

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

- 1. Shri Bhanu Bhushan, Member**
- 2. Shri R.Krishnamoorthy, Member**

Petition No. 84/2007

In the matter of

Approval of tariff of Feroze Gandhi Unchahar Thermal Power Station, Stage-III, (210 MW) from the date of commercial operation till 31.3.2009.

And in the matter of

NTPC Limited, New Delhi

... ..Petitioner

Vs

1. Uttar Pradesh Power Corporation Ltd., Lucknow
 2. Jaipur Vidyut Vitran Nigam Ltd., Jaipur
 3. Ajmer Vidyut Vitran Nigam Ltd., Ajmer
 4. Jodhpur Vidyut Vitran Nigam Ltd., Jodhpur
 5. Delhi Transco Ltd., New Delhi
 6. Haryana Power Generation Co. Ltd., Panchkula
 7. Punjab State Electricity Board, Patiala
 8. Himachal Pradesh State Electricity Board, Shimla
 9. Power Development Deptt. Govt. of J & K, Srinagar
 10. Power Department, Union territory of Chandigarh, Chandigarh
 11. Uttaranchal Power Corporation Ltd., Dehradun
- Respondents

The following were present:

1. Shri S.Saran, NTPC
2. Shri T.P.S.Bawa, OSD, PSEB
3. Shri Mithun Balaji, BSES Rajdhani,
4. Shri Vivek Soni, BSES Rajdhani
5. Shri Bharat Sharma, NDPL

ORDER
(Date of Hearing: 13.12.2007)

This petition has been filed by the petitioner, a generating company owned or controlled by the Central Government, for approval of tariff of Feroze Gandhi Unchahar TPS, Stage-III, (210 MW) (hereinafter referred to as “the generating station”), an extension project of the existing Feroze Gandhi Unchahar TPS, from the date of commercial operation 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 was synchronised on 28.9.2006 and the date of commercial operation of the generating station is 1.1.2007.

3. The tariff for infirm power from the generating station was approved by the Commission by its order dated 2.8.2006 in Petition No. 39/2006. Further, by order dated 23.1.2007 in Petition No.122/2006, the Commission approved the provisional tariff for the generating station from the date of commercial operation as under:

(Rs in lakh)

	2006-07	2007-08	2008-09
Annual fixed charges (provisional)	10252	12214	11940

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

(Rs. in lakh)

	2006-07 (w.e.f 1.1.07)	2007-08	2008-09
Interest on Loan	4555	4438	4169
Interest on Working Capital	937	944	976
Depreciation	2868	2868	2868
Advance against Depreciation	0	0	1767
Return on Equity	3383	3383	3383
O & M Expenses	2363	2457	2556
Total	14106	14091	15719

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

(Rs. in lakh)

	2006-07	2007-08	2008-09
Coal Stock	2774	2782	2774
Oil Stock	119	119	119
O & M expenses	197	205	213
Spares	806	854	905
Receivables	5244	5250	5513
Total Working Capital	9140	9210	9524
Rate of Interest	10.25%	10.25%	10.25%
Interest on Working capital	937	944	976

6. In addition, the petitioner has claimed energy charge of 129.63 paise/kWh, subject to fuel price variation.

7. Respondents No.1, 6 and 7 have filed their replies to the petition. The petitioner has published notices in the newspapers in accordance with the procedure specified by the Commission. No objections or suggestions have been received in response to these notices.

Capital Cost

8. Regulation 17 of the 2004 regulations relating to the capital cost provide as under:

*“17. **Capital Cost:** Subject to prudence check by the Commission, the actual expenditure incurred on completion of the project shall form the basis for determination of final tariff. The final tariff shall be determined based on the admitted capital expenditure actually incurred up to the date of commercial operation of the generating station and shall include capitalised initial spares subject to following ceiling norms as a percentage of the original project cost as on the cut off date:*

(i) Coal-based/lignite-fired generating stations - 2.5%

(ii) Gas Turbine/Combined Cycle generating stations - 4.0%

Provided that where the power purchase agreement entered into between the generating company and the beneficiaries provides a ceiling of actual expenditure, the capital expenditure shall not exceed such ceiling for determination of tariff;

Provided further that any person intending to establish, operate and maintain a generating station may make an application before the Commission for 'in principle' acceptance of the project capital cost and financing plan before taking up a project through a petition in accordance with the procedure specified in the Central Electricity Regulatory Commission (Procedure for making application for determination of tariff, publication of the application and other related matters) Regulations, 2004, as applicable from time to time. The petition shall contain information regarding salient features of the project including capacity, location, site specific features, fuel, beneficiaries, break up of capital cost estimates, financial package, schedule of commissioning, reference price level, estimated completion cost including foreign exchange component, if any, consent of beneficiary licensees to whom the electricity is proposed to be sold etc.

Provided further that where the Commission has given 'in principle' acceptance to the estimates of project capital cost and financing plan, the same shall be the guiding factor for applying prudence check on the actual capital expenditure:

Provided further that 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.

Note

Scrutiny of the project cost estimates by the Commission shall be limited to the reasonableness of the capital cost, financing plan, interest during construction, use of efficient technology, and such other matters for determination of tariff”.

9. The investment proposal of the generating station was approved by the Board of Directors of the petitioner company on 5.11.2003 at the cost of Rs.93928 lakh

(Rs.89387 lakh+ US\$ 9.9 million) including IDC and FC of Rs.9445 lakh (Rs. 4904 lakh+ US\$ 9.9 million), at an exchange rate of Rs.46/US\$ and Working Capital Margin of Rs.1952 lakh (1st Qtr of 2003 price level).

10. The petitioner has claimed the capacity charges based on the capital cost of Rs.80552 lakh as on 1.1.2007 which includes IDC and FC of Rs.5106 lakh. The petitioner vide affidavit dated 25.10.2007 has submitted statement of deferred liabilities as under:

Nature of works	Amount (Rs.in lakh)
Contracts remaining to be executed on capital account	3298
Deferred works for which contracts have been awarded after 1.1.2007 and upto 30.9.2007	2859
Deferred works for which contract is yet to be awarded	4523
Total	10680

11. It is observed that the capital cost of the generating station including deferred liabilities is Rs.91223 lakh which works out to Rs.4.34 crore/MW. As the estimated capital cost for expansion of the generating station is higher as compared to other expansion projects of the petitioner, which is around Rs.3 crore/MW for 500 MW units, the petitioner was directed to justify the cost of the generating station.

12. The petitioner vide affidavit dated 25.10.2007 has submitted that the capital cost of the generating station as on the date of commercial operation is Rs.80552 lakh which works out to Rs.3.84 crore/MW. The petitioner has submitted that per MW cost of the generating station is reasonable as the benefits of taxes and duties

available to mega projects are not available to the generating station being a non-mega project. The petitioner has further submitted that the capital cost of Stage-II of the generating station (2x210 MW) is Rs.123484 lakh (Rs.2.94 crore/MW) as on the date of commercial operation (1.1.2001) and by applying 6% escalation per annum up to 1.1.2007, the capital cost works out to Rs.4.17 crore/MW which compares favourably with the cost of Stage-III of the generating station.

13. During the hearing, the respondents Nos.6 and 7 raised the issue of capital cost of the generating station by stating that the capital cost of Kahalgaon and Suratgarh extension projects was less than Rs.3 crore/MW. The Commission by its order dated 27.9.2007 directed these respondents to furnish the details of completed capital cost along with scope of works of Suratgarh extension project, Yamuna Nagar Thermal Power Project (2x300 MW) and Hissar Thermal Power Project for comparison.

14. Respondent No. 6 vide affidavit dated 4.10.2007 has submitted that the Unit - VI of Kota Thermal Power Station (210 MW) extension project was completed at a capital cost of Rs.537 crore (Rs.2.56 crore/MW) and Unit-V of Suratgarh TPS (250 MW) at a cost of Rs.527 crore (Rs.2.11 crore/MW). However, respondent No. 7 has not submitted the details of the completed cost and the scope of works of Yamuna Nagar and Hissar projects as directed by the Commission.

15. We have been informed that as per the order dated 21.3.2007 of the Rajasthan Electricity Regulatory Commission (RERC), the completed capital cost for Suratgarh Unit-VII (250 MW) is Rs.814.00 crore and Kota Unit-VI (195 MW) is Rs.694.95 crore which translate into Rs.3.26 crore/MW and Rs.3.56 crore/MW respectively. It is also noticed that the estimated cost for Yamunanagar Thermal Power Station, which is a green field project, is about Rs.2400 crore (i.e.Rs.4.0 crore/MW). As such, a clear picture about the capital cost of Kota and Suratgarh extension projects does not emerge.

16. The estimated completion cost of other extension projects of the petitioner namely, Rihand TPS-II (1000 MW) and Ramagundam STPS-III (500 MW) is Rs.3006 crore (Rs.3.00 crore /MW) and Rs.1657 crore (Rs.3.31/MW) respectively. Rihand II being a mega power project is exempted from customs and excise duty. Taking into consideration the above, the estimated completion cost of the generating station at Rs.91223 lakh appears reasonable to us.

17. The petitioner vide affidavit dated 25.10.2007 has also submitted the name of supplier and number of bidders for each package. It has been clarified that a single bidder, BHEL was awarded the main plant package at the cost of Rs.46171 lakh with escalation, excluding cost of material supplied by the petitioner. The expenditure on main plant supply and erection packages as on the date of commercial operation is Rs.65663 lakh including Rs.13360 lakh towards IEDC, IDC, taxes and duties. The petitioner has further submitted that main plant and off-site civil packages and

chimney packages were awarded to M/s Hindustan Steel Construction Ltd and M/s NBCC at a cost of Rs.3866 lakh and Rs.643 lakh respectively with escalation. The cost as on the date of commercial operation of these packages is Rs.8340 lakh (including material supplied by the petitioner amounting to Rs.5174 lakh) and Rs.1611 lakh respectively.

18. The petitioner vide affidavit dated 16.11.2007 has clarified the reasons for increase in prices of main plant packages over the awarded price. We notice that the increase over the awarded price is on account of inclusion of taxes paid, IEDC, IDC, material supplied by the petitioner and general cost escalation. The increases cannot be attributed to the petitioner and therefore, are found to be in order.

19. During the hearing held on 13.12.2007, the Commission directed the petitioner to submit the consent of beneficiaries to draw power from this station at the capital cost indicated by the petitioner. The petitioner vide affidavit dated 27.12.2007 has submitted that the issue of capital cost was discussed during the 123rd meeting of NREB held on 17.5.2002 wherein the tentative estimated cost of the generating station inclusive of IDC (at IV Qtr, 2001 price level) was indicated as Rs.94316 lakh and the indicative cost of generation for the first year and levelised at 68.5% PLF was 290.57p/kWh and Rs.223.94 p/kWh respectively. In the 127th meeting of NREB held on 18.5.2002 a resolution was adopted that the constituents of the Northern Region were willing to absorb power from the generating station. The petitioner has submitted that all the beneficiaries had signed the Power Purchase Agreements.

Undischarged Liability

20. In response to Commission's directions to furnish actual cash outflow on the capital assets as on the date of commercial operation of the generating station, the petitioner vide affidavit dated 25.10.2007 has submitted that capital cost does not get affected by undischarged liabilities and that certain capital expenditure though actually paid for (e.g. capital works in progress) is not being included in the gross block for the purpose of tariff. However, the petitioner has subsequently submitted that the undischarged liabilities in the capitalized gross block of the generating station as on date of commercial operation is Rs.6155 lakh only.

21. The Commission, in the petitions pertaining to the determination of tariff for other generating stations of the petitioner, has taken a consistent view that for computation of capital cost for tariff, the outstanding liabilities are not to form part of the capital cost. Guided by that view, the amount of Rs.6155 lakh on account of undischarged liabilities have been reduced from the gross block and the net gross block has been considered for the purpose of tariff as on date of commercial operation of the generating station.

22. The petitioner has claimed an amount of Rs.5106 lakh towards IDC and FC based on FIFO method of repayment of loan. The Commission, in its previous orders has uniformly followed the average method of repayment of loan instead of FIFO method as the latter method results in higher IDC in on-going under construction

projects and higher AAD in case of the existing generating stations. Accordingly, for the generating station also, IDC has been worked out with average method of loan repayment. However, as no repayments are involved during the period, there is no change in IDC. Moreover, FERV capitalised up to the date of commercial operation of the generating station is (-) Rs.20.04 lakh, apportioned to the generating station in the total amount drawn under Euro Bonds-II. The capital cost of the generating station after exclusion of liabilities and without reduction in IDC, is allowed as under:

(Rs in lakh)	
	As on 1.1.2007
Capitalized Gross block as per accounts	80552
Less Liabilities included in above	6155
Reduction in IDC due to average method of repayment	0
Capital cost approved for tariff	74397

Infirm Power

23. The petitioner vide its affidavit dated 16.11.2007 has certified that the revenues earned from sale of infirm power in excess of fuel cost in respect of generating station have been adjusted in the capital cost.

Debt-Equity Ratio

24. Clause (2) of Regulation 20 of the 2004 regulations as amended provides that in case of the generating stations for which investment approval was accorded prior to 1.4.2004 and which is likely to be declared under commercial operation during the period 1.4.2004 to 31.3.2009, debt-equity in the ratio of 70:30 shall be considered. The petitioner has considered the normative debt equity ratio of 70:30 in line with 2004 regulations.

25. The approved capital cost is apportioned between debt and equity in the ratio of 70:30. In this manner, notional equity works out to Rs.22319 lakh.

Return on Equity

26. 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 date of billing.

27. The petitioner has claimed return on equity @ 14%. The return on equity has been worked out on equity base of Rs.22319 lakh. The petitioner shall recover an amount of Rs.3125 lakh each year, during the period 1.1.2007 to 31.3.2009, as return on equity and shall be claimed on pro rata basis for part of the year.

Interest on Loan

28. 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 beneficiaries.

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

(e) In case of any dispute, any of the parties may approach the Commission with proper application. However, the beneficiaries shall not withhold any payment as ordered by the Commission to the generating company during the pendency of the any dispute relating to swapping 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 swapping of loan and interest on loan.

29. The interest on loan has been worked out in the manner as mentioned below:

(a) Gross normative loan corresponding to 70% of admissible capital cost works out to Rs.52078 lakh as on 1. 1.2007.

(b) The net loan opening as on 1.1.2007 is same as gross normative loan and the cumulative repayment of loan is nil.

- (c) The petitioner has considered FIFO method of repayment in case of loans from Allahabad Bank, HDFC-IV, Bank of Maharashtra, Corporation Bank, State Bank of Travancore-II and SBI-III. Since application of FIFO method may result into higher AAD in case of the existing generating stations and higher IDC in case of ongoing projects, calculations of repayment have been made on average basis, taking into consideration terms and conditions of the loan drawal as furnished by the petitioner in Form 8 and the information and clarifications subsequently furnished.
- (d) The petitioner has considered rate of interest on monthly/quarterly/half-yearly rates. In our computation, rate of interest has been considered on annual rest basis.
- (e) Repayment of actual loan has been used to calculate normative repayment of loan. Normative repayment has been worked out as per formula below:
- $$\text{Normative Repayment} = \frac{\text{Actual Repayment} \times \text{Normative Loan}}{\text{Actual Loan}}$$
- (f) As per methodology adopted by the Commission for the tariff period 2004-09, normative repayment of loan or depreciation whichever is higher has been treated a repayment during the year. The calculation as per this methodology is subject to the final decision of the Hon'ble

Supreme Court in the appeals filed by the Commission against the judgments of the Appellate Tribunal for Electricity.

- (g) Financial charges of 0.03% for bonds (surveillance fee) and 20.91% withholding tax for Euro Bond incurred towards loans have been allowed and taken into consideration for calculation for interest on loan.
- (h) Some of the loans carry floating rates of interest namely, SBI-III Drawal 4 (8.5%), SBI-III Drawal 8 (9.5%) and SBT-II (8.5%). Floating interest rates prevailing as on 1.1.2007 has been considered for interest computation for the period from 1.1.2007 onwards. However interest on loan would be subject to adjustment on the basis of actual rate of interest applicable for the period.
- (i) Loan draws up to the date of commercial operation of the generating station as furnished by the petitioner have been considered. The interest rates of individual loans as applicable on the date of commercial operation have also been considered.
- (j) Bullet repayment has been considered in case of foreign loans (Euro Bond).
- (k) The petitioner has calculated average net loan for interest using day product method so as to true up its claim. Since all other claims are not trued up, the method employed by the petitioner has not been considered. Average net loan has been calculated as average of

opening and closing as was being done for other tariff orders pertaining to the period 2004-09.

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

Calculation of Weighted Average Rate of Interest

(Rs. in lakh)

Details of Loan	2006-07	2007-08	2008-09
Bank of Maharashtra-II			
Net Loan-Opening	1500.00	1500.00	1200.00
Repayment during the year	0.00	300.00	300.00
Net Loan-Closing	1500.00	1200.00	900.00
Average Loan	1500.00	1350.00	1050.00
Rate of Interest	7.31%	7.31%	7.31%
Interest	109.65	98.69	76.76
Rep Schedule	5-Yearly instalments wef 19.1.2008		
Corporation Bank-II			
Net Loan-Opening	5000.00	5000.00	5000.00
Repayment during the year	0.00	0.00	357.14
Net Loan-Closing	5000.00	5000.00	4642.86
Average Loan	5000.00	5000.00	4821.43
Rate of Interest	7.20%	7.20%	7.20%
Interest	360.00	360.00	347.14
Rep Schedule	14 Half-Yearly instalments wef 29.12.2008		
HDFC-IV			
Net Loan-Opening	2500.00	2500.00	2142.86
Repayment during the year	0.00	357.14	357.14
Net Loan-Closing	2500.00	2142.86	1785.71
Average Loan	2500.00	2321.43	1964.29
Rate of Interest	7.35%	7.35%	7.35%
Interest	183.75	170.63	144.38
Rep Schedule	14 Half-Yearly instalments wef 5.7.2007		
LIC-III T-I			
Net Loan-Opening	1500.00	1500.00	1500.00
Repayment during the year	0.00	0.00	50.00
Net Loan-Closing	1500.00	1500.00	1450.00
Average Loan	1500.00	1500.00	1475.00
Rate of Interest	6.57%	6.57%	6.57%
Interest	98.57	98.57	96.92
Rep Schedule	30 Half-Yearly instalments wef 31.12.2008		
LIC-III T-III			
Net Loan-Opening	10000.00	10000.00	9500.00
Repayment during the year	0.00	500.00	1000.00

Net Loan-Closing	10000.00	9500.00	8500.00
Average Loan	10000.00	9750.00	9000.00
Rate of Interest	7.73%	7.73%	7.73%
Interest	773.20	753.87	695.88
Rep Schedule	20 Half-Yearly instalments wef 31.12.2007		
LIC-III T-IV			
Net Loan-Opening	4800.00	4800.00	4560.00
Repayment during the year	0.00	240.00	480.00
Net Loan-Closing	4800.00	4560.00	4080.00
Average Loan	4800.00	4680.00	4320.00
Rate of Interest	8.52%	8.52%	8.52%
Interest	409.10	398.88	368.19
Rep Schedule	20 Half-Yearly instalments wef 31.12.2007		
LIC-III Consolidated			
Net Loan-Opening	16300.00	16300.00	15560.00
Repayment during the year	0.00	740.00	1530.00
Net Loan-Closing	16300.00	15560.00	14030.00
Average Loan	16300.00	15930.00	14795.00
Rate of Interest	7.86%	7.86%	7.85%
Interest	1280.87	1251.31	1161.00
Rep Schedule			
SBI-III Drawal-4			
Net Loan-Opening	10000.00	9285.71	7857.14
Repayment during the year	714.29	1428.57	1428.57
Net Loan-Closing	9285.71	7857.14	6428.57
Average Loan	9642.86	8571.43	7142.86
Rate of Interest	8.50%	8.50%	8.50%
Interest	819.64	728.57	607.14
Rep Schedule	14 Half-Yearly instalments wef 30.3.2007		
SBI-III Drawal-8			
Net Loan-Opening	2000.00	1857.14	1571.43
Repayment during the year	142.86	285.71	285.71
Net Loan-Closing	1857.14	1571.43	1285.71
Average Loan	1928.57	1714.29	1428.57
Rate of Interest	9.50%	9.50%	9.50%
Interest	183.21	162.86	135.71
Rep Schedule	14 Half-Yearly instalments wef 30.3.2007		
SBI-III Consolidated			
Net Loan-Opening	12000.00	11142.86	9428.57
Repayment during the year	857.14	1714.29	1714.29
Net Loan-Closing	11142.86	9428.57	7714.29
Average Loan	11571.43	10285.71	8571.43
Rate of Interest	8.67%	8.67%	8.67%
Interest	1002.86	891.43	742.86
Rep Schedule	14 Half-Yearly installments w.e.f 30.03.2007		
SBT-II			
Net Loan-Opening	2000.00	2000.00	1714.29
Repayment during the year	0.00	285.71	285.71

Net Loan-Closing	2000.00	1714.29	1428.57
Average Loan	2000.00	1857.14	1571.43
Rate of Interest	8.50%	8.50%	8.50%
Interest	170.00	157.86	133.57
Rep Schedule	14 Half-Yearly installments w.e.f 30.9.2007		
Allahabad bank-II			
Net Loan-Opening	2500.00	2500.00	2500.00
Repayment during the year	0.00	0.00	178.57
Net Loan-Closing	2500.00	2500.00	2321.43
Average Loan	2500.00	2500.00	2410.71
Rate of Interest	7.000%	7.000%	7.000%
Interest	175.00	175.00	168.75
Rep Schedule	14 Half-Yearly installments w.e.f 23.3.2009		
Bonds XXI Series			
Net Loan-Opening	4500.00	4500.00	4500.00
Repayment during the year	0.00	0.00	0.00
Net Loan-Closing	4500.00	4500.00	4500.00
Average Loan	4500.00	4500.00	4500.00
Rate of Interest	7.74%	7.74%	7.74%
Interest	348.30	348.30	348.30
Rep Schedule	10 Half Yearly installments w.e.f 2.2.2011		
Euro Bonds			
Net Loan-Opening	6868.48	6868	6868
Repayment during the year	0.00	0.00	0.00
Net Loan-Closing	6868	6868.48	6868.48
Average Loan	6868	6868.48	6868.48
Rate of Interest	7.4282%	7.4282%	7.4282%
Interest	510.21	510.21	510.21
Rep Schedule	Bullet Payment on 2.3.2016		
Total Loan			
Net Loan-Opening	53168.48	52311.34	48914.19
Repayment during the period/year	857.14	3397.14	4722.86
Net Loan-Closing	52311.34	48914.19	44191.34
Average Loan	52739.91	50612.77	46552.77
Rate of Interest	7.851%	7.831%	7.804%
Interest	4140.63	3963.41	3632.95

31. The computations of interest on notional loan by applying weighted average interest rate are appended herein below:

Computation of Interest on Loan

(Rs. in lakh)

Interest on Loan	2006-07	2007-08	2008-09
Gross Normative Loan	52078	52078	52078
Cumulative Repayment upto Previous Year	0	840	4167
Net Loan-Opening	52078	51238	47911
Repayment during the year	840	3327	4626
Net Loan-Closing	51238	47911	43285
Average Loan	51658	49575	45598
Weighted Average Rate of Interest on Loan	7.8510%	7.8309%	7.8040%
Interest	4056	3882	3558

Depreciation

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

“(i) The value base for the purpose of depreciation shall be the historical cost of the asset.

(ii) Depreciation shall be calculated annually based on straight line method over the useful life of the asset and at the rates prescribed in Appendix II to these regulations. The residual life of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the historical capital cost of the asset. Land is not a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the historical cost of the asset. The historical capital cost of the asset shall include additional capitalization on account of Foreign Exchange Rate Variation up to 31.3.2004 already allowed by the Central Government / Commission

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

(iv) *Depreciation shall be chargeable from the first year of operation. In case of operation of the asset for part of the year, depreciation shall be charged on pro rata basis.”*

33. Weighted average rate of depreciation calculated by the petitioner based on gross value of assets as on 1.1.2007 is 3.56%. Since asset-wise liability provision is not furnished, calculation of depreciation rate has been based on gross value of the assets as furnished by the petitioner at applicable rates as per Appendix-II to the 2004 regulations and applied on pro rata basis on the admissible capital cost. For certain assets not listed in Appendix II, the rates considered are as applicable to similar assets listed therein as considered in other tariff orders of 2004-09 period. Accordingly, depreciation has been calculated as under:

		(Rs. in lakh)		
Details of Depreciation		2006-07	2007-08	2008-09
Gross block as on COD		74397	74397	74397
Rate of Depreciation	3.56%			
Depreciable Value	90%	66957	66957	66957
Remaining Depreciable Value		66957	66118	62790
Depreciation (annualized)		2648	2648	2648

Advance Against Depreciation

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

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

35. It is provided that Advance Against Depreciation shall be permitted only if the cumulative repayment up to a particular year exceeds the cumulative depreciation up to that year. It is further provided that Advance Against Depreciation in a year shall be restricted to the extent of difference between cumulative repayment and cumulative depreciation up to that year.

36. The petitioner has claimed Advance Against Depreciation based on repayment of the loan as considered for working out interest on loan. As mentioned above, the petitioner has considered FIFO method of repayment in case of loans from Allahabad bank, HDFC-IV, Bank of Maharashtra, Corporation bank, State Bank of Travancore-II and SBI-III. For the reasons already stated, all calculations of actual repayment have been made on average basis, taking into consideration terms and conditions of the loan drawal as per Form-8 as furnished by the petitioner and subsequent information and clarification called for and submitted by the petitioner. 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 as mentioned above.

37. Based on the above, the petitioner is entitled to Advance Against Depreciation, as shown hereunder:

(Rs in lakh)				
Advance against Depreciation		2006-07	2007-08	2008-09
1/10th of Gross Loan(s)	0.10	5208	5208	5208
Repayment of the Loan		840	3327	4626
Minimum of the above		840	3327	4626
Depreciation during the year		662	2648	2648
(A) Difference		178	680	1978
Cumulative Repayment of the Loan		840	4167	8793
Cumulative Depreciation		662	3487	6815
(B) Difference		178	680	1978
Advance against Depreciation Minimum of (A) and (B)		178	680	1978
Annualized AAD		711	680	1978

O&M Expenses

38. As per the 2004 regulations, the following norms for O&M expense shall be adopted for a generating station with 210 MW units:

(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

39. The petitioner has claimed O&M expenses as per the details given below:

(Rs. in lakh)			
Year	2006-07	2007-08	2008-09
O&M Expenses	2362.5	2457	2555.7

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

41. In addition to the above, the petitioner has prayed for a specific deviation pertaining to water charges in O&M. The petitioner has submitted that in the past years, the State Governments have been resorting to manifold increase in the rates of water charges/royalty payable, which is not normally based on common commercial principles. Therefore, this increase cannot be covered under the normal

O&M expenses allowed in the tariff. The petitioner has, therefore, submitted that any increase in the rates of water charges / royalty etc. by more than 4% per annum over the rates prevailing on 31.3.2004 should be additionally payable by the respondent beneficiaries.

42. The respondent No.1, UPPCL has objected to the claim of the petitioner and has submitted that the prayer should not be allowed.

43. 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 @ 4% per year is inbuilt in the normative O&M expenses specified by the Commission. There may be other heads in O&M expenses where actual expenses may be less than the normative expenses specified by the Commission. Therefore, we do not consider it to be justified to allow increase under one head, that is, water charges in isolation. As such, recovery of additional O&M expenses on account of any increase in the rates of water charges / royalty etc. during tariff period cannot be allowed. However, the petitioner is at liberty to approach the Commission in accordance with law for recovery of additional water charges with proper justification and details of actual expenses recovered under other heads, if State Governments resort to abnormal increase in the rates of water charges / royalty during the tariff period.

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 on this issue at this stage. The petitioner may approach for 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 Coal based/Lignite-fired generating stations shall cover:

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

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) **Coal stock:** The cost of coal has been worked out for two months on the basis of operational parameters given in the 2004 regulations and weighted average price and GCV of coal.

(b) **Secondary Fuel Oil:** The petitioner has claimed cost of fuel in the working capital based on price and GCV of coal for preceding three months from the date of commercial operation (i.e. October 2006 to December 2006) and based on the price and GCV of HFO for the months of October 2006 to December 2006. Since HFO is the main secondary fuel oil, it is considered for the computation of working capital and base rate of energy charge. Accordingly, the fuel component in working capital works out as follows for the tariff period 1.1.2007-31.3.2009:

(Rs in lakh)

Particulars	2006-07	2007-08	2008-09
Cost of coal for 2 months	2774	2782	2774
Cost of secondary fuel oil for two months.	119	119	119

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

(d) **Spares:** The petitioner has calculated the value of maintenance spares for the purpose of working capital considering the capital cost inclusive of deferred liabilities. The amount claimed for maintenance spares for the purpose is given below:

(Rs in lakh)			
	2006-07	2007-08	2008-09
Maintenance Spares Claimed	806	854	905

The spares requirement has been worked out based on the admissible capital cost as on date of commercial operation and escalated @ 6% per annum to arrive at permissible spares for the relevant years. The amount of spares included in gross block is "nil". Accordingly, 1% of this cost has been escalated at the rate of 6% per annum to arrive at permissible spares consumption for the relevant year. The value of spares considered in the computation of working capital is as under:

(Rs in lakh)			
Years	2006-07	2007-08	2008-09
Capitalized cost as on respective date of commercial operation (1.1.2007)	74397		
Initial spares	-		
Effective gross block for maintenance spares	74397		
Maintenance spares	743.97	755.13	800.44

(e) **Receivables:** The receivables have been worked out on the basis of two months of fixed and variable charges. The supporting calculations in respect of receivables are tabulated hereunder:

(Rs.in lakh)

Variable Charges	2006-07	2007-08	2008-09
Coal (Rs/kwh)	1.2429	1.2429	1.2429
Oil (Rs/kwh)	0.0433	0.0433	0.0433
Rs./kwh	1.2862	1.2862	1.2862
Variable Charges per year	17225	17272	17225
Variable Charges -2 months	2871	2879	2871
Fixed Charges - 2 months	2304	2286	2468
Receivables	5174	5164	5339

48. 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.

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

(Rs. in lakh)

	2006-07	2007-08	2008-09
Coal Stock- 2 months	2774	2782	2774
Oil stock -2 months	97	97	97
O & M expenses	197	205	213
Spares	744	755	800
Receivables	5174	5164	5339
Total Working Capital	8986	9003	9223
Rate of Interest	10.25%	10.25%	10.25%
Total Interest on Working capital	921	923	945

Target Availability

50. 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 1.1.2007 to 31.3.2009.

Annual Fixed Charges

51. A statement showing summary of the capital cost and other related matters is annexed to this order. The annual fixed charges for the period 1.1.2007 to 31.3.2009 allowed in this order are summed up as below:

(Rs. in lakh)				
	Particulars	2006-07	2007-08	2008-09
1	Interest on Loan	4056	3882	3558
2	Interest on Working Capital	921	923	945
3	Depreciation	2648	2648	2648
4	Advance against Depreciation	711	680	1978
5	Return on Equity	3125	3125	3125
6	O & M Expenses	2363	2457	2556
	TOTAL	13822	13714	14810

Energy/Variable Charges

52. The petitioner has adopted the following operational norms for 210 MW units as per clause (v) and (vi) of Regulation 16 of the 2004 regulations for calculation of energy/variable charges:

Specific fuel Oil Consumption	2 ml/kWh
Auxiliary Consumption*	9%
Heat Rate	2500 Kcal/kWh

* unit has closed cooling towers

53. The petitioner has claimed energy charges ex-bus from 1.1.2007 based on the above operational parameters and the following weighted average price and GCV of coal and secondary fuels (LDO+HFO) procured during the preceding three months:

GCV of Oil (LDO+HFO)	9990 kCal/L
GCV of Coal	3560 kCal/Kg
Weighted Average Price of Oil (as procured basis) (LDO+HFO)	24291 Rs./KL
Price of Coal (as procured basis)	1209.96 Rs./MT

54. HSD/LDO is used only during cold boiler start up. Hot start ups and flame stability during low load conditions are taken care of by HFO which is the main secondary fuel oil. Since HFO is the main secondary fuel oil, it should only be considered for the computation of working capital requirement and base rate of energy charge. Therefore, HFO has been allowed as secondary fuel oil for the purpose of base rate of energy charge.

55. Further, FPA clause in the 2004 regulations takes care of the cost of HSD/LDO used at the generating station on "as consumed basis" from month to month. As such, the petitioner is not being denied reimbursement of HSD/LDO whenever used.

56. The petitioner has claimed the rate of energy charge at 129.63 paise/kWh. However, the base rate of energy charge works out to 128.62 paise/kWh as per the following computations:

Description	Unit	
Capacity	MW	210
Gross Station Heat Rate	kCal/kWh	2500
Specific Fuel Oil Consumption	ml/kWh	2
Aux. Energy Consumption	%	9
Weighted Average GCV of Oil	kCal/l	9990
Weighted Average GCV of Coal	kCal/Kg	3560
Weighted Average Price of Oil (HFO)	Rs./KL	19691.69
Weighted Average Price of Coal	Rs./MT	1623.54
Rate of Energy Charge from Sec. Fuel Oil	Paise/kWh	3.94
Heat Contributed from HFO	kCal/kWh	19.98
Heat Contributed from Coal	kCal/kWh	2480.02
Specific Coal Consumption	Kg/kWh	0.70
Rate of Energy Charge from Coal	Paise/kWh	113.10
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	128.62

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

$$\text{FPA} = \text{A} + \text{B}$$

Where,

- FPA – Fuel price Adjustment for a month in Paise/kWh Sent out
A – Fuel price adjustment for Secondary Fuel oil in Paise/kWh sent out
B – Fuel price adjustment for Coal in Paise/kWh sent out

And,

$$\text{A} = \frac{10 \times (\text{SFC}_n)}{(100 - \text{AC}_n)} \left\{ (\text{P}_{om}) - (\text{P}_{os}) \right\}$$

$$\text{B} = \frac{10}{(100 - \text{AC}_n)} \left\{ \left[(\text{SHR}_n) \left(\text{P}_{cm}/\text{K}_{cm} \right) - (\text{P}_{cs}/\text{K}_{cs}) \right] - (\text{SFC}_n) \left\{ (\text{k}_{om} \times \text{P}_{cm}/\text{K}_{cm}) - (\text{k}_{os} \times \text{P}_{cs}/\text{K}_{cs}) \right\} \right\}$$

Where,

- SFC_n – Normative Specific Fuel Oil consumption in l/kWh
- SHR_n – Normative Gross Station Heat Rate in kCal/kWh
- AC_n – Normative Auxiliary Consumption in percentage
- P_{om} – Weighted Average price of fuel oil on as consumed basis during the month in Rs./KL.
- K_{om} – Weighted average GCV of fuel oils fired at boiler front for the month in Kcal/Litre
- P_{os} – Base value of price of fuel oils as taken for determination of base energy charge in tariff order in Rs./ KL.
- K_{os} – Base value of gross calorific value of fuel oils as taken for determination of base energy charge in tariff order in Kcal/Litre
- P_{cm} – Weighted average price of coal procured and burnt during the month at the power station in Rs./ MT.
- K_{cm} – Weighted average gross calorific value of coal fired at boiler front for the month in Kcal/Kg
- P_{cs} – Base value of price of coal as taken for determination of base energy charge in tariff order in Rs. /MT
- K_{cs} – Base value of gross calorific value of coal as taken for determination of base energy charge in tariff order in kCal/Kg

Other Charges

58. In addition to the charges approved above, the petitioner is entitled to recover other charges like incentive, claim for reimbursement of Income-tax, other taxes, cess levied by a statutory authority, in accordance with the 2004 regulations, as applicable.

Reimbursement of publication charges

59. The petitioner has also sought approval for reimbursement of expenditure incurred on publication of notices in the newspapers. Although the petitioner has

confirmed publication of public notices and submitted copies of the notices vide its affidavit dated 17.7.2007, the expenditure incurred in this regard is not available on record. We direct that 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 on production of evidence of incurring expenditure to the respondents. 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. The view taken on consideration of the comments received shall apply in the present case as regards reimbursement of filing fee.

60. 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.

61. This order disposes of Petition No.84/2007.

Sd/-
(R.KRISHNAMOORTHY)
MEMBER

Sd/-
(BHANU BHUSHAN)
MEMBER

New Delhi, dated the 10th July, 2008