

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram:**

- 1. Shri Ashok Basu, Chairperson**
- 2. Shri Bhanu Bhushan, Member**

**Petition No. 68/2005**

**In the matter of**

Approval of tariff for Neyveli Thermal Power Station-I (Expansion) (2x210 MW) for the period from 1.4.2004 to 31.3.2009.

**And in the matter of**

Neyveli Lignite Corporation Limited, Neyveli

**...Petitioner**

Vs

1. Tamil Nadu Electricity Board, Chennai
2. Karnataka Power Transmission Corporation Limited, Bangalore.
3. Kerala State Electricity Board, Thiruvananthapuram
4. Pondicherry Electricity Department, Pondicherry

**..... Respondents**

**The following were present:**

1. Shri K.Sekar, CGM, NLC
2. Shri R. Seetharaman, DGM, NLC
3. Shri A.Ganesan, NLC
4. Shri S. Sowmyanarayanan, TNEB
5. Shri R.Krishnaswami, TNEB

**ORDER  
(DATE OF HEARING: 17.8.2006)**

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 Neyveli Thermal Power Station-I (Expansion) (2x210 MW) (hereinafter referred to as "the generating station") for the period from 1.4.2004 to 31.3.2009 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, (hereinafter referred to as "the 2004 regulations").

2. The generating station with a total capacity of 420 MW comprises 2 units of 210 MW each. The dates of commercial operation of these units of the generating station are as follows:

Unit	Date of commercial operation
Unit-I	9.5.2003
Unit-II	5.9.2003

3. The completion cost of the generating station is stated to be Rs. 139033 lakh against the sanctioned completion cost of Rs. 142347 lakh by Govt of India, which includes foreign exchange component of Rs. 54774 lakh, at December 2000 price level.

4. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide its order dated 7.4.2005 in Petition No. 105/2002 based on the capital cost of Rs. 129914 lakh as on 5.9.2003 after deducting an amount of Rs. 9119 lakh withheld by the petitioner as the liquidated damages, from the gross block of Rs. 139033 lakh on that date. The two part tariff was approved based on Net Fixed Assets. The petitioner's claim for tariff in the present petition was initially based on the capital cost which included admitted capital cost of Rs. 129914 lakh as opening net block as on 1.4.2004. Subsequently, the petitioner filed Petition No. 8/2006 seeking increase in capital cost by an amount of Rs. 7265 lakh on account of FERV for the period December 2000 to the date of commercial operation of the station for approval of tariff for the period 1.4.2004 to 31.3.2009. It was submitted that loan component of capital cost worked out to Rs. 50060 lakh @ Rs. 50.59/Euro, against an amount of Rs. 42796 lakh considered in the order dated 7.4.2005 The Commission vide its order dated 26.4.2006 accepted the claim of the petitioner and directed that the capital cost of Rs. 137179 lakh would be taken as the opening cost

as on 1.4.2004 for the purpose of determination of tariff for the period ending 31.3.2009 as per the following details:

	(Rs. in lakh)
Equity component	96238
Loan component	50060
Total	146298
Less liquidated damages	9119
<b>Net Capital cost</b>	<b>137179</b>

5. Based on the above, the petitioner was granted liberty to file an amended petition and accordingly, the petitioner filed the amended petition and revised its claim for tariff based on capital cost of Rs. 137179 lakh as the opening cost as on 1.4.2004.

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

	(Rs. in lakh)				
<b>Particulars</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Interest on loan	1910	1568	1180	797	848
Interest on Working Capital	1679	1691	1703	1714	1732
Depreciation	5403	5545	5707	5964	6381
Advance against Depreciation	0	0	0	0	0
Return on Equity	13888	13944	13970	13834	13429
O & M Expenses	4368	4544	4725	4914	5111
<b>TOTAL</b>	<b>27247</b>	<b>27292</b>	<b>27285</b>	<b>27223</b>	<b>27502</b>

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

	(Rs. in lakh)				
	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
Fuel cost	0	0	0	0	0
Lignite Stock	3938	3938	3938	3938	3938
Oil Stock	181	181	181	181	181
O & M expenses	364	379	394	410	426
Spares	1534	1626	1724	1827	1937
Receivables	9973	9981	9979	9969	10015
Total Working Capital	15991	16105	16216	16325	16498
Rate of Interest	10.50%	10.50%	10.50%	10.50%	10.50%
<b>Interest on Working capital</b>	<b>1679</b>	<b>1691</b>	<b>1703</b>	<b>1714</b>	<b>1732</b>

8. In addition, the petitioner has claimed energy charge at 130.5 paise/kWh of the electricity sent out, based on the pooled lignite price of Rs 1124/MT, as approved by the Board of Directors of the petitioner company for the year 2004-05.

9. The reply to the petition has been filed by Kerala State Electricity Board and Tamil Nadu Electricity Board. The petitioner had published notices in the newspapers in accordance with the procedure specified by the Commission. However, no objections or suggestions have been received in response to these notices.

**ADDITIONAL CAPITALIZATION -2003-04**

10. The petitioner has claimed additional capitalization of Rs. 5586.64 lakh from date of commercial operation to 31.3.2004 with following details:

(Rs. in lakh)

Off-shore spares cost		
1.	Spares	3524.63
2.	Bank Charges	4.69
3.	Retention charges	374.60
4.	Custom duty	824.48
(a)	Total off shore	4728.40
On-shore spares cost		
1.	Spares	264.24
2.	Others	120.00
(b)	Total-on-shore	384.24
(a)+(b)	Grand total	5112.64
Common service assets for the period up to 31.3.2004		474.00
<b>Total</b>		<b>5586.64</b>

11. As the claim of additional capitalization did not exceed 20% of the approved capital cost, this was not considered for the purpose of tariff for the period ending 31.3.2004 in the order dated 7.4.2005 in Petition No. 105/2002. However, this additional capitalization is being considered in the gross block as on 1.4.2004 for the purpose of tariff for the

period 2004-09. By order dated 30.8.2006, the petitioner was directed to explain the reasons for capitalizing the bank charges and the retention charges in off-shore spare costs. The petitioner was also directed to furnish the list of off-shore and on-shore spares, break-up of spares under the head "Others" included in on-shore spares and break-up of common/service assets.

12. The 2004 regulations which stipulate capitalization of initial spares for lignite-fired generating stations to the extent of 2.5% of original project cost as on the cut-off date were notified on 26.3.2004. The petitioner placed the orders for these spares before the norms fixing maximum ceiling of initial spares came into effect. The petitioner could not capitalize the expenditure on these spares before date of commercial operation because these were not supplied by that time. Therefore, the reasonable expenditure incurred by the petitioner for procurement of initial spares is being considered without applying the ceiling norm of the 2.5% for arriving at capital base as on 1.4.2004.

13. We have examined the detailed break-up and purpose of initial capital spares of Rs.5112.64 lakh submitted by the petitioner vide affidavit dated 23.9.2006 and found in order.

14. Regarding capitalization of common/service assets of Rs. 474 lakh, the petitioner has stated that it includes the proportionate allocation of asset- additions of units like township admn., corporate office, hospital etc. and these are being allowed to be capitalized.

15. As per sanction of the Central Government issued in December 2001, the revised cost estimate for the generating station is for an amount of Rs. 142027 lakh

and completion cost of Rs.142347 lakh at December, 2000 price level, inclusive of capital spares. The revised cost estimate includes FERV up to December 2000 and does not include FERV from December 2000 to the date of commercial operation of the generating station. The capital cost admitted by the Commission as on 1.4.2004 of Rs. 137179 lakh includes FERV of Rs.7265 lakh from December 2000 to the date of commercial operation. The capital cost admitted by the Commission as on 1.4.2004 after excluding FERV of Rs. 7265 lakh is thus Rs. 129914 lakh as on the date of commercial operation. After including additional capital expenditure of Rs.5586.64 lakh from the date of commercial operation to 31.3.2004 over the admitted cost of Rs. 129914 lakh by the Commission excluding FERV, the cost works out as Rs. 135501 lakh as on 31.3.2004 excluding FERV. Since this is less than the approved completion cost of Rs.142347 lakh, we allow the additional capitalisation of Rs. 5586.64 lakh claimed by the petitioner for the period 5.9.2003 to 31.3.2004. The total initial spares in the capital cost of Rs.135501 lakh excluding FERV works out as Rs.5962 lakh (Rs.5113 lakh + Rs.849 lakh).

16. It would be pertinent to point out that the it was stated in Petition No. 105/2002 that the petitioner had withheld an amount of Rs. 9119 lakh as LD for the time overrun by the contractor and the matter had gone for arbitration. Irrespective of the outcome of the arbitration proceedings presently pending, the capital base for tariff purpose shall not exceed Rs. 142347 lakh excluding FERV from December 2000.

## **CAPITAL COST**

17. As per the second proviso to regulations 17 of the 2004 regulations, in case of the existing generating station, the capital cost admitted by the Commission for determination of tariff prior to 1.4.2004 shall form the basis for determination of tariff.

18. The petitioner has claimed tariff based on the opening gross block of Rs. 144749 lakh which included admitted capital cost of Rs. 137179 lakh as on 1.4.2004.

19. The Commission vide its order dated 26.4.2006 in Petition No. 8/2006 has decided that the opening capital cost would be Rs. 137179 lakh. TNEB has opposed adoption of this capital cost as the base, alleging that there was an error in considering the exchange rate. In our opinion, the order dated 26.4.2006 has become final since none of the parties has taken any further proceedings. Therefore, the capital cost of Rs. 137179 lakh approved by the said order dated 26.4.2006 has been adopted for the purpose of tariff in this petition. Next, we consider the additional capitalization on account of FERV.

## **FERV/EXTRA RUPEE LIABILITY DURING THE YEARS 2001-04**

20. Regulation 1.13 (a) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2001 provided as under:

“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.

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.

Regulation 1.7 of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2001 further provides that recovery of foreign exchange rate variation shall 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.”

21. The petitioner has claimed Rs. 1983 lakh on account of FERV for the year 2003-04. TNEB has opposed the petitioner’s claim for capitalization of FERV. The petitioner’s claim for capitalization on account of FERV has been considered and has been found to be in order. While allowing FERV we have applied exchange rate of Rs. 53.10/EURO as on 1.4.2004 against exchange rate of Rs. 50.59/EURO as on 5.9.2003, on the outstanding loan of 78.993 million Euro.

22. Based on the above, the gross block as on 1.4.2004 comes to Rs. 144748.40 lakh as per details given below:

(Rs. in lakh)	
Capital cost admitted as on 1.4.2004 as per order dated 26.4.2006	137179.00
<b>Additional capitalization for the period 2003-04</b>	5586.64
FERV capitalized	1982.76
Opening Gross Block as on 1.4.2004	<b>144748.40</b>

### **DEBT-EQUITY RATIO**

23. Clause (1) and (2) of Regulations 20 of the 2004 regulations *inter alia* provides that,-

“20. Debt-Equity Ratio. (1) In case of the existing generating stations, debt-equity ratio considered by the Commission for the period ending 31.3.2004 shall be considered for determination of tariff with effect from 1.4.2004:

Provided that in cases where the tariff for the period ending 31.3.2004 has not been determined by the Commission, debt-equity ratio shall be as may be decided by the Commission:

Provided further that in case of the existing generating stations where additional capitalization has been completed on or after 1.4.2004 and admitted by the Commission under Regulation 18, equity in the additional capitalization to be considered shall be,-

- (a) 30% of the additional capital expenditure admitted by the Commission; or
  - (b) equity approved by the competent authority in the financial package, for additional capitalization; or
  - (c) actual equity employed,
- whichever is the least:

Provided further that in case of additional capital expenditure admitted under the second proviso, the Commission may consider equity of more than 30% if the generating company is able to satisfy the Commission that deployment of such equity of more than 30% was in the interest of general public.

(2) In case of the generating stations for which investment approval was accorded prior to 1.4.2004 and which are likely to be declared under commercial operation during the period 1.4.2004 to 31.3.2009, debt and equity in the ratio of 70:30 shall be considered:

Provided that where equity actually employed to finance the project is less than 30%, the actual debt and equity shall be considered for determination of tariff:

Provided further that the Commission may in appropriate cases consider equity higher than 30% for determination of tariff, where the generating company is able to establish to the satisfaction of the Commission that deployment of equity higher than 30% was in the interest of general public.”

24. Note 1 below Regulation 18 of the 2004 regulations provides that any expenditure admitted on account of committed liabilities within original scope of work and the expenditure deferred on techno-economic grounds but falling within the original scope of work shall be serviced in the normative debt-equity ratio specified in regulation 20.

25. Since the Commission has already agreed to adopt Net Fixed Assets method in the case of the petitioner's generating stations, actual source of funding has been considered for calculating debt-equity ratio as on date of commercial operation. However, debt-equity ratio loses relevance once the repayment is allowed on actual basis. Total amount of Rs. 97190 lakh has been considered as equity as on 1.4.2004. Thereafter average equity every year has been considered after adjusting average loan against the average Net Fixed Assets.

### **TARGET AVAILABILITY**

26. The petitioner has considered target availability of 75%, as notified by the Commission in the 2004 regulations. Accordingly, target availability of 75% 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**

27. 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.

28. The petitioner has claimed return on equity @14%. Accordingly, the charges on account of return on equity during the period 2004-09 works out as follows:

	(Rs. in lakh)				
	2004-05	2005-06	2006-07	2007-08	2008-09
Average equity	99161	99107	99034	98040	94831
Return on equity	13883	13875	13865	13726	13276

## **INTEREST ON LOAN**

29. 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 beneficiaries. The costs associated with such swapping shall be borne by the beneficiaries.

(d) The changes to the loan terms and conditions shall be reflected from the date of such swapping and benefits passed on to the beneficiaries.

(e) In case 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.

(f) The generating company shall not make any profit on account of loan and interest on loan.

30. The fixed charges for the period prior to 1.4.2004 were allowed by the Commission on NFA method. Therefore, the interest on loan has been worked out as under in accordance with the methodology specified by the Commission:

- (a) The average loan amount for the relevant tariff period has been worked out based on actual loan details furnished by the petitioner.
- (b) The loan draws up to 5.9.2003, that is, the date of commercial operation of the generating station have been considered.
- (c) The cumulative repayment of loan has been worked out based on the details given in the petition.
- (d) The exchange rate (Rupee/Euro) @ Rs.53.10/ Euro, applicable on 31.3.2004, has been considered.
- (e) The Government Guarantee fees @ 1.20% per annum have been allowed for working out the interest rate in case of foreign loan.
- (f) On the basis of actual rate of interest on actual average loans, the weighted rate of interest on loan has been worked out and the same has been applied on the average loan for working out the interest on loan in relevant periods of tariff.

31. The necessary calculations in support of interest on loan are appended below:

**CALCULATIONS OF INTEREST ON LOAN**

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
<b>Euro 191.837 M Loan (Portion-I)</b>					
Gross Loan-Opening	23560	23560	23560	23560	23560
Cum. Repayments up to Previous Period	0	0	0	0	772
Net Loan-Opening	23560	23560	23560	23560	22787
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	0	0	0	772	772
Net Loan-Closing	23560	23560	23560	22787	22015
Average Loan	23560	23560	23560	23173	22401
Rate of Interest	1.95%	1.95%	1.95%	1.95%	1.95%
Interest	459	459	459	452	437
<b>Euro 191.837 M Loan (Portion-II)</b>					
Gross Loan-Opening	28259	28259	28259	28259	28259
Cum .Repayments up to Previous Period	10039	15244	20450	25656	28259
Net Loan-Opening	18220	13014	7809	2603	0
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	5206	5206	5206	2603	0
Net Loan-Closing	13014	7809	2603	0	0
Average Loan	15617	10411	5206	1301	0
Rate of Interest	8.71%	8.71%	8.71%	8.71%	8.71%
Interest	1360	907	453	113	0
<b>Euro 33.234 M Loan (Portion-I)</b>					
Gross Loan-Opening	113	113	113	113	113
Cum. Repayments up to Previous Period	0	0	0	2	6
Net Loan-Opening	113	113	113	111	108
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	0	0	2	4	4
Net Loan-Closing	113	113	111	108	104
Average Loan	113	113	112	110	106
Rate of Interest	1.95%	1.95%	1.95%	1.95%	1.95%
Interest	2	2	2	2	2
<b>Euro 33.234 M Loan (Portion-II)</b>					
Gross Loan-Opening	111	111	111	111	111
Cum Repayments up to Previous Period	58	97	111	111	111
Net Loan-Opening	53	14	0	0	0
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	39	14	0	0	0
Net Loan-Closing	14	0	0	0	0
Average Loan	34	7	0	0	0
Rate of Interest	9.31%	9.31%	9.31%	9.31%	9.31%
Interest	3	1	0	0	0

<b>Total loan</b>					
Gross Loan-Opening	52043	52043	52043	52043	52043
Cum. Repayments up to Previous Period	10097	15341	20561	25769	29148
Net Loan-Opening	41946	36701	31481	26274	22895
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	5244	5220	5208	3379	776
Net Loan-Closing	36701	31481	26274	22895	22119
Average Loan	<b>39324</b>	<b>34091</b>	<b>28878</b>	<b>24584</b>	<b>22507</b>
Weighted Average Rate of Interest	<b>4.64%</b>	<b>4.02%</b>	<b>3.17%</b>	<b>2.31%</b>	<b>1.95%</b>
Interest	1825	1369	915	567	439

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

(Rs. in lakh)

Gross Loan-Opening	52043	52043	52043	52043	52043
Cum.Repayments up to Previous Period	10097	15341	20561	25769	29148
Net Loan-Opening	41946	36701	31481	26274	22895
Addition due to Drawl	0	0	0	0	0
Addition due to FERV	0	0	0	0	0
Repayment	5244	5220	5208	3379	776
Net Loan-Closing	36701	31481	26274	22895	22119
Average Loan	39324	34091	28878	24584	22507
Rate of Interest	4.64%	4.02%	3.17%	2.31%	1.95%
<b>Interest on loan</b>	<b>1825</b>	<b>1369</b>	<b>915</b>	<b>567</b>	<b>439</b>

## **DEPRECIATION**

33. Sub-clause (a) of clause (ii) of regulation 21 of the 2004 regulations provides for computation of depreciation in the following manner, namely:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually based on straight line method over the useful life of the asset and at the rates prescribed in Appendix II to these regulations. The residual life of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the historical capital cost

of the asset. Land is not a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the historical cost of the asset. The historical capital cost of the asset shall include additional capitalization on account of Foreign Exchange Rate Variation up to 31.3.2004 already allowed by the Central Government / Commission

(i) On repayment of entire loan, the remaining depreciable value shall be spread over the balance useful life of the asset.

(ii) 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.

34. The petitioner has calculated the weighted average depreciation rate of 3.69% (excluding land). It has been noted that the normative loan is still outstanding. Therefore depreciation has been calculated as per weighted average rate of depreciation. Weighted average rate of depreciation calculated is 3.65% as against 3.69% claimed by the petitioner. The rate has been calculated based on gross value of assets.

35. Depreciation has been allowed at opening gross block of Rs.144748.40 lakh. The depreciable value of the generating station is  $0.9 \times (\text{Rs.}144748.40 \text{ lakh}) = \text{Rs } 130273.56 \text{ lakh}$ . Cumulative depreciation recovered in tariff up to 31.3.2004 is 3620 lakh.

36. Accordingly, for the period 1.4.2004 to 31.3.2009 the depreciation works out to Rs. 5287 lakh each year by applying rate of depreciation 3.65%. The necessary computations in support of depreciation allowed are given hereunder:

(Rs. in lakh)

<b>Details of depreciation</b>	Up to 31.3.2004	2004-05	2005-06	2006-07	2007-08	2008-09
As per last order	137179.00					
Addition during 2001-04 due to additional capitalization	5586.64					
Addition during 2001-04 due to FERV	1982.76					
Gross Block as on 31.3.2004	144748.40	144748.40	144748.40	144748.40	144748.40	144748.40
Rate Of Depreciation		3.65%	3.65%	3.65%	3.65%	3.65%
<b>Depreciation</b>		<b>5287</b>	<b>5287</b>	<b>5287</b>	<b>5287</b>	<b>5287</b>

### **ADVANCE AGAINST DEPRECIATION**

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

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

38. 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.

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

### **O&M EXPENSES**

40. The 2004 regulations have prescribed the following Operation and Maintenance expense norms for the generating station:

(Rs. in lakh/mw)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O & M expenses	10.40	10.82	11.25	11.70	12.17

41. Based on the above norms, the petitioner has claimed O&M expenses for the generating station with 420 MW capacity as detailed below:

(Rs. in lakh)					
Years	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses	4368	4544	4725	4914	5111

42. O&M expenses claimed by the petitioner are in order and are allowed.

### **INTEREST ON WORKING CAPITAL**

43. In accordance with clause (v) of regulation 21 of the 2004 regulations, working capital in case of Coal based/Lignite-fired generating stations shall cover:

- (i) Cost of lignite for 1½ months, corresponding to the target availability;
- (ii) Cost of secondary fuel oil for two months corresponding to the target availability;
- (iii) Operation and maintenance expenses for one month;
- (iv) Maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation; and
- (v) Receivables equivalent to two months of fixed and variable charges for sale of electricity calculated on the target availability.

44. Under the 2004 regulations, the rate of interest on working capital shall be on a normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2004 or on 1<sup>st</sup> April of the year in which the generating station

or a unit thereof is declared under commercial operation, whichever is later. Interest on working capital is payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency.

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

(a) **Lignite Cost:** The lignite stock has been worked out for 1.5 months on the basis of operational parameters given in the 2004 regulations and weighted average price and GCV of lignite. The details in regard to cost of lignite considered as a component of working capital are given below:

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Weighted Avg. GCV of Lignite (kCal/kg)	2678	2678	2678	2678	2678
Heat Contribution by Lignite (kCal/kwh)	2720	2720	2720	2720	2720
Specific Lignite Consumption (kg/kwh)	<b>1.016</b>	<b>1.016</b>	<b>1.016</b>	<b>1.016</b>	<b>1.016</b>
Requirement of Lignite for the period (MT)	2802677	2802677	2802677	2810355	2802677
Lignite Stock (1 & 1/2 months) (MT)	<b>350334.58</b>	<b>350334.58</b>	<b>350334.58</b>	<b>351294.40</b>	<b>350334.58</b>
Wt. Av. Price of Lignite (Rs./ MT)	977	977	977	977	977
<b>Lignite Stock- (1 &amp; 1/2 months)- (Rs.in lakh)</b>	<b>3422.77</b>	<b>3422.77</b>	<b>3422.77</b>	<b>3432.15</b>	<b>3422.77</b>

(a) **Secondary Fuel Oil:** The petitioner has considered price and GCV of secondary fuel oil as under:

Price of Secondary fuel oil (Rs./KL)	13151
GCV of Secondary fuel oil (Kcal./KL)	10000

The petitioner has stated that the furnace oil and LDO prices prevailing during 2004 to March 2004, were considered for arriving at the weighted average secondary fuel oil price at Rs 13151/KL, to arrive at the rate of energy charges with the secondary fuel.

It has been observed from the details of Oil Price Working furnished by the petitioner that the weighted average secondary fuel oil price is a Rs. 13151 KL is a mix of 95% cost of furnace oil and 5% cost of LDO consumption during January 2004 to March 2004. Further, the price of secondary fuel has been considered which works out to Rs13150.89/MT. This has been considered and allowed. GCV of secondary fuel oil of 10000 Kcal/KL as claimed has been allowed. Accordingly, the fuel component in working capital for the purpose of the tariff for the period 2004-09, works out as follows:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Weighted Avg. GCV of Oil (kCal/Lit.)	10000	10000	10000	10000	10000
Heat Contribution by Oil (kCal/kwh)	30.00	30.00	30.00	30.00	30.00
Requirement of Oil for the period (Itrs)	8278200	8278200	8278200	8300880	8278200
Oil Stock(2 months) (KL)	<b>1379.70</b>	<b>1379.70</b>	<b>1379.70</b>	<b>1383.48</b>	<b>1379.70</b>
Weighted Avg. Price of Oil (Rs./KL)	13151	13151	13151	13151	13151
<b>Oil Stock- 2 months- (Rs. in Lakh)</b>	<b>181.44</b>	<b>181.44</b>	<b>181.44</b>	<b>181.94</b>	<b>181.44</b>

- (c) **O & M expenses** : O& M expenses for working capital has been worked out for one month of O & M expenses approved above and are considered in tariff of the respective year.
- (d) **Maintenance spares** : The petitioner has calculated the value of maintenance spares for the purpose of working capital considering gross block of Rs. 144748.40 lakh ( which includes additional capital expenditure of Rs. 5586.64 lakh claimed for the period from 5.9.2003 to 31.3.2004) claimed for the purpose of tariff as historical cost as on 1.4.2004. Starting with the 1% of Rs. 144748.40 lakh the cost of maintenance spares for a particular year has been calculated by the

petitioner, by escalating the previous year's cost by 6%. The claim of the petitioner for maintenance spares for working capital are as follows :

(Rs in lakh)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Amount claimed for maintenance spares	1534.33	1626.40	1723.98	1827.42	1937.06

The 2004 regulations do not provide for taking into account additional capital expenditure for working out the cost of maintenance spares for the working capital. Hence, the cost of maintenance spares for the working capital is computed on historical cost of Rs137179 lakh as on date of commercial operation. The value of the spares works out is as follows:

(Rs in lakh)

Year	2004-05	2005-06	2006-07	2007-08	2008-09
Amount allowed for maintenance spares	1419	1504	1594	1690	1791

- (e) **Receivables** : As per the 2004 regulations, receivables equivalent to two months of fixed and variable charges, for sale of electricity calculated on target availability are the part of the working capital. The supporting calculations in respect of receivables considered are tabulated hereunder:

(Rs in lakh)

Variable Charges	2004-05	2005-06	2006-07	2007-08	2008-09
Variable Charges per year	28471	28471	28471	28549	28471
Variable Charges -2 months	4745	4745	4745	4758	4745
Fixed Charges - 2 months	4477	4430	4383	4335	4272
<b>Receivables</b>	<b>9222</b>	<b>9175</b>	<b>9129</b>	<b>9093</b>	<b>9017</b>

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

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

(Rs. in lakh)					
	2004-05	2005-06	2006-07	2007-08	2008-09
Fuel Cost	0	0	0	0	0
Lignite Stock- 1.1/2 months	3423	3423	3423	3423	3423
Oil stock -2 months	181	181	181	182	181
O & M expenses	364	379	394	410	426
Spares	1419	1504	1594	1690	1791
Receivables	9222	9175	9129	9093	9017
<b>Total Working Capital</b>	<b>14609</b>	<b>14662</b>	<b>14721</b>	<b>14807</b>	<b>14839</b>
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
<b>Interest on Working capital</b>	<b>1497</b>	<b>1503</b>	<b>1509</b>	<b>1518</b>	<b>1521</b>

### **ANNUAL FIXED CHARGES**

48. A statement showing summary of the capital cost and other related matters is annexed to this order. The annual fixed charges for the period 1.4.2004 to 31.3.2009, allowed in this order are summed up as below:

(Rs. in lakh)						
	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
1	Interest on Loan	1825	1369	915	567	439
2	Interest on Working Capital	1497	1503	1509	1518	1521
3	Depreciation	5287	5287	5287	5287	5287
4	Advance Against Depreciation	0	0	0	0	0
5	Return on Equity	13883	13875	13865	13726	13276
6	O & M Expenses	4368	4544	4725	4914	5111
	<b>TOTAL</b>	<b>26860</b>	<b>26578</b>	<b>26300</b>	<b>26011</b>	<b>25634</b>

### **ENERGY /VARIABLE CHARGE**

#### **Lignite Transfer price**

49. The petitioner has claimed energy charge of 130.50 paise/kWh based on the pooled lignite transfer price of Rs. 1124/MT as approved by the Board of Directors of

the petitioner company for the year 2004-05 and is subject to change in subsequent years based on the lignite transfer price to be decided by the petitioner every year.

50. The petitioner has stated that pooled price of lignite at Rs. 1124/MT as on 31.3.2004 arrived at based on the guidelines of Ministry of Coal and as certified by the statutory auditors in the last tariff period has been taken as provisional primary fuel price for the years 2004-05 onwards subject to retrospective adjustment based on the year-wise lignite transfer price to be fixed by the petitioner for the year 2004-05 onwards. The year-wise lignite transfer price as per Ministry of Coal guidelines for the period from 2004-05, 2005-06 and 2006-07 will be fixed by the petitioner separately.

51. The issue of lignite transfer price has been considered separately in Petition No. 5/2002, tariff for TPS-II and the Commission arrived at pooled lignite transfer price of Rs. 977/MT for the year 2003-04. The same has been considered for computation of energy charge in the present petition.

52. Accordingly, the base rate of energy charge works out to 114 paise/kWh as per the following computations based on fuel prices and GCVs.

Description	Unit	As considered
Capacity	MW	420.00
No. of operating hours corresponding to PLF 75%	hrs	6570.00
Gross Station Heat Rate	kCal/kWh	2750.00
Specific Fuel Oil Consumption	ml/kWh	3.00
Aux. Energy Consumption	%	9.50
Weighted Average GCV of Oil	kCal/l	10000.00
Weighted Average GCV of Lignite	kCal/Kg	2678
Weighted Average Price of Oil	Rs./KL	13150.89
Weighted Average Price of Lignite	Rs./MT	977.00
Rate of Energy charges from Sec. fuel oil	Paise/kWh	3.95
Heat Contributed from SFO	kCal/kWh	30.00
Heat Contributed from Lignite	kCal/kWh	2720.00
Specific Lignite consumption	Kg/kWh	1.02
Rate of Energy Charges from Lignite	Paise/kWh	99.23
<b>Rate of Energy Charge ex-bus per kWh sent</b>	<b>paise/kWh</b>	<b>114.01</b>

53. The base energy charge has 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 and GCV of fuels as provided in the 2004 regulations. Accordingly, the base energy charges approved shall be subject to adjustment. The formula applicable for fuel price adjustment shall be given as 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 Lignite in Paise/kWh sent out

**And,**

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

$$\mathbf{B = \frac{10}{(110 - AC_n)} \left[ \left\{ (SHR_n) (P_{cm}/K_{cm}) - (P_{cs}/K_{cs}) \right\} - (SFC_n) \left\{ (k_{om} \times P_{cm}/K_{cm}) - (k_{os} \times P_{cs}/K_{cs}) \right\} \right]}$$

**Where,**

**SFC<sub>n</sub>** – Normative Specific Fuel Oil consumption in l/kWh

**SHR<sub>n</sub>** – Normative Gross Station Heat Rate in kCal/kWh

**AC<sub>n</sub>** – Normative Auxiliary Consumption in percentage

**P<sub>om</sub>** – Weighted Average price of fuel oil on as consumed basis during the month in Rs./KL.

- $K_{om}$  – 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 lignite procured and burnt during the month at the power station in Rs. / MT.
- $K_{cm}$  – Weighted average gross calorific value of lignite fired at boiler front for the month in Kcal/Kg
- $P_{cs}$  – Base value of price of lignite as taken for determination of base energy charge in tariff order in Rs. /MT
- $K_{cs}$  – Base value of gross calorific value of lignite as taken for determination of base energy charge in tariff order in kCal/Kg

54. The petitioner has 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.

55. 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.

56. The petitioner is already billing the respondent 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.

57. This order disposes of Petition No.68/2005.

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

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

**New Delhi dated the 23<sup>rd</sup> March 2007**

## Summary Sheet

(Rs.in Lakh)					
1	<b>Capital Cost of the Project as on 31.03.2004</b>				<b>137179.00</b>
2	<b>Additional Capitalisation(works)</b>				<b>5586.64</b>
3	<b>Additional Capitalisation(FERV)</b>				<b>1982.76</b>
4	<b>Total Capital Cost as on 01.04.2004(1+3+4)</b>				<b>144748.40</b>
5	<b>Depreciation recovered upto 31.03.2004</b>				<b>3620.35</b>
6	<b>Net Fixed Assets at the beginning of the year i.e. 1-04-2004 (4-5)</b>				<b>141128.05</b>
5	<b>Debt: Equity Ratio of NFA as on 01.04.2004</b>				
	Debt	29.72%		41945.70	
	Equity	70.28%		99182.36	
	Total	100.00%		141128.05	
6	<b>Debt details-Notional Debt (Net) as on 01.04.2004</b>				<b>41945.70</b>
	<b>Notional debt (Net) as on 01.04.2004</b>				
	Actual Debt as on 31.03.2004			52042.84	
	Repayment upto 31.03.04			10097.14	
	Balance Debt			<b>41945.70</b>	
7	<b>Weighted Av. Rate of interest- Calculated</b>				
	2004-05	2005-06	2006-07	2007-08	2008-09
	4.64%	4.02%	3.17%	2.31%	1.95%
8	<b>Depreciation recovered upto 31.03.09 :</b>				<b>30053.60</b>
				<b>Total</b>	
9	<b>Balance Depreciation to be recovered beyond 31.03.2009 :</b>				
	Capital cost for the purpose of Depreciation <sup>2</sup>			137179.00	
	ACE + FERV			7569.40	
	Capital cost as 01.04.2004			144748.40	
	<b>Less: Land Cost</b>			<b>0.00</b>	
				144748.40	
	90% of Capital Cost as above			130273.56	
	Cum. Depreciation to be recovered upto 31.03.09			30053.60	
	Balance			<b>100219.96</b>	<b>100219.96</b>