rs. 35477 lakh after accounting for equity on account of additional capitalization on works and FERV for the period 1.4.2001 to 31.3.2004, which has been accepted. The return on equity has been worked out on the average normative equity. The charges payable by the respondents on account of return on equity shall be Rs 4967 lakh each year.

INTEREST ON LOAN

26. 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.
27. The interest on loan has been worked out in the manner given hereunder:
- (a) The normative loan of Rs. 47730 lakh outstanding as per the order dated 5.3.2004 read with order dated 18.5.2004 has been considered.
 - (b) Notional loan of Rs.4008 lakh arising due to additional capitalization for the period 2001-04 has been accounted for, aggregating the total outstanding notional loan as on 1.4.2004 to Rs.52738 lakh.

(c) For working out the opening balance of foreign loans viz. IBRD-A, B (Tr.I) & B (Tr.II) as on 1.4.2004, opening balance of loan (as per previous tariff orders) is taken as the starting point. To the opening balance is added the ERV of that year as allowed. In all the above loans opening balance in foreign currency and Indian rupees is as per previous tariff orders. In case of IBRD-Main US \$ equated loan opening balance of loan in foreign currency (as per previous tariff orders) on 1.4.2001 is taken as the starting point, the loan being of multicurrency pool type. Under this system IBRD calculates all the outstanding amounts at current value. To the opening balance is added the ERV of that year as claimed & verified from payment vouchers submitted by NTPC Ltd. Final amount arrived in foreign currency is converted in Indian rupees as opening balance of loan on 01.04.2004.

Closing balance of Indian loan (as on 31.3.2004) continuing from earlier tariff period, is taken as per Commissions order in petition no. 22/99 to be the opening balance on 1.4.2004 for tariff period 2004-09.

(d) The cumulative repayment of loan up to 31.3.2004 is taken as per Commission' order dated 5.3.2004 read with order dated 18.5.2004 in petition no. 22/1999.

(e) Some of the loans viz. Euro Bond (upto 2007-08), SBI-II (upto 2004-05), LIC (upto 2007-08), involve moratorium period which has been taken into account.

(f) Normative repayment of loan or depreciation whichever is higher has been treated as repayment during the year in view of the decision referred to above.

(g) Normative repayment has been worked out as under:

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

(h) The petitioner has considered FIFO method of repayment for some of the loans viz. SBI-I, and Indian Bank. However, in our calculations, actual repayment of loan is worked out on average basis as was followed in earlier tariff order for the generating station, since adoption of FIFO method may result in higher AAD in the existing generating stations and higher IDC in new generating station.

(i) The petitioner has not considered cumulative repayment of loan as per earlier order dated 5.3.2004 read with order dated 18.5.2004 and shown it as NIL. Cumulative repayment as per earlier order dated 5.3.2004 read with order dated 18.5.2004 is Rs.912 lakh, which has been considered for calculation of interest on loan during tariff period 2004-09.

(j) The petitioner has calculated interest on loan considering weighted average rate of interest (including financing charges) on monthly rest basis. In our calculations, interest on loan has been calculated by taking interest on annual rest basis (including financial charges as claimed by the petitioner).

(k) The weighted average rate of interest considered for calculating the interest on loan is that of Bonds XIV which is outstanding in the books of accounts of the petitioner. These Bonds have replaced the high interest bearing GOI loans considered in earlier tariff period.

(l) Financial charges incurred towards loan/s by the petitioner have been allowed and taken into consideration for calculation for interest on loan. In this case the financial charges considered are 0.05% in case of SBI-I, and SBI-II,

0.01% in case of LIC and 1% Government guarantee fee for IBRD Main, IBRD-A and IBRD-B.

(m) Some of the loans interest viz. IBRD Main (4.85%), SBI-I And SBI-II (9.6%) carry floating rate of. Therefore, interest rate prevailing as on 1.4.2004 has been considered for interest computations. However, interest on loan would be subject to adjustment on the basis of actual rate of interest applicable during the tariff period.

(n) Loan draws up to 31.3.2004 have been considered.

(o) Repayment in case of foreign loans is calculated as per schedule furnished by the petitioner and rate of exchange as on 31.03.2004.

[US\$=Rs.44.31, and EURO=Rs.54.28].

28. The computations of interest on notional 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	82780	82780	82780	82780	82780
Cumulative repayments of Loans up to previous year	30042	37015	44291	51730	59344
Net loan-Opening	52738	45765	38489	31050	23436
Repayments of Loans during the year	6973	7276	7439	7614	5267
Net loan-Closing	45765	38489	31050	23436	18168
Average Net Loan	49252	42127	34769	27243	20802
Rate of Interest on Loan	6.6130%	6.5909%	6.5561%	6.5068%	6.3842%
Interest on loan	3257	2777	2280	1773	1328

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. In present petition the petitioner has de-capitalised assets worth Rs.2.94 lakh for the period up to 31.3.2004 and has claimed depreciation after accounting for depreciation of Rs.2 lakh recovered against the assets de-capitalised. The same has been considered.

31. The cost of land in the present case is Rs.4262 lakh. The gross depreciable value of the asset, excluding land cost, is $0.9 \times (\text{Rs.}118257 \text{ lakh} - \text{Rs.}4262 \text{ lakh}) = \text{Rs.}102596 \text{ lakh}$. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004 is Rs.28412 lakh. Remaining depreciable value as on 1.4.2004 is thus Rs.74184 lakh.

32. Since the normative loan is outstanding depreciation is calculated as per weighted average rate of depreciation. Weighted average rate of depreciation calculated based on Gross value of asset is 4.45% against the petitioner's claim of 4.93%. The petitioner had considered depreciation rate of 25% for assets not owned by it amounting to Rs.717 lakh. However, rate of depreciation of these assets, as per details furnished by the petitioner, was worked out as per rates applicable to individual assets included in Appendix-II to the 2004 regulations. For assets not listed specifically in Appendix-II the rates considered are as applicable to similar assets included in Appendix-II.

33. In case of de-capitalization of physical assets, depreciation recovered up to the date of de-capitalization has been reduced from cumulative depreciation recovered till 31.3.2004 based on the information submitted by the petitioner. The petitioner has considered de-capitalisation of assets to the tune of Rs.2.94 lakh and calculated depreciation charged on the assets till de-capitalisation amounting to Rs. 2 lakh. As per claims made by the petitioner the amount of cumulative depreciation calculated has been considered. Accordingly, the depreciation recovered in tariff up to 31.3.2004 has been taken as per the order dated 5.3.2004 read with order dated 18.5.2004 *ibid*, with limited correction on account of de-capitalization of assets by the petitioner as stated above.

34. The generating station could not achieve the target availability norms of 80% during the years 1999-2000 and 2001-02. Accordingly, the petitioner could not recover depreciation to the tune of Rs.137 lakh and 1384 lakh during these years. The petitioner has pleaded that the depreciation not recovered in tariff during these years

should be reduced from the cumulative depreciation, otherwise the generating station would not be able to recover its capital cost. We have considered the submission made by the petitioner. The law provides for disincentive for not meeting the target availability norms by proportionate reduction in fixed charges, which includes depreciation. In case the petitioner's prayer is accepted it 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. In our considered view, this is not permissible. Therefore, for the purpose of computation of tariff in the present petition, depreciation recoverable in accordance with the order dated 5.3.2004 read with order dated 18.5.2004 has been considered since the tariff in these orders was computed based on normative target availability of 80%.

35. Based on the above, for the period 1.4.2004 to 31.3.2009 the depreciation works out to Rs. 5267 lakh each year as shown below:

(Rs. in lakh)

Details of Depreciation	2004-05	2005-06	2006-07	2007-08	2008-09
Gross Block as on 1.4.2004	118257	118257	118257	118257	118257
Depreciable Value	102596	102596	102596	102596	102596
Balance Useful life of the asset	-	-	-	-	-
Remaining Depreciable Value	74183	67210	59934	52495	44881
Depreciation	5267	5267	5267	5267	5267

ADVANCE AGAINST DEPRECIATION

36. 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

37. 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.

38. For working out Advance Against Depreciation, 1/10th of the loan has been worked out with reference to notional gross loan, while repayment of loan during the year has been worked out by the above formula. The petitioner's entitlement to Advance Against Depreciation has been arrived at as under:

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
1/10th of Gross Loan(s)	8278	8278	8278	8278	8278
Repayment of the Loan	6973	7276	7439	7614	5267
Minimum of the above	6973	7276	7439	7614	5267
Depreciation during the year	5267	5267	5267	5267	5267
(A) Difference	1706	2009	2172	2346	0
Cumulative Repayment of the Loan	37015	44291	51730	59344	64612
Cumulative Depreciation	33680	40653	47929	55368	62982
(B) Difference	3335	3638	3801	3976	1629
Advance against Depreciation Minimum of (A) and (B)	1706	2009	2172	2346	0

O&M EXPENSES

39. Under the 2004 regulations, O&M norms specified for Combined Cycle generating stations, other than small gas turbine power generating station without warranty spares are -

(Rs. in lakh /MW)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses/ MW	7.80	8.11	8.44	8.77	9.12

40. The petitioner has claimed O&M expenses are as detailed below, stated to have been worked out based on actual expenses for the preceding 5 years:

Years	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses (Rs in. lakh)	2805	2917	3034	3155	3281

41. 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.

42. 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, the direct 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.

43. Based on above discussion, the 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	2804.72	2916.19	3034.85	3153.52	3279.37

44. The petitioner has submitted that the wage revision of its employees is due with effect from 1.1.2007. Therefore, O &M expenses should be subject to revision on account of revision of employee cost from that date. In the alternative, it has been prayed that the increase in employee cost due to wage revision be allowed as per actuals for extra cost to be incurred consequent to wage revision. We are not expressing any view, as this issue does not arise for consideration at this stage. The petitioner may approach for a relief in this regard at an appropriate stage in accordance with law.

INTEREST ON WORKING CAPITAL

45. In accordance with clause (v) of Regulation 21 of the 2004 regulations, working capital in case of gas based generating stations shall cover:

- (i) Fuel cost for one month corresponding to the target availability duly taking into account the mode of operation of the generating station on gas fuel and liquid fuel;
- (ii) Liquid fuel stock for ½ month;
- (iii) Operation and maintenance expenses for one month;

- (iv) Maintenance spares at 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 target availability.

46. 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.

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

(a) Fuel Cost; The petitioner has claimed following cost for fuel component in working capital based on price and GCV of liquid fuel (Naphtha) for preceding three months from January 2004 to March 2004:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (Leap Year)	2008-09
Fuel Cost for 1 Month	6268	6268	6268	6285	6268
Liquid fuel stock for 1/2 month	3134	3134	3134	3143	3134

Based on the weighted average GCV and price of fuels the fuel component in working capital works out as follows for different years during tariff period

(Rs in lakh)

Description	1.4.2004 to 31.3.2007 and 1.4.2008 to 31.3.2009	1.4. 2007 to 31.3.2008 (Leap Year)
Value of stock of Naphtha for 1/2 month	3134.06	3142.64
Fuel Cost-1 Month	6268.11	6285.29
Energy Charges for Two months	12536.23	12570.57

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

(c) Maintenance Spares: The petitioner has calculated the value of maintenance spares for the purpose of working capital considering additional capital expenditure in respective years after the date of commercial operation. The amount claimed for maintenance spares for working capital calculation by the petitioner are as given below :

(Rs.in lakh).

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Amount claimed for maintenance spares	1569	1663	1762	1868	1980

Accordingly, the spare requirement has been worked out on historical cost as on the date of commercial operation, without considering the additional capitalisation thereafter. 1% of the historical cost of Rs. 104815 lakh as on 1.3.2000 has been escalated at the rate of 6% p.a. to arrive at permissible spare consumption for the relevant years. The maintenance spares for the purpose of working capital has been arrived at as shown hereunder:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Cost of maintenance spares	1323	1403	1487	1576	1671

(d) 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					
Rs./kWh	3.077	3.077	3.077	3.077	3.077
Variable Charges per year (Rs.)	75217	75217	75217	75423	75217
Variable Charges - 2 months (Rs in lakh)	12536	12536	12536	12571	12536
Fixed Charges - 2 months (Rs in lakh)	3460	3450	3415	3382	2931
Receivables (Rs in lakh)	15996	15987	15952	15952	15467

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

49. 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
Fuel Cost	6268	6268	6268	6285	6268
Naphtha Stock	3134	3134	3134	3143	3134
O & M expenses	234	243	253	263	273
Spares	1275	1352	1433	1519	1610
Receivables	15996	15987	15952	15952	15467
Total Working Capital	26907	26983	27039	27162	26752
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest on allowed Working Capital	2758	2766	2772	2784	2742

50. Kerala State Electricity Board has submitted that the generating station was closed for a period of one year and therefore, the question of payment of interest on working capital for that period should not arise. We are not impressed by the argument. Notwithstanding the fact that KSEB did not requisition power from the generating station as a consequence of which it was closed, the petitioner was maintaining necessary fuel stock, etc. Therefore, there is no case for reduction in interest on working capital for the period the generating station was stated to be closed.

ANNUAL FIXED CHARGES

51. A summary sheet showing the details of capital cost, 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 as below:

(Rs. in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Depreciation	5267	5267	5267	5267	5267
Interest on Loan	3257	2777	2280	1773	1328
Return on Equity	4967	4967	4967	4967	4967
Advance against Depreciation	1706	2009	2172	2346	0
Interest on Working Capital	2758	2766	2772	2784	2742
O & M Expenses	2805	2916	3035	3154	3279
TOTAL	20760	20702	20492	20291	17584

ENERGY/VARIABLE CHARGES

52. The generating station is a combined cycle thermal power station designed for liquid fuel firing. The petitioner has claimed the energy charges based on the following operational norms as per the 2004 regulations-

Description	Unit	
Auxiliary Energy Consumption in Combined Cycle mode	%	3
Auxiliary Energy Consumption in Open Cycle mode	%	1
Station Heat Rate in Combined Cycle mode	kCal/kWh	2000
Station Heat Rate in Open Cycle mode	kCal/kWh	2900

53. The petitioner has submitted the auditor's certificate regarding Price and GCV of Naphtha. The following table contains the prices and GCV of the fuel as claimed by the petitioner and adopted in our calculations for base energy charges-

Weighted Average GCV of Fuel (as fired basis)	kCal/kg	11356
Weighted Average Price of Fuel (as procured basis)	Rs./MT	16948.21

54. The Base Energy Charges have been calculated as under based on the operational norms specified in the 2004 regulations and price and GCV of Naphtha approved:

	Unit	Combined Cycle	Open Cycle
Capacity	MW	359.580	359.580
Normative PLF/Availability	Hours/Kw/year	7008.00	7008.00
Gross Station Heat Rate corresponding to GCV	kCal/kWh	2000.00	2900.00
Aux. Energy Consumption	%	3.00	1.00
Weighted average GCV of Fuel	kCal/Kg	11356.00	11356.00
Weighted average Price of Fuel	Rs./MT	16948.21	16948.21
Rate of Energy Charge per kWh generated	Paise/kWh	298.49	432.81
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	307.72	437.18

55. 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 2004 regulations provide for fuel price adjustment for variation in fuel price and GCV of fuels. Accordingly, the base energy charges approved shall be subject to adjustment. The formula applicable for fuel price adjustment shall be as given below: -

$$\text{FPA} = \frac{10 \times (\text{SHR}_n) \times (\text{P}_m/\text{K}_m) - (\text{P}_s/\text{K}_s)}{(100 - \text{AC}_n)}$$

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 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 determination of base energy charge in tariff order in Kcal/ SCM or kCal/ Litre or kCal/ Kg

56. 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 2900 kCal/kWh and auxiliary energy consumption of 1%, as per formula given below:

$$\text{MOPA} = (\text{BEC} + \text{FPA}) \times \left[\frac{\{(\text{SHR}_{no})/(100-\text{AC}_{no})\}}{\{(\text{SHR}_{nc})/(100-\text{AC}_{nc})\}} - 1 \right] \times \text{POCM}/100$$

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 (2900 kCal/kWh)

- SHR_{nc} - Normative Gross Station Heat Rate for Combined cycle operation expressed in kCal/kWh (2000 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

57. 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 capitalization for the years 2001-04

58. In petition No 141/2004 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.

59. Based on the above, the petitioner shall be entitled to recover the following amounts from the respondents through tariff on account of return on equity and interest on loan on additional capitalisation on works.:

(Rs. in lakh)

		2001-02	2002-03	2003-04	Total
Additional Capitalisation		1386.13	(1623.01)	1245.01	1008.13
Financing of Additional Capitalisation					
Notional Loan		970.29	(1136.11)	871.51	705.69
Notional Equity		415.84	(486.90)	373.50	302.44
Total					
Effective Additional Capitalisation					
Opening Loan Balance		0.00	970.29	(165.82)	
Addition of Loan		970.29	(1136.11)	871.51	705.69
Repayment of Loan		0.00	0.00	0.00	0.00
Closing Loan Balance		970.29	(165.82)	705.69	
Effective Loan			970.29	(165.82)	
Weighted Average Rate of Interest on Loan			6.9778%	7.1161%	
Effective Equity			415.84	(71.06)	
Interest on Loan			67.70	(11.80)	55.91
Return on Equity	16%		66.53	(11.37)	55.16
Impact of Additional Capitalisation			134.24	(23.17)	111.07

60. The petitioner has sought approval for the reimbursement of expenditure of Rs. 2,67,090/- 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.

61. 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.

62. 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.

63. This order disposes of Petition No 147/2004 along with IA No.38/2005.

Sd/
(BHANU BHUSHAN)
MEMBER

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRPERSON

New Delhi dated the 9th May 2006

Summary Sheet				
COMPANY		NTPC Ltd.		
POWER STATION		KAYAMKULAM CCPP		
PETITION NO.		147/2004		
IA NO.		38/2005		
Tariff Setting Period		2004-09		
				(Rs. in lakh)
1	Capital Cost of the Project as on 31.3.2001			112531
2	Additional Capitalisation(works)			1008
	2001-02		1386	
	2002-03		-1623	
	2003-04		1245	
	Total		1008	
3	Additional Capitalisation(FERV)			4718
	2001-02		1688	
	2002-03		3526	
	2003-04		-496	
	Total		4718	
4	Total Capital Cost as on 1.4.2004(1+2+3)			118257
5	Means of Finance¹ :			
	Debt	70.00%	82780	
	Equity	30.00%	35477	
	Total	100.00%	118257	
6	Normative Loan as on 1.4.2004			52738
	Normative Loan O/S as on 31.3.2004		48730	
	Normative Loan due to ACE+FERV in20 01-04		4008	
	Total Normative Loan as on 1.4.2004		52738	
7	Cumulative Repayment up to 31.3.2009 :			64612
	Repaid up to 31.3.2004		30042	
	1. 4.2001 to 31. 3.2004 (ACE & FERV)		0	
	1.4.2004 to 31.3.2009		34570	
	Total		64612	
8	Balance Normative Loan to be repaid beyond 31.3.2009 :			18168
9	Depreciation recovered up to 31. 3.2009 :			62982
		Dep	AAD	Total
	Recovered up to 31.3.2004	26497	1498	27995
	1.4.2001 to 31.3.2004 (ACE & FERV)	419	0	419
	1.4.2004 to 31.3.2009	26337	8233	34570
	Adjustment of Cumulative .Depreciation due to de-capitalisation	-2	0	-2
	Total			62982
10	Balance Depreciation to be recovered beyond 31.3.2009 :			39613
	Capital cost for the purpose of Depreciation		112531	
	ACE + FERV		5726	
	Capital cost as 1.4.2004		118257	
	Less: Land Cost		4262	
			113995	
	90% of Capital Cost as above		102596	
	Cum. Depreciation to be recovered up to 31.3.2009		62982	
	Balance Depreciation to be recovered beyond 31.3.2009		39613	