CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram:
1. **Shri Ashok Basu, Chairman**
2. **Shri K.N. Sinha, Member**
3. **Shri Bhanu Bhushan, Member**
4. **Shri A.H. Jung, Member**

Petition No.8/2005

In the matter of

Approval of revised fixed charges on account of additional capital expenditure incurred during 14.1.2000 to 31.3.2004 in respect of Tanda Thermal Power Station (440 MW).

And in the matter of

National Thermal Power Corporation Ltd. … **Petitioner**

Vs

Uttar Pradesh Power Corporation Ltd., Lucknow ……**Respondent**

The following were present:

1. Shri V.B.K. Jain, NTPC
2. Shri I.J. Kapoor, NTPC
3. Shri Shankarsaran, NTPC
4. Shri S.S. Sen, NTPC
5. Shri G.K. Dua, NTPC
6. Shri Pranav Kapoor, ALO, NTPC
7. Shri Balaji Dubey, DGM, NTPC
8. Shri D.G. Salpekar, NTPC
9. Shri S.D. Jha, NTPC
10. Shri T.K. Srivastava, EE, UPPCL

ORDER
(DATE OF HEARING: 3.3.2005)

The petitioner, National Thermal Power Corporation Ltd seeks revision of annual fixed charges for the period 14.1.2000 to 31.3.2004 as a consequence of incurring additional capital expenditure in respect of Tanda Thermal Power Station located in the State of Uttar Pradesh. The respondent herein is the only beneficiary of the generating station. The facts leading to filing of the present application are discussed in the succeeding paragraphs.

2. The erstwhile Uttar Pradesh State Electricity Board (UPSEB) (the predecessor of the respondent herein) constructed Tanda Thermal Power Station (4X110 MW), with a total installed capacity of 440 MW. The first three units were commissioned in 1987-88 to 1988-89. The last unit was commissioned in the year 1997-98.

3. The generating station was transferred to the petitioner on 14.1.2000 under the Uttar Pradesh Electricity Reforms (Transfer of Tanda Undertaking) Scheme, 2000 (the Scheme) for a total consideration of Rs.1, 000/- crore. The Scheme was framed by the State Government of Uttar Pradesh by virtue of powers under Section 23 of the Uttar Pradesh State Electricity Reforms Act, 1999. The petitioner and UPSEB had also entered into a Power Purchase Agreement (PPA) dated 7.1.2000, valid for a period for 25 years from the date of vesting of the generating station in the petitioner, that is, 14.1.2000. The power generated from the generating station is supplied exclusively to the respondent.

4. The petitioner had filed a tariff Petition (No. 77/2001) before the Commission for approval of tariff from 14.1.2000 to 31.3.2004 The Commission vide order dated 28.6.2002 approved tariff for the period 14.1.2000 to 31.3.2004. The Commission further revised the fixed charges vide order dated 9.4.2003 in review petition 2/2003. The fixed charges as finally approved by the Commission are as under-

(Rs. in lakh)

YEAR	1999-2000	2000-01	2001-02	2002-03	2003-04
Fixed Charges	18120	17703	16149	15945	15723

5. The fixed charges approved were based on a capital cost of Rs.607 crore as on the date of commercial operation of the generating station.

6. Through the present petition, the petitioner has claimed revised fixed charges on account of additional capital expenditure for the years 1999-2000 (14.1.2000 to 31.3.2000), 2000-01, 2001-02, 2002-03 and 2003-04. The year-wise and category-wise break up of the additional capitalization claimed by the petitioner for the period 1999-2000 to 2003-04 is as follows –

(Rs. in lakh)

Details of additional capitalization	**1999-2000**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Total**
New work-R&M	56.41	4100.86	4501.27	5888.85	2357.91	16905.30
Reinstatement of part of decapitalised amount	0.00	0.00	0.00	83.17	0.00	83.17
Inter unit transfer	0.00	0.00	0.00	0.00	64.60	64.60
Spares- R&M	0.00	88.63	189.27	183.29	256.39	717.58
Rearrangement	0.00	-0.05	23.28	-19.63	0.00	3.60
Total	**56.41**	**4189.44**	**4713.82**	**6135.68**	**2678.90**	**17774.25**

7. Based on the above additional capital expenditure, the petitioner seeks revision of fixed charges approved earlier under the heads, return on equity, interest on loan and depreciation.

Reasons for undertaking R&M

8. The petitioner has submitted that Units 1, 2 and 3 were more than 12 years old at the time of takeover and were operating at very low PLF. Unit-3 was completely in a dismantled state (under shut down since 3.7.1999). The equipment was cannibalized to operate the running units, which had a large number of generic problems and were very unreliable. The tube leakage and failure of auxiliary equipment were frequent. It has been further submitted that one of the main factors

for poor condition of the generating station was poor quality of intake water. High calcium content in the intake water and non-maintenance of proper water chemistry severely affected water circuit in boilers with hydrogen embrittlement. Eventually, the complete replacement of water wall panels and economisers was planned by UPSEB before the take over by the petitioner. No equipment history was available and, therefore, a detailed life assessment and studies had to be undertaken for R&M and enhancement of life for sustained high level of generation. The petitioner has submitted that complete renovation of boiler, milling system, ESP, water system, CHP and other areas was necessary for turnaround of the generating station, apart from other infrastructure facilities.

Estimates of cost of R&M and implementation schedule

9. The petitioner has submitted that R&M Phase-I was undertaken for a total capital expenditure of Rs.193 crore, including IDC mainly for revival of the units. Most of the schemes of R&M Phase-I have been implemented. R&M Phase-II estimated at a cost of Rs.316 crore including contingency and IDC has been started to deal with generic problems of the generating station like inadequate availability of cooling water, poor cooling water quality, environment norms, systems deficiencies and sustenance of performance. These are expected to be completed by December 2007. The consideration of additional capital expenditure for the present purpose is, however, limited to the expenditure incurred up to 31.3.2004.

Benefits of R&M to the beneficiaries

10. The Commission in its order dated 28.6.2002 petition No. 77/2001 specified the following operational parameters for the generating station for the period 2000-04:

	2000-01	2001-02	2002-03	2003-04
Plant load factor (%)	**30.89**	**36.00**	**50.00**	**60.00**
SFC (ml./kWh)	15.00	10.00	6.00	3.50
APC (%)	12.2	12.00	11.00	11.00
SHR (kCal /kWh)	3440.00	3200.00	3000.00	3000.00

11. The petitioner has submitted that the implementation of R&M Phase-I scheme has resulted into improvement in operational parameters including PLF and Availability. It has been submitted that PLF, which was 21.59% in 1999-2000 at the time of takeover has increased to 75.32% in 2003-2004. Specific Oil Consumption and Heat Rate operating parameters, which were 38.22 ml/kWh and 3764 kCal/kWh respectively in 2000-01, have improved to meet the prescribed norm of 3.5 ml/kWh and 3000 kCal/kWh respectively. Auxiliary Power Consumption, though has been reduced from 19.73% in 2000-01 to 12.81% in 2003-04, is still higher than the norm of 11% prescribed by the Commission.

12. The petitioner has further submitted that with the improvement in the performance parameters as a result of R&M Phase-I, there is reduction in variable charges corresponding to prices and GCV of coal and secondary fuel oil considered in the order dated 28.6.2002. The net reduction in cost of energy to the beneficiary respondent on account of this reduction corresponding to generation in respective year works out as Rs.212.08 crore for the period 2000-01 to 2003-04, which is more than the additional capitalization claim of Rs.177.7 crore for 1999-2000 to 2003-04.

13**.** The respondent on the other hand, through its affidavit dated 26.2.2005 and supplementary affidavits dated 18.3.2005 and 22.4.2005 has disputed the claim of the petitioner for revision of fixed charges on following grounds:

(a) There is no approval of CEA for R&M Phase-I for Rs.199.0 crore, required under clause 2.5 of the Commission's notification dated 26.3.2001

(b) Available CEA approval is for R&M of Rs. 86 crore granted to erstwhile UPSEB before the transfer which is less than 20% of admitted cost of Rs. 607 crore as on 14.1.2000 and hence cannot be considered for the period 2001-04 in view of clause 1.8 of the notification dated 26.3.2001.

(c) Additional capitalisation has been claimed under clause 5 of the PPA dated 7.1.2000, which has been held null and void by the Commission and is thus not enforceable.

14. The above objections of the respondent are of preliminary nature and have been considered first. The objections do not appear to be correct. Clause 5 of the PPA dated 7.1.2000 was held to be not enforceable by the Commission to the extent that the consideration amount of Rs. 1000 crore for the purpose of tariff was not justified. The Commission has not recorded any finding as regards additional capitalisation or R&M. These provisions are independent severeable from the provision relating to capital cost. The fact of improvement in operational parameters as a result of R&M has not been denied by the respondent. In our view any additional capital expenditure if found justified and benefiting the respondent has to be allowed for the purpose of tariff. In this regard agreement between the parties for R&M after technical assessment is also considered to be an important consideration for allowing additional capitalisation and consequential revision of fixed charges. Further, insistence on CEA approval in this particular case involving transfer of power station is also not considered necessary. Even otherwise, in the absence of CEA approval, the

Commission is competent and fully equipped to take a view on the prudence and reasonableness of the expenditure and has been doing so in past cases. Therefore, the preliminary objections are of no consequence.

15. It has been seen that R&M under Phase-I, which has been completed as claimed in the petition, is for the revival of the generating station by restoring the cannibalized items, missing items and deficient items. Further, the generic problem of the generating station also appears to be on account of inadequate maintenance and other practices by the erstwhile UPSEB. R&M Phase-I has, in fact, restored the performance level, which is expected from a generating station following good operating practices. The improved performance cannot be sustained for long without addressing the generic problems of the generating station, which shall be tackled in R&M Phase-II. As such, R&M Phase-II may also be necessary for sustaining the desired level of performance during the balance useful life. There is also shortage of power in the country and the existing capacity cannot be allowed to deteriorate. It is also in the interest of the beneficiary respondent not to discourage the petitioner's endeavor to operate the generating station at its optimum level. In view of this, we agree in principle that additional capitalization on account of R&M is to be allowed, subject to prudence check.

16. Now we proceed to examine the amount of capital expenditure to be allowed for capitalisation.

New works

17. The petitioner has claimed an amount of Rs. 16905.30 lakh on "New works under R&M" giving justification for each item of works. On scrutiny, it is observed that

generally the expenditure relates to replacement/renovation of defective plant components/ assets and there is corresponding de-capitalization of the old assets. Some of the expenditure has been incurred on procurement of new items, infrastructure facilities and miscellaneous items like- dozers, testing equipment, hydraulic jacks, cars, computers, furniture, air-conditioners, welding equipment etc. with no de-capitalisation of the old assets. There are certain other assets, which have been replaced without corresponding de-capitalisation. The petitioner has explained that these assets were not available at the time of take-over but were necessarily required for smooth operation of the generating station and for providing basic amenities to the employees. Normally such expenditure is allowed after corresponding de-capitalisation. But here the circumstances are very different. Therefore, the entire expenditure under this head has been allowed to be capitalised.

Reinstatement of part of decapitalised amount

18. The petitioner has claimed an amount of Rs.83.17 lakh on reinstatement of part of decapitalised amount. The justification given by the petitioner is as follows-

> *"The project taken over cost was revised from Rs.1000 Cr. to Rs.607 Cr. by the order of CERC (dt.28.6.02) .Accordingly; the proportionate value of decapitalised amounts during the past two years is restated."*

19. The contention of the petitioner has been verified and found to be in order and therefore, the amount is allowed for capitalisation.

Inter-Unit Transfer

20. The petitioner has claimed an amount of Rs.64.60 lakh in the year 2003-04 on account of inter-unit transfer for transfer of lathe, which has been allowed.

Capital Spares

21. The petitioner has claimed an amount of Rs. 717.58 lakh for capital spares. The petitioner has stated that the spares were not available in the inventory at the time of take-over. Though these items are not of repetitive or consumptive nature, but are required for safety against breakdown, which if not available in time would lead to loss of generation and would further aggravate the power deficit condition. Since these critical spares are required to be procured from the OEM lead-time could be one to one and half years. To avoid long outages of the units it is necessary to maintain stocks of these spares. The capital spares claimed are of the order of 1.2% of the capital cost of Rs.607 crore admitted by the Commission and are allowed.

Rearrangement

22. Under this head the petitioner has put the following two types of assets:

(a) Assets, which have been de-capitalized and are with negative entries, and

(b) Assets, which have become unserviceable and have been replaced with corresponding de-capitalisation of the unserviceable assets at the gross value but are yet to be disposed off and are transferred to this head with positive entries (Salvage value or the depreciated value), pending their disposal. Such unserviceable assets cannot be considered in the rate base for the purpose of tariff. Hence following amounts is admitted after deducting the positive entries:

(Rs. in lakh)

	1999-2000	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Total**
Amount allowed	0.00	(-)0.05	23.28	(-)19.63	0.00	3.60
Amount claimed	0.00	-(1).05	(-)0.66	(-)21.67	0.00	(-) 23.38

23. In view of above discussion, the following additional capital expenditure is found to be justified and has been allowed to be capitalised for the purpose of tariff:

(Rs. in lakh)

Details of additional Capitalisation	**1999-2000**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**Total**
New work-R&M	56.41	4100.86	4501.27	5888.85	2357.91	16905.30
Reinstatement of part of decapitalised amount	0.00	0.00	0.00	83.17	0.00	83.17
Inter unit transfer	0.00	0.00	0.00	0.00	64.60	64.60
Spares- R&M	0.00	88.63	189.27	183.29	256.39	717.58
Rearrangement	0.00	(-)1.05	(-)0.66	(-)21.67	0.00	(-)23.38
Total	**56.41**	**4188.44**	**4689.88**	**6133.64**	**2678.90**	**17747.27**

24. The total additional capital expenditure on equipment and works under R&M of Rs. 17747.25 lakh allowed for the period 1999-2000 to 2003-04 includes capital spares worth Rs. 717.58 lakh. The tariff for the year 1999-2000 and 2000-01 has to be revised based on admitted additional capital expenditure in terms of agreement between the parties. The expenditure during the tariff period 2001-04 of Rs. 13502.42 lakh is of the order of about 22% of admitted capital cost of Rs. 607 crore as on 14.1.2000. This additional capital expenditure during 2001-04 exceeds 20% of the admitted capital cost as on 14.1.2000. As such, tariff shall have to be revised for the tariff period 2001-04 also as provided in clause 1.10 of the notification dated 26.3.2001 on terms and conditions of tariff.

Capital cost for the purpose of tariff

25. After considering the above year-wise additional capital expenditure and opening gross block as on 14.1.2000 as earlier admitted by the Commission in its order dated 28.6.2002 , the capital cost for the purpose of revision of tariff in the

respective year is worked out as follows after adding the additional capitalisation allowed:

(Rs. in crore).

Capital Cost as on 14.01.2000 admitted in Order dated 28.6.2002.	**607.00**
Additional Capitalization for the period 1999-2000	0.56
Capital Cost as on 1.4.2000	**607.56**
Additional Capitalization for the period 2000-01	41.88
Capital Cost as on 1.4.2001	**649.44**
Additional Capitalization for the period 2001-02	46.90
Capital Cost as on 1.4.2002	**696.34**
Additional Capitalization for the period 2002-03	61.34
Capital Cost as on 1.4.2003	**757.68**
Additional Capitalization for the period 2003-04	26.79
Capital Cost as on 1.4.2004	**784.47**

Debt-Equity Ratio

26. The debt- equity ratio of 70:30 was considered by the Commission in its order dated 28.6.2002 in petition No. 77/2001. Based on the loan details submitted by the petitioner the actual debt- equity ratio for financing of additional capital expenditure works out as 67:33 approx. However, in the present working , debt equity ratio of 70:30 as considered in the Commission's earlier order has been considered.

Return on Equity

27. In accordance with the terms and conditions for determination of tariff applicable during the relevant period, return on equity has been worked out @16 % on the average normative equity worked out from the normative debt-equity ratio as per the preceding paragraph. The necessary calculations in support of the return on equity allowed are appended hereunder:

(Rs in lakh)

	1999-2000	2000-01	2001-02	2002-03	2003-04
Opening Balance	18210.00	18226.92	19483.46	20890.42	22730.51
Addition due to Additional Capitalisation	16.92	1256.53	1406.96	1840.09	803.67
Closing Balance	18226.92	19483.46	20890.42	22730.51	23534.18
Average	18218.46	18855.19	20186.94	21810.47	23132.35
Rate of Return on Equity	16.00%	16.00%	16.00%	16.00%	16.00%
Return on Equity	2915	3017	3230	3490	3701

Interest on loan

28. Interest on loan has been worked out as per the methodology mentioned below:

(a) The gross opening normative loan amount has been worked out based on normative debt-equity ratio.

(b) Cumulative repayment of loan up to 14.1.2000 has been taken as per the Commission' order dated 28.6.2002 in petition No. 77/2001 and revised order dated 9.4.2003 in review petition No. 2/2003 in petition No. 77/2001.

(c) The annual repayment amount for the year 1999-2000 to 2003-04 has been worked out as per the methodology followed by the Commission in other petitions of the petitioner for the period prior to 2001 and period 2001-04 , which is as follows:

actual repayment during the year
or
as worked out as per the following formula:

actual repayment during the year x normative net loan at the beginning of the year/ actual net loan at the beginning of the year,

whichever is higher.

(d) Loan drawls up to 31.3.2004 have been considered based on the loan details submitted by the petitioner.

(e) On the basis of actual rate of interest on actual loans, the weighted rate of interest on average loan has been worked out and the same has been applied on the normative average loan during the year to arrive at the interest on loan.

29. The necessary calculations in support of interest on loan allowed are appended hereunder:

(Rs in lakh)

	1999-2000	2000-01	2001-02	2002-03	2003-04
Gross loan	42490.00	42529.49	45461.40	48744.31	53037.86
Cumulative repayments of Loans up to previous year	0.00	4249	8502	13122	17371
Net loan-Opening	42490.00	38280.49	36959.01	35622.05	35666.60
Addition due to Additional Capitalisation	39.49	2931.91	3282.92	4293.55	1875.23
Total	42529.49	41212.40	40241.92	39915.60	37541.83
Repayment	4249	4253	4620	4249	4984
Closing Balance	38280.49	36959.01	35622.05	35666.60	32557.53
Average Loan	40385.24	37619.75	36290.53	35644.32	34112.06
Rate of Interest	**14.50%**	**14.50%**	**13.92%**	**13.35%**	**12.89%**
Interest on Loan	5856	5455	5052	4760	4411

Depreciation

30. The depreciation rates adopted in the present computation is 7.84% for the period 1999-2000 and 2000-01 and 3.60% for the period 2001-02 to 2003-04 which are same as considered in the tariff order issued by the Commission on 28.6.2002 in petition No. 77/2001 and the order dated 9.4.2003 in review petition No. 2/2003 in petition No. 77/2001.The necessary details in support of computation of depreciation are appended herein below:

(Rs in lakh)

	1999-2000	2000-01	2001-02	2002-03	2003-04
Gross Block / Opening Balance	**60700**	**60756**	**64945**	**69635**	**75768**
Additional Capitalisation	56.41	4188.44	4689.88	6133.64	2678.90
Closing Balance	60756	64945	69635	75768	78447
Rate of Depreciation	**7.84%**	**7.84%**	**3.60%**	**3.60%**	**3.60%**
Annual Depreciation	4759	4763	2422	2617	2776
Depreciation allowed in Tariff	**1001**	**4763**	**2422**	**2617**	**2776**

Advance Against Depreciation

31. The petitioner is not entitled to Advance Against Depreciation for the period prior to 1.4.2001. For working out Advance against depreciation for the subsequent

period, 1/12th 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 per formula as at paragraph 29(c) above. The petitioner's entitlement to Advance Against Depreciation for the years 2001-02 to 2003-04 is computed as under:

(Rs in lakh)

	2001-02	2002-03	2003-04
1/12th of Loan(s)	3788	4062	4420
Scheduled Repayment of the Loan(s)	4620	4249	4984
Minimum of Column	3788	4062	4420
Depreciation during the year	2422	2617	2776
Advance against Depreciation	**1366**	**1445**	**1644**

O&M Expenses

32. O&M Expenses considered in the present working are same as considered by the Commission in the tariff order dated 28.6.2002 in petition No. 77/2001 and the order dated 9.4.2003 in review petition No. 2/2003 in petition No. 77/2001 and are re-produced below:

(Rs. in lakh)

Years	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**
O&M Expenses	3381	3720	3944	4181	4431

Interest on Working Capital

33. The operational parameters viz. Target PLF /Availability, Specific Fuel oil consumption, Auxiliary. Power Consumption and Station Heat Rate considered in the present computation are the same as considered by the Commission in the tariff order dated 28.6.2002 in petition No. 77/2001 and revised vide order dated 9.4.2003 in review petition No. 2/2003 in petition No. 77/2001. Accordingly, there is no change in values of fuel components of working capital and variable charges. The rate of interest on working capital (SBI PLR) considered in the present computation is also same as considered earlier. As such , the interest on working

capital has been revised to the extent of change in receivables only due to revision in Annual Fixed Charges. The revised calculations in support of interest on working capital are appended below:

(Rs in lakh)

	1999-00	2000-01	2001-02	2002-03	2003-04
Fuel cost- 1 month	1505	1324	1510	1903	2233
Coal Stock- 30 days	1275	1125	1315	1732	2095
Oil stock -60 days	411	363	348	290	203
O & M expenses- 1 Month	282	310	329	348	369
Spares	607	607	607	607	607
Recievables	6030	5655	5881	6778	7544
Total Working Capital	10109	9384	9990	11658	13051
Rate of Interest (Av. Annual SBIPLR)	**12.00%**	**11.50%**	**11.50%**	**11.50%**	**11.50%**
Total Interest on Working capital	**1213**	**1079**	**1149**	**1341**	**1501**

34. The summary of the revised fixed charges allowed for the period 14.1.2000 to 31.3.2004 worked out based on the above methodology is extracted below:

(Rs. in lakh)

Particulars	**1999-2000**	**2000-01**	**2001-02**	**2002-03**	**2003-04**
Depreciation	4759	4763	2422	2617	2776
Interest on Loan	5856	5455	5052	4760	4411
Return on Equity	2915	3017	3230	3490	3701
Advance against Depreciation			1366	1445	1644
Interest on Working Capital	1213	1079	1149	1341	1501
O & M Expenses	3381	3720	3944	4181	4431
Total	**18124**	**18034**	**17163**	**17834**	**18464**
*** The amount relates to full year. For part of the year there shall be proportionate reduction.**					

35. The difference between the revised Annual Fixed Charges claimed by the petitioner and those allowed is because of the following reasons, namely:

(i) A part of the additional expenditure claimed by the petitioner has been disallowed.

(ii) Impact of additional capital expenditure on depreciation for the period 1999-2000 and 2000-01 has been worked out on opening Block in the working as against average Block considered by the petitioner.

(iii) Change in Advance against depreciation is due to change in normative loan amount and change in repayment amount.

(iv) Change in interest on loan component due to change in normative loan amount after taking into account additional capital expenditure, change in weighted average rate of interest and repayment amount due to consideration of additional loans drawn for financing additional capitalisation.

(v) Increase in interest on working capital is because of increase in receivables.

36. With the above, the petition stands disposed of.

Sd/-	Sd/-	Sd/-	Sd/-
(A.H. JUNG)	**(BHANU BHUSHAN)**	**(K.N. SINHA)**	**(ASHOK BASU)**
MEMBER	**MEMBER**	**MEMBER**	**CHAIRMAN**

New Delhi dated the 24th October, 2005