

CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI

Coram

1. Shri Ashok Basu, Chairman
2. Shri K.N.Sinha, Member

Petition No 2/2002

**In the matter of**

Approval of tariff in respect of Simhadari Thermal Power Project for the period from 1.9.2002 to 31.3.2004.

**And in the matter of**

National Thermal Power Corporation Ltd.

.... Petitioner

Vs

Transmission Corporation of Andhra Pradesh Ltd

.... Respondent

The following were present:

1. Shri V.B.K. Jain, GM, NTPC
2. Shri Rajeshwar Datt, GM, NTPC
3. Shri M.S. Chawla, AGM (Comml), NTPC
4. Shri A.K. Juneja, DGM (Comml), NTPC
5. Shri Majoj Mathur, DGM (Comml), NTPC
6. Shri Surendra, Dy. Mgr (Comml), NTPC
7. Smt. Rachna Mehta, Mgr, NTPC
8. Smt. Alka Saigal, Mgr, NTPC
9. Shri Balaji Dubey, Sr. Law Officer, NTPC
10. Shri D.G. Salpakar, NTPC
11. Shri G. Venkateswara Rao, Div. Engineer, APTRANSCO

**ORDER**  
**(DATE OF HEARING 9-12-2003)**

The petition has been filed by the petitioner, NTPC, a generating company owned by the Central Government for approval of tariff in respect of Simhadari Thermal Power Project (hereinafter referred to as "Simhadari TPP") based on the terms and conditions of tariff contained in the Commission's notification dated 26.3.2001, hereinafter referred to as "the notification dated 26.3.2001".

2. The techno-economic clearance for Simhadari TPP was accorded by CEA in terms of its letter dated 12.8.1996 at a cost US \$ 85.96 + Rs. 1841.53 crore, including IDC. The value of US \$ was taken @ Rs. 35/US \$. Subsequently, the Central Government in Ministry of Power, vide its letter dated 24.7.1997 accorded investment approval for Rs. 3579.75 crore, including IDC and WCM of Rs. 71.04 crore. This is the latest available approved project cost and will be considered for approval of tariff.

3. Simhadari TPP comprises of two units, each with capacity of 500 MW. The dates of commercial operation of the two units are 1.9.2002 and 1.3.2003 respectively. The periods for which approval of tariff has been sought are thus as under:

| Unit               | Period                |
|--------------------|-----------------------|
| Unit I             | 1.9.2002 to 28.2.2003 |
| Unit I and Unit II | 1.3.2003 to 31.3.2004 |

4. The petitioner has claimed the fixed charges as per details given hereinbelow:

(Rs in lakh)

| Particulars                  | 2002-2003                   |                             | 2003-2004                |
|------------------------------|-----------------------------|-----------------------------|--------------------------|
|                              | 1.9.2002<br>to<br>28.2.2003 | 1.3.2003<br>to<br>31.3.2003 | 1.4.2003 to<br>31.3.2004 |
| Interest on Loan             | 5964                        | 8818                        | 8685                     |
| Interest on Working Capital  | 1612                        | 3067                        | 3318                     |
| Depreciation                 | 8040                        | 12018                       | 12243                    |
| Advance Against Depreciation | 0                           | 0                           | 0                        |
| Return on Equity             | 10459                       | 15465                       | 15755                    |
| O & M Expenses               | 5447                        | 8055                        | 8538                     |
| <b>TOTAL</b>                 | <b>31523</b>                | <b>47423</b>                | <b>48539</b>             |

5. The petitioner has furnished the following details in support of its claim for interest on working capital:

(Rs in lakh)

|                                      | 2002-2003                |                          | 2003-2004             |
|--------------------------------------|--------------------------|--------------------------|-----------------------|
|                                      | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.9.2002 to 28.2.2003 |
| Fuel Cost                            | 1567                     | 3875                     | 4307                  |
| Coal Stock                           | 1446                     | 3622                     | 4048                  |
| Oil stock                            | 242                      | 506                      | 519                   |
| O & M expenses                       | 454                      | 671                      | 711                   |
| Spares <sup>1</sup>                  | 1888                     | 2820                     | 3013                  |
| Receivables- 2 months                | 9355                     | 17084                    | 18162                 |
| Total Working Capital                | 14952                    | 28579                    | 30761                 |
| Working capital<br>Margin(WCM)       | 3552                     | 7104                     | 7104                  |
| Total Working Capital<br>allowed     | 11400                    | 21475                    | 23657                 |
| Interest rate on working<br>capital  | 11.79%                   | 11.79%                   | 11.79%                |
| Interest on Working Capital          | 1344.04                  | 2531.85                  | 2789.16               |
| Interest on WCM                      | 97.22                    | 194.44                   | 187.97                |
| Return on WCM                        | 170.5                    | 340.99                   | 340.99                |
| Total Interest on Working<br>capital | 1612                     | 3067                     | 3318                  |

#### **Date of Commercial Operation**

6. In terms of the notification dated 26.3.2001, the date of commercial operation of a unit of the coal-based thermal power station is not to exceed 180 days from the date of the synchronisation of the respective unit. According to TEC of CEA, the project was to be completed within a period of 65 months from the date of CCEA clearance, and Unit I was to be declared under commercial operation within a period of 56 months from that date. As per the investment approval accorded by the Central Government, the commissioning dates of Units I and II are accordingly indicated as 56 months and 65 months respectively from 8.7.1997. Accordingly, the scheduled dates of commercial operation of Unit I and Unit II work out to 7.3.2002 and 7.12.2002 respectively.

7. The petitioner has clarified that the dates given in the investment approval of the Central Government are the scheduled dates of synchronization of respective unit and corresponding to this, the scheduled dates of commercial operation have to be after 180 days after the respective date of synchronisation. To support its contention, the petitioner has placed on record the relevant extracts from pre-PIB meeting dated 1.11.1996, according to which "Schedule for unit-I and unit-II shall be 56 and 65 months respectively from Govt. approval for synchronization / commissioning". Having regard to the deliberations in the pre-PIB meeting, it is clear that the dates indicated in the investment approval by the Central Government refer to the dates of synchronization of the respective unit. The scheduled and actual dates of synchronization and commercial operation of respective units are, thus, as follows:

|         | Scheduled                               |                              | Actual                  |                              |
|---------|-----------------------------------------|------------------------------|-------------------------|------------------------------|
|         | Date of Synchronisation                 | Date of Commercial Operation | Date of Synchronisation | Date of Commercial Operation |
| Unit I  | 7.3.2002<br>(56 months from<br>8.7.97)  | 7.9.2002                     | 22.2.2002               | 1.9.2002                     |
| Unit II | 7.12.2002<br>(65 months from<br>8.7.97) | 7.6.2003                     | 24.8.2002               | 1.3.2003                     |

8. In the light of above, there is no time over run in completion of the project.

### TARGET AVAILABILITY

9. Based on the provisions of the notification dated 26.3.2001, Target Availability of 80 % has been considered for recovery of full fixed charges and computation of fuel element in the working capital.

## CAPITAL COST

10. As per the notification dated 26.3.2001, the actual capital expenditure incurred on completion of the generating station shall be the criterion for fixation of tariff. It is further provided that where actual expenditure exceeds the approved project cost, the excess expenditure as approved by CEA or an appropriate independent agency shall be deemed to be actual capital expenditure for the purpose of determining the tariff.

11. Based on the information furnished by the petitioner and affidavits dated 7.11.2003 and 19.12.2003, it emerges that the capital expenditure on the dates of commercial operation of the respective unit is as under:

( Rs. in lakh)

|                                                                       | Unit-I    | Unit-II    | Total      |
|-----------------------------------------------------------------------|-----------|------------|------------|
| Capital cost/Gross Block as on COD of Unit-I (i.e 1.9.2002)           | 214038.00 |            | 214038.00  |
| Additional Capitalisation from 1.9.2002 to 28.2.2003                  | 7697.00   |            | 7697.00    |
| FERV from 1.9.2002 to 28.2.2003                                       | 0.00      |            | 0.00       |
| Project cost as on 1.3.2003 (date of commercial operation of Unit-II) | 221735.00 | 102623.00  | 324358.00  |
| Additional Capitalisation from 1.3.2003 to 31.3.2003                  |           | 1887.57    | 1887.57    |
| FERV from 1.3.2003 to 31.3.2003                                       |           | (-)6232.00 | (-)6232.00 |
| Project cost as on 31.3.2003                                          | 221735.00 | 98278.57   | 320013.57  |

12. The petitioner has, thus, claimed tariff based on a capital cost of Rs.320013.57 lakh. The capital expenditure indicated by the petitioner has been verified from the balance sheet. The project cost as on the date of commercial operation of the respective unit is compared with reference to the approved cost. The following position has emerged:

(Rs. in crore)

|                                                                                                                                                        |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Approved Cost as per Central Government, including IDC & FC of Rs. 563.45 Crore and WCM of Rs. 71.04 Crore (Current cost 1 <sup>st</sup> quarter 1997) | 3579.75 |
| IDC & FC                                                                                                                                               | 563.45  |
| Hard cost as per Central Government approval                                                                                                           | 3016.30 |
| Capital cost as on 1.9.2002, the date of commercial operation of Unit -I                                                                               | 2140.38 |
| Percentage (%) of approved cost                                                                                                                        | 59.79%  |
| Capital Cost as on 1.3.2003, the date of commercial operation of Unit-II                                                                               | 3243.58 |
| Actual IDC                                                                                                                                             | 129.32  |
| Actual hard cost as on the date of commercial operation of Unit-II                                                                                     | 3114.26 |
| Works not undertaken                                                                                                                                   | 236.058 |
| Works undertaken but not completed                                                                                                                     | 107.002 |
| Total Amount yet to be capitalised                                                                                                                     | 349.18  |
| Anticipated hard cost                                                                                                                                  | 3463.45 |
| Anticipated completion cost                                                                                                                            | 3592.77 |

13. The cost of Rs.3579.75 crore approved by the Central Government was corresponding to 1<sup>st</sup> quarter of 1997 price level, with IDC component of Rs.565.45 crore. As such, hard cost as per the Central Government approval was Rs.3016.30 crore. Against this (hard cost at a price level of 1<sup>st</sup> quarter of 1997), the hard cost of the station as on the date of commercial operation of 1.3.2003 is Rs.3114.26 crore after excluding actual IDC of Rs.129.32 crore, capitalized from the gross block of Rs.3243.58 crore as on the date of commercial operation of the generating station. The reduction in IDC is stated to be on account of reduction in rates of interest on loan. An amount of Rs.349.18 crore is yet to be capitalized on account of works within the scope of original cost but not undertaken (Rs.236.058 crore) and works undertaken but not completed (Rs.107.002 crore). As such, anticipated hard cost works out to Rs.3463.45 crore.

14. It is seen from above that there is an increase of Rs.447.15 crore in hard cost from the Central Government approved hard cost of Rs.3016.30 crore, which is on account of escalation and exchange rate variation on direct loans. The increase in hard cost works out @ 3% per annum average escalation in prices including exchange rate variation in six years and is considered to be reasonable.

15. The actual capital expenditure on the date of commercial operation of Unit-I is Rs.2140.38 crore, which is about 59.79% of the approved project cost of Rs.3592.77 crore and the anticipated completion cost. Since the break up of common facilities are not available in the project cost approval in accordance with the notification dated 26.3.2001, the apportioned project cost for the purpose of determination of tariff of Unit-I has been restricted to 50% of the anticipated project cost, which works out to Rs.1796.38 crore.

16. Further, as per the loan agreement of HDFC-II, front-end fee is @ 0.5% on the loan amount of Rs.200 crore, which works out to Rs. 1 crore. Out of the above Rs.200 crore HDFC-II loan, Rs.100 crore is allocated to Simhadri TPP. Accordingly, the proportionate front-end fee of Rs. 0.5 crore only has been capitalised. As such, the following project cost without FERV has been accepted for the purpose of tariff after reducing financing charges (front-end fee on HDFC- II loan by Rs 50 lakh).

| (Rs. in lakh)                                                                         |           |
|---------------------------------------------------------------------------------------|-----------|
| Apportioned Project Cost as on the date of commercial operation of Unit-I (1.9.2002)  | 179638.00 |
| Project cost/Gross Block as on 1.3.2003 (the date of commercial operation of Unit-II) | 324308.00 |
| Project cost as on 31.3.2003                                                          | 324308.00 |

17. The anticipated capital expenditure of Rs.349.18 crore beyond 1.3.2003 is indicated to be excluding variation due to ERV and price escalation beyond 1.3.2003. The petitioner has also stated that the anticipated capitalization beyond 1.3.2003 may also vary on account of settlement of extra claim of contractors. This has been taken on record and shall be kept in view while dealing with additional capitalization in future.

18. The project cost includes capitalised initial spares to the tune of Rs.14.52 crore as on 1.9.2002, the date of commercial operation of Unit-I and Rs.5.57crore as on 1.3.2003, the date of commercial operation of Unit-II, totaling to Rs.20.09 crore, which is less than initial spares of Rs. 74.57 crore considered in the approved project cost.

#### **Additional Capitalisation**

19. As per clause 1.10 of the notification dated 26.3.2001, any additional capitalization less than 20% of project cost and incurred after the date of commercial operation during the tariff period can be considered during the next tariff period.

20. The petitioner's claim for additional capitalisation of Rs.76.97 crore for the period 1.9.2002 to 28.2.2003 is in the nature of balance payments or on the works within the scope of the approved project cost and has been allowed to be capitalised. The amount of additional capitalisation of Rs. 18.87 crore after the date of commercial operation of the generating station for the period 1.3.2003 to 31.3.2003, has not been considered in this tariff period because the percentage of additional capitalisation is below 20% of the approved project cost.

21. The petitioner has also considered anticipated additional capitalisation of Rs. 164.14 crore for the year 2003-2004. This additional capitalisation has not been considered for the tariff computations in terms of clause 1.10 of the notification dated 26.3.2001 noticed above.

22. As such, the following project cost without FERV has been accepted for the purpose of tariff after reducing financing charges (front-end fee on HDFC- II loan by Rs 50 lakh).

| ( Rs. in lakh)                                                                           |           |
|------------------------------------------------------------------------------------------|-----------|
| Apportioned Project Cost as on the date of commercial operation of Unit-I (i.e 1.9.2002) | 179638.00 |
| Project cost/Gross Block as on 1.3.2003 (Date of commercial operation of Unit-II)        | 324308.00 |
| Project cost as on 31.3.2003                                                             | 324308.00 |

23. The actual FERV for the period 1.9.2002 to 31.3.2003 worked out on foreign loans is of the order of Rs.(-)6891 lakh, out of which FERV of an amount of Rs.(-)6232 lakh for the period from 1.3.2003 to 31.3.2003 is stated to have been capitalised by the petitioner. The balance FERV has been allocated for the period

1.9.2002 to 28.2.2003 , though the petitioner has considered 'Nil' FERV for the period 1.9.2002 to 28.2.2003. Based on the above, for the tariff periods 1.9.2002 to 28.2.2003 and 1.3.2003 to 31.3.2003, the opening and closing capital cost as on relevant dates, as tabulated below, has been considered in the present tariff computation:

|                      | (Rs in lakh)               |                            |                            |
|----------------------|----------------------------|----------------------------|----------------------------|
|                      | 2002-03                    |                            | 2003-04                    |
|                      | From 1.9.2002 to 28.2.2003 | From 1.3.2003 to 31.3.2003 | From 1.4.2003 to 31.3.2004 |
| Capital Cost         |                            |                            |                            |
| Opening Balance      | 179638                     | 324308                     | 318076                     |
| Addition-Due to FERV | -659                       | -6232                      | 0                          |
| Addition-Due to ACE  | 7697                       | 0                          | 0                          |
| Closing Balance      | 186676                     | 318076                     | 318076                     |

#### DEBT-EQUITY RATIO

24. As per the notification dated 26.3.2001, the interest on loan capital and return on equity are to be computed, as per the financial package approved by CEA or an appropriate independent agency, as the case may be.

25. TEC for Simhadari TPP was approved by CEA with the financial package with debt-equity in the ratio of 70:30. However, the actual debt and equity employed is in the ratio of 75.4:24.6. The actual debt-equity ratio has been considered for computation of tariff as the final approved financial package has not been placed on record by the petitioner.

#### RETURN ON EQUITY

26. As per the notification dated 26.3.2001, return on equity shall be computed on the paid up and subscribed capital and shall be 16% of such capital. The petitioner

has claimed return on equity @ 10%. The respondent has, however, submitted that that return on equity should be payable at 10%. In case of generating stations, return on equity was charged in tariff @ 12% per annum till 31.10.1998. However, it was increased to 16% with effect from 1.11.1998. The respondent has contended that there was no justification to increase return on equity to 16%. We do not find any justification in support of the issue raised since the notification dated 26.3.2001 provides for return on equity at the rate of 16%. In our computation of tariff, return on equity @ 16% per annum has been allowed. The charges payable by the respondent on account of return on equity are as under:

|                          | (Rs in lakh)             |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|
|                          | 2002-03                  |                          | 2003-04                  |
|                          | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to<br>31.3.2004 |
| Opening Balance          | 44218                    | 79829                    | 77782                    |
| Addition                 | 3779                     | 0                        | 0                        |
| Closing Balance          | 47998                    | 79829                    | 77782                    |
| Average Equity           | 46108                    | 79829                    | 77782                    |
| Rate of Return on Equity | 16.00%                   | 16.00%                   | 16.00%                   |
| <b>Return on Equity</b>  | <b>7377</b>              | <b>12773</b>             | <b>12445</b>             |

27. The variation between the claim of the petitioner and the amount allowed by us under the head "return on equity" is explained as under:

- (a) Actual debt and equity up to 1.3.2003, the date commercial operation of the generating station which is in the ratio of 75.4:24.6 has been considered in the working as against the notional debt-equity in the ratio of 70:30 considered by the petitioner.
- (b) Rejection of petitioner's claim for estimated additional capital expenditure of Rs.16414 lakh for the year 2003-04.
- (c) Rejection of petitioner's claim for additional capitalisation of Rs.1888 lakh for the period 1.3.2003 to 31.3.2003 and up front fees of Rs.50 lakh capitalised by the petitioner on HDFC-II loan.

## INTEREST ON LOAN

28. As per the notification dated 26.3.2001, the interest on loan capital shall be computed on the outstanding loans, duly taking into account the schedule of repayment, as per the financial package approved by CEA or an appropriate independent agency, as the case may be.

29. The methodology adopted for computation of interest on loan is summarised below:

(a) The gross actual loan (opening) as on 1.9.2002 has been worked out from the gross actual loan (opening) as on 1.3.2003 in the same ratio of capital cost considered as on 1.9.2002 and 1.3.2003 which is as detailed below:

| (Rs in lakh)              |                |                |
|---------------------------|----------------|----------------|
| Period                    | As on 1.9.2002 | As on 1.3.2003 |
| Capital cost              | 179638         | 324308         |
| Actual Gross loan opening | 135420         | 244479         |

(b) The interest on loan has been calculated on the basis of actual loan outstanding as worked out and based on the information regarding the repayment schedule given in the petition.

(c) The loan draws up to 1.3.2003, that is, the date of commercial operation of the generating station have been considered.

(d) HDFC-III loan carries floating rate of interest. Therefore, interest rate prevailing as on 1.4.2003 has been considered for interest computation for the period 1.4.2003 onwards. However, interest on loan allowed is subject to adjustment on the basis of actual rate of interest applicable for the period 1.4.2003 onwards

(e) In case of HDFC-III loan, up front fees have not been allowed for working out interest rate as the same was already charged to IDC.

(f) In case of Bonds-XII series, only those financial charges which are of recurring nature and are to be charged annually have been allowed.

(g) The financial charges @ 0.10% in case of JBIC-I, JBIC-II and JBIC-III loans have not been considered for working out the interest rate. However, the Govt. Guarantee fees @ 1.20% per annum in case of above loans have been allowed.

30. The necessary details of computation of interest on loan are appended hereinbelow:

|                                              | 2002-03                  |                          | 2003-04               |
|----------------------------------------------|--------------------------|--------------------------|-----------------------|
|                                              | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to 31.3.2004 |
| Gross Loan - Opening                         | 135420                   | 244479                   | 240294                |
| Cumulative Repayment up to the Previous Year | 0                        | 0                        | 0                     |
| Net Loan-Opening                             | 135420                   | 244479                   | 240294                |
| Addition/Drawl                               | 3918                     | 0                        | 0                     |
| Increase/ Decrease due to FERV               | -1499                    |                          |                       |
| Repayments of loan during the year           | 0                        | 0                        | 0                     |
| Net Loan-Closing                             | 137838                   | 240294                   | 240294                |
| Rate of Interest                             | 3.81%                    |                          |                       |
| <b>Interest</b>                              | <b>5208</b>              | <b>9254</b>              | <b>9121</b>           |

31. The detailed calculations in support of interest on loan capital are appended below.

(Rs in lakh)

|                          | 2002-03                  |                          | 2003-04                 |
|--------------------------|--------------------------|--------------------------|-------------------------|
|                          | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to<br>1.3.2004 |
| Days in the Year         | 365                      | 365                      | 366                     |
| Period (days)            | 181                      | 31                       | 366                     |
| <b>1HDFC-III</b>         |                          |                          |                         |
| Opening Balance          | 10000                    | 10000                    | 10000                   |
| Addition                 | 0                        | 0                        | 0                       |
| Repayment                | 0                        | 0                        | 0                       |
| Net Loan-Closing         | 10000                    | 10000                    | 10000                   |
| Rate of Interest         | 11.35%                   | 11.25%                   | 11.25%                  |
| Interest                 | 563                      | 96                       | 1125                    |
| <b>2BONDS-XII series</b> |                          |                          |                         |
| Opening Balance          | 10000                    | 10000                    | 10000                   |
| Addition                 | 0                        | 0                        | 0                       |
| Repayment                | 0                        | 0                        | 0                       |
| Net Loan-Closing         | 10000                    | 10000                    | 10000                   |
| Rate of Interest         | 10.05%                   | 10.05%                   | 10.05%                  |
| Interest                 | 498                      | 85                       | 1005                    |
| <b>3JBIC-I</b>           |                          |                          |                         |
| Opening Balance          | 78746                    | 77890                    | 76438                   |
| Addition                 | 166                      | 0                        | 0                       |
| Repayment                | 0                        | 0                        | 0                       |
| Net Loan-Closing         | 77890                    | 76438                    | 76438                   |
| Rate of Interest         | 3.50%                    | 3.50%                    | 3.50%                   |
| Interest                 | 1368                     | 232                      | 2675                    |
| ERV                      | -1023                    | -1452                    | 0                       |
| <b>4JBIC-II</b>          |                          |                          |                         |

|                   |        |        |        |
|-------------------|--------|--------|--------|
| Opening Balance   | 48316  | 48117  | 47220  |
| Addition          | 412    | 0      | 0      |
| Repayment         | 0      | 0      | 0      |
| Net Loan-Closing  | 48117  | 47220  | 47220  |
| Rate of Interest  | 3.00%  | 3.00%  | 3.00%  |
| Interest          | 723    | 123    | 1417   |
| ERV               | -611   | -897   | 0      |
| <b>5JBIC-III</b>  |        |        |        |
| Opening Balance   | 93050  | 98472  | 96636  |
| Addition          | 6494   | 0      | 0      |
| Repayment         | 0      | 0      | 0      |
| Net Loan-Closing  | 98472  | 96636  | 96636  |
| Rate of Interest  | 3.00%  | 3.00%  | 3.00%  |
| Interest          | 1428   | 251    | 2899   |
| ERV               | -1072  | -1836  | 0      |
| <b>Total loan</b> |        |        |        |
| Opening Balance   | 240113 | 244479 | 240294 |
| Addition/Drawl    | 7073   | 0      | 0      |
| Repayment         | 0      | 0      | 0      |
| Net Loan-Closing  | 244479 | 240294 | 240294 |
| Average loan      | 242296 | 242387 | 240294 |
| Rate of Interest  | 3.81%  |        |        |
| Interest          | 4580   | 786    | 9121   |
| ERV               | -2707  | -4185  | 0      |

32. The difference between the amount of interest on loan claimed and that allowed is on account of the fact that actual debt and equity up to 1.3.2003, the date commercial operation of the generating station which is in the ratio of 75.4:24.6 has been considered in the working as against the notional debt-equity in the ratio of 70:30 considered by the petitioner.

## DEPRECIATION

33. The notification dated 26.3.2001, prescribes that the value base for the purpose of depreciation shall be historical cost of the asset and the depreciation shall be calculated annually as per straight line method at the rates of depreciation prescribed in the schedule attached thereto.

34. Depreciation for the tariff period has been calculated by taking the individual assets and their depreciation rates as per the notification dated 26.3.2001, which also stipulates that the depreciation shall be chargeable from the first year of operation on *pro-rata* basis. The weighted averaged depreciation rate has been calculated by taking the individual assets of the gross block as on 31.8.2002 and 28.2.2003 and their depreciation rates as per the notification dated. 26.3.2001. The asset-wise depreciation rate as worked out and considered in the present computations is 3.68% as on 31.8.2002 and 3.72% as on 28.2.2003 against 3.69% and 3.73% considered by the petitioner. The depreciation has been worked out on the average of opening and closing gross block during the year. The necessary details in support of computation of depreciation are appended below.

(Rs. in lakh)

|                                                           | 2002-03                  |                          | 2003-04                     |
|-----------------------------------------------------------|--------------------------|--------------------------|-----------------------------|
|                                                           | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003<br>to<br>31.3.2004 |
| Rate Of Depreciation                                      | 3.68%                    | 3.72%                    | 3.72%                       |
| Depreciation recovered in tariff                          | 6748                     | 11957                    | 11841                       |
| Advance against Depreciation<br>(AAD) recovered in tariff | 0                        | 0                        | 0                           |
| <b>Depreciation</b>                                       | <b>6748</b>              | <b>11957</b>             | <b>11841</b>                |
| Cumulative Depreciation/<br>Advance Against Depreciation  | 3346                     | 4362                     | 16203                       |

35. The difference between the petitioner's claim on account of depreciation and the depreciation actually allowed is on account of the following reasons:

- (i) The depreciation has been allowed based on the capital cost as on 1.9.2002 @ 50 % of anticipated completion cost which works out to Rs. 1796.38 crore, against the actual capital expenditure of Rs. 2140.38 crore considered in the petition.
- (ii) Rejection of petitioner's claim for estimated additional capital expenditure of Rs.16414 lakh for the year 2003-04.
- (iii) Rejection of petitioner's claim for additional capitalisation of Rs.1888 lakh for the period 1.3.2003 to 31.3.2003 and up front fees of 50 lakh capitalised by the petitioner on HDFC-III loan.
- (iv) Depreciation rate of 3.68% as on 31.8.2002 and of 3.72% as on 28.2.2003 have been considered in the working though the petitioner had claimed depreciation @ 3.69% and 3.73% for the corresponding period.

#### **ADVANCE AGAINST DEPRECIATION**

36. As per the notification dated 26.3.2001, Advance Against Depreciation shall be permitted wherever originally scheduled loan repayment exceeds the depreciation allowable and shall be computed as follows:

AAD= Originally scheduled loan repayment amount subject to a ceiling of 1/12<sup>th</sup> of original loan amount minus depreciation as per schedule.

37. The actual gross loan and actual repayment as on 1.9.2002 has been considered for computing Advance Against Depreciation. The petitioner is not entitled to claim any Advance Against Depreciation as shown below:

(Rs. in lakh)

|                                          | 2002-03                  |                          | 2003-04               |
|------------------------------------------|--------------------------|--------------------------|-----------------------|
|                                          | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to 31.3.2004 |
| 1/12 <sup>th</sup> of Loan(s)            | 11285                    | 20373                    | 20025                 |
| Scheduled<br>Repayment of the<br>Loan(s) | 0                        | 0                        | 0                     |
| Minimum of the above                     | 0                        | 0                        | 0                     |
| Depreciation during<br>the year          | 6748                     | 11957                    | 11841                 |
| <b>Advance Against<br/>Depreciation</b>  | <b>0</b>                 | <b>0</b>                 | <b>0</b>              |

### O&M EXPENSES

38. The notification dated 26.3.2001 lays down that the base O&M expenses for the new generating stations shall be fixed at 2.5% of the actual capital cost as approved by CEA or an appropriate Independent agency, as the case may be, in the year of commissioning and shall be escalated @10% per annum for subsequent years to arrive at O&M expenses for the base year 1999-2000 level. Thereafter, the base O&M expenses shall be further escalated at the rate of 6% per annum to arrive at permissible O & M expenses for the relevant year.

39. In the present case, the base year is 2002-2003 when both the units of the generating station were declared under commercial operation. In accordance with the methodology prescribed, the petitioner shall be entitled to O&M expenses in tariff as computed hereinbelow:

(Rs. in lakh)

|  | 2002-03                  |                          | 2003-04                     |
|--|--------------------------|--------------------------|-----------------------------|
|  | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003<br>to<br>31.3.2004 |
|  |                          |                          |                             |

|                                |             |             |             |
|--------------------------------|-------------|-------------|-------------|
| %age of Capital Cost           | 2.50%       |             |             |
| Escalation Factor after 1 year | 6.00%       |             |             |
| Unit- I                        | 4491        | 4491        | 4648        |
| Addition -Unit - I             | 88          | 88          | 179         |
| Unit- II                       |             | 3441        | 3458        |
| Addition -Unit - II            |             | -78         | -156        |
| <b>Total</b>                   | <b>4579</b> | <b>7942</b> | <b>8129</b> |

40. The differences between the petitioner's claim on account of O&M expenses and those allowed by us in this order are primarily on account of the following reasons.

- (i) The depreciation has been allowed based on the capital cost as on 1.9.2002 @ 50 % of anticipated completion cost which works out to Rs. 1796.38 crore, against the actual capital expenditure of Rs. 2140.38 crore considered in the petition.
- (ii) Rejection of petitioner's claim for estimated additional capital expenditure of Rs.16414 lakh for the year 2003-04.
- (iii) Rejection of petitioner's claim for additional capitalisation of Rs.1888 lakh for the period 1.3.2003 to 31.3.2003 and up front fees of 50 lakh capitalised by the petitioner on HDFC-III loan.

#### **INTEREST ON WORKING CAPITAL**

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

- (a) Fuel Cost: As per the notification dated 26.3.2001, fuel cost for one month corresponding to normative Target Availability is permissible. Accordingly, the fuel cost is worked out for one month on the basis of operational parameters as given in the notification dated 26.3.2001.

- (b) Coal stock : As per the notification dated 26.3.2001, reasonable fuel stock as actually maintained but limited to 15 days for pit head station and 30 days for non-pit head stations, corresponding to Target Availability is permissible. Accordingly, the coal stock has been worked out for 30 days on the basis of the prescribed operational parameters. The actual coal stock value as per audited balance sheet of Simhadri TPP as on 31.8.2002 for the period 1.9.2002 to 28.2.2003 and actual coal stock value as per audited balance sheet of Simhadri TPP as on 28.2.2003 for the period 1.3.2003 onwards have been considered.
- (c) O&M Expenses: As per the notification dated 26.3.2001, operation and maintenance expenses (cash) for one month are permissible as a part of the working capital. Accordingly, O&M expenses for working capital has been worked out for 1 month of O&M expenses considered in tariff of the respective year.
- (d) Oil Stock: As per the notification dated 26.3.2001, 60 days stock of secondary fuel oil, corresponding to Target Availability is permissible. Accordingly, the Oil stock is considered for 60 days based on the specified operational parameters.
- (e) Spares: As per the notification dated 26.3.2001, maintenance spares at actuals subject to a maximum of 1% of the capital cost but not exceeding 1 year's requirements less value of 1/5th of initial spares already capitalised for first 5 years are required to be considered in the working capital. Accordingly, the spares requirement for the purpose of working capital has been worked out @ 1% of the capital cost less value of 1/5th of initial spares already capitalised. The amount of initial spares

stated to be capitalized by the petitioner as on 1.9.2002 and 1.3.2003 is Rs. 1452 lakh and Rs. 557 lakh respectively, totalling to Rs. 2009 lakh .

- (f) Receivables: As per the notification dated 26.3.2001, receivables will be equivalent to two months average billing for sale of electricity calculated on normative Target Availability. Accordingly, receivables have been worked out on the basis of two months of fixed and variable charges.

42. The notification dated 26.3.2001 is silent about the financing of the working capital margin. Therefore the return and interest is not separately calculated on working capital margin and interest on the total working capital is worked out.

43. SBI PLR of 11.5% as on 1.4.2002 has been considered as the rate of interest on working capital in line with the Commission's earlier decision.

44. The necessary details in support of calculation of Interest on Working Capital are appended below:

|                                  | (Rs. in lakh)            |                          |                          |
|----------------------------------|--------------------------|--------------------------|--------------------------|
|                                  | 2002-03                  |                          | 2003-04                  |
|                                  | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to<br>31.3.2004 |
| Days in the Year                 | 365                      | 365                      | 366                      |
| Period (days)                    | <b>181</b>               | <b>31</b>                | <b>366</b>               |
| Fuel Cost                        | 2439                     | 4748                     | 4683                     |
| Coal Stock                       | 2220                     | 2362                     | 2362                     |
| Oil stock                        | 371                      | 632                      | 566                      |
| O & M expenses                   | 382                      | 662                      | 677                      |
| Spares <sup>1</sup>              | 1506                     | 2841                     | 2779                     |
| Receivables- 2 months            | 9159                     | 16990                    | 16787                    |
| Total Working Capital            | 16077                    | 28235                    | 27854                    |
| Interest rate on working capital | 11.00%                   | 10.75%                   | 10.75%                   |
| Interest on Working Capital      | <b>1768</b>              | <b>3035</b>              | <b>2994</b>              |

45. The reasons for differences under the head "interest on working capital" are summarised below:

- (i) The difference in the operational parameters and price of fuel considered by the Commission and the petitioner.
- (ii) The values of actual coal stock as per audited balance sheet of the generating station as on 31.8.2002 for the period 1.9.2002 to 28.2.2003 and as on 28.2.2003 for the period 1.3.2003 onwards have been considered.
- (iii) Difference in O&M expenses as explained above
- (iv) 40% of O&M expenses minus 1/5th of initial spares capitalised in the petition have been restricted to 1% of opening capital cost as on 1.9.2002 and 1.3.2003 minus 1/5th of initial spares capitalised.
- (v) SBI PLR of 11% prevailing as on 1.9.2002 for the period 1.9.2002 to 28.2.2003 and SBI PLR of 10.75 % prevailing as on 1.3.2003 has been considered as the rate of interest on working capital for the tariff period 1.3.2003 onwards though the petitioner has claimed interest @ 11.79% through out.

**ANNUAL FIXED CHARGES**

46. The annual fixed charges for the period 1.4.1999 to 31.3.2004 allowed in this order are summed up as below:

| (Rs. in lakh) |             |         |         |
|---------------|-------------|---------|---------|
|               | Particulars | 2002-03 | 2003-04 |
|               |             |         |         |



|   |                                 | 1.9.2002 to<br>28.2.2003 | 1.3.2003 to<br>31.3.2003 | 1.4.2003 to<br>31.3.2004 |
|---|---------------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Interest on Loan                | 5208                     | 9254                     | 9121                     |
| 2 | Interest on Working Capital     | 1768                     | 3035                     | 2994                     |
| 3 | Depreciation                    | 6748                     | 11957                    | 11841                    |
| 4 | Advance Against<br>Depreciation | 0                        | 0                        | 0                        |
| 5 | Return on Equity                | 7377                     | 12773                    | 12445                    |
| 6 | O & M Expenses                  | 4579                     | 7942                     | 8129                     |
|   | <b>TOTAL</b>                    | <b>25681</b>             | <b>44961</b>             | <b>44531</b>             |

### VARIABLE CHARGES

47. The petitioner has claimed the energy charges based on the operational norms applicable to coal-based generating stations as per the notification dated 26.3.2001. The Commission has decided to adopt the unit price of coal as per PSL. The fuel price and GCV furnished by the petitioner for the months of June, July and August 2002 have been considered for the base energy charge computations and the base energy charges are summarised below:

| Period                                      |          | 1.9.2002 to<br>28.2.2003                   | 1.3.2003 to<br>31.8.2003                                        | 1.9.2003 to<br>31.3.2004 |
|---------------------------------------------|----------|--------------------------------------------|-----------------------------------------------------------------|--------------------------|
| Description                                 | Unit     | Unit -I (under<br>Stabilization<br>Period) | Unit-I (Normal)<br>+Unit-II ( Under<br>Stabilisation<br>period) | Unit-I &II<br>( Normal)  |
| Capacity                                    | MW       | 500                                        | 1000.00                                                         | 1000                     |
| PLF corresponding to<br>Availability of 80% | %        | 80                                         | 80.00                                                           | 80                       |
| Gross Station Heat<br>Rate                  | kCal/kWh | 2600                                       | 2550.00                                                         | 2500                     |
| Specific Fuel Oil<br>Consumption            | ml/kWh   | 5                                          | 4.25                                                            | 3.5                      |
| Aux. Energy<br>Consumption                  | %        | 8.5                                        | 8.25                                                            | 8                        |
| Weighted Average<br>GCV of HFO              | kCal/l   | 9787                                       | 9787.00                                                         | 9787                     |
| Weighted Average<br>GCV of Coal             | kCal/Kg  | 3508.00                                    | 3508.00                                                         | 3508.00                  |

|                                                  |                  |              |              |              |
|--------------------------------------------------|------------------|--------------|--------------|--------------|
| Weighted Average Price of HFO                    | Rs./KL           | 12916.97     | 12916.97     | 12916.97     |
| Weighted Average Price of Coal                   | Rs./MT           | 1060.24      | 1060.24      | 1060.24      |
| Rate of Energy Charge from Sec. Fuel Oil         | Paise/kWh        | 6.46         | 5.49         | 4.52         |
| Heat Contributed from SFO                        | kCal/kWh         | 48.94        | 41.59        | 34.25        |
| Heat Contributed from Coal                       | kCal/kWh         | 2551.07      | 2508.41      | 2465.75      |
| Specific Coal Consumption                        | Kg/kWh           | 0.73         | 0.72         | 0.70         |
| Rate of Energy Charge from Coal                  | Paise/kWh        | 77.10        | 75.81        | 74.52        |
| <b>Rate of Energy Charge ex-bus per kWh Sent</b> | <b>Paise/kWh</b> | <b>91.32</b> | <b>88.61</b> | <b>85.92</b> |

48. The base energy charges have been calculated on base value of GCV, base price of fuel and normative operating parameters as indicated above. The notification dated 26.3.2001 provides for fuel price adjustment for variation in fuel price and GCV of fuels. It also provides that for the purpose of calculating the tariff, the operating parameters, that is, 'Station Heat Rate', 'Secondary Fuel Oil Consumption' and 'Auxiliary Consumption' shall be determined on the basis of actuals or norms, whichever is lower. Therefore, the base energy charges approved shall be subject to standard fuel price variation and adjustment based on actual operational parameters achieved or the normative parameters, whichever is lower.

49. The Base Energy Charges (BEC) shall however, be subject to fuel price adjustment as per following formula:

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

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,

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

$$B = \frac{10}{(100 - AC_n)} \left[ (SHR_n) \left\{ (P_{cm}/K_{cm}) - (P_{cs}/K_{cs}) \right\} - (SFC_n) \left\{ (K_{om} \times P_{cm}/K_{cm}) - (K_{os} \times P_{cs}/K_{cs}) \right\} \right]$$

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 as per PSL for the month in Rs./KL.

K<sub>om</sub> - Weighted average GCV of fuel oils fired at boiler front for the month in Kcal/Litre

P<sub>os</sub> - Base value of price of fuel oils as taken for determination of base energy charge in tariff order in Rs. / KL.

K<sub>os</sub> - Base value of gross calorific value of fuel oils as taken for determination of base energy charge in tariff order in Kcal/Litre

P<sub>cm</sub> - Weighted average price of coal as per PSL for the month at the power station in Rs. / MT.

K<sub>cm</sub> - Weighted average gross calorific value of coal fired at boiler front for the month in Kcal/Kg

P<sub>cs</sub> - Base value of price of coal as taken for determination of base energy charge in tariff order in Rs. /MT

K<sub>cs</sub> - Base value of gross calorific value of coal as taken determination of base energy charge in tariff order in kCal/Kg

50. The above formula is different from the FPA formula earlier specified in Commission's tariff orders in case of Singrauli STPS, Ramagundam STPs etc. based on Ministry of Power's project specific tariff notifications. The FPA formula has been corrected considering variation in heat value of oil and specifying correct unit of specific fuel oil consumption. The correctness of the above corrected formula has been verified by using actual numbers.

51. The energy charges shall be finally adjusted on annual basis as per actual annual average values of operating parameters achieved for the station i.e. 'Station Heat Rate', 'Auxiliary Energy Consumption' and 'Specific Fuel Oil Consumption' provided any or all of the actual operating parameters are lower than their respective normative values. The annual energy charge adjustment shall be done as per the formula given below: -

$$AECA = (P - Q - R) \times 10^{-9}$$

Where,

AECA - Annual Energy Charge Adjustment in Rs. Crore

P - Energy charge payable for the year based on operational parameters (Actual or normative whichever is lower) and weighted average price and GCV of fuels for the year in paise

Q - Total amount recovered as monthly fuel price adjustment for the year in Paise

R - Total amount recovered as base energy charge for the year in Paise

And,

$$P = (ESO_{\text{Annual}}) \times 10 \times \left[ \frac{\{(SFC_A) \times P_O\} + \{(SHR_A) - (SFC_A) \times K_O / 1000\} \times P_C / K_C}{\dots} \right]$$

$$\{100 - (AC_A)\}$$

$$Q = \sum_{mi=1}^{12} (FPA_{mi}) \times (ESO_{mi})$$

$$R = (ESO_{Annual}) \times BEC$$

Where,

$ESO_{Annual}$  - Energy sent out in the year in kwh sent out based on actual draws for the tariff period up to 31.3.2001 and based on generation schedules given by RLDC for the tariff period 1.4.2001 to 31.3.2004

$SFC_A$  - Actual average secondary fuel oil consumption of the station for the year in l/kWh sent out

$K_o$  - Weighted average GCV of secondary fuel oil for the year in kCal/Litre

$P_o$  - Weighted average price of secondary fuel oil for the year in Rs./KL

$SHR_A$  - Actual yearly weighted average gross station heat rate in kCal/kWh generated

$P_c$  - Weighted average price of coal for the year in Rs./MT

$K_c$  - Weighted average GCV of coal for the year in kCal/kg

$FPA_{mi}$  - Fuel price adjustment for the  $i^{th}$  month in paisa/kWh sent out

$ESO_{mi}$  - Energy sent out for the  $i^{th}$  month in kWh sent out based on actual draws for the tariff period up to 31.3.2001 and based on generation schedules given by RLDC for the tariff period 1.4.2001 to 31.3.2004

$BEC$  - Base Energy Charge as per tariff order in Paise/kWh sent out

$AC$  - Actual average Auxiliary Consumption of the station for the year in percentage.

52. In case the adjustment period is less than a year, adjustment shall be done for the actual period.

53. The petitioner has already recovered fixed and variable charges from the respondent based on the interim orders of the Commission. The amount already recovered shall be adjusted against the revised charges decided by us through this order.

54. In addition to the charges approved in this order, 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 notification dated 26.3.2001, as applicable.

55. This order disposes of Petition No 2/2002.

Sd.

(K.N. SINHA)  
MEMBER

Sd.

(ASHOK BASU)  
CHAIRMAN

New Delhi dated the 19<sup>th</sup> May, 2004