

# CENTRAL ELECTRICITY REGULATORY COMMISSION NEW DELHI

## Coram

1. Shri Ashok Basu, Chairman
2. Shri D.P. Sinha, Member
3. Shri G.S. Rajamani, Member
4. Shri K.N. Sinha, Member

**Petition No. 51/2001**

### **In the matter of**

Transmission tariff for 315 MVA ICT-II at Malerkotla, 400 KV Hissar-Jaipur Line with associated bays, 400 KV Bawana-Hissar Line (Part) and 400 KV Bawana-Bhiwani Line with associated bays, covered under Nathpa-Jhakri Transmission System in Northern Region.

### **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. Er. A.K. Tandon, Sr. AE, UPPCL
2. Shri Umesh Gupta, SE (Law), RVPNL
3. Shri V.K. Gupta, DCE (Comml.), RVPNL
4. Shri J.S. Bhargava, AE (JSP), RVPNL
5. Shri D.D. Chopra, Advocate, UPPCL
6. Shri R.K. Vohra, GM (Comml.), PGCIL
7. Shri S.S. Sharma, AGM (Comml.), PGCIL
8. Shri C. Kannan, CM (Fin.), PGCIL
9. Shri T.P.S. Bawa, Addl. SE, PSEB
10. Shri R.K. Arora, XEN (T), HVPNL

**ORDER**  
(DATE OF HEARING : 29.8.2002)

Petition No. 51/2001 has been filed by PGCIL, the petitioner for approval of transmission charges for

- (i) 315 MVA ICT-II at Malerkotla,
- (ii) 400 KV Hissar-Jaipur line and its associated bays
- (iii) 400 KV Bawana-Hisar Line (Part) and its associated bays, and
- (iv) 400 KV Bawana-Bhiwani line with associated bays.

2. The above assets are components of Nathpa-Jhakri Transmission System. The approval sought by the petitioner was from the respective date of commercial operation and up to 31.3.2002 based on the terms and conditions of tariff contained in the Ministry of Power notifications dated 14.6.1996 and 16.12.1997. Meanwhile, the Commission notified the terms and conditions of tariff on 26.3.2001, which have come into force w.e.f. 1.4.2001. Therefore, the petitioner subsequently sought approval of transmission charges up to 31.3.2001. The commercial date of operation of individual assets is as under:

- |       |                                                              |          |
|-------|--------------------------------------------------------------|----------|
| (i)   | 315 MVA ICT-II at Malerkotla,                                | 1.4.1996 |
| (ii)  | 400 KV Hissar-Jaipur line and its associated bays            | 1.8.1997 |
| (iii) | 400 KV Bawana-Hisar Line (Part) and its associated bays, and | 1.2.1998 |
| (iv)  | 400 KV Bawana-Bhiwani line with associated bays.             | 1.9.1997 |

3. The Central Government in Ministry of Power accorded its approval for Nathpa-Jhakri Transmission System for evacuation of power generated from 6 x 250 MW Nathpa-Jhakri Hydroelectric Project in Northern Region vide letter dated 5.4.1989 at an estimated cost of Rs.889.95 crores including IDC of Rs.95.59 crores, based on 1<sup>st</sup> quarter 1989 price level. However, subsequently there were changes made in the scope and structure of the transmission system, which included those relating to transmission line configuration, relocation of transformers and sub-stations and the route of transmission lines. Accordingly, Ministry of Power vide its letter dated 25.5.2001, accorded the administrative approval and expenditure sanction to the Revised Cost Estimate of Rs.1561.63 crores (including IDC of Rs.353.58 crores) for the Nathpa-Jhakri Transmission System, with the revised scope of work as under:

**(a) Transmission Lines**

- (i) 400 KV D/C Nathpa-Jhakri – Abdullapur-Bawana (Triple)
- (ii) 400 KV D/C Nathpa-Jhakri – Nalagarh-Hissar (Triple)
- (iii) 400 KV D/C Bawana-Bhiwani
- (iv) 400 KV S/C Hissar-Jaipur
- (v) 220 KV D/C Jalandhar-Dasuya
- (vi) LILO of 400 KV D/C Chamera-Moga at Jalandhar

**(b) Sub-stations**

- (i) 400/220 KV sub-station at Abdullapur (new) (2x315 MVA ICT)
- (ii) 400/220 KV sub-station at Nalagarh (new) (2x315 MVA ICT)

- (iii) 400/220 KV sub-station at Jalandhar (new) (2x315 MVA ICT)
- (iv) Extension of 400/220 KV sub-station at Bawana and Malerkotla (1x315 MVA ICT)
- (v) Extension of 400/220 KV sub-station at Jaipur (2x315 MVA ICT)
- (vi) Extension of 400 KV sub-station at Hissar and 220 KV sub-station at Dasuya
- (vii) Provision of 4 sets of Emergency Restoration System
- (viii) Provision of 4 Nos of Thermovision cameras

4. The replies filed on behalf of RRVPNL, UPPCL and HVPNL are on record. While the respondents are unanimous in their representation that the transmission lines in respect of which the tariff has been claimed were meant for evacuation of power generated from Nathpa Jhakri Hydroelectric Project, they have referred to delay in commissioning of Nathpa Jhakri Hydroelectric Project and, therefore, they desire that they should not be made liable to pay charges for these transmission lines. It has been clarified on behalf of the petitioner that though the transmission lines were sanctioned as a part of Nathpa Jhakri Hydroelectric Project, the transmission lines are being used for strengthening of the transmission system in the Northern Region. We are satisfied with the explanation given on behalf of the petitioner. The other general points raised by the parties in their responses have been duly taken note of while approving the different components of transmission charges in respect of these transmission lines.

## **TARIFF FOR PERIOD PRIOR TO 1.4.1997**

5. 315 MVA ICT-II was declared under commercial operation w.e.f. 1.4.1996. The tariff for the period from 1.4.1996 to 31.3.1997 has been worked out based on notification dated 14.6.1996 applicable to Northern Region, according to which transmission charges are calculated by taking average values of interest on loan, depreciation, O&M, ROE and interest on working capital. As per the notification dated 14.6.1996, depreciation has not been allowed during first year.

## **TARIFF FOR PERIOD FROM 1.4.1997**

### **CAPITAL COST**

6. The date of commercial operation of different components of the Nathpa-Jhakri Transmission System, forming the subject matter of these two petitions, their apportioned approved cost and the completion cost as furnished by the petitioner are given hereunder in the Table.

TABLE

(Rs. in lakhs)

Sl. No.	Details of the Assets	Date of commercial operation	Apportioned Approved cost (Rs. in lakhs)	Completion cost (Rs. in lakhs)
1.	315 MVA ICT-II at Malerkotla with associated bays	1.4.1996	1291.38	918.23
2.	400 KV Hissar-Jaipur line with associated bays	1.8.1997	11338.41	11175.00
3.	400 KV Bawana-Hissar line with associated bays (Part)	1.2.1998	8426.19	1394.66
4.	400 KV Bawana-Bhiwani line with associated bays	1.9.1997		5957.78

7. Based on the above, the petitioner has claimed asset-wise transmission charges as under from the date of commercial operation of the respective asset and up to 31.3.2001 :

(Rs. in lakhs)						
Sl. No.	Name of the Assets	1996-97	1997-98	1998-99	1999-2000	2000-2001
1.	315 MVA ICT-II at Malerkotla with associated bays	134.57	223.03	216.21	210.45	204.59
2.	400 KV Hissar-Jaipur line with associated bays	-	1762.98 (1.8.1997 to 31.3.1998)	2658.32	2676.41	2703.21
3.	400 KV Bawana-Hissar line with associated bays (Part)	-	53.45 (1.2.1998 to 31.3.1998)	309.19	299.49	291.43
4.	400 KV Bawana-Bhiwani line with associated bays	-	821.20 (1.9.1997 to 31.3.1998)	1414.77	1429.07	1448.30

8. The petitioner in addition to the present petition has also filed petitions for approval of transmission charges in respect of other assets of Nathpa-Jhakri Transmission System, these being petitions No. 39/2000, 69/2000, 87/2000 and 3/2001. Nathpa-Jhakri Nalagarh and Nathpa-Jhakri-Abdulapur Transmission lines are, however, yet to be commissioned. The completion cost of the assets already under commercial operation is well within the RCE of Rs.1561.63 crores approved by Ministry of Power. Therefore, for the purpose of tariff calculations, the actual completion cost has been considered. However, in case subsequently with the commissioning of the complete transmission system, the actual completion cost exceeds the approved RCE of Rs.1561.63 crores, the calculation of tariff for the assets yet to be commissioned shall be limited to the approved RCE.

9. As per the original investment approval dated 5.4.1989 the transmission system was to be commissioned within a period of 7 years, including one and a half year for pre-construction activities, already in progress. Thus, the project was to be completed by April 1996. It has been explained on behalf of the petitioner that consequent upon transfer of the project to it, tendering activities were taken up and tenders were floated in February 1994 and various assets under the Nathpa-Jhakri Transmission System were progressively commissioned from April 1996 onwards. We notice that the Revised Cost Estimate was approved by Ministry of Power vide its letter dated 25.5.2001, wherein it has taken note of the fact that all the originally approved transmission lines, except 400 KV D/C Nathpa-Jhakri-Nalagarh line had been completed and additional components of the project were to be completed by May 2001. Under these circumstances, the commissioning of the transmission lines is generally in accord with the prescribed completion schedule and there is no time over-run.

10. It has been found that 4 sets of Emergency Restoration System (ERS) were sanctioned as a part of Nathpa-Jhakri Transmission System. We have considered the question of sharing of transmission charges for ERS earlier in Petitions No. 69/2000 and 3/2001. In our order dated 24.10.2002 in those petitions, we have taken a view that ERS covered in a particular scheme would be considered as part of that scheme itself. No separate charges are to be recovered from beneficiaries in case ERS is used in the states' system, as the annual transmission charges for the ERS are payable by them. However, in case ERS

under the specific scheme of the region is used in other regions or by other authorities, then the “net” earnings of the petitioner on this account, shall be passed on to the beneficiaries of the region, who are paying the transmission charges on account of ERS. The decision in Petitions No. 69/2000 and 3/2001 would equally govern the assets of ERS covered under the present petition.

11. It is seen that repayment of Govt. of India loan commenced before the date of commercial operation. The capital cost on the date of commercial operation, gross loan and equity corresponding to capital cost on the date of commercial operation, along with schedule of repayment have been considered as such for the purpose of tariff calculations. The repayment of loan made before the date of commercial operation has been taken into account for interest on loan calculations.

### **DEBT – EQUITY RATIO**

12. As per the original approval of the Central Government, Ministry of Power dated 5.4.1989, the total capital investment was to be met by debt and equity in the ratio of 50:50. However, the petitioner has employed debt and equity in the ratio varying from 74.94% : 25.06% to 89.19% : 10.81% for different assets commissioned after 1.4.1997. For the purpose of computation of tariff in accordance with the notification dated 16.12.1997, we allow the actual debt and equity employed by the petitioner in case of assets commissioned after 1.4.1997

and for assets commissioned before 1.4.1997 notional debt-equity of 1:1, has been allowed.

### **INTEREST ON LOAN**

13. The interest on loan has been considered based on the gross loan amount corresponding to capital cost on the date of commercial operation, the repayment schedule and the interest rates contained in the petition. It is observed that the interest rates considered in different petitions for the same loan are different. It has been explained by the petitioner that these loans are carrying floating rates of interest and the interest prevailing on the date of commercial operation has been considered in the tariff petitions. Any resetting of the interest rates during the tariff period shall have to be settled mutually between the parties. However, in the event of their inability to settle the matter, either party may approach the Commission for a decision. Subject to the above observations, actual interest rates as claimed in the petition have been allowed.

### **O&M EXPENSES**

14. As provided in Ministry of Power notification dated 16.12.1997, operation and maintenance expenses, including expenses on insurance, if any, for the first full year after commissioning of the transmission utility are to be calculated as

percentage of actual expenditure @ 1.5% of actual expenditure at the time of commissioning of the transmission system in the plain area and @ 2% of such expenditure in the hilly area. The expenditure on O&M in each subsequent year is to be revised as per weighted price index taking into account 60 percentage of weightage for wholesale price index and 40 percentage of weightage of consumer price index.

15. The completion cost of different assets in respect of which approval of transmission charges in this petition is sought, has been considered. O&M expenses in respect of the assets commissioned after 31.3.1997 have been calculated @ 1.5% as prescribed under Ministry of Power notification dated 16.12.1997 by taking the actual expenditure incurred up to the end of the respective year of commercial operation, subject to the limit of apportioned cost of the respective asset. In case of 315 MVA ICT II at Malerkotla declared under commercial operation prior to 1.4.1997, O&M have been calculated @ 1.4% as was being considered by the Central Government prior to 1.4.1997. In order to arrive at O&M expenses for the subsequent years, the basic O&M expenses have been escalated as per the notification dated 16.12.1997.

### **INTEREST ON WORKING CAPITAL**

16. It has been provided in the Ministry of Power notification dated 16.12.1997 that 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. Cost of maintenance spares for each subsequent years shall be revised at the rate applicable for revision of expenditure on O&M of transmission system; and
- (c) Receivables equivalent to two months' average billing calculated on normative availability level.

17. The above methodology has been considered while computing working capital. The details of computation of working capital for different assets are given here under:

#### COMPUTATION OF WORKING CAPITAL

##### **315 MVA ICT-II AT MALERKOTLA WITH ASSOCIATED BAYS**

(Rs. in lakhs)

	1996-97	1997-98	1998-99	1999-2000	2000-2001
O&M Charges	0.99	1.20	1.29	1.39	1.49
Maintenance Spares	8.51	9.58	10.34	11.11	11.95
Receivables	21.58	37.02	35.80	34.75	33.73
<b>TOTAL</b>	<b>31.08</b>	<b>47.80</b>	<b>47.43</b>	<b>47.25</b>	<b>47.17</b>

##### **400 KV HISSAR-JAIPUR LINE WITH ASSOCIATED BAYS**

(Rs. in lakhs)

	1997-98	1998-99	1999-2000	2000-2001
O&M Charges	13.90	14.53	15.42	16.36
Maintenance Spares	111.21	116.24	123.33	130.90
Receivables	438.98	439.58	440.00	441.13
<b>TOTAL</b>	<b>564.09</b>	<b>570.35</b>	<b>578.75</b>	<b>588.39</b>

### **400 KV BAWANA-HISSAR LINE WITH ASSOCIATED BAYS (PART)**

(Rs. in lakhs)

	<b>1997-98</b>	<b>1998-99</b>	<b>1999-2000</b>	<b>2000-2001</b>
O&M Charges	1.74	1.75	1.86	1.98
Maintenance Spares	13.86	14.01	14.87	15.81
Receivables	51.29	50.51	48.61	47.03
<b>TOTAL</b>	<b>66.89</b>	<b>66.27</b>	<b>65.34</b>	<b>64.82</b>

### **400 KV BAWANA-BHIWANI LINE WITH ASSOCIATED BAYS**

(Rs. in lakhs)

	<b>1997-98</b>	<b>1998-99</b>	<b>1999-2000</b>	<b>2000-2001</b>
O&M Charges	7.35	7.65	8.14	8.67
Maintenance Spares	58.82	61.19	65.15	69.36
Receivables	237.01	237.31	238.31	237.03
<b>TOTAL</b>	<b>303.18</b>	<b>306.15</b>	<b>311.60</b>	<b>315.06</b>

18. In the petitioner's tariff calculations, interest on working capital is based on interest rate of 15.84%. We have, however, allowed the annual average SBI PLR applicable during the respective financial year, that is, 14.50%, 14%, 13%, 12% and 11.50% for 1996-97, 1997-98, 1998-99, 1999-2000 and 2000-2001 respectively instead of the interest rate claimed by the petitioner in the petition.

### **DEPRECIATION**

19. It has been contended by the respondents that depreciation should be adjusted towards the loan repayment. According to the petitioner, depreciation is a recognised cost element and it does not have any bearing on repayment of loan. In this context, the petitioner has relied upon the accounting principle of the Institute of Chartered Accountants of India. It is contended on behalf of the petitioner that depreciation is charged for the purpose of replacement of assets at

the end of useful life of the assets and, therefore, cannot be linked with loan repayment. As the 16.12.1997 notification issued by Ministry of Power provides for charging of depreciation in the tariff, the same is being allowed in this petition. While allowing depreciation component of tariff, the weighted average depreciation rate has been applied, which has been worked out on the basis of actual capital expenditure as on 31.3.2001 as per CA's Certificates annexed to the petitions. The asset-wise weighted average depreciation rate applied is as under:

S.No.	Details of the assets	Weighted average depreciation rate
1.	315 MVA ICT-II at Malerkotla with associated bays	7.84%
2.	400 KV Hissar-Jaipur line with associated bays	5.73%
3.	400 KV Bawana-Hissar line with associated bays (Part)	5.61%
4.	400 KV Bawana-Bhiwani line with associated bays	6.00%

20. Based on the above discussion, the transmission charges approved by us are given below:

**315 MVA ICT-II T MALERKOTLA WITH ASSOCIATED BAYS**

(Rs. in lakhs)

Component	1996-97	1997-98	1998-99	1999-2000	2000-2001
Interest on Loan	66.51	62.87	53.04	43.42	33.59
Depreciation	0.00	68.39	69.33	70.66	71.99
O&M Expenses	11.91	14.36	15.49	16.65	17.90
Return on Equity	51.03	69.79	70.75	72.10	73.46
Interest on Working Capital	4.51	6.69	6.17	5.67	5.42
<b>TOTAL</b>	<b>133.96</b>	<b>222.10</b>	<b>214.78</b>	<b>208.50</b>	<b>202.36</b>

### **400 KV HISSAR-JAIPUR LINE WITH ASSOCIATED BAYS**

(Rs. in lakhs)

<b>Component</b>	<b>1997-98</b> (1.8.1997 to 31.3.1998)	<b>1998-99</b>	<b>1999-2000</b>	<b>2000-2001</b>
Interest on Loan	874.28	1310.28	1301.01	1294.33
Depreciation	424.82	637.77	639.32	640.33
O&M Expenses	111.21	174.37	184.99	196.37
Return on Equity	292.96	440.93	445.24	448.07
Interest on Working Capital	52.65	74.15	69.45	67.66
<b>TOTAL</b>	<b>1755.92</b>	<b>2637.50</b>	<b>2640.01</b>	<b>2646.76</b>

### **400 KV BAWANA-HISSAR LINE WITH ASSOCIATED BAYS (PART)**

(Rs. in lakhs)

<b>Component</b>	<b>1997-98</b> (1.2.1998 to 31.3.1998)	<b>1998-99</b>	<b>1999-2000</b>	<b>2000-2001</b>
Interest on Loan	26.91	157.34	144.51	133.12
Depreciation	12.96	77.77	78.01	78.24
O&M Expenses	3.47	21.02	22.31	23.72
Return on Equity	6.39	38.32	38.98	39.65
Interest on Working Capital	1.56	8.62	7.84	7.45
<b>TOTAL</b>	<b>51.29</b>	<b>303.07</b>	<b>291.65</b>	<b>282.18</b>

### **400 KV BAWANA-BHIWANI LINE WITH ASSOCIATED BAYS**

(Rs. in lakhs)

<b>Component</b>	<b>1997-98</b> (1.9.1997 to 31.3.1998)	<b>1998-99</b>	<b>1999-2000</b>	<b>2000-2001</b>
Interest on Loan	494.37	846.76	840.91	821.45
Depreciation	205.88	353.39	355.65	357.47
O&M Expenses	51.47	91.77	97.71	104.02
Return on Equity	53.04	92.13	98.17	103.00
Interest on Working Capital	24.76	39.80	37.39	36.23
<b>TOTAL</b>	<b>829.52</b>	<b>1423.85</b>	<b>1429.83</b>	<b>1422.17</b>

21. In addition to the transmission charges, the petitioner shall be entitled to other charges like extra rupee liability arising out of foreign exchange rate variation, income tax, incentive, surcharge and other cess and taxes in accordance with the notification dated 16.12.1997 issued by Ministry of Power.

22. The petitioner is already charging provisional tariff in respect of the assets covered by this petition. The provisional tariff being presently charged shall be subject to adjustment in the light of final tariff now approved by us.

23. The transmission tariff approved by us shall be included in the regional transmission tariff for Northern Region and shall be shared by the regional beneficiaries in accordance with para 7 of notification dated 16.12.1997.

24. This order disposes of Petitions No. 51/2001.

<b>Sd/-</b>	<b>Sd/-</b>	<b>Sd/-</b>	<b>Sd/-</b>
<b>(K.N. SINHA)</b> <b>MEMBER</b>	<b>(G.S. RAJAMANI)</b> <b>MEMBER</b>	<b>(D.P. SINHA)</b> <b>MEMBER</b>	<b>(ASHOK BASU)</b> <b>CHAIRMAN</b>

New Delhi dated the 30<sup>th</sup> October 2002