

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram**

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

**Petition No. 44/2002**

**In the matter of**

Transmission tariff for Moga-Hissar-Bhiwani Transmission System in Northern Region for the period from 1.4.2001 to 31.3.2004.

**And in the matter of**

Power Grid Corporation of India Limited

...**Petitioner**

Vs

1. Rajasthan Rajya Vidyut Prasaran Nigam Ltd, Jaipur
2. Himachal Pradesh State Electricity Board, Shimla
3. Punjab State Electricity Board, Patiala
4. Haryana Vidyut Prasaran Nigam Ltd., Panchkula
5. Power Development Department, Govt. of J&K, Jammu
6. Uttar Pradesh Power Corporation Ltd., Lucknow
7. Delhi Vidyut Board, New Delhi
8. Chief Engineer, Chandigarh Administration, Chandigarh
9. Uttranchal Power Corporation Ltd., Dehradun

... **Respondents**

The following were present:

1. Shri S. S. Sharma, PGCIL
2. Shri A.K. Nagpal, PGCIL
3. Shri S.K. Jain, Manager (Law), PGCIL
4. Shri R Prasad, PGCIL
5. Shri Mahesh Kumar, PGCIL
6. Shri R.K. Vohra, ED (Comml), PGCIL
7. Shri M.K. Kulshrestha, PGCIL
8. Shri R.N Pathak, ACE (Comml-LD), RVPNL
9. Shri K.K. Mitta, XEN (ISP), RVPNL
10. Shri R.K. Arora, XEN(Tariff), HVPNL
11. Shri Mahendra Kumar, EE, UPPCL
12. Shri D.D. Chopra, Advocate, UPPCL
13. Shri T.P.S Bawa, SE, PSEB

**ORDER  
(DATE OF HEARING : 13.12.2002)**

The present petition has been filed for approval of transmission charges for Moga-Hissar-Bhiwani Transmission System in Northern Region for the period from

1.4.2001 to 31.3.2004, 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 Central Government in Ministry of Energy, Department of Power accorded its approval for 400 KV Moga-Bhiwani Transmission System in Northern Region under its letter dated 20.9.1988 at an estimated cost of Rs.9516 lakh, including IDC of Rs.748 lakh. However, subsequently there were changes made in the scope and structure of the Transmission System. Accordingly, Ministry of Power under its letter dated 15.5.2001, accorded the administrative approval and expenditure sanction to the Revised Cost Estimate of Rs.15090 lakh (including IDC of Rs.1975 lakh) for 400 kV Moga-Hissar-Bhiwani Transmission System, with the revised scope of work as under:

**(a) Transmission Lines**

- (i) 400 kV D/C Moga-Hissar Transmission Line along with associated bay equipment bay Moga and Hissar sub-stations,
- (ii) 400 kV S/C Hissar-Bhiwani Line,
- (iii) 400 kV S/C Hissar-Bhiwani-Bawana line, and
- (iv) 220 kV D/C Hissar (Power grid) – Hissar (BBMB) line.

**(b) Sub-stations**

- (i) 400/220 KV sub-station at Hissar (2x315 MVA Auto-transformer), and
- (ii) Extension of sub-stations at Moga and Bhiwani (BBMB).

3. The date of commercial operation of different components of the Moga-Hissar-Bhiwani Transmission System, forming the subject matter of this petition and their apportioned approved capital cost as furnished by the petitioner are given hereunder:

| Sl. No.      | Details of the Assets   | Date of commercial operation | Apportioned Approved cost (Rs. in lakh) |
|--------------|---|------------------------------|---|
| 1.           | Moga-Hissar Transmission Line   | 1.12.1994                    | 11962.00                                |
| 2.           | 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations | 1.7.1995                     | 1390.00                                 |
| 3.           | One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line | 1.9.1997                     | 1221.00                                 |
| 4.           | 400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar and Bhiwani | 1.2.1998                     | 925.00                                  |
| <b>TOTAL</b> |   |                              | <b>15090.00</b>                         |

4. The petitioner has clubbed the assets at 1 and 2 in the table above for the purpose of tariff and similarly, the assets at 3 and 4 in the above table have also been clubbed while seeking approval for tariff. The petitioner has claimed the transmission charges as under:

(Rs. in lakh)

|                              | Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I<br>line with associated bays at Hissar<br>and Bhiwani sub-stations |                |                | One no. bay at Bhiwani sub-station<br>for termination of one circuit of 400<br>KV Bawana-Bhiwani line, and<br><br>400 KV S/C of Hissar-Bawana line, up<br>to Bhiwani along with associated bay<br>at Hissar |               |               |
|------------------------------|---|----------------|----------------|---|---------------|---------------|
|                              | 2001-2002   | 2002-2003      | 2003-2004      | 2001-2002   | 2002-2003     | 2003-2004     |
| Interest on Loan             | 362.90  | 309.77         | 256.64         | 118.50  | 106.02        | 95.21         |
| Interest on Working Capital  | 66.15   | 63.64          | 64.66          | 13.60   | 13.50         | 13.74         |
| Depreciation                 | 354.18  | 354.18         | 354.18         | 58.88   | 58.88         | 58.88         |
| Advance against Depreciation | 168.74  | 0.00           | 0.00           | 21.02   | 6.70          | 6.70          |
| Return on Equity             | 890.74  | 890.74         | 890.74         | 176.26  | 176.26        | 176.26        |
| O & M Expenses               | 434.90  | 459.00         | 488.47         | 77.22   | 81.73         | 86.76         |
| <b>Total</b>                 | <b>2277.61</b>  | <b>2077.33</b> | <b>2054.69</b> | <b>465.48</b>   | <b>443.09</b> | <b>437.55</b> |

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

(Rs. in lakh)

| Interest on Working Capital | Moga-Hissar Transmission Line, and 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations |               |               | One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and 400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar |           |           |
|-----------------------------|--|---------------|---------------|--|-----------|-----------|
|                             | 2001-2002  | 2002-2003     | 2003-2004     | 2001-2002  | 2002-2003 | 2003-2004 |
| Maintenance Spares          | 159.39   | 168.95        | 179.09        | 17.90  | 19.41     | 21.01     |
| O & M expenses              | 36.24  | 38.25         | 40.71         | 11.88  | 12.58     | 13.35     |
| Receivables                 | 379.60   | 346.22        | 342.45        | 88.47  | 85.39     | 85.16     |
| Total                       | <b>575.23</b>  | <b>553.42</b> | <b>562.25</b> | 118.25   | 117.38    | 119.52    |
| Rate of Interest            | 11.50%   | 11.50%        | 11.50%        | 11.50%   | 11.50%    | 11.50%    |
| Interest                    | 66.15  | 63.64         | 64.66         | 13.60  | 13.50     | 13.74     |

6. In addition, the petitioner has prayed for approval of other charges like Foreign Exchange Rate Variation, Income Tax, incentive, Development Surcharge, late payment surcharge, other statutory taxes, levies, cess, filing fee, etc in terms of the notification dated 26.3.2001.

### **CAPITAL COST**

7. As laid down in the notification dated 26.3.2001, the project cost, which includes capitalised initial spares for the first 5 years of operation, as approved by CEA or an appropriate independent agency, other than Board of Directors of the transmission utility, as the case may be, shall be the basis for computation of tariff. The notification dated 26.3.2001 further provides that the actual capital expenditure incurred on completion of the project shall be the criterion for the fixation of tariff. Where the actual expenditure exceeds the approved project cost the excesses as approved by the CEA or an appropriate independent agency, as the case may be, shall be deemed to be the actual capital expenditure for the purpose of determining the tariff, provided that excess expenditure is not attributable to the 'Transmission

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Utility' or its suppliers or contractors and provided further that where a transmission services agreement entered into between the Transmission Utility and the beneficiary provides a ceiling on capital expenditure, the capital expenditure shall not exceed such ceiling.

8. The tariff for Moga-Hissar transmission line was notified by Ministry of Power vide its notification dated 16.11.1998. The tariff for the remaining assets was approved by the Commission in its order dated 30.10.2002 in petition No 79/2001. For the purpose of present petition, the capital cost as admitted by Ministry of Power in the notification dated 16.11.1998 and the Commission in its order dated 30.10.2002 has been adopted as the base for computation of tariff by the Commission in the present petition. The capital cost considered for tariff purposes is given hereunder:

|  | (Rs in lakh) | (Rs. in lakh) |
|--|--------------|---------------|
| Moga-Hissar Transmission Line and  | 11291.00     | 12550.00      |
| 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations      | 1259.00      |               |
| One no. Bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and | 1249.52      | 2060.45       |
| 400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar and Bhiwani      | 810.93       |               |

#### **ADDITIONAL CAPITALISATION**

9. 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 by the Commission 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.

10. The petitioner has not claimed any additional capital expenditure on works for the period after 01.04.2001 in the petition. Accordingly, the question of considering additional capitalisation on works does not arise.

### **EXTRA RUPEE LIABILITY**

11. The notification dated 26.3.2001 provides that

(a) Extra rupee liability towards interest payment and loan repayment actually incurred, in the relevant year shall be admissible; provided it directly arises out of foreign exchange rate variation and is not attributable to the Utility or its suppliers or contractors. Every utility shall follow the method as per the Accounting Standard-11 (Eleven) as issued by the Institute of Chartered Accountants of India to calculate the impact of exchange rate variation on loan repayment.

(b) Any foreign exchange rate variation to the extent of the dividend paid out on the permissible equity contributed in foreign currency, subject to the ceiling of permissible return shall be admissible. This, as and when paid, may be spread over the twelve-month period in arrears.

12. The petitioner has not claimed FERV since no foreign loan is involved. Accordingly, FERV has not been considered for the purpose of tariff.

13. The capital expenditure considered in the calculations for tariff is under:

(Rs. in lakh)

| Name of the Element  | Capital Expenditure up to 31.03.2001 | FERV up to 31.03.2001 | Capital Expenditure up to 31.03.2001 | Additional Capital Expenditure | Capital Expenditure |
|--|--------------------------------------|-----------------------|--------------------------------------|--------------------------------|---------------------|
| Moga-Hissar Transmission Line  | 11291.00                             |                       |                                      |                                |                     |
| 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations                                | 1259.00                              | 0.00                  | 12550.00                             | 0.00                           | 12550.00            |
| One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line                                | 1249.52                              | 0.00                  | 2060.45                              | 0.00                           | 2060.45             |
| 400 kV Transmission Line from Hissar upto Bhiwani Ckt.-II and line bay at Hissar under Moga-Hissar-Bhiwani Transmission System | 810.93                               | 0.00                  |                                      |                                |                     |

### **SOURCES OF FINANCING. DEBT – EQUITY RATIO**

14. As per clause 4.3 of the notification dated 26.3.2001, capital expenditure of the transmission system shall be financed as per approved financial package set out in the techno-economic clearance of CEA or as approved by an appropriate independent agency, as the case may be.

15. The petitioner has claimed tariff by taking debt and equity in the same ratio of as was considered earlier by Ministry of Power and the Commission while notifying tariff for the period ending 31.3.2001. It is pointed out on behalf of the respondents that taking debt and equity as claimed by the petitioner will result into higher return on equity (ROE). The respondents have submitted that equity of 20% or 30% should be considered for the purpose of fixation of tariff. The debt-equity ratio as considered by Ministry of Power/the Commission earlier has been maintained for determination of tariff in the present petition. The debt-equity ratio considered for different assets is indicated below:

| Name of the Element  | Debt-Equity ratio as per previous tariff setting | Debt-Equity ratio as considered in current tariff setting |
|--|--|---|
| Moga-Hissar Transmission Line  | 50:50  | 50:50   |
| 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations                                | 50:50  |   |
| One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line                                | 42.71:57.83                                      | 46.53:53:47   |
| 400 kV Transmission Line from Hissar upto Bhiwani Ckt.-II and line bay at Hissar under Moga-Hissar-Bhiwani Transmission System | 53.25:46.75                                      |   |

### **INTEREST ON LOAN**

16. As provided in the notification dated 26.3.2001, interest on loan capital is to be computed on the outstanding loans, duly taking into account the schedule of repayment, as per financial package approved by CEA or any independent agency.

17. In the calculation for Moga-Hissar Transmission Line and 400 kV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations, the interest on loan has been worked out notionally as per the methodology detailed below:

(i) Closing balance of the notional loan as on 31.03.2001 is taken as opening Balance of the loan as on 1.4.2001.

(ii) Repayment of the loan during the year has been worked out in accordance with the following formula or as per the actual repayment during the year as claimed by the petitioner, whichever is higher:

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



(iii) On the basis of actual rate of interest on actual average loan, the weighted rate of interest on loan is worked out and the same is applied on the notional average loan during the year to arrive at the interest on loan.

18. On the basis of actual rate of interest on actual average loans based on information available in the petition and the loan allocation details, the weighted rate of interest on loan has been worked out and the same has been applied on the normative average loan during the year to arrive at the interest on loan. The details of calculation of weighted average rate of interest are as given below:

**Calculation of Weightage Average Rate of Interest**

**(Moga-Hissar transmission line and 400 kV S/C of Hissar-Bhiwani Ckt I line)**

(Rs. in lakh)

| <b>Details of Loan</b>                   | <b>2001-02</b>   | <b>2002-03</b> | <b>2003-04</b> |
|--|--|----------------|----------------|
| <b>GOI Loan</b>                          |  |                |                |
| Gross Loan -Opening                      | 3771.94  | 3771.94        | 3771.94        |
| Cumulative Repayment upto Previous Year  | 1752.03  | 2065.05        | 2378.08        |
| Net Loan-Opening                         | 2019.91  | 1706.89        | 1393.86        |
| Repayment during the year                | 313.03   | 313.03         | 313.03         |
| Net Loan-Closing                         | 1706.89  | 1393.86        | 1080.83        |
| Average Loan                             | 1863.40  | 1550.37        | 1237.34        |
| Rate of Interest                         | 16.09%   | 16.21%         | 16.38%         |
| Interest                                 | 299.85   | 251.25         | 202.65         |
| Repayment Schedule                       | Mentioned separately at respective Govt of India loan calculations |                |                |
| <b>Grid Bond-I (Issue-III)</b>           |  |                |                |
| Gross Loan -Opening                      | 141.49   | 141.49         | 141.49         |
| Cumulative Repayment up to Previous Year | 0.00   | 141.49         | 141.49         |
| Net Loan-Opening                         | 141.49   | 0.00           | 0.00           |
| Repayment during the year                | 141.49   | 0.00           | 0.00           |
| Net Loan-Closing                         | 0.00   | 0.00           | 0.00           |
| Average Loan                             | 70.75  | 0.00           | 0.00           |
| Rate of Interest                         | 9.00%  | 9.00%          | 9.00%          |
| Interest                                 | 6.37   | 0.00           | 0.00           |
| Repayment Schedule                       | Bullet on 10.03.2002   |                |                |

|  |                      |               |               |
|--|----------------------|---------------|---------------|
| <b>Bond-III (Issue-II)</b>               |                      |               |               |
| Gross Loan -Opening                      | 62.93                | 62.93         | 62.93         |
| Cumulative Repayment up to Previous Year | 0.00                 | 62.93         | 62.93         |
| Net Loan-Opening                         | 62.93                | 0.00          | 0.00          |
| Repayment during the year                | 62.93                | 0.00          | 0.00          |
| Net Loan-Closing                         | 0.00                 | 0.00          | 0.00          |
| Average Loan                             | 31.47                | 0.00          | 0.00          |
| Rate of Interest                         | 9.75%                | 9.75%         | 9.75%         |
| Interest                                 | 3.07                 | 0.00          | 0.00          |
| Repayment Schedule                       | Bullet on 28.10.2001 |               |               |
|  |                      |               |               |
| <b>Bond-III (Issue-I)</b>                |                      |               |               |
| Gross Loan -Opening                      | 10.07                | 10.07         | 10.07         |
| Cumulative Repayment up to Previous Year | 0.00                 | 10.07         | 10.07         |
| Net Loan-Opening                         | 10.07                | 0.00          | 0.00          |
| Repayment during the year                | 10.07                | 0.00          | 0.00          |
| Net Loan-Closing                         | 0.00                 | 0.00          | 0.00          |
| Average Loan                             | 5.04                 | 0.00          | 0.00          |
| Rate of Interest                         | 13.50%               | 13.50%        | 13.50%        |
| Interest                                 | 0.68                 | 0.00          | 0.00          |
| Repayment Schedule                       | Bullet on 28.02.2002 |               |               |
|  |                      |               |               |
| <b>Total Loan</b>                        |                      |               |               |
| Gross Loan -Opening                      | 3986.43              | 3986.43       | 3986.43       |
| Cumulative Repayment upto Previous Year  | 1752.03              | 2279.54       | 2592.57       |
| Net Loan-Opening                         | 2234.40              | 1706.89       | 1393.86       |
| Repayment during the year                | 527.52               | 313.03        | 313.03        |
| Net Loan-Closing                         | 1706.89              | 1393.86       | 1080.83       |
| Average Loan                             | 1970.64              | 1550.37       | 1237.34       |
| Rate of Interest                         | 15.73%               | 16.21%        | 16.38%        |
| <b>Interest</b>                          | <b>309.96</b>        | <b>251.25</b> | <b>202.65</b> |

19. It is observed that in case of Grid Bond-I loan applicable to 400 kV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar and Bhiwani, the details furnished earlier in Petition No 79/2001 and the present petition are at variance. The petitioner had claimed interest on loan in Petition No 79/2001 by indicating repayment of Grid Bond-I loan during March 2002 and accordingly no repayment was considered while approving tariff for the period ending 31.3.2001.

However, in the present petition, part repayment of loan has been shown prior to 31.3.2001. The outstanding amount shown as on 31.3.2001 indicated in present petition is in agreement with the corresponding outstanding amount shown in loan allocation details submitted by the petitioner in its affidavits dated 5.2.2003, 26.3.2003 and 30.4.2003 filed in the present proceedings. The position gets clarified from the comparative details given in the table below.

(Rs in lakh)

| Name of the Element  | As per petition 79/2001                                |                           |                                 | As per loan allocation details |                           |                                 | As per Petition No. 44/2002                            |                           |                                 |
|--|--|---------------------------|---------------------------------|--------------------------------|---------------------------|---------------------------------|--|---------------------------|---------------------------------|
|  | 13.92%   |                           |                                 | 9%                             |                           |                                 | 9%   |                           |                                 |
| Rate of Interest   | Opening balance as on the date of commercial operation | Repayment up to 31.3.2001 | Closing balance as on 31.3.2001 | Gross loan allocated           | Repayment up to 31.3.2001 | Closing balance as on 31.3.2001 | Opening balance as on the date of commercial operation | Repayment up to 31.3.2001 | Closing balance as on 31.3.2001 |
| One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line                                | 0.00   | 0.00                      | 0.00                            | 10.29                          | 0.00                      | 10.29                           | 20.00  | 9.71                      | 10.29                           |
| 400 kV Transmission Line from Hissar upto Bhiwani Ckt.-II and line bay at Hissar under Moga-Hissar-Bhiwani Transmission System | 20.00  | 0.00                      | 20.00                           |                                |                           |                                 |  |                           |                                 |

20. Interest loan has been allowed by considering the details of repayment of loan submitted in present petition. Further, in the calculation, for working out the interest on loan, the repayment for the years 2001-2002 to 2003-2004 and rate of interest etc. of the above loan have been worked out from the loan details submitted by the petitioner in its affidavits dated 5.2.2003, 26.3.2003 and 30.4.2003. Loan details of Grid Bond II and UTI loan have been considered based on the order dated 30.10.2002 in petition No 79/2001.

21. So far as the bay at Bhiwani for Bawana-Bhiwani Circuit-I and 400 kV transmission line from Hissar up to Bhiwani Ckt.-II and line bay at Hissar are concerned, the interest on loan has been allowed on actual basis. The necessary calculations are appended below:

**CALCULATION OF INTEREST**  
**(One no. bay at Bhiwani sub-station and 400 kV S/C of Hissar-Bawana line)**

(Rs in lakh)

| Details of Loan                         | 2001-02              | 2002-03 | 2003-04 |
|---|----------------------|---------|---------|
| <b>Bond-I</b>                           |                      |         |         |
| Gross Loan -Opening                     | 20.00                | 20.00   | 20.00   |
| Cumulative Repayment upto Previous Year | 9.71                 | 20.00   | 20.00   |
| Net Loan-Opening                        | 10.29                | 0.00    | 0.00    |
| Repayment during the year               | 10.29                | 0.00    | 0.00    |
| Net Loan-Closing                        | 0.00                 | 0.00    | 0.00    |
| Rate of Interest                        | 9.00%                | 9.00%   | 9.00%   |
| Interest                                | 0.87                 | 0.00    | 0.00    |
| Repayment Schedule                      | Bullet on 10.03.2002 |         |         |
|   |                      |         |         |
| <b>Bond-III (Issue-II)</b>              |                      |         |         |
| Gross Loan -Opening                     | 9.48                 | 9.48    | 9.48    |
| Cumulative Repayment upto Previous Year | 0.00                 | 9.48    | 9.48    |
| Net Loan-Opening                        | 9.48                 | 0.00    | 0.00    |
| Repayment during the year               | 9.48                 | 0.00    | 0.00    |
| Net Loan-Closing                        | 0.00                 | 0.00    | 0.00    |
| Rate of Interest                        | 9.75%                | 9.75%   | 9.75%   |
| Interest                                | 0.53                 | 0.00    | 0.00    |
| Repayment Schedule                      | Bullet on 28.10.2001 |         |         |
|   |                      |         |         |
| <b>Bond-III (Issue-I)</b>               |                      |         |         |
| Gross Loan -Opening                     | 1.52                 | 1.52    | 1.52    |
| Cumulative Repayment upto Previous Year | 0.00                 | 1.52    | 1.52    |
| Net Loan-Opening                        | 1.52                 | 0.00    | 0.00    |
| Repayment during the year               | 1.52                 | 0.00    | 0.00    |
| Net Loan-Closing                        | 0.00                 | 0.00    | 0.00    |
| Rate of Interest                        | 13.50%               | 13.50%  | 13.50%  |
| Interest                                | 0.19                 | 0.00    | 0.00    |
| Repayment Schedule                      | Bullet on 28.02.2002 |         |         |

|   |                          |        |        |
|---|--------------------------|--------|--------|
|   |                          |        |        |
| <b>Grid Bond-II</b>                     |                          |        |        |
| Gross Loan -Opening                     | 81.00                    | 81.00  | 81.00  |
| Cumulative Repayment upto Previous Year | 81.00                    | 81.00  | 81.00  |
| Net Loan-Opening                        | 0.00                     | 0.00   | 0.00   |
| Repayment during the year               | 0.00                     | 0.00   | 0.00   |
| Net Loan-Closing                        | 0.00                     | 0.00   | 0.00   |
| Rate of Interest                        | 14.78%                   | 14.78% | 14.78% |
| Interest                                | 0.00                     | 0.00   | 0.00   |
| Repayment Schedule                      | Repaid before 31.03.2001 |        |        |
|   |                          |        |        |
| <b>UTI Loan</b>                         |                          |        |        |
| Gross Loan -Opening                     | 48.00                    | 48.00  | 48.00  |
| Cumulative Repayment upto Previous Year | 48.00                    | 48.00  | 48.00  |
| Net Loan-Opening                        | 0.00                     | 0.00   | 0.00   |
| Repayment during the year               | 0.00                     | 0.00   | 0.00   |
| Net Loan-Closing                        | 0.00                     | 0.00   | 0.00   |
| Rate of Interest                        | 16.70%                   | 16.70% | 16.70% |
| Interest                                | 0.00                     | 0.00   | 0.00   |
| Repayment Schedule                      | Repaid before 31.03.2001 |        |        |
|   |                          |        |        |
| <b>GOI Loan</b>                         |                          |        |        |
| Gross Loan -Opening                     | 798.72                   | 798.72 | 798.72 |
| Cumulative Repayment upto Previous Year | 94.17                    | 159.74 | 225.32 |
| Net Loan-Opening                        | 704.55                   | 638.98 | 573.40 |
| Repayment during the year               | 65.58                    | 65.58  | 65.58  |
| Net Loan-Closing                        | 638.98                   | 573.40 | 507.82 |
| Rate of Interest                        | Considered separately    |        |        |
| Interest                                | 112.82                   | 102.01 | 91.15  |
| Repayment Schedule-<br>Bullet on        | Considered separately    |        |        |
|   |                          |        |        |
| <b>Total Loan</b>                       |                          |        |        |
| Gross Loan -Opening                     | 958.72                   | 958.72 | 958.72 |
| Cumulative Repayment upto Previous Year | 232.88                   | 319.74 | 385.32 |
| Net Loan-Opening                        | 725.84                   | 638.98 | 573.40 |
| Repayment during the year               | 86.87                    | 65.58  | 65.58  |
| Net Loan-Closing                        | 638.98                   | 573.40 | 507.82 |
| Interest                                | 114.41                   | 102.01 | 91.15  |

22. On the basis of above details, interest on loan has been worked out as under:

(Rs. in lakh)

|   | 2001-02  | 2002-03  | 2003-04  | 2001-02   | 2002-03 | 2003-04 |
|---|----------|----------|----------|---|---------|---------|
|   |          |          |          | One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and<br>400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar |         |         |
|   |          |          |          | Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations   |         |         |
| <b>Gross Loan -Opening</b>                          | 5567.16  | 5567.16  | 5567.16  | 958.72  | 958.72  | 958.72  |
| <b>Cumulative Repayment up to the previous Year</b> | 2970.76  | 3583.74  | 3947.48  | 232.88  | 319.74  | 385.32  |
| <b>Net Loan-Opening</b>                             | 2596.40  | 1983.42  | 1619.67  | 725.84  | 638.98  | 573.40  |
| <b>Repayment during the year</b>                    | 612.98   | 363.74   | 363.74   | 86.87   | 65.58   | 65.58   |
| <b>Net Loan-Closing</b>                             | 1983.42  | 1619.67  | 1255.93  | 638.98  | 573.40  | 507.82  |
| <b>Average Loan</b>                                 | 2289.91  | 1801.55  | 1437.80  | NA  | NA      | NA      |
| <b>Rate of Interest</b>                             | 15.7291% | 16.2058% | 16.3778% |   |         |         |
| <b>Interest</b>                                     | 360.18   | 291.95   | 235.48   | 114.41  | 102.01  | 91.15   |

**DEPRECIATION**

23. With regard to depreciation, Clause 4(b) of the notification dated 26.3.2001 provides:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually as per straight-line method at the rate of depreciation as prescribed in the Schedule attached to the notification.

Provided that the total depreciation during the life of the project shall not exceed 90% of the approved Original Cost. The approved original cost shall include additional capitalisation on account of foreign exchange rate variation also.

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

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

(vi) Depreciation against assets relating to environmental protection shall be allowed on case-to-case basis at the time of fixation of tariff subject to the condition that the environmental standards as prescribed have been complied with during the previous tariff period.

24. The petitioner has claimed the depreciation on the capital expenditure in accordance with above principles.

25. In the calculation, the depreciation has been worked out on the capital cost as per para 13 above and the rates as prescribed in the notification dated 26.03.2001 for different heads of capital cost. For working out cumulative depreciation the depreciation as per last tariff setting has been considered.

26. The calculations in support of depreciation allowed are appended hereinbelow:

(Rs. in lakh)

|                             | Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I line<br>with associated bays at Hissar and<br>Bhiwani sub-stations |         |         | One no. bay at Bhiwani sub-station for<br>termination of one circuit of 400 KV Bawana-<br>Bhiwani line, and<br>400 kV S/C of Hissar-Bawana line, up to<br>Bhiwani along with associated bay at Hissar |         |         |         |         |
|-----------------------------|---|---------|---------|---|---------|---------|---------|---------|
|                             |   | 2001-02 | 2002-03 | 2003-04   |         | 2001-02 | 2002-03 | 2003-04 |
| Rate of Depreciation        | 2.82%   |         |         |   | 2.86%   |         |         |         |
| Depreciable Value           | 11295.00  |         |         |   | 1854.41 |         |         |         |
| Remaining Depreciable Value |   | 6908.55 | 6444.62 | 6080.88   |         | 1439.01 | 1359.11 | 1293.53 |
| Depreciation                |   | 354.18  | 354.18  | 354.18  |         | 58.88   | 58.88   | 58.88   |

**ADVANCE AGAINST DEPRECIATION**

27. In addition to allowable depreciation, the petitioner becomes entitled to Advance Against Depreciation when originally scheduled loan repayment exceeds the depreciation allowable as per schedule to the notification dated 26.3.2001. Advance Against Depreciation is computed in accordance with the following formula:

$$\text{AAD} = \text{Originally scheduled loan repayment amount subject to a ceiling of } 1/12^{\text{th}} \text{ of original loan amount minus depreciation as per schedule.}$$

28. The petitioner has claimed advance against depreciation on the basis of
- (i) 1/12th of gross loan worked out from 50% of the gross block as was admitted by Ministry of Power.
  - (ii) Repayment of actual loans during the year, and
  - (iii) Depreciation as claimed in the petition.

29. For working out Advance Against Depreciation, 1/12<sup>th</sup> of the notional loan has been considered while repayment of loan as worked out above has been taken as repayment of the loan during the year. The petitioner is entitled to Advance Against Depreciation as calculated below:

(Rs. in lakh)

|   | (Rs. in lakh) |         |         |   |         |         |
|---|---------------|---------|---------|---|---------|---------|
|   | 2001-02       | 2002-03 | 2003-04 | 2001-02   | 2002-03 | 2003-04 |
| Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations |               |         |         | One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and<br>400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar |         |         |
| 1/12th of Gross Loan(s)   | 463.93        | 463.93  | 463.93  | 79.89   | 79.89   | 79.89   |
| Scheduled Repayment of the Loan(s)  | 612.98        | 363.74  | 363.74  | 86.87   | 65.58   | 65.58   |
| Minimum of the above  | 463.93        | 363.74  | 363.74  | 79.89   | 65.58   | 65.58   |
| Depreciation during the year  | 354.18        | 354.18  | 354.18  | 58.88   | 58.88   | 58.88   |
| Advance against Depreciation  | 109.75        | 9.56    | 9.56    | 21.01   | 6.70    | 6.70    |



## OPERATION & MAINTENANCE EXPENSES

30. In accordance with the notification dated 26.3.2001, Operation and Maintenance expenses, including expenses on insurance, if any, are to be calculated as under:

- i) Where O&M expenses, excluding abnormal O&M expenses, if any, on sub-station (OMS) and line (OML) are separately available for each region, these shall be normalised by dividing them by number of bays and line length respectively. Where data as aforesaid is not available, O&M expenses in the region are to be apportioned to the sub-station and lines on the basis of 30:70 ratio and these are to be normalised as below:

$$\text{O\&M expenses per Unit of the line length in Kms (OMLL)} = \frac{\text{Expenses for lines (OML)}}{\text{Average line length in Kms (LL)}}$$

$$\text{O\&M expenses for sub-stations (OMBN)} = \frac{\text{O\&M expenses for substations (OMB)}}{\text{Average number of bays (BN)}}$$

- ii) The five years average of the normalised O&M expenses for lines and for bays for the period 1995-96 to 1999-2000 is to be escalated at 10% per annum for two years (1998-99 and 1999-2000) to arrive at normative O&M expenses per unit of line length and per bay for 1999-2000.
- iii) The normative O&M per unit length and normative O&M per bay for the year 1999-2000 for the region derived in the preceding paragraph is to be escalated @ 6% per annum to obtain normative values of O&M expenses per unit per line length and per bay in the relevant year. These

normative values are to be multiplied by line length and number of bays (as the case may be) in a given system in that year to compute permissible O&M expenses for the system.

- iv) The escalation factor of 6% per annum is to be used to revise normative base figure of O&M expenses. Any deviation of the escalation factor computed from the actual inflation data that lies within 20% of the notified escalation factor of 6% shall be absorbed by utilities/beneficiaries.

31. The different elements of Operation & Maintenance expenses have been considered in the succeeding paragraphs in the light of provisions of the notification dated 26.3.2001 based on the data available since 1995-96.

### **Employee Cost**

32. The petitioner has, inter alia, claimed incentive and *ex gratia* as a part of employee cost. The petitioner was asked to specify the amount of minimum statutory bonus paid to its employees under the Payment of Bonus Act. The petitioner vide its affidavit dated 6.2.2003 has stated that the incentive paid to employees does not include minimum statutory bonus. The petitioner has further stated that the *ex gratia* was being paid in lieu of bonus, as is customary and a normal practice followed in private and public sectors. The petitioner has also furnished a write-up on Incentive scheme in support of the claim. It has been clarified on behalf of the petitioner that even the top management of the petitioner company is paid incentive and *ex gratia* included as a part of employee cost in O&M expenses claimed. The payment of incentive other than the statutory minimum bonus is at the discretion of the petitioner

company and should be borne out of its profits or incentive earned from the respondents for higher availability of the Transmission System. In view of the above, the incentive and *ex gratia* payments made by the petitioner to its employees have been kept out of consideration for calculation of employee cost.

33. The petitioner was directed to furnish details of the arrears on account of pay and allowances for the period prior to 1995-96, but paid between 1995-96 to 1999-2000. The petitioner has submitted the details of such arrears, amounting to Rs. 14.99 lakh and Rs 19.33 lakh paid for Northern Region during 1995-96 and 1996-97. Similarly, the arrears for the previous years included in the employee cost for 1995-96 and 1996-97 for Corporate Office were stated to be Rs. 9.61 lakh and Rs. 35.60 lakh. The petitioner has also submitted that the arrears on account of pay revision from 01.01.97 to 31.03.2000 have been paid during the years 2000-01 and 2001-02 also. The amounts of these arrears as claimed by the petitioner are Rs. 362.56 lakh and Rs. 263.86 lakh for Northern Region and Rs. 297.13 lakh and Rs. 109.95 lakh for the Corporate Office for the years 2000-01 and 2001-02 respectively. The petitioner has prayed that the arrears on account of pay and allowances for the period prior to 1995-96 should be deducted while those pertaining to the period from 1995-96 to 1999-2000 but paid subsequent to 1999-2000 should be added to O&M charges. The petitioner has argued that since these pay arrears pertain to the period being considered for fixation of normative O&M, the arrears should be considered while fixing the normative O&M. We find the submission of the petitioner to be logical and have considered the submission in the calculation of employee cost.

### **Repair & Maintenance Expenses**

34. The petitioner has submitted that the increase of 152.77 % in Repair & Maintenance expenses in 1997-98 (Rs 1121.85 lakh) over the previous year (Rs 443.82 lakh) is due to major repair of converter transformer under HVDC project. HVPNL has prayed for exclusion of such abnormal charges for calculating average O&M expenses. It is noted that the converter transformers in the Rihand-Dadri HVDC project have been under outage several times, which is not a normal phenomenon. It may be mentioned that in view of repeated outages in converter transformers, the petitioner has procured 3rd spare transformer for which the Commission has approved the tariff. In view of this, such major repair has been considered as abnormal and hence increase in expense has been limited to Rs 532.58 lakh (i.e. 20% over the previous year). In the next year i.e. 1998-99, the petitioner has claimed Repair and Maintenance expenses of the same order (Rs 1131.38 lakh) as in 1997-98. Thus, the Repair and Maintenance expenses in 1998-99 are also substantially high. Hence, in this year also the increase has been limited to Rs 639.10 lakh (i.e. 20% over the expenses considered admissible in previous year) for the purpose of normalisation. The abnormal increase of Repair and Maintenance expenses during 1997-98 and 1998-99 is evident from the O&M expenses for the year 1999-2000, which is Rs. 602.4 lakh. However, if any major repairs are undertaken during the tariff period covered by this order, the petitioner may approach the Commission with proper justification to claim the actual expenses as a part of O&M expenses.

### **Power Charges**

35. In case of Corporate Office, the power charges as claimed by the petitioner have been considered in the calculation of O&M expenses. As regards Northern

Regional Transmission System (for short “ the NRTS”) the petitioner was directed to submit break up of power charges between sub-station facilities and residential colonies. The petitioner expressed its inability to furnish the data as it was not maintained. However, the petitioner has furnished details of power consumption for the residential colony in Western and Eastern Regions, which work out to be in the range of 20% of the total power charges. On the same basis, the power charges for the residential colony have been considered as 20% of total power charges claimed for Northern Region. As power charges for the residential colony need to be recovered from the employees, admissibility of power charges in case of the NRTS has been limited to 80% of the total claim.

### **Insurance**

36. It has been noted that the petitioner has a policy of self-insurance for which it has created the insurance reserve. The insurance charges claimed by the petitioner are credited to the insurance reserve. The petitioner was directed to furnish the management policy on creation of insurance reserve, items of loss secured and the conditions thereto. The petitioner has submitted insurance policy of the petitioner company under affidavit dated 6.2.2003. The key features of the policy submitted by the petitioner are as under:

- (a) Insurance reserve is created @ 0.1% on gross value of fixed assets at the close of the year, to meet the future losses arising from uninsured risks, except machinery breakdown for valve hall of HVDC, and fire risk of HVDC equipment and SVC sub-stations.

- (b) The policy generally covers following:
- (i) Fire, lightning, explosion/implosion, and bush fire
  - (ii) Natural calamity: flood, earthquake, storm, cyclone, typhoon, tempest, hurricane, tornado, subsidence and landslide
  - (iii) Riot, strike/ malicious and terrorist damage
  - (iv) Theft, burglary, Missile testing equipment, impact damage due to rail/ road or animal, aircraft and articles dropped there from.
- (c) The losses of assets caused by the above causes are adjusted against insurance reserve as per the corporation guidelines.
- (d) The amount so set aside in the insurance reserve has not been separately claimed from the respondents and the expenses have been met from the permitted O&M charges under the tariff.

37. The petitioner has stated that the policy of self-insurance has also been followed by NHPC, where 0.5% per annum of the gross block of O&M projects is transferred to self-insurance reserve account. It has also been informed that the rate of 0.1% as booked under O&M expenses towards self-insurance reserve is lower than the insurance premium (0.22%) being charged by the insurance companies for the risks covered in the self-insurance policy. In support of this claim, the petitioner has placed on record a letter from Reliance General Insurance Company quoting for the insurance rate of the assets covered in the self-insurance policy of the petitioner company.

38. In view of the explanation furnished on behalf of the petitioner, the insurance charges as claimed have been considered in O&M expenses. We, however, make it explicit that the self-insurance provided by the petitioner is for replacement of the damaged assets and the beneficiaries shall not be charged anything in case of damage due to any of the events mentioned in the insurance policy.

39. In case of Training & Recruitment expenses, Communication expenses, Traveling, Rent, and Miscellaneous Expenses as claimed by the petitioner have been considered for calculation, both in the case of the NRTS as well as Corporate Office.

#### **Other Expenses**

40. In case of NRTS, under the subhead "provisions", the petitioner has claimed amount of Rs 10.69 lakh, Rs 30.08 lakh and Rs 5.71 lakh for the years 1997-98, 1998-99 and 1999-2000 respectively for loss of stores. Similarly, amount of Rs 5.15 lakh in 1998-99 has been claimed on account of writing off of advance. These have not been considered admissible, since, these items are controllable by the petitioner and reflect the managerial efficiency of the petitioner. In case of Corporate Office, following expenses have not been admitted for reimbursement:

- (a) Donation of Rs. 0.05 lakh, Rs. 30 lakh, Rs. 34.78 lakh and Rs. 600.03 lakh for the years 1995-96, 1996-97, 1898-99 and 1999-2000, as these donations are not related to transmission business. The expenditure on account of the donations need be borne by the petitioner out of other profits of the corporation.

- (b) Provisions of Rs. 1107.61 lakh, Rs. 385.8 lakh and Rs. 0.27 lakh for the year 1996-97, 1997-98 and 1999-2000. These provisions were made for the loss of stores in Eastern Region and North Eastern Region, for bad and doubtful debt in Northern Region and for shortage of store in North Eastern Region. As all these items are controllable by the petitioner and reflect the managerial efficiency. However, an amount of Rs. 11.14 lakh on account of fire at the corporate office in 1998-99 has been considered as admissible under the head provisions.
- (c) Legal expenses amounting to Rs. 2.65 lakh in the Corporate Office on legal opinion on CERC matters have not been allowed in line with the Commission's policy of allowing only the fees for the petitions filed in the Commission. However, other legal expenses for disputes related to compensation, contracts, service matters and labour cases have been admitted.

### **Recoveries**

41. The details of the recoveries for the NRTS and the Corporate Office were furnished by the petitioner vide affidavit dated 6<sup>th</sup> February 2003. The petitioner in the aforesaid affidavit also furnished the "complete details" of the recoveries for the NRTS. According to the petitioner, the income from sale of bid documents has already been adjusted for under the sub-head Tender Expenses under the head Other Expenses. Hence, income under this sub-head has not been considered in the recovery for the NRTS as well as Corporate Office. Similarly, electricity charges recovered from employees residential buildings and other residential buildings have



not been considered under the head “recovery” as 20% of the power charges for colony consumption have been deducted in case of the NRTS.

### **Allocation of Corporate Office Expenses to Various Regions**

42. The petitioner has submitted the method for allocation of Corporate Office expenses to various Regions. The key steps in the apportionment of Corporate Office expenses among the regions are as under:

- i) Expenses booked under Training & Recruitment, Directors sitting fees, provisions, R&D, Write off of fixed assets/ non-operating expenses and donations are considered exclusively as O&M expenses.
- ii) After deducting these exclusive O&M expenses, the balance Corporate Office expenses are allocated in the ratio of Transmission charges to annual Capital outlay to obtain expenses allocated to O&M and construction activity.
- iii) The allocation to O&M activity obtained in step (ii) is added to exclusive O&M expenses obtained in step (i) to arrive at total O&M expenses in the Corporate Office.
- iv) RLDC expenses are then deducted from the total O&M expenses obtained in step (iii) to arrive at O&M expenses allocated to transmission business.
- v) O&M expenses allocated to transmission business are then allocated to various regions in the ratio of their respective transmission charges.

43. The methodology adopted by the petitioner for allocation of Corporate Office O&M expenses has been approved and followed in the calculation of O&M expenses. The comparative statement of O&M expenses claimed by the petitioner and those allowed and considered for the years 1995-96 to 1999-2000 for the purpose of computation of O&M expenses for the tariff period are given herein below:

**DETAILS OF O&M EXPENSES FOR POWERGRID SYSTEM IN  
NORTHERN REGION**

(Rs. in Lakh)

| Items                         | 1995-96           |                | 1996-97           |                | 1997-98           |                | 1998-99           |                | 1999-2000         |                |
|-------------------------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|
|                               | As per Petitioner | As allowed for | As per Petitioner | As allowed for | As per Petitioner | As allowed for | As per Petitioner | As allowed for | As per Petitioner | As allowed for |
| Employee Cost                 | 1475.76           | 1312.61        | 1651.14           | 1485.26        | 2224.24           | 2266.33        | 2686.78           | 2701.83        | 3287.71           | 2929.61        |
| Repair & Maintenance          | 373.53            | 373.53         | 443.82            | 443.82         | 1121.85           | 532.58         | 1131.38           | 639.10         | 602.04            | 602.04         |
| Power Charges                 | 351.00            | 280.80         | 501.27            | 401.02         | 486.21            | 388.97         | 497.64            | 398.11         | 602.04            | 481.63         |
| Training & Recruitment        | 7.88              | 7.88           | 9.54              | 9.54           | 11.57             | 11.57          | 13.29             | 13.29          | 11.57             | 11.57          |
| Communications                | 81.37             | 81.37          | 69.53             | 69.53          | 100.32            | 100.32         | 85.82             | 85.82          | 75.13             | 75.13          |
| Traveling                     | 201.61            | 201.61         | 208.75            | 208.75         | 274.35            | 274.35         | 329.98            | 329.98         | 347.30            | 347.30         |
| Printing & Stationery         | 25.14             | 25.14          | 33.62             | 33.62          | 30.15             | 30.15          | 26.65             | 26.65          | 27.59             | 27.59          |
| Rent                          | 14.93             | 14.93          | 15.79             | 15.79          | 24.54             | 24.54          | 23.48             | 23.48          | 20.86             | 20.86          |
| Miscellaneous Expenses        | 342.46            | 342.46         | 402.74            | 402.74         | 495.03            | 495.03         | 619.64            | 619.64         | 632.82            | 632.82         |
| Insurance                     | 406.59            | 406.59         | 542.03            | 542.03         | 719.81            | 719.81         | 640.90            | 640.90         | 725.33            | 725.33         |
| Others                        | 215.95            | 215.95         | 150.09            | 150.09         | 292.18            | 281.49         | 188.39            | 145.16         | 237.43            | 231.72         |
| Corporate Expenses Allocation | 949.51            | 929.40         | 1216.57           | 598.75         | 1191.95           | 1028.16        | 1068.85           | 1066.49        | 1348.99           | 1090.89        |
| <b>TOTAL</b>                  | <b>4445.73</b>    | <b>4192.27</b> | <b>5244.89</b>    | <b>4360.93</b> | <b>6972.20</b>    | <b>6153.30</b> | <b>7312.80</b>    | <b>6690.45</b> | <b>7918.81</b>    | <b>7176.49</b> |
| Less : Recoveries             |                   | 44.79          |                   | 24.31          |                   | 52.45          |                   | 13.88          |                   | 39.17          |
| <b>Net O&amp;M Expenses</b>   | 4445.73           | 4147.48        | 5244.89           | 4336.62        | 6972.20           | 6100.85        | 7312.80           | 6676.57        | 7918.81           | 7137.32        |

**Method of Normalizing O&M Expenses**

44. The following formulae for calculation of normative O&M expenses as per the notification dated 26.3.2001, as amended vide Central Electricity Regulatory

Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2003 published in the Gazette of India on 2.6.2003 have been followed

$$AVOMLL = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OML_i|}{|LL_i|}$$

$$AVOMBN = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OMS_i|}{|BN_i|}$$

Where:

AVOMLL and AVOMBN are average normalized O&M expenses per Ckt. km of line length and per bay respectively.

OML<sub>i</sub> and OMS<sub>i</sub> are O&M expenses for the lines and for the sub-stations for the i<sup>th</sup> year respectively.

LL<sub>i</sub> and BN<sub>i</sub> are the total line length in Ckt. km and total number of bays in the i<sup>th</sup> year respectively.

45. As per the above method, AVOMLL and AVOMBN are calculated based on the data for the years 1995-96 to 1999-2000. These normalized averages correspond to the year 1997-98. After escalating these averages by 10% per annum for two years, the normative O&M expenses for the base year 1999-2000 have been obtained. Normative O&M expenses for subsequent years are obtained by escalating these normative figures by 6% per annum. Following table gives comparison of the normative O&M expenses as calculated by the petitioner and as per our calculations allowed for the base year i.e. 1999-2000 and afterwards:

## NORMALISED O&M EXPENSES FOR NORTHERN REGION

(Rs. in Lakh)

| S. NO. | Items   | 1995-96 | 1996-97 | 1997-98       | 1998-99        | 1999-2000      | Total for five years 95-96 to 99-00 | 99-00          | 2000-01        | 2001-02        | 2002-03        | 2003-04        |
|--------|---|---------|---------|---------------|----------------|----------------|-------------------------------------|----------------|----------------|----------------|----------------|----------------|
| 1      | Total O&M expenses(Rs. in lakh)                         | 4147.48 | 4336.62 | 6100.85       | 6676.57        | 7137.32        |                                     |                |                |                |                |                |
| 2      | Abnormal O&M expenses                                   | 0.00    | 0.00    | 57.64         | 107.13         | 99.08          | 263.85                              |                |                |                |                |                |
| 3      | Normal O&M expenses (S.No. 1 -S.NO. 2)                  | 4147.48 | 4336.62 | 6043.21       | 6569.44        | 7038.24        |                                     |                |                |                |                |                |
| 4      | <b>OML</b> (O&M for lines)= 0.7 X S. NO.3               | 2903.24 | 3035.63 | 4230.25       | 4598.61        | 4926.77        | <b>19694.50</b>                     |                |                |                |                |                |
| 5      | <b>OMS</b> (O&M for substation) = 0.3XS.NO.3            | 1244.24 | 1300.99 | 1812.96       | 1970.83        | 2111.47        | <b>8440.49</b>                      |                |                |                |                |                |
| 6      | Line length at beginning of the year in Kms.            | 9622.13 | 9622.13 | 9743.48       | 10561.88       | 10819.55       |                                     |                |                |                |                |                |
| 7      | Line length added in the year in Kms.                   | 0.00    | 121.35  | 818.40        | 257.67         | 1705.07        |                                     |                |                |                |                |                |
| 8      | Line length at end of the year in Kms.                  | 9622.13 | 9743.48 | 10561.88      | 10819.55       | 12524.62       |                                     |                |                |                |                |                |
| 9      | LL (Average line length in the Region)                  | 9622.13 | 9682.81 | 10152.68      | 10690.72       | 11672.09       | <b>51820.43</b>                     |                |                |                |                |                |
| 10     | NO. of bays at beginning of the year                    | 157     | 157     | 161           | 183            | 185            |                                     |                |                |                |                |                |
| 11     | NO. of bays added in the year                           | 0       | 4       | 22            | 2              | 31             |                                     |                |                |                |                |                |
| 12     | NO. of bays at the end of the year                      | 157     | 161     | 183           | 185            | 216            |                                     |                |                |                |                |                |
| 13     | BN (Average number of bays in the Region)               | 157.0   | 159.0   | 172.0         | 184.0          | 200.5          | <b>872.50</b>                       |                |                |                |                |                |
| 14     | AVOMLL(OML/LL)  | 0.302   | 0.314   | 0.417         | 0.430          | 0.422          | 1.884                               |                |                |                |                |                |
| 15     | AVOMBN(OMS/BN)  | 7.925   | 8.182   | 10.540        | 10.711         | 10.531         | 47.890                              |                |                |                |                |                |
| 16     | <b>NOMLL(allowable O&amp;M per unit of line length)</b> |         |         | <b>0.3768</b> | <b>0.4145</b>  | <b>0.4560</b>  |                                     | <b>0.4560</b>  | <b>0.4833</b>  | <b>0.5123</b>  | <b>0.5431</b>  | <b>0.5756</b>  |
| 17     | <b>NOMBN(Allowable O&amp;M per bay)</b>                 |         |         | <b>9.5780</b> | <b>10.5358</b> | <b>11.5894</b> |                                     | <b>11.5894</b> | <b>12.2847</b> | <b>13.0218</b> | <b>13.8031</b> | <b>14.6313</b> |
|        | <b>NOMLL(as calculated by petitioner)</b>               |         |         | <b>0.42</b>   |                |                |                                     | <b>0.51</b>    | <b>0.54</b>    | <b>0.57</b>    | <b>0.60</b>    | <b>0.64</b>    |
|        | <b>NOMBN(as calculated by petitioner)</b>               |         |         | <b>10.75</b>  |                |                |                                     | <b>13.01</b>   | <b>13.79</b>   | <b>14.62</b>   | <b>15.50</b>   | <b>16.43</b>   |

46. The differences in NOMLL and NOMBAN as calculated by the petitioner and as allowed are mainly on account of certain expenses disallowed by us as explained in preceding paragraphs. Using these normative values, O&M charges have been calculated.

47. In our calculations the escalation factor of 6% per annum has been used. In accordance with the notification dated 26.3.2001, if the escalation factor computed from the observed data lies in the range of 4.8% to 7.2%, this variation shall be absorbed by the petitioner. In case of deviation beyond this limit, adjustment shall be made on by applying actual escalation factor arrived at on the basis of weighted price index of CPI for industrial workers (CPI\_IW) and index of selected component of WPI (WPI\_TR).

48. The details of O&M expenses allowed are given hereunder:

|   | 2001-02            |             |                            | 2002-03            |             |                            | 2003-04            |             |                            |
|---|--------------------|-------------|----------------------------|--------------------|-------------|----------------------------|--------------------|-------------|----------------------------|
|   | Line length in Ckm | No. of bays | O&M expenses (Rs. in lakh) | Line length in Ckm | No. of bays | O&M expenses (Rs. in lakh) | Line length in Ckm | No. of bays | O&M expenses (Rs. in lakh) |
| Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations   | 480.84             | 11          | 389.584                    | 480.84             | 11          | 412.959                    | 480.84             | 11          | 437.736                    |
| One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and<br>400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar | 32.88              | 4           | 68.932                     | 32.88              | 4           | 73.068                     | 32.88              | 4           | 77.452                     |

## **RETURN ON EQUITY**

49. 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. It further provides that premium raised by the Transmission Utility while issuing share capital & investment of internal resources created out of free reserve of the existing utility, if any, for the funding of the project, shall also be reckoned as paid up capital for the purpose of computing the return on equity, provided such premium amount and internal resources are actually utilised for meeting the capital expenditure of the transmission project and forms part of the approved financial package as set out in the techno-economic clearance accorded by the Authority.

50. The petitioner has claimed return on the basis of equity as was admitted in Ministry of Power notification while notifying tariff, along with notional equity arising out of FERV claimed. The same methodology has been followed for working out the return on equity. Thus the following amount of equity has been considered in the calculation of return of equity:

(Rs. in lakh)

|   | Equity as allowed in previous tariff setting | Total Equity |
|---|--|--------------|
| Moga-Hissar Transmission Line   | 590.16                                       | 5567.16      |
| 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations | 4977.00                                      |              |
| One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line | 722.60                                       | 1101.73      |
| 400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar and Bhiwani | 379.13                                       |              |

51. On the above basis, the petitioner shall be entitled to return on equity of Rs. 1067.02 lakh each year during the tariff period.

**INTEREST ON WORKING CAPITAL**

52. As provided in the notification dated 26.3.2001, the interest on working capital shall cover:

- (a) Operation and maintenance expenses (cash) for one month;
- (b) Maintenance spares at a normative rate of 1% of the capital cost less 1/5<sup>th</sup> of the initial capitalised spares. Cost of maintenance spares for each subsequent year shall be revised at the rate applicable for revision of expenditure on O & M of the transmission system; and
- (c) Receivables equivalent to two months' average billing calculated on normative availability level, which is 98%.

53. The petitioner has claimed the maintenance spares on the basis of maintenance spares allowed in Ministry of Power for the year 1997-98 escalating the same as per weighted price index taking into account 60% of weightage for WPI & 40% of CPI and @ 6% p.a. for the years 2001-02 to 2003-04 and deducting the 1/5<sup>th</sup> of the initial capitalized spares therefrom.

54. In keeping with the methodology prescribed in the notification dated 26.3.2001, working capital has been worked out. The value of maintenance spares for 1997-98 has been taken as considered by Ministry of Power and the

same has been escalated up to 2000-01 as per respective WPI/CPI and thereafter the same has been further escalated @ 6% per annum for the tariff period 2001-02 to 2003-04.

55. The petitioner has claimed interest on working capital at the rate of 11.5%, based on annual SBI PLR for the year 2001-2002, which has been allowed separately by the Commission in certain other petitions and, therefore, the same has been allowed here also despite the objection of some of the respondents. The detailed calculations in support of interest on Working Capital are as under:

**Interest on Working Capital**

(Rs. in lakh)

| Interest on Working Capital       | Moga-Hissar Transmission Line, and 400 KV S/C of Hissar-Bhiwani Ckt-I line with associated bays at Hissar and Bhiwani sub-stations |              |              |              | One no. bay at Bhiwani sub-station for termination of one circuit of 400 KV Bawana-Bhiwani line, and 400 KV S/C of Hissar-Bawana line, up to Bhiwani along with associated bay at Hissar |              |              |              |
|-----------------------------------|--|--------------|--------------|--------------|--|--------------|--------------|--------------|
|                                   |  | 2001-2002    | 2002-2003    | 2003-2004    |  | 2001-2002    | 2002-2003    | 2003-2004    |
| Escalation for Maintenance Spares | 6%   |              |              |              | 6%   |              |              |              |
| Spares                            | 150.31   |              |              |              | 23.78  |              |              |              |
| Less: 1/5 th of Initial Spares    | 0.00   |              |              |              | 7.30   |              |              |              |
| Maintenance Spares                | 150.31   | 159.33       | 168.89       | 179.02       | 16.48  | 17.46        | 18.51        | 19.62        |
| O & M expenses                    |  | 32.47        | 34.41        | 36.48        |  | 5.74         | 6.09         | 6.45         |
| Receivables                       |  | 361.34       | 336.92       | 331.77       |  | 75.14        | 71.33        | 70.26        |
| Total                             |  | 553.14       | 540.22       | 547.28       |  | 98.35        | 95.93        | 96.33        |
| Rate of Interest                  |  | 11.50%       | 11.50%       | 11.50%       |  | 11.50%       | 11.50%       | 11.50%       |
| <b>Interest</b>                   |  | <b>63.61</b> | <b>62.13</b> | <b>62.94</b> |  | <b>11.31</b> | <b>11.03</b> | <b>11.08</b> |



## **TRANSMISSION CHARGES**

56. In the light of above discussion, we approve the transmission charges as given in the Table below:

**TABLE**

(Rs. in lakh)

|                                 | Moga-Hissar Transmission Line, and<br>400 KV S/C of Hissar-Bhiwani Ckt-I<br>line with associated bays at Hissar<br>and Bhiwani sub-stations |                |                | One no. bay at Bhiwani sub-station<br>for termination of one circuit of 400<br>KV Bawana-Bhiwani line, and<br>400 KV S/C of Hissar-Bawana line, up<br>to Bhiwani along with associated bay<br>at Hissar |               |               |
|---------------------------------|---|----------------|----------------|---|---------------|---------------|
|                                 | 2001-2002   | 2002-2003      | 2003-2004      | 2001-2002   | 2002-2003     | 2003-2004     |
| Interest on Loan                | 360.18  | 291.95         | 235.48         | 114.41  | 102.01        | 91.15         |
| Interest on Working<br>Capital  | 63.61   | 62.13          | 62.94          | 11.31   | 11.03         | 11.08         |
| Depreciation                    | 354.18  | 354.18         | 354.18         | 58.88   | 58.88         | 58.88         |
| Advance against<br>Depreciation | 109.75  | 9.56           | 9.56           | 21.01   | 6.70          | 6.70          |
| Return on Equity                | 890.74  | 890.74         | 890.74         | 176.28  | 176.28        | 176.28        |
| O & M Expenses                  | 389.58  | 412.96         | 437.74         | 68.93   | 73.07         | 77.45         |
| <b>Total</b>                    | <b>2168.05</b>  | <b>2021.52</b> | <b>1990.64</b> | <b>450.82</b>   | <b>427.97</b> | <b>421.54</b> |

57. In addition to the transmission charges, the petitioner shall be entitled to other charges like Development Surcharge, income tax, incentive, surcharge and other cess and taxes in accordance with the notification dated 26.3.2001 subject to directions if any, of the superior courts. The petitioner shall also be entitled to recovery of filing fee of Rs 2 lakh, which shall be recovered from the respondents in five monthly installments of Rupees forty thousand each and shall be shared by the respondents in the same ratio as other transmission charges. This is subject to confirmation that the amount is not already included in the O&M charges.

58. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's notification dated 4.4.2001 as extended from time to time. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us.

59. The transmission charges approved by us shall be included in the regional transmission tariff for Northern Region and shall be shared by the respondents in accordance with the notification dated 26.3.2001.

60. This order disposes of Petition No. 44/2002.

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

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

New Delhi dated the 25<sup>th</sup> March, 2004