

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram:**

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

**Petition No. 36/2003**

**In the matter of**

Approval of Generation Tariff of Kopili Hydroelectric Project (250 MW)

**And in the matter of**

North Eastern Electric Power Corporation Ltd.

**Petitioner**

**Vs**

1. Assam State Electricity Board, Guwahati
2. Meghalaya State Electricity Board, Shillong
3. Department of Power, Govt of Arunchal Pradesh, Itanagar,
4. Electricity Department, Govt. of Manipur, Imphal
5. Electricity Department, Govt. of Mizoram, Aizawl
6. Electricity Department., Govt. of Nagaland, Kohima
7. Electricity Department, Govt. of Tripura, Agartala

**Respondents**

**The following were present:**

1. Shri V. Venkanna, NEEPCO
2. Shri P.K. Agarwal, NEEPCO
3. Shri P. Bhattacharya, NEEPCO
4. Shri P.K. Singha, NEEPCO
5. Shri S.G. Tempe, SE, ASEB

**ORDER  
(DATE OF HEARING 5.2.2004)**

The petitioner, North Eastern Electric Power Corporation Ltd has filed the petition for approval of tariff for Kopili Hydroelectric Project (250 MW) (Kopili HEP) for the period from 1.4.2001 to 31.3.2004 based on terms and conditions of tariff notified by the Commission on 26.3.2001 under the Central Electricity Regulatory Commission

(Terms and Conditions of Tariff) Regulations, 2001 (hereinafter referred to as “the notification dated 26.3.2001”).

2. Kopili Hydroelectric Project comprises of two generating stations, namely Khandong generating station (2X25 MW) and Kopili generating station (4X50 MW). The dates of commercial operation of the respective unit of these generating stations are indicated below:

**Khandong Generating Station**

Unit-I: 7.3.1984

Unit-II: 4.5.1984

**Kopili Generating Station**

Unit-I: 5.7.1988

Unit-II: 22.6.1988

Unit-III: 1.5.1997

Unit-IV: 12.7.1997

3. The administrative approval for Kopili HEP (150 MW) , called the Stage I, for Rs. 243.82 crore was accorded by the Central Government, Ministry of Home Affairs vide letter No. III-14013/26/77- NE II dated 1.10.1991, comprising Khandong generating station (2x25 MW) and Kopili generating station (2x50 MW). Under the Stage I extension, two units of 50 MW each were added to the then existing Kopili generating station, the original TEC cost of which was Rs. 66.70 crore. The revised cost estimates for Kopili Stage I extension (2x50 MW) were sanctioned at Rs. 134.48 crore by the Central Government in Ministry of Home Affairs letter No. 6/4/49-Hydel II dated 27.7.1999. Subsequently, an amount of Rs. 9.50 crore was sanctioned by the Central Government in Ministry of Power vide letter dated 27.3.1998 for augmentation

and modernization of Kopili Generating Station. It is noted that break-up of the sanctioned cost separately for Khandong and Kopili generating stations was not indicated in the administrative approvals granted by the Central Government under its letter dated 1.10.1991.

4. The petitioner has claimed tariff as per the following details:

(Rs in lakh)

| Particulars                  | Khandong Generating Station |                |                | Kopili Generating Station |                |                |
|------------------------------|-----------------------------|----------------|----------------|---------------------------|----------------|----------------|
|                              | 2001-02                     | 2002-03        | 2003-04        | 2001-02                   | 2002-03        | 2003-04        |
| Interest on Loan             | 209.00                      | 53.00          | 27.00          | 1463.00                   | 986.00         | 896.00         |
| Interest on Working Capital  | 26.00                       | 26.00          | 27.00          | 79.00                     | 80.00          | 82.00          |
| Depreciation                 | 332.00                      | 332.00         | 332.00         | 690.00                    | 696.00         | 737.00         |
| Advance against Depreciation | 0.00                        | 0.00           | 0.00           | 0.00                      | 0.00           | 0.00           |
| Return on Equity             | 1024.00                     | 1024.00        | 1024.00        | 2224.00                   | 2249.00        | 2249.00        |
| O&M Expenses                 | 616.00                      | 653.00         | 692.00         | 1935.00                   | 2051.00        | 2174.00        |
| <b>Total</b>                 | <b>2207.00</b>              | <b>2088.00</b> | <b>2102.00</b> | <b>6391.00</b>            | <b>6062.00</b> | <b>6138.00</b> |

5. The details given by the petitioner in support of its claim for interest on working capital are as hereunder:

(Rs. in lakh)

| Particulars                        | Khandong Generating Station |              |              | Kopili Generating Station |              |              |
|------------------------------------|-----------------------------|--------------|--------------|---------------------------|--------------|--------------|
|                                    | 2001-02                     | 2002-03      | 2003-04      | 2001-02                   | 2002-03      | 2003-04      |
| Spares                             | 0.00                        | 0.00         | 0.00         | 0.00                      | 0.00         | 0.00         |
| O & M expenses 1 month             | 51.00                       | 54.00        | 58.00        | 161.25                    | 170.92       | 181.17       |
| Receivables- months                | 2184.00                     | 184.00       | 184.00       | 560.00                    | 560.00       | 560.00       |
| Total Working Capital              | 235.00                      | 238.00       | 242.00       | 721.25                    | 730.92       | 741.17       |
| Weighted Average Interest Rate     | 11.00%                      | 11.00%       | 11.00%       | 11.00%                    | 11.00%       | 11.00%       |
| <b>Interest on Working Capital</b> | <b>25.85</b>                | <b>26.18</b> | <b>26.62</b> | <b>79.34</b>              | <b>80.40</b> | <b>81.53</b> |

## **CAPITAL COST**

6. In accordance with the notification dated 26.3.2001, the actual expenditure incurred on completion of the project is to form the basis for fixation of tariff. It is further provided that where the actual expenditure exceeds the approved project cost; the excess expenditure as allowed by CEA or an appropriate independent agency, is to be considered for the purpose of fixation of tariff. The terms and conditions notified by the Commission further provide that the capital expenditure of the project should be financed as per the approved financial package set out in the techno-economic clearance of CEA or as approved by an appropriate independent agency. A reasonable amount of capitalised initial spares are to be included in the project cost.

7. Since break-up of approved cost separately for Khandong and Kopili generating stations accorded under letter dated 1.10.1991 is not available, this has been worked out as discussed in the succeeding paragraphs, based on the information furnished by the petitioner.

## **Kopili Generating Station**

8. The petitioner under its affidavit dated 25.3.2004 has submitted details of unit-wise expenditure incurred in respect of Kopili generating station on the date of commercial operation and additional expenditure incurred in the subsequent years up to the year 2000-01. The details of expenditure incurred have been summarised in the following table:

(Rs. in crore)

| Year   | Unit-I      | Unit-II     | Unit-III | Unit-IV | Total      |
|--|-------------|-------------|----------|---------|------------|
| As on 6/88 (the date of commercial operation Unit-II)                        |             | 66.3918     |          |         |            |
| As on 7/88 (the date of commercial operation Unit-I)                         | 66.3918     |             |          |         | 132.7836   |
| Balance as on 31.3.1989  | 66.3918     | 66.3918     |          |         | 132.7836   |
| Additional capital expenditure (ACE) during 1989-90                          | 2.0365      | 2.0365      |          |         | 4.0730     |
| Balance as on 31.3.1990  | 68.4283     | 68.4283     |          |         | 136.8566   |
| ACE during 1990-91   | (-) 0.41    | (-) 0.41    |          |         | (-) 0.82   |
| Balance as on 31.3.1991  | 68.0183     | 68.0183     |          |         | 136.0366   |
| ACE during 1991-92   | (-) 0.00055 | (-) 0.00055 |          |         | (-) 0.0011 |
| Balance as on 31.3.1992  | 68.01775    | 68.01775    |          |         | 136.0355   |
| ACE during 1992-93   | 1.19485     | 1.19485     |          |         | 2.3897     |
| Balance as on 31.3.1993  | 69.2126     | 69.2126     |          |         | 138.4252   |
| ACE during 1993-94   | 0.04517     | 0.04517     |          |         | 0.09034    |
| Balance as on 31.3.1994  | 69.25777    | 69.25777    |          |         | 138.51554  |
| ACE during 1994-95   | (-) 3.16    | (-) 3.16    |          |         | (-) 6.32   |
| Balance as on 31.3.1995  | 66.09777    | 66.09777    |          |         | 132.19554  |
| ACE during 1995-96   | (-) 0.264   | (-) 0.264   |          |         | (-) 0.528  |
| Balance as on 31.3.1996  | 65.83377    | 65.83377    |          |         | 131.66754  |
| ACE during 1996-97   | 0.00        | 0.00        |          |         | 0.00       |
| Balance as on 31.3.1997  | 65.83377    | 65.83377    |          |         | 131.66754  |
| Capital expenditure as on 5/97 (the date of commercial operation Unit-III)   |             |             | 53.0943  |         | 184.76184  |
| Capital expenditure as on 7/97 (the date of commercial operation of Unit-IV) |             |             |          | 53.0943 | 237.85614  |
| ACE during 1997-98   | 0.1325      | 0.1325      |          |         | 0.2650     |
| Balance as on 31.3.1998  | 65.96627    | 65.96627    | 53.0943  | 53.0943 | 238.12114  |
| ACE during 1998-99   | 0.01075     | 0.01075     | 0.468    | 0.468   | 0.9575     |
| Balance as on 31.3.1999  | 65.97702    | 65.97702    | 53.5623  | 53.5623 | 239.07864  |

|                         |          |          |         |         |           |
|-------------------------|----------|----------|---------|---------|-----------|
| ACE during 1999-2000    | 0.0405   | 0.0405   | 0.1795  | 0.1795  | 0.44      |
| Balance as on 31.3.2000 | 66.01752 | 66.01752 | 53.7418 | 53.7418 | 239.51864 |
| ACE during 2000-01      | -2.199   | -2.199   | 3.559   | 3.559   | 2.72      |
| Total As on 31.3.2001   | 63.81852 | 63.81852 | 57.3008 | 57.3008 | 242.23864 |

9. On the basis of the above information furnished by the petitioner, the expenditure incurred on the date of commercial operation of different units of Kopili generating station is worked out as under:

|  |               |
|--|---------------|
|  | (Rs in crore) |
| Expenditure at the date of commercial operation of Unit I              | 66.3918       |
| Total Expenditure at the date of commercial operation of Units I & II  | 132.7836      |
| Total Expenditure at the date of commercial operation of Units I to IV | 237.85614     |

10. The petitioner had earlier filed affidavits on 10.7.2003 and 7.11.2003 in support of the capital expenditure. ASEB has pointed out wide variations in the capital expenditure submitted by the petitioner in two affidavits. ASEB has further submitted that since the information submitted by the petitioner is not supported either by auditor's certificate or its annual reports, the capital cost may be accepted after further scrutiny.

11. The details of actual expenditure incurred at Kopili generating station after commissioning of Units III & IV as furnished by the petitioner in the affidavits dated 10.7.2003, 7.11.2003 and 25.3.2004 are tabulated below:

(Rs. in crore)

| Year    | Affidavit dated 10.7.03 | Affidavit dated 7.11.03 | Affidavit dated 25.3.2004 |
|---------|-------------------------|-------------------------|---------------------------|
| 1997-98 | 273.64                  | 245.96                  | 238.11                    |
| 1998-99 | 274.22                  | 248.77                  | 239.08                    |
| 1999-00 | 274.22                  | 257.38                  | 239.52                    |
| 2000-01 | 274.22                  | 259.80                  | 242.24                    |

12. It has been explained by the petitioner that the asset-wise expenditure details furnished in the affidavits dated 10.7.2003 and dated 7.11.2003 pertain to gross block while those furnished in the affidavit dated 25.3.2004 relate to capital expenditure. It is also be seen from the above table that total expenditure incurred on Kopili generating station at the end of the year 1997-98 ( year of the commissioning of Units III & IV) and subsequent years as furnished by the petitioner under affidavit dated 25.3.2004 is the lowest compared to corresponding figures furnished in two earlier affidavits dated 10.7.2003 and 7.11.2003. As such, the details of expenditure furnished under affidavit dated 25.3.2004 have been considered for tariff purposes.

**Additional Capital Expenditure (ACE) (Up to 31.3.2001)**

***ACE after the dates of commercial operation of Units I & II (5.7.1988 and 22.6.1988)***

13. The petitioner has filed an affidavit dated 13.7.2004, furnishing information regarding asset wise details of ACE after the date of commercial operation of various units and justification for major items of works/assets, which have been summarised below :

(Rs. in crore)

| Year         | ACE              | Reasons   |
|--------------|------------------|---|
| 1989-90      | 4.07             | Amounts of Rs. 1.061 crore and Rs. 1.339 Crore have been incurred for power house civil works and Umrong tunnel respectively. The expenditure of tunnel was for restoration work because of collapse of a portion of HRT due to slide in hill area after commissioning of the project. Other payments are minor in nature and are on account of balance payments of original works. |
| 1990-91      | (-) 0.82         | An insurance claim of Rs. 1.00 crore (Approx) was received towards flood damage which has been credited proportionately to the respective asset.  |
| 1991-92      | (-) 0.0011       | The contract of Dyke work was rescinded due to some contractual problems and restarted by awarding a fresh contract. An amount of Rs. 1.298 Crore has been spent on this account during the year.   |
| 1992-93      | 2.39             | An amount of Rs. 2.06 crore has been incurred on work of Kopili Dyke. Other payments are minor and on account of balance payment of original works.   |
| 1993-94      | 0.09             | An amount Rs. 0.865 crore has been incurred to complete the remaining works of Kopili Dyke. Also, there was reduction in capital expenses due to disposal of certain assets.  |
| 1994-95      | (-) 6.32         | During the year, interest on Govt. loan for Kopili HEP has been reworked as per approved pattern of financing, that is, debt/equity ratio of 1.1 and accordingly the value of assets has been decreased to that extent.   |
| 1995-96      | (-) 0.53         | Due to disposal of certain assets.  |
| 1996-97      | 0.00             | Nil   |
| 1997-98      | 0.27             | Rs. 0.236 crore was paid towards Kopili Dyke work and Rs. 0.029 crore for Umrong tunnel.  |
| 1998-99      | 0.02             | There was no major expenditure. The minor works were within the original scope of works.  |
| 1999-00      | 0.0810           | There was no major expenditure. The minor works were on account of original scope of works.   |
| 2000-01      | (-) 4.398        | The reduction in Govt. loan due to rescheduling of loan and equity as per pattern of financing for Kopili generating station Stage I Extension project has resulted into reduction of interest during construction and assets capitalized an account of this. IDC has been reduced proportionately.   |
| <b>Total</b> | <b>(-) 4.338</b> |   |



14. It is noted that the net expenditure on de-capitalisation for Units I & II during the 12 years period from 1989-90 to 2000-01 works out to Rs. 4.338 crore. The petitioner has furnished sufficient justification for additional capitalisation and de-capitalisation on different assets/ works. On consideration of the matter, de-capitalisation of an amount of Rs. 4.338 crore has been allowed for computation of tariff.

***ACE after the date of commercial operation of Units III & IV (1.5.1997 and 12.7.1997)***

15, The petitioner under its affidavit dated 13.7.2004 has submitted the break-up of ACE during for the years 1998-99 to 2000-01 amounting to Rs. 1.573 crore. These are indicated hereunder:

(Rs. in crore)

| Year         | ACE          | Reasons  |
|--------------|--------------|--|
| 1998-99      | 0.936        | Rs. 0.754 crore has been incurred on remaining civil works of Kopili Power House. Other minor expenses were on sub-station equipment and switchgear.                 |
| 1999-2000    | 0.359        | Rs. 0.20 crore was spent for making balance payments of steel liner and penstock. Other minor expenses were on switchgear, plantation, internal electrification etc. |
| 2000-01      | 0.278        | Expenditure on switchgear.   |
| <b>Total</b> | <b>1.573</b> |  |

16. ACE claimed by the petitioner is found to be justified and in order and has been allowed for tariff fixation.

### **Expenditure on augmentation and modernization**

17. An amount of Rs. 9.50 crore was sanctioned for augmentation and modernization of Kopili generating station. The petitioner vide affidavit dated 13.7.2004 has submitted that against the sanctioned amount of Rs. 9.50 crore, the actual expenditure of Rs. 10.68 crore was incurred, which includes an amount of Rs. 6.84 crore spent for raising the height of Umrong dam during the year 2000-01 and an amount of Rs. 3.84 during the year 2001-02 and installation of radial gates at Umrong dam.

18. In response to the objection raised by ASEB at the hearing on 22.10.2003, regarding the benefits accruing on account of raising the height of Umrong dam, the petitioner vide affidavit dated 7.11.03 has clarified that the design energy of Kopili power station (2 x 50 MW) under Stage-I was 590 MUs. With the commissioning of two additional units of 50 MW each under the Stage I extension it was noted that firm power would not increase proportionately unless the Umrong reservoir capacity was also increased. With the addition in installed capacity and the subsequent increase in firm power after raising level of Umrong Reservoir to 609.60 M, the design energy generation of Kopili generating station has increased to 969.88 MUs from the earlier annual design energy generation of 590 MU. The increase in generation thus works out to 379.88 MU.

19. The petitioner has, therefore, successfully explained that increase in generation of 379.88 MUs is on account of raising of height of Umrong dam by 7.6 meters together with enhancement of capacity of Kopili generating station from 2x50 MW to 4x50 MW. It is seen that total expenditure incurred on augmentation and

modernization works of Kopili generating station during the years 2000-01 & 2001-02 sums up to Rs. 10.68 crore, against the approved cost of Rs. 9.50 crore. However, for computation of tariff for the period 1.4.2001 to 31.3.2004, expenditure of Rs. 6.84 crore incurred during the year 2000-01, that is by 31.3.2001 only is to be taken into account. Therefore, we allow ACE of Rs. 6.84 crore on augmentation and modernization of Kopili generating station up to 31.3.2001 for tariff purposes.

**Cost as on 31.3.2001**

20. Thus, the gross block of Rs. 242.23864 crore as on 31.3.2001, including a sum of Rs. 6.84 crore on augmentation and modernization works of Kopili generating station during the year 2000-01 is being considered for tariff. Initial spares for an amount of Rs. 64.00 lakh (0.36% of the project cost) have been capitalized, and included in the gross block.

**Khandong Generating Station**

21. Year-wise expenditure for Khandong generating station has been shown in the petition as below:

|   | (Rs in crore) |               |
|---|---------------|---------------|
| 1984-85   | 98.28         |               |
| 1985-86   | 115.44        |               |
| 1986-87   | 121.94        |               |
| 1987-88   | 121.94        |               |
| .....   | .....         |               |
| 2000-01   | 121.94        |               |
|   |               | (Rs in crore) |
| Cost on the date of commercial operation of Unit-I (7.3.1984)       | = 98.28       |               |
| Cost on the date of commercial operation of Units I & II (4.5.1984) | = 115.44      |               |

**Additional Capitalisation (Up to 31.3.2001)**

22. The petitioner has not claimed any additional capitalisation at Khandong generating station since the year 1986-87.

**Gross Block as on 31.3.2001**

23. Thus, the gross block as on 31.3.2001 for the purpose tariff shall be Rs. 121.94 crore. Initial spares for an amount of Rs. 66.25 lakh (0.54% of the project cost) have been capitalized, and included in the gross block.

**Total Capital Cost**

24. The total capital cost of Rs. 364.18 crore as on 31.3.2001 for Khandong generating station (Rs. 121.94 crore ) and Kopili generating station (Rs. 242.23864 crore ) is less than the total approved cost of Rs. 387.80 crore.

**ADDITIONAL CAPITALISATION (1.4.2001 to 31.3.2004)**

25. Para 1.10 of the notification dated 26.3.2001 provides that tariff revisions during the tariff period on account of capital expenditure within the approved project cost incurred during the tariff period may be entertained only if such expenditure exceeds 20% of the approved cost. In all cases, where such expenditure is less than 20%, tariff revision shall be considered in the next tariff period.

26. The petitioner has indicated an expenditure of Rs. 3.84 crore during 2001-02 on raising of height of Umong dam. As the expenditure is less than 20% of the approved capital cost of Kopili generating station, this has not been considered for additional capitalisation.

### **DEBT-EQUITY RATIO**

27. In accordance with the notification dated 26.3.2001, the capital expenditure of the project should be financed as per the approved financial package set out in the techno-economic clearance of CEA or as approved by an appropriate independent agency.

28. The debt-equity ratio of 1:1 as approved by the Central Government vide letter dated 23.6.1997 and further confirmed by the letter dated 23.1.2003 has been considered in the calculation. Based on this equity of Rs. 6097.00 lakh and Rs. 12111.93 lakh as on 1.4.2001 has been considered respectively for Khodong generating station and Kopili generating station. The amount of loan considered for these stations are also Rs. 6097.00 lakh and Rs. 12111.93 lakh respectively.

### **REPAYMENT OF LOAN AND INTEREST ON LOAN**

29. As provided in the notification dated 26.3.2001, interest on loan capital is to be computed on the outstanding loan, 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. The interest on loan has been computed based on loan amount, repayment schedule, adjustments, if any, of various loans up to 2003-2004 and actual interest rate indicated by the petitioner in the petition.

30. The petitioner has raised loans from different agencies like Ministry of Home Affairs, Ministry of Power, LIC, HUDCO, Deutsche Bank etc and through various bonds. The loans raised are not project-specific. The petitioner on 10.7.2003 submitted the loan allocations in the prescribed format in respect of Khandong

generating station and Kopili generating station separately but the details furnished are inadequate for the purpose of calculating the annual fixed charges. The revised final details have been submitted on 23.6.2005 superceding all previous submissions. The loan allocations details submitted earlier substantially vary from the revised final submission. The loan agreement details of most of the borrowings are submitted by the petitioner but documents related with loan borrowings from Ministry of Home Affairs and Ministry of Power are not made available. The petitioner has shown its inability to produce these documents. Hence, the letter dated 23.1.2003 from the Central Government relating to rescheduling of loans has been considered as base for computation of interest on Govt of India loans. The loan reconciliation for all the projects owned by the petitioner is carried out on the basis of revised final submission dated 23.6.2005. This has been considered as base for calculation of interest on loan. The difference in interest on loan as per petition and as worked out is primarily due to reallocation of loans by the petitioner in the revised submission and also due to calculation of gross loan in debt: equity ratio of 1:1 and also due to consideration of repayments as per schedule (not at actual) and refinancing of loans.

31. The interest on loan has been worked out in accordance with the principles indicated below:

- (a) The gross deemed loan amount has been worked out on the basis of Debt-Equity ratio of 1:1.
- (b) Cumulative repayment of loan up to 31.3.2001 and the annual repayment for the years 2001-02 to 2003-04 has been worked out as follows:

Actual repayment during the year

or

Repayment 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.

- (c) On the basis of actual rate of interest on actual loans, considering repayment as per schedule, the weighted rate of interest on average loan is worked out and the same is applied on the deemed average loan during the year to arrive at the interest on loan.
- (d) As the capital cost is considered up to 31.3.2001, loan draws up to that date only have been considered.
- (e) In case of Kopili generating station, Arrangers fees, Processing fees, Commitment fees claimed as financing charges against HUDCO loan and Legal Advisory fees & Trusteeship Acceptance fees claimed against PSU 8<sup>th</sup> series bonds have not been allowed.

32. The Commission in its order dated 13.12.2002 in Petition No 94/2002, and other petitions had observed that the benefit of re-financing should be passed on to the beneficiaries and through them the ultimate consumer when a costlier loan is re-financed through cheaper loan with fixed rate of interest. In line with this order, the interest rate applicable on re-financed /substituted loans with fixed rate of interest have been considered in the working. As such, the interest rate applicable on PSU 8<sup>th</sup> series bonds (7.90%) and HUDCO loan (9.75%) have been considered in the working.

33. Loans for Kopili generating station borrowed from Ministry of Home Affairs, mentioned at Sr. No. 14, 18, 28, 29 and 30 under head MHA loans amounting to Rs.

1170.21 lakh are refinanced by raising Syndicated loan. Similarly HUDCO loan has been refinanced from Syndicated loan. As Syndicated loan bears floating interest rate, it has not been considered and interest on loan has been worked considering the original loan and its repayment schedule.

34. The petitioner shall be entitled to the interest on loan as given hereunder:

(Rs. in lakh)

| Particulars   | Khandong Generating Station |             |             | Kopili Generating Station |          |          |
|---|-----------------------------|-------------|-------------|---------------------------|----------|----------|
|   | 2001-02                     | 2002-03     | 2003-04     | 2001-02                   | 2002-03  | 2003-04  |
| Deemed Gross Loan Opening                               | 6097.00                     | 6097.00     | 6097.00     | 12111.93                  | 12111.93 | 12111.93 |
| Cumulative repayment of deemed loan up to previous year | 6097.00                     | 6097.00     | 6097.00     | 8096.97                   | 8826.83  | 9626.03  |
| Opening Balance   | 0.00                        | 0.00        | 0.00        | 4014.96                   | 3285.10  | 2485.90  |
| Additions   | 0.00                        | 0.00        | 0.00        | 0.00                      | 0.00     | 0.00     |
| Repayments  | 0.00                        | 0.00        | 0.00        | 729.87                    | 799.20   | 198.80   |
| Closing Balance   | 0.00                        | 0.00        | 0.00        | 3285.10                   | 2485.90  | 2287.10  |
| Average Loan  | 0.00                        | 0.00        | 0.00        | 3650.03                   | 2885.50  | 2386.50  |
| Weighted Average Rate of Interest                       | 0.00%                       | 0.00%       | 0.00%       | 15.36%                    | 15.31%   | 9.92%    |
| <b>Interest on Loan</b>                                 | <b>0.00</b>                 | <b>0.00</b> | <b>0.00</b> | 560.74                    | 441.90   | 236.81   |

### **DEPRECIATION**

35. As per the notification dated 26.3.2001, the rate base for the purpose of depreciation is the historical cost of the asset. The depreciation is to be calculated as per the straight line method. Further, the total depreciation to be recovered in tariff during the life of the project should not exceed 90% of the approved original cost, which shall include additional capitalisation allowed by the Commission.



36. The weighted average depreciation rate for the tariff period has been calculated by taking the individual assets of gross block as on 31.3.2001 and the respective depreciation rates as per the notification dated 26.3.2001. The depreciation recovered in tariff up to 31.3.2001 is not available and cumulative depreciation up to 31.3.2001 has been taken as per the allocation of gross block and depreciation as per submissions of the petitioner. The petitioner shall be entitled to claim depreciation in tariff as detailed hereunder:

(Rs. in lakh)

|                             | Khandong Generating Station |               |               | Kopili Generating Station |               |               |
|-----------------------------|-----------------------------|---------------|---------------|---------------------------|---------------|---------------|
| Particulars                 | 2001-02                     | 2002-03       | 2003-04       | 2001-02                   | 2002-03       | 2003-04       |
| Capital Cost                | 12194                       | 12194         | 12194         | 24223.86                  | 24223.86      | 24223.86      |
| Rate Of Depreciation        | 2.18%                       | 2.18%         | 2.18%         | 2.61%                     | 2.61%         | 2.61%         |
| <b>Depreciation Allowed</b> | <b>265.28</b>               | <b>265.28</b> | <b>265.28</b> | <b>631.87</b>             | <b>631.87</b> | <b>631.87</b> |

### **ADVANCE AGAINST DEPRECIATION**

37. The Commission in the norms of tariff notified on 26.3.2001 has made a provision for advance against depreciation, in addition to allowable depreciation. Advance against depreciation is permitted wherever original scheduled loan repayment exceeds the depreciation allowable. The amount of advance against depreciation is to be worked out by applying the ceiling of 1/12<sup>th</sup> of the original loan amount less depreciation allowed as provided in the notification-dated 26.3.2001. Accordingly, advance against depreciation for different years of the tariff period in this case is being allowed as under:

(Rs. in lakh)

| Particulars                     | Khandong Generating Station |         |         | Kopili Generating Station |         |         |
|---------------------------------|-----------------------------|---------|---------|---------------------------|---------|---------|
|                                 | 2001-02                     | 2002-03 | 2003-04 | 2001-02                   | 2002-03 | 2003-04 |
| 1/12th of Loan                  | 508.08                      | 508.08  | 508.08  | 1009.33                   | 1009.33 | 1009.33 |
| Scheduled Repayment of the Loan | 0.00                        | 0.00    | 0.00    | 729.87                    | 799.20  | 198.80  |
| Minimum of the Above            | 0.00                        | 0.00    | 0.00    | 729.87                    | 799.20  | 198.80  |
| Depreciation during the year    | 265.28                      | 265.28  | 265.28  | 631.87                    | 631.87  | 631.87  |
| Advance against Depreciation    | 0.00                        | 0.00    | 0.00    | 98.00                     | 167.33  | 0.00    |

### **RETURN OF EQUITY**

38. As per the notification issued by the Commission on terms and conditions of tariff, return on equity is to be computed on the paid up and subscribed capital @ 16%. The year-wise return on equity on amount works out as under:

(Rs. in lakh)

| Particulars              | Khandong Generating Station |               |               | Kopili Generating Station |                |                |
|--------------------------|-----------------------------|---------------|---------------|---------------------------|----------------|----------------|
|                          | 2001-02                     | 2002-03       | 2003-04       | 2001-02                   | 2002-03        | 2003-04        |
| Deemed Equity            | 6097.00                     | 6097.00       | 6097.00       | 12111.93                  | 12111.93       | 12111.93       |
| Opening Balance          | 6097.00                     | 6097.00       | 6097.00       | 12111.93                  | 12111.93       | 12111.93       |
| Additions                | 0.00                        | 0.00          | 0.00          | 0.00                      | 0.00           | 0.00           |
| Closing Balance          | 6097.00                     | 6097.00       | 6097.00       | 12111.93                  | 12111.93       | 12111.93       |
| Average Equity           | 6097.00                     | 6097.00       | 6097.00       | 12111.93                  | 12111.93       | 12111.93       |
| Rate of Return on Equity | 16.00%                      | 16.00%        | 16.00%        | 16.00%                    | 16.00%         | 16.00%         |
| <b>Return on Equity</b>  | <b>975.52</b>               | <b>975.52</b> | <b>975.52</b> | <b>1937.91</b>            | <b>1937.91</b> | <b>1937.91</b> |

### **O&M EXPENSES**

39. The notification dated 26.3.2001 has prescribed the procedure for arriving at base O&M expenses for the year 1999-2000 in the notification issued on 26.3.2001. It

provides that O&M expenses including insurance for the existing stations belonging to the petitioner, which have been in operation for 5 years or more in the base year of 1999-2000 shall be derived on the basis of actual O&M expenses, excluding abnormal O&M expenses, if any, for the years 1995-96 to 1999-2000, duly certified by the statutory auditors. The average of actual O&M expenses for the years 1995-96 to 1999-2000 are to be considered as O&M expenses for the year 1997-98, which are to be escalated twice @ 10% per annum to arrive at O&M expenses for the base year 1999-2000 in accordance with the given formula. The base O&M expenses for the year 1999-2000 are to be further escalated @ 6% per annum to arrive at permissible O&M expenses for the relevant year. O & M expenses are considered to be abnormal when increase in a particular year is more than 20% over those of the previous year.

40. The details of O&M expenses for the years 1995-96 to 1999-2000 as furnished by the petitioner are as given here under:

| Year      | Khandong Generating Station  |                     | Kopili Generating Station   |                     |
|-----------|------------------------------|---------------------|-----------------------------|---------------------|
|           | O & M expenses (Rs. in lakh) | Percentage increase | O & M expenses (Rs.in lakh) | Percentage increase |
| 1995-96   | 439.00                       | -                   | 874.26                      | -                   |
| 1996-97   | 447.00                       | 1.8                 | 894.13                      | 2.3                 |
| 1997-98   | 386.00                       | (-) ve              | 1404.94                     | 57.1                |
| 1998-99   | 461.00                       | 19.2                | 1860.98                     | 32.5                |
| 1999-2000 | 521.00                       | 13.0                | 2082.61                     | 11.9                |

#### **Kopili Generating Station**

41. Kopili Generating Station is a typical case where two generating units (2x50 MW) under Stage I were commissioned in the year 1987-88 and two generating units (2x50 MW) under the Stage I extension scheme were added in the year 1997-98, about 10 years after Stage I was completed.

42. The petitioner has submitted the following reasons for higher O&M cost during the year 1998-99:

- (i) Revision of IDA pay scales of employees with effect from 1.1.1992 implemented in the year 1996-97. The pay scales were again due for revision with effect from 1.1.1997 as per recommendations of 5<sup>th</sup> Pay Commission. Pending finalization of pay scales, interim relief was released during 1998-99.
- (ii) Expenditure of Rs. 125 lakh was incurred for major repairs carried out for unit 1 of Kopili generating station during 1997-98 and Rs. 65 lakh during 1998-99 for rectification of turbine problems.

43. Total increase in O&M expenses on account of higher salaries of the employees during the year 1989-99 as compared to 1997-98 works out to Rs. 3.91 crore. The expenses due to implementation of recommendations of 5<sup>th</sup> Pay Commission and interim relief were beyond the control of the petitioner. After this expenditure is taken out, O&M expenses during the year 1998-99 would be only 4.6% higher compared to 1997-98. Thus total O&M expenses of Kopili generating station during the year 1998-99 are within the permissible limit and have been considered.

44. However, for the purpose of normalisation during the period 1997-98 to 1999-00, the following abnormal expenses are not considered :

- (i) Rs. 125 lakh incurred for major repairs carried out for Unit 1 of Kopili generating station during 1997-98, and
- (ii) Rs. 65 lakh during 1998-99 for rectification of turbine problems.

### **Khandong Generating Station**

45. The total year wise O&M expenses during all the years are within the prescribed limit of 20%. Hence these have been allowed for the purpose of normalisation.

46. In the light of the foregoing O&M expenses for the years 1996-97 to 1999-2000 considered for the purpose of computation of tariff are as under:

(Rs in lakh)

|           | Khandong Generating Station | Kopili Generating Station |
|-----------|-----------------------------|---------------------------|
| Year      |                             |                           |
| 1995-1996 | 439.00                      | -                         |
| 1996-1997 | 447.00                      | -                         |
| 1997-1998 | 386.00                      | 1280.00                   |
| 1998-1999 | 461.00                      | 1796.00                   |
| 1999-2000 | 521.00                      | 2082.00                   |

47. The petitioner has submitted actual O&M expenses data for the period 1995-96 to 1999-2000. In case of Kopili generating station, the expenses for the years 1995-96 and 1996-97 do not represent the true O&M expenses for the station as a whole because only two units (out of total 4 units) of the generating station were in operation up to the year 1996-97. The remaining two units were commissioned during the year 1997-98. Hence for calculation purposes, O&M data for the years 1997-98 to 1999-2000 has been considered as relevant. The average of prudent O&M expenses for three years from 1997-98 to 1999-2000, has been escalated at the rate of 10% to arrive at the base O&M expenses for the year 1999-2000. In case of Khandong generating station, the data for all the five years has been considered for computation of base O&M expenses for 1999-2000. The base O&M expenses (of the year 1999-2000) are further escalated at the actual escalation factor decided by the Commission

in its order dated 28.2.2005 in petition No. 196/2004 (suo motu) to arrive at O&M expenses for the relevant year of tariff period as given hereunder:

| <b>Year</b> | <b>Escalation factor (%)</b> |
|-------------|------------------------------|
| 2000-01     | 4.24                         |
| 2001-02     | 3.68                         |
| 2002-03     | 3.09                         |
| 2003-04     | 4.33                         |

48. Based on the above, O&M expenses for different years of the tariff period allowed by us are given here under:

| (Rs. in lakh) |                             |                           |
|---------------|-----------------------------|---------------------------|
|               | Khandong Generating Station | Kopili Generating Station |
| 2001-2002     | 590.00                      | 2044.00                   |
| 2002-2003     | 608.00                      | 2107.00                   |
| 2003-2004     | 634.00                      | 2198.00                   |

### **INTEREST ON WORKING CAPITAL**

49. As per the Commission's notification 26.3.2001, interest on working capital covers the following :

- (a) Operation and Maintenance expenses for one month;
- (b) Maintenance spares at actuals but not exceeding one year's requirements less value of one fifth of initial spares already capitalized for the first five years;
- (c) Receivables equivalent to two months of average billing for sale of electricity.

50. The above components have been taken into account for the purpose of calculation of working capital. O&M expenses for one month considered for the purpose are as decided by us in para 48 above. Spares have been considered as

given in the petition and are subject to adjustment, based on actuals, but not exceeding one year's requirement. Receivables for two months have been worked out on the basis of total billing charges calculated based on the different component of tariff decided by us.

51. The interest rate for the purpose of calculating interest on working capital is the cash-credit rate prevailing at the time of tariff filing. The annual average Prime Lending Rate of State Bank of India of 11.5% was applicable at the beginning of the tariff period, that is, 1.4.2001. However, the interest rate of 11% as claimed by the petitioner has been taken for the purpose of calculating interest on working capital. The interest on working capital to be recovered from the respondents is as per the following details:

(Rs. in lakh)

| Particulars                        | Khandong Generating Station |              |              | Kopili Generating Station |               |               |
|------------------------------------|-----------------------------|--------------|--------------|---------------------------|---------------|---------------|
|                                    | 2001-02                     | 2002-03      | 2003-04      | 2001-02                   | 2002-03       | 2003-04       |
| Spares for Working Capital         | 9.37                        | 9.93         | 10.53        | 32.30                     | 47.46         | 55.32         |
| O & M expenses                     | 49.17                       | 50.67        | 52.83        | 170.33                    | 175.58        | 183.17        |
| Receivables                        | 311.93                      | 315.02       | 319.49       | 898.95                    | 901.62        | 854.13        |
| Total Working Capital              | 370.47                      | 375.62       | 382.85       | 1101.59                   | 1124.66       | 1092.61       |
| Interest Rate                      | 11.00%                      | 11.00%       | 11.00%       | 11.00%                    | 11.00%        | 11.00%        |
| <b>Interest on Working Capital</b> | <b>40.75</b>                | <b>41.32</b> | <b>42.11</b> | <b>121.17</b>             | <b>123.71</b> | <b>120.19</b> |

### **TOTAL FIXED CHARGES**

52. The revised fixed charges payable by the respondents to the petitioner year-wise are as under:

(Rs. in lakh)

| Particulars                  | Khandong Generating Station |                |                | Kopili Generating Station |                |                |
|------------------------------|-----------------------------|----------------|----------------|---------------------------|----------------|----------------|
|                              | 2001-02                     | 2002-03        | 2003-04        | 2001-02                   | 2002-03        | 2003-04        |
| Interest on Loan             | 0.00                        | 0.00           | 0.00           | 560.74                    | 441.90         | 236.81         |
| Interest on Working Capital  | 40.75                       | 41.32          | 42.11          | 121.17                    | 123.71         | 120.19         |
| Depreciation                 | 265.28                      | 265.28         | 265.28         | 631.87                    | 631.87         | 631.87         |
| Advance Against Depreciation | 0.00                        | 0.00           | 0.00           | 98.00                     | 167.33         | 0.00           |
| Return on Equity             | 975.52                      | 975.52         | 975.52         | 1937.91                   | 1937.91        | 1937.91        |
| O & M Expenses               | 590.00                      | 608.00         | 634.00         | 2044.00                   | 2107.00        | 2198.00        |
| <b>TOTAL</b>                 | <b>1871.55</b>              | <b>1890.12</b> | <b>1916.91</b> | <b>5393.68</b>            | <b>5409.72</b> | <b>5124.78</b> |

53. In accordance with the Commission's notification dated 26.3.2001, the annual fixed charges are to be divided into capacity charges and primary energy charges. The annual fixed charges are indicated above in para 52 of this order. The primary energy charges are to be computed in accordance with clause 3.5.3 of the Commission's notification. The capacity charge shall then be computed as indicated below:

$$\text{Capacity Charges} = (\text{Annual fixed charges} - \text{primary energy charges})$$

### **PRIMARY ENERGY CHARGES**

54. As per the notification dated 26.3.2001, the Primary Energy Charges are to be worked out on the basis of paise per kWh rate ex-bus energy scheduled to be sent out from the Generating Station after adjusting for the free power delivered to the home state.

55. Rate of Primary Energy, is to be taken as 90% of the lowest variable charges of the central sector thermal power station of the region concerned. The primary energy charges are computed based on the Primary Energy Rate and saleable energy of the project. This rate is also the rate to be used in merit order despatch of the plants. Secondary Energy Rate are to be equal to Primary Energy Rate.



56. The Commission in petition No 87/2001 (Generation tariff for Ranganadi Hydroelectric Project) took a view that for computation of Primary Energy Rate, the variable charges of a central sector coal-based thermal power station in the region are to be considered. However, there is no coal-based central sector thermal power station in North-Eastern Region. Therefore, the Commission in its order dated 11.4.2002 in that petition directed that in order to arrive at Primary Energy Rate, transmission charges of Eastern Region shall be added to 90% of the lowest variable cost of central sector thermal generating station in Eastern Region.

57. The lowest variable charge of Central Sector Thermal Stations of Eastern Region was found to be varying on a month to month basis. The lowest variable charge for the year 2000-01 has been worked out to 39.67 paise per kWh. The Primary Energy Rate applicable during 2001-02 for the energy supplied from Kopili HEP shall be 35.70 paise per kWh (90% of 39.67 paise per kWh). The details in support of Primary Energy Rate arrived at are given in the Table below:

**Kopili and Khandong HE stations**

| VARIABLE CHARGES OF THE CENTRAL SECTOR THERMAL POWER STATIONS OF EASTERN REGION FOR 2000-01   |  |       |       |       |       |       |       |       |       |       |       |       |                        |
|---|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------|
| STATION   | APR.   | MAY   | JUNE  | JULY  | AUG.  | SEPT. | OCT.  | NOV   | DEC   | JAN   | FEB   | MAR.  | Avg. Rate for the Year |
|   | P/Kwh  | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh | P/Kwh |                        |
| FSTPP   | 78.16  | 85.92 | 80.65 | 84.99 | 84.75 | 85.59 | 86.50 | 84.72 | 79.11 | 75.91 | 84.84 | 84.84 | 83.00                  |
| KHSTPP  | 73.79  | 73.76 | 75.57 | 81.50 | 78.00 | 83.85 | 92.49 | 85.20 | 81.25 | 77.14 | 87.08 | 87.08 | 81.39                  |
| TSTPP   | 36.83  | 40.70 | 40.60 | 41.25 | 42.02 | 41.22 | 39.42 | 39.54 | 38.65 | 38.57 | 38.59 | 38.59 | 39.67                  |
| Average Lowest Rate for the year (P/Kwh)  |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| =36.83+40.7+40.6+41.25+42.02+41.22+39.42+39.54+38.65+38.57+38.59+38.59=475.98/12= 39.67 p/kwh |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| 90% of Average lowest rate for the year 2000-01 = 35.70 p/kwh                                 |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| To work out Transmission charges of Eastern Region during 2000-01                             |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| 59. Annual transmission charges of ER(Tsc) = Rs. 269.9 crore                                  |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| 59. Annual energy sent out from ER= 18454.35 Gwh  |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| Transmission charges of Eastern Region=(a/b)*1000 = 14.62 paise/unit                          |  |       |       |       |       |       |       |       |       |       |       |       |                        |
| Primary Energy Rate* =  | (35.70 p/kwh+ 14.62 paise/unit)=50.32 paise/unit |       |       |       |       |       |       |       |       |       |       |       |                        |
| (*)- This rate will be applicable to work out the tariff for the year 2001-02                 |  |       |       |       |       |       |       |       |       |       |       |       |                        |

58. The primary energy rates for the years 2002-03 and 2003-04 shall be determined based on 90% of average of the 12 months' lowest variable charges of Central Sector Thermal Stations of Eastern Region and transmission charges of the region for the years 2001-02 and 2002-03 respectively by the petitioner in consultation with the respondents. No petition for this purpose is required to be filed. However, in case the parties are unable to agree to primary energy rates for these years, any one of them may by making an appropriate application approach the Commission for a decision.

### **SECONDARY ENERGY**

59. Secondary energy relates to the quantum of energy generated in excess of the design energy on an annual basis in the station. For the computation of monthly secondary energy and secondary energy charge, month wise details of design energy are indicated in the table given below:

#### **MONTH-WISE DESIGN ENERGY ( in Gwh)**

| Month     | Khandong<br>Generating Station | Kopili<br>Generating<br>Station |
|-----------|--------------------------------|---------------------------------|
| April     | 10.08                          | 56.24                           |
| May       | 37.21                          | 124.93                          |
| June      | 36.00                          | 132.20                          |
| July      | 37.20                          | 127.26                          |
| August    | 37.20                          | 72.53                           |
| September | 36.00                          | 63.01                           |
| October   | 33.23                          | 118.30                          |
| November  | 10.03                          | 54.72                           |
| December  | 10.42                          | 56.54                           |
| January   | 10.42                          | 56.54                           |
| February  | 9.40                           | 51.07                           |
| March     | 10.42                          | 56.54                           |
| Total     | 277.60                         | 969.88                          |

60. The rate of secondary energy shall be the same as rate of primary energy in the respective years.

### **FILING FEE**

61. The petitioner has remitted a sum of Rs.10 lakh on account filing fee for the present tariff petition. The petitioner has prayed that the filing fee be made a “pass through” in the tariff. We are satisfied that the filing fee is an obligatory statutory expense on the petitioner and is to be made “pass through” in the tariff, like other taxes, duties, cess and levies. We have also considered the implications of allowing filing fee in O&M expenses. We feel that filing fee should be allowed to be reimbursed as a separate item and not made a part of O&M expenses since including the filing fee in O&M expenses will put additional burden on the consumers for a longer term. We, therefore, direct that filing fee of the main tariff petition only shall be recovered by the petitioner in 10 monthly installments in the tariff. We make it clear that all other charges, including advocate's fee or filing fee for interlocutory applications before the Commission or any other court shall not be allowed as “pass through” and these expenses shall be borne by the petitioner itself.

62. In addition to the above charges, the petitioner shall be entitled to tax on income etc. as prescribed in the notification dated 26.3.2001.

63. The matters not specifically covered in this order, but for which provisions are made in the Commission's notification dated 26.3.2001, shall be governed by that notification. This is, however, subject to the directions of the superior courts on these matters.

64. The tariff approved by us shall be borne by the respondents in proportion of primary energy supplied to the beneficiaries from Kopili HEP till 1.11.2003, that is, introduction of ABT and in terms of the notification dated 26.3.2001 thereafter.

65. This order disposes of petition No.36/2003.

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

**Sd/-**  
**(K.N. SINHA)**  
**MEMBER**

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

**New Delhi dated the 16<sup>th</sup> August 2005**