

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

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

Petition No. 23/1999

In the matter of

Approval of tariff in respect of Faridabad Gas Power Station for the period from 1.9.1999 to 31.3.2001.

Petition No 81/2002

In the matter of

Approval of tariff in respect of Faridabad Gas Power Station for the period from 1.4.2001 to 31.3.2004.

And in the matter of

National Thermal Power Corporation Ltd.

.... Petitioner

Vs

Haryana Vidyut Prasaran Nigam Ltd, Panchkula

.... Respondent

The following were present:

1. **Shri K.K. Garg, GM (Comml.), NTPC**
2. **Shri T.R. Sohal, NTPC**
3. **Shri M.S. Chawla, AGM (Comml.), NTPC**
4. **Shri A. Dua, NTPC**
5. **Shri R.K. Arora, XEN/T, HVPNL**

ORDER
(DATE OF HEARING 19-12-2002)

These petitions have been filed by the petitioner, NTPC, a generating company owned by the Central Government for approval of tariff in respect of Faridabad Gas Power Station (hereinafter referred to as "Faridabad GPS").

2. The techno-economic clearance for Faridabad GPS was accorded by CEA in terms of its letter dated 31.10.1994 at a cost of Rs. 1181.44 crore, including IDC of Rs.

64.69 crore. Subsequently, the Central Government in Ministry of Power, vide its letter dated 29.7.1997 accorded investment approval for Rs. 1163.60 crore, including IDC of Rs. 90.94 crore and WCM of Rs. 29.11 crore. The petitioner was stated to be processing a proposal for approval of revised cost estimates of Rs. 1049.70 crore, including IDC 14.65 crore and WCM of Rs.30.70 crore. Therefore, the latest approved cost for Faridabad GPS available on record is the investment approval accorded by Ministry of Power vide its letter dated 29.7.1997.

3. Faridabad GPS comprises of two gas turbine (GT) units with capacity of 140.827 MW each and one steam turbine (ST) unit with capacity of 149.932 MW. The date of commercial operation of GT-I, GT-II and ST, as stated in the petition, are 1.9.1999, 1.1.2000 and 1.1.2001 respectively. Petition No 23/1999 has been filed for approval of tariff from 1.9.1999 to 31.3.2001 based on Ministry of Power notification dated 30.3.1992 and in Petition No 81/2002 approval of tariff for the period 01.04.2001 to 31.03.2004 is sought based on the Commission's notification dated 26.3.2001. The periods for which approval of tariff for different units has been sought are thus as under:

| Unit | Basis | Period |
|------------------|--|------------------------|
| GT-I | Ministry of Power Notification dated 30.3.1992 | 1.9.1999 to 31.12.1999 |
| GT-I & GT-II | Ministry of Power Notification dated 30.3.1992 | 1.1.2000 to 31.12.2000 |
| GT-I, GT-II & ST | Ministry of Power Notification dated 30.3.1992 | 1.1.2001 to 31.3.2001 |
| GT-I, GT-II & ST | Commission's Notification dated 26.3.2001 | 1.4.2001 to 31.3.2004 |

4. The respondent has questioned the basis for declaring the GT-I, GT-II and ST on commercial operation and has sought shifting of date of commercial operation of Faridabad GPS under combined cycle operation mode from 1.1.2001 to 14.8.2001 on the ground there were large number of break downs during this period as a result which there were interruptions in supply of power during the period from 1.1.2001 to 13.8.2001, the details of which are contained in the reply filed on behalf of the respondent.

5. The petitioner has submitted that the successful completion of trial operation should be taken as the date of commercial operation of GT-I, GT-II and ST, which is stated to be in line with the guidelines formulated by the K.P. Rao Committee on the subject. According to the petitioner this requirement was duly complied with.

6. In terms of Ministry of Power notification dated 30.3.1992 and the Commission's notification dated 26.3.2001, the date of commercial operation would be the date of the synchronisation of the respective unit. The date of synchronisation of ST is stated to be 31.7.2000. As such, there may be a case for advancing the date of commercial operation rather than postponing it to 14.8.2001, as contended by the respondent. However, determination of date of commercial operation of the generating station has far reaching consequences. Prior to the date of commercial operation the generating company gets only the fuel cost reimbursed for the infirm power supplied. However, in such a situation, the generating company is not under any obligation to make available the full capacity on the demand of the beneficiary. On the date of commercial operation of the generating station, IDC gets frozen in the project cost.

The generating company becomes entitled to claim fixed charges from the beneficiaries from this date and beneficiary can stake its claim to full capacity of the generating station. By considering the date of synchronisation of the unit as the date of commercial operation would not make available the full benefits of the generating station to the beneficiary during the intervening period, though it will cast an obligation on the beneficiary to pay fixed charges. As we have noted above, the generating company is under no obligation to supply power to the beneficiary on demand till the date of commercial operation. Hence advancing the date of commercial operation to the date of synchronisation of the unit appears to be opposed to justice and equity. The postponement of the date of commercial operation of the generating station adds burden on the beneficiary, as the generating company becomes entitled to capitalisation of IDC, which adds to the cost of the generating station and resultantly the tariff. The postponement of the date of commercial operation is not considered to be in the interest of the ultimate consumer. On these considerations, we do not approve to advance the date of commercial operation to the date of synchronisation or postpone it to 14.8.2001. In case the respondent has any grievance on account of any non-declaration of capacity by the petitioner or non-availability of the generating station, it is at liberty to settle the issue in terms of the power purchase agreement signed between the parties.

CAPITAL COST

7. As per Ministry of Power notification dated 30.3.92 and the Commission's notification dated 26.3.2001, the actual capital expenditure incurred on completion of the generating station shall be the criterion for fixation of tariff. It is further provided that where actual expenditure exceeds the approved project cost, the excess

expenditure as approved by CEA or an appropriate independent agency shall be deemed to be actual capital expenditure for the purpose of determining the tariff.

8. The petitioner was not following the practice of drawing the account and getting them audited on the dates of commercial operation of each of the units. Accordingly these are not available on the respective dates of commercial operation of the units and, therefore, the capital cost on the date of commercial operation is to be back calculated by deducting additional capitalisation amount from the date of commercial operation to the year end, from the capital cost. From the records, it can be seen that on the date of commercial operation of the generating station, that is, 1.1.2001 the actual expenditure on GT-I and GT-II cannot be inferred because the petitioner has furnished the additional capitalisation in respect of GT-I & GT-II for the full year, instead of bifurcating it into additional capitalization up to the date of commercial operation of Steam Turbine and thereafter, and, therefore, the petitioner was directed to give capital cost of each of the unit, separately on the date of commercial operation and details of additional capitalisation for GT-I & GT-II up to the date of the commercial operation of the Steam Turbine. The petitioner has, however, indicated project cost of GT I and GT II on the respective date of their commissioning and not on the date of commercial operation of the Steam Turbine. The petitioner has also submitted that capital cost of GT-I of Rs.30543.5 lakh and capital cost of GT-II of Rs.16189.3 lakh. as on 31.3.2001 may be treated as capital cost on the date of commercial operation of the Steam Turbine, that is, 1.1.2001 as the details of additional capital expenditure given are only of the nature of adjustment to the capitalisation done previously. This implies that additional capitalisation to the tune of Rs.778.6 lakh for GT-I and Rs.813.8

lakh for GT-II is to be treated as having been done by the petitioner prior to the date of commercial operation of the Steam Turbine. This has been accepted as a special case, having regard to the practice followed by the petitioner for maintaining annual accounts. In view of the above, the actual capital expenditure on the date of commercial operation of the respective unit and as on 31.3.2001 works out as follows:

| | (Rs. in lakh) |
|--|---------------|
| As on 01.01.1999, the date of commercial operation of GT-I | 29648.8 |
| As on 01.01.2000, the date of commercial operation of GT-II | 45010.1 |
| As on 01.01.2001, the date of commercial operation of ST and Plant | 89537.4 |
| As on 31.03.2001 | 90289.5 |

9. The actual expenditure on the date of commercial operation of plant is less than the revised cost estimate submitted to CEA. We, therefore, allow tariff based on actual capital expenditure on the respective date. However, the apportionment of the cost of the actual expenditure on the date of commercial operation for the purpose of the tariff from 1.1.1999 for GT-I and from 1.1.2000 for GT-II would be in ratio of the corresponding capacity in view of the provisions of Ministry of Power notification dated 30.3.1992 and the Commission's notification dated 26.3.2001 and, therefore, the following project cost has been adopted for tariff purpose on the respective dates as mentioned below:

(Rs. in lakh)

| | Apportioned Cost | Actual Expenditure | Cost allowed in tariff |
|--|------------------|--------------------|------------------------|
| As on 01.01.1999, the date of commercial operation of GT-I | 29216 | 29648.8 | 29216 |
| As on 01.01.2000, the date of commercial operation of GT-II | 58432 | 45010.1 | 45010.1 |
| As on 01.01.2001 the date of commercial operation of ST and the generating station | 89537.4 | 89537.4 | 89537.4 |
| As on 31.03.2001 | | 90289.5 | 90289.5 |

10. The amount of spares capitalized should be taken as Rs.1474 lakh as indicated by the petitioner, based on books of accounts for 2000-2001.

DEBT-EQUITY RATIO

11. As per Ministry of Power Notification dated 30.3.92 and the Commission's notification dated 26.03.2001, the interest on loan capital and return on equity are to be computed, as per the financial package approved by CEA or an appropriate independent agency, as the case may be. The petitioner has claimed tariff by considering debt and equity in the ratio of 50:50. It has been submitted by the respondent that debt and equity should be in the ratio of 80:20 as applicable to IPPs.

12. The approved financial package for the generating station is not available on record. The feasibility report for Faridabad GPS was with the provision of debt and equity in the ratio of 50:50. Accordingly, debt and equity in the ratio of 50:50 has been adopted notionally for working out the fixed charges.

TARGET AVAILABILITY

13. The petitioner has considered Target Availability of 68.49% for the generating station for the period prior to 1.4.2001 as also for the period 1.4.2001 to 31.3.2004 as the station is not covered under ABT. However, based on the provisions of the Commission's notification dated 26.3.2001, Target Availability of 80 % has been considered for recovery of full fixed charges and computation of fuel element in the working capital for the period from 1.4.2001 onwards. For the period from 1.9.1999 to 31.3.2001, PLF of 68.49% has been taken into account for this purpose.

RETURN ON EQUITY

14. As per Ministry of Power Notification dated 30.3.92 and the Commission notification dated 26.03.2001, return on equity shall be computed on the paid up and subscribed capital and shall be 16% of such capital. The petitioner has claimed return on equity @ 16%. The respondent has, however, submitted that that return on equity should be payable at 12%. In case of generating stations, return on equity was charged in tariff @ 12% per annum till 31.10.1998. However, it was increased to 16% with effect from 1.11.1998. The respondent has contended that there was no justification to increase return on equity from 12% to 16%. As the things stand, the terms and conditions prescribed by the Central Government as also the Commission legislate that return on equity should be allowed @ 16%. Accordingly, we do not find any justification in support of the issue raised. In our computation of tariff, return on equity @ 16% per annum has been allowed. The charges payable by the respondent on account of return on equity as under:

| | (Rs in lakh) | | | | | | |
|--|---------------------------|--------------------------|---------------------------|-----------------------------|--------------------------|--------------------------|-----------------------------|
| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2002 | 1.4.2002 to 31.3.2003 | 1.4.2003 to 31.3.2004 |
| Opening Balance | 14608 | 22505 | 22570 | 44769 | 45145 | 45145 | 45145 |
| Increase/Decrease due to FERV | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Increase/Decrease due to Additional capitalisation | 0 | 65 | 796 | 376 | 0 | 0 | 0 |
| Closing Balance | 14608 | 22570 | 23366 | 45145 | 45145 | 45145 | 45145 |
| Average Equity | 14608 | 22538 | 22968 | 44957 | 45145 | 45145 | 45145 |
| Rate of Return on Equity | 16.00% | 16.00% | 16.00% | 16.00% | 16.00% | 16.00% | 16.00% |
| Return on Equity | 2337 | 3606 | 3675 | 7193 | 7223 | 7223 | 7223 |

INTEREST ON LOAN

15. As per Ministry of Power Notification dated 30.3.92 and the Commission's notification dated 26.03.2001, the interest on loan capital shall be computed on the outstanding loans, duly taking into account the schedule of repayment, as per the financial package approved by CEA or an appropriate independent agency, as the case may be. The normative loan amount has been worked out by considering debt-equity in the ratio of 50:50 as already decided. In accordance with earlier decisions of the Commission, the annual repayment amount for calculation of interest on loan as worked out by the following formula, or as claimed in the petition, whichever is higher, has been considered:

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

16. On the basis of the formula given above, the repayment amount will be Rs.912 lakh during 2003-04 only and there are no repayments during the earlier years. These have been considered for the purpose of calculation of interest on loan. Some of the loans viz. SBI-I loan carry floating rate of interest. Therefore, interest rate prevailing as on 1.4.2001 has been considered for interest computation for the period 1.4.2001 onwards. However, interest on loan would be subject to adjustment on the basis of actual rate of interest applicable for the period 1.4.2001 onwards. In case the parties are unable to agree to adjustment of rate of interest, any one of them is at liberty to approach the Commission for appropriate decision. The necessary details of loan and computation of interest on loan are appended hereinbelow:

(Rs. in lakh)

| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
|---|------------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2002 | 1.4.2002 to 31.3.2003 | 1.4.2003 to 31.3.2004 |
| Gross Loan - Opening | 14608 | 22505 | 22570 | 44769 | 45145 | 45145 | 45145 |
| Cumulative Repayment up to the Previous Year | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Loan-Opening | 14608 | 22505 | 22570 | 44769 | 45145 | 45145 | 45145 |
| Increase/ Decrease due to FERV | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Increase/ Decrease due to Additional capitalisation | 0 | 65 | 796 | 376 | 0 | 0 | 0 |
| Total | 14608 | 22570 | 23366 | 45145 | 45145 | 45145 | 45145 |
| Repayments of loan during the year | 0 | 0 | 0 | 0 | 0 | 0 | 912 |
| Net Loan-Closing | 14608 | 22570 | 23366 | 45145 | 45145 | 45145 | 44233 |
| Average Net Loan | 14608 | 22538 | 22968 | 44957 | 45145 | 45145 | 44689 |
| Rate of Interest | 14.50% | 14.50% | 14.35% | 13.96% | 13.78% | 13.78% | 13.80% |
| Interest | 2118 | 3268 | 3297 | 6277 | 6221 | 6221 | 6166 |

DEPRECIATION

17. As per Ministry of Power notification dated 30.3.1992, depreciation for computation of annual fixed charges is to be considered in accordance with the rates notified by the Central Government from time to time under Section 43A (2) of the Electricity (Supply) Act, 1948. These rates were notified by the Central Government vide notification dated 29.3.1994. The Commission's notification dated 26.3.2001, prescribes that the value base for the purpose of depreciation shall be historical cost of the asset and the depreciation shall be calculated annually as per straight line method at the rates of depreciation prescribed in the Schedule thereto.

18. Depreciation for the tariff period has been calculated by taking the individual assets and their depreciation rates as per Ministry of Power's notification dated 30.3.92 read with notification dated 29.3.1994 and the Commission's notification dated 26.03.2001. For the period 1.4.2001 onwards, since the Commission's notification dated 26.3.2001 stipulates that the depreciation shall be chargeable from the first year of operation on pro-rata basis, the depreciation has been worked out on the average of opening and closing gross block during the year.

| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
|--|------------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2002 | 1.4.2002 to 31.3.2003 | 1.4.2003 to 31.3.2004 |
| Rate Of Depreciation | 7.09% | 7.09% | 7.09% | 7.09% | 4.60% | 4.60% | 4.60% |
| Depreciation recovered in tariff | 0 | 0 | 2411 | 789 | 4151 | 4151 | 4151 |
| Depreciation recovered in tariff- ACE | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation recovered in tariff- FERV | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Advance against Depreciation (AAD) recovered in tariff | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Depreciation | 0 | 0 | 2411 | 789 | 4151 | 4151 | 4151 |

ADVANCE AGAINST DEPRECIATION

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

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

20. The provision of Advance Against Depreciation was not applicable prior to 1.4.2001. The actual gross loan and actual repayment as on 1.4.2001 has been considered for computing Advance Against Depreciation. The petitioner is not entitled to claim any Advance Against Depreciation as shown below:

| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
|-------------------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2002 | 1.4.2002 to 31.3.2003 | 1.4.2003 to 31.3.2004 |
| 1/12 th of Loan(s) | | | | | 3762 | 3762 | 3762 |
| Scheduled Repayment of the Loan(s) | | | | | 0 | 0 | 912 |
| Minimum of the above | | | | | 0 | 0 | 912 |
| Depreciation during the year | | | | | 4151 | 4151 | 4151 |
| Advance Against Depreciation | | | | | 0 | 0 | 0 |

O&M EXPENSES

21. As per Ministry of Power notification dated 30.3.1992, operation and maintenance expenses including insurance for the first full year, after commissioning

of the generating station shall be calculated as a percentage on the actual capital expenditure on the basis of one of the following alternatives, namely:

- (i) at the rate of 2.5 per cent of the actual capital expenditure of ceiling on capital provided in the power purchase agreement; or
- (ii) at 2 per cent of the actual capital expenditure on ceiling on capital expenditure provided in the power purchase agreement together with actual expenditure on insurance.

Provided that total of 2 per cent of the actual capital expenditure on ceiling on capital expenditure provided in the power purchase agreement and the actual expenditure on insurance shall not exceed 3 percent on the capital expenditure.

22. The Commission's notification dated 26.03.2001 lays down that the base O&M expenses for the new generating stations shall be fixed at 2.5% of the actual capital cost as approved by CEA or an appropriate Independent agency, as the case may be, in the year of commissioning and shall be escalated @10% p.a. for subsequent years to arrive at O&M expenses for the base year 1999-2000 level. Thereafter, the base O & M expenses shall be further escalated at the rate of 6% p.a. to arrive at permissible O & M expenses for the relevant year.

23. In the present case, the base year is 1999-00 for GT I and GT II and 2000-2001 for ST which is also the year of commissioning of the generating station. In accordance with the above methodologies, the petitioner shall be entitled to O&M expenses in tariff as computed hereinbelow:

| (Rs. in lakh) | | | | | | | |
|---|------------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2002 | 1.4.2002 to 31.3.2003 | 1.4.2003 to 31.3.2004 |
| %age of Capital Cost | 2.50% | | | | | | |
| Escalation Factor after 1 year | 6.00% | | | | | | |
| Unit -GT-I | 730 | 730 | 745 | 756 | 801 | 849 | 900 |
| Unit -GT-II | | 395 | 395 | 401 | 425 | 450 | 477 |
| Additional Capitalisation for GT-II | | 2 | 3 | 3 | 3 | 4 | 4 |
| Additional Capitalisation for GT-II | | | 20 | 20 | 41 | 43 | 46 |
| Unit –ST | | | | 1070 | 1086 | 1151 | 1220 |
| Additional Capitalisation for the station | | | | 9 | 19 | 20 | 21 |
| O & M Expenses | 730 | 1127 | 1163 | 2259 | 2375 | 2518 | 2669 |

INTEREST ON WORKING CAPITAL

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

- (a) Fuel Cost: As per Ministry of Power notification dated 30.3.92 and the Commission's notification dated 26.03.2001, fuel cost for one month corresponding to normative plant load factor/Target Availability is permissible. Accordingly, the fuel cost is worked out for one month on the basis of operational parameters as given in Ministry of Power notification dated 30.3.92 and the Commission's notification dated 26.03.2001.
- (b) Naptha Stock: For the period 1999-2000 and 2000-2001, the Naptha stock as on 3/2000 of the books of accounts and for the period 2001-02 onwards, Naptha stock as on 3/2001 of the books of accounts has been considered. There is also a provision of Naptha stock of 16000 KL for the generating station that should be sufficient for about 7 days operation at the normative PLF of 68.49%. The petitioner

has claimed 10 days stock of Naptha in petition No. 23/99. The Naptha price and GCV are based on PSL.

- (c) O&M Expenses: As per Ministry of Power notification dated 30.3.1992 and as per the Commission's notification dated 26.03.2001, operation and maintenance expenses (cash) for one month are permissible as a part of the working capital. Accordingly, O&M expenses for working capital has been worked out for 1 month of O&M expenses considered in tariff of the respective year.
- (d) Spares: As per Ministry of Power notification dated 30.3.92 and as per the Commission's notification dated 26.03.2001, maintenance spares at actuals subject to a maximum of 1% of the capital cost but not exceeding 1 year's requirements less value of 1/5th of initial spares already capitalised for first 5 years are required to be considered in the working capital. Accordingly, the spares requirement for the purpose of working capital has been worked out @ 1% of the capital cost less value of 1/5th of initial spares already capitalised. The amount of initial spares stated to be capitalized by the petitioner is Rs. 1474 lakh.
- (e) Receivables: As per Ministry of Power notification dated 30.3.92 and as per the Commission's notification dated 26.03.2001, receivables will be equivalent to two months average billing for sale of electricity calculated on normative plant load factor/Target Availability. However, receivable has been worked out on the basis of two months of fixed and variable charges.

The relevant details in support of computation of fuel cost, Naptha stock and receivables are appended herein below:

(Rs. in lakhs)

| | 1.9.1999 to 29.11.1999 | 30.11.1999 to 31.12.1999 | 1.9.1999 to 31.12.1999 | 1.1.2000 to 30.3.2000 | 31.3.2001 | 1.1.2000 to 31.3.2000 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.1.2001 to 31.3.2001 | 1.1.2001 to 31.3.2001 | 2001-02 | 2002-03 | 2003-04 |
|---|------------------------------|--------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--|--|--|---|---------|---------|
| | Stablisation period | After Stablisation period | After Stablisation period | Stablisation period | After Stablisation period | After Stablisation period | After Stablisation period | After Stablisation period | Stablisation period (combined cycle) | After Stablisation period (combined cycle) | After Stablisation period (combined cycle) | Combined cycle after stablisation period | | |
| Fuel Cost | | | | | | | | | | | | | | |
| Weighted Avg. GCV of Gas (kCal/cm) | 9962.02 | 9962.02 | | 9555.52 | 9555.52 | 9555.52 | | 9555.52 | 9337.48 | 9337.48 | | 9337.48 | 9337.48 | 9337.48 |
| Requirement of Gas for the period (1000SCM) | 45364 | 21506 | | 47294 | 701 | 63759 | | 386412 | 35633 | 89252 | | 647831 | 647831 | 649606 |
| Weighted Avg. Price of Gas (Rs./1000SCM) | 3956.64 | 3956.64 | | 4152.32 | 4152.32 | 4152.32 | | 4152.32 | 4032.94 | 4032.94 | | 4032.94 | 4032.94 | 4032.94 |
| Fuel cost for the period (Rs. in Lacs) | 1794.89 | 850.91 | 2645.80 | 1963.79 | 29.09 | 2647.48 | 4640.36 | 16045.06 | 1437.07 | 3599.47 | 5036.55 | 26127 | 26127 | 26198 |
| Fuel cost - 1 month (Rs. in Lakh) | | | 661.45 | | | | 1555 | 1775 | | | 1702 | 2177 | 2177 | 2183 |
| Naptha Stock | | | | | | | | | | | | | | |
| GCV of Naptha | 11356 | 11356 | | 11333 | 11333 | 11333 | | 11333 | 11130 | 11130 | | 11130 | 11130 | 11130 |
| Specific Naptha Consumption (MT/kwh) | 0.26 | 0.26 | | 0.26 | 0.26 | 0.26 | | 0.26 | 0.18 | 0.18 | | 0.18 | 0.18 | 0.18 |
| Requirement of Naptha for the period (MT) | 39795 | 18866 | | 39877 | 591 | 53760 | | 325815 | 29895 | 74878 | | 543496 | 543496 | 544985 |
| Weighted Avg. Price of Naptha (Rs./MT) | 12100 | 12100 | | 15600 | 15600 | 15600 | | 15600 | 16265 | 16265 | | 16265 | 16265 | 16265 |
| Naptha cost for the period (Rs. in Lacs) | 4815.24 | 2282.78 | 7098.02 | 6220.84 | 92.16 | 8386.61 | 14699.62 | 50827 | 4862 | 12179 | 17041 | 88400 | 88400 | 88642 |
| Naptha stock for 7 days | | | 407.26 | | | | 1131 | 1294 | | | 1325 | 1695 | 1695 | 1695 |

| | | | | | | | | | | | | | | |
|--|--------|--------|------|--------|--------|--------|------|--------|--------|--------|------|--------|--------|--------|
| Actual Naptha stock | | | 6 | | | | 6 | 6 | | | 6 | 1383 | 1383 | 1383 |
| Naptha stock considered in tariff | | | 6 | | | | 6 | 6 | | | 6 | 1383 | 1383 | 1383 |
| Receivables | | | | | | | | | | | | | | |
| Variable Charges | | | | | | | | | | | | | | |
| Gas (Rs/kWh) | 1.1693 | 1.1634 | | 1.2794 | 1.2729 | 1.2729 | | 1.2729 | 0.8951 | 0.8951 | | 0.8905 | 0.8905 | 0.8905 |
| Rs./kWh | 1.1693 | 1.1634 | | 1.2794 | 1.2729 | 1.2729 | | 1.2729 | 0.8951 | 0.8951 | | 0.8905 | 0.8905 | 0.8905 |
| Variable Charges for the period (Rs. in Lakh) | 1795 | 851 | 2646 | 1964 | 29 | 2647 | 4640 | 16045 | 1437 | 3599 | 5037 | 26127 | 26127 | 26198 |
| Variable Charges -2 months | | | 1323 | | | | 3111 | 3549 | | | 3404 | 4354 | 4354 | 4366 |
| Fixed Charges - 2 months | | | 924 | | | | 1461 | 2035 | | | 3332 | 3564 | 3588 | 3605 |
| Receivables | | | 2247 | | | | 4572 | 5584 | | | 6736 | 7918 | 7943 | 7971 |

25. The Commission's notification dated 26.03.2001 is silent about the financing of the working capital margin. Therefore the return and interest is not separately calculated on working capital margin and interest on the total working capital is worked out.

26. The average SBI PLR of 12% during 1999-2000 is considered as the rate of interest on working capital. For the tariff period 2001-02 to 2003-04, SBI PLR of 11.5% as on 1.4.2001 has been considered as the rate of interest on working capital in line with the Commission's earlier decision.

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

(Rs. in lakh)

| | 1999-2000 | | 2000-2001 | | 2001-02 | 2002-03 | 2003-04 |
|------------------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------|-------------|-------------|-------------|
| | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | | | |
| Days in the Year | 366 | 366 | 365 | 365 | 365 | 365 | 366 |
| Period (days) | 122 | 91 | 275 | 90 | 365 | 365 | 366 |
| Spares | -3 | 155 | 157 | 601 | 608 | 608 | 608 |
| Fuel Cost | 661 | 1555 | 1775 | 1702 | 2177 | 2177 | 2183 |
| Naptha Stock | 6 | 6 | 6 | 6 | 1383 | 1383 | 1383 |
| O & M expenses | 61 | 94 | 97 | 188 | 198 | 210 | 222 |
| Receivables | 2247 | 4572 | 5584 | 6736 | 7918 | 7943 | 7971 |
| Total Working Capital | 2972 | 6382 | 7619 | 9233 | 12284 | 12321 | 12368 |
| Weighted Average Interest Rate | 12.00% | 12.00% | 11.50% | 11.50% | 11.50% | 11.50% | 11.50% |
| Interest on Working Capital | 357 | 766 | 876 | 1062 | 1413 | 1417 | 1422 |

ANNUAL FIXED CHARGES

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

(Rs. in Lakh)

| | Particulars | 1999- 2000 | | 2000- 2001 | | 2001-02 | 2002-03 | 2003-04 |
|---|------------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------|--------------|--------------|--------------|
| | | 1.9.1999 to 31.12.1999 | 1.1.2000 to 31.3.2000 | 1.4.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | | | |
| | Days in the Year | 366 | 366 | 365 | 365 | 365 | 365 | 366 |
| | Period (days) | 122 | 91 | 275 | 90 | 365 | 365 | 366 |
| 1 | Interest on Loan | 2118 | 3268 | 3297 | 6277 | 6221 | 6221 | 6166 |
| 2 | Interest on Working Capital | 357 | 766 | 876 | 1062 | 1413 | 1417 | 1422 |
| 3 | Depreciation | 0 | 0 | 3199 | 3199 | 4151 | 4151 | 4151 |
| 4 | Advance Against Depreciation | | | | | 0 | 0 | 0 |
| 5 | Return on Equity | 2337 | 3606 | 3675 | 7193 | 7223 | 7223 | 7223 |
| 6 | O & M Expenses | 730 | 1127 | 1163 | 2259 | 2375 | 2518 | 2669 |
| | TOTAL | 5543 | 8767 | 12210 | 19990 | 21382 | 21529 | 21630 |

VARIABLE CHARGES

29. In terms of Ministry of Power Notification dated 30.3.1992 and the Commission's notification dated 26.3.2001 following operational norms have been considered for the computation of energy charges:

| Period | 1.9.1999 to 29.11.1999 | 30.11.1999 to 31.12.2000 | 1.1.2000 to 30.3.2000 | 31.3.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2004 |
|----------------------------------|---------------------------|--------------------------------|--------------------------|-------------------------------|--------------------------|-----------------------------|
| Normative PLF (Hours/kw/year) | | | | | | |
| GT-I | 4500 | 6000 | 6000 | 6000 | 6000 | 7008 |
| GT-II | - | - | 4500 | 6000 | 6000 | 7008 |
| ST-I | - | - | - | - | 4500 | 7008 |
| Average | 4500 | 6000 | 5250 | 6000 | 5478.90 | 7008 |
| Station Heat Rate (kcal/kWh) | | | | | | |
| GT-I | 2900 | 2900 | 2900 | 2900 | 2000 | 2000 |
| GT-II | - | - | 2900 | 2900 | | |
| ST-I | - | - | - | - | | |
| Average | 2900 | 2900 | 2900 | 2900 | 2000 | 2000 |
| Auxiliary Energy Consumption (%) | | | | | | |
| GT-I | 1.50 | 1.00 | 1.00 | 1.00 | 3.50 | 3.00 |
| GT-II | - | - | 1.50 | 1.00 | | |
| ST-I | - | - | - | - | | |
| Average | 1.50 | 1.00 | 1.25 | 1.00 | 3.50 | 3.00 |

30. The above values of station heat rate of 2900 Kcal/kWh or 2000 Kcal/kWh for open cycle and combined cycle operations respectively correspond to gross calorific value of fuel.

31. The gas data is available on record for the months of July 1999, December 1999 and January 2001 to March 2001 which has been considered.

32. The Energy Charges have been computed based on the data furnished in the petitions and are summarised below:

| Description | Unit | 1.9.1999 to 29.11.1999 | 30.11.1999 to 31.12.1999 | 1.1.2000 to 30.3.2000 | 31.3.2000 to 31.12.2000 | 1.1.2001 to 31.3.2001 | 1.4.2001 to 31.3.2004 |
|---|-------------------|------------------------------|--------------------------------|-----------------------------|-------------------------------|-----------------------------|-----------------------------|
| Capacity | MW | 140.827 | 140.827 | 281.654 | 281.654 | 431.586 | 431.586 |
| Normative PLF/Availability | Hours/Kw /year | 4500.00 | 6000.00 | 5250.00 | 6000.00 | 5478.90 | 7008.00 |
| Gross Station Heat Rate corresponding to GCV | kcal/kWh | 2900.00 | 2900.00 | 2900.00 | 2900.00 | 2000.00 | 2000.00 |
| Station Heat Rate corresponding to LCV of gas | kcal/kWh | 2629.19 | 2629.19 | 2629.19 | 2629.19 | 1813.24 | 1813.24 |
| Aux. Energy Consumption | % | 1.50 | 1.00 | 1.25 | 1.00 | 3.50 | 3.00 |
| NCV of Gas | kcal/SCM | 9031.75 | 9031.75 | 8663.21 | 8663.21 | 8465.53 | 8465.53 |
| GCV of Gas | kcal/SCM | 9962.02 | 9962.02 | 9555.52 | 9555.52 | 9337.48 | 9337.48 |
| Price of Gas | Rs./1000S CM | 3956.64 | 3956.64 | 4152.32 | 4152.32 | 4032.94 | 4032.94 |
| NCV of Naptha | kcal/Kg | | | | | 10500.00 | 10500.00 |
| GCV of Naptha | kcal/Kg | 11356.00 | 11356.00 | 11332.70 | 11332.70 | 11130.00 | 11130.00 |
| Price of Naptha | Rs./MT | 12100.00 | 12100.00 | 15600.00 | 15600.00 | 16264.99 | 16264.99 |
| Rate of Energy Charge from Gas | Paise/kWh | 115.18 | 115.18 | 126.02 | 126.02 | 86.38 | 86.38 |
| Rate of Energy Charge ex-bus per kWh Sent on Gas | Paise/kWh | 116.93 | 116.34 | 127.61 | 127.29 | 89.51 | 89.05 |
| Rate of Energy Charge from Naptha | Paise/kWh | 309.00 | 309.00 | 399.20 | 399.20 | 292.27 | 292.27 |
| Rate of Energy Charge ex-bus per kWh Sent on Naptha | Paise/kWh | 313.71 | 312.12 | 404.25 | 403.23 | 302.87 | 301.31 |

33. The base energy charges have been calculated on base value of GCV, base price of fuel and normative operating parameters as indicated in the above table and are subject to fuel price adjustment. Ministry of Power notification dated 30.3.1992 as amended from time to time, and the Commission's notification dated 26.3.2001 provide for fuel price adjustment for variation in fuel price and GCV of fuels. It is further provided that for the purpose of calculating the tariff, the operating parameters, that is, 'Station Heat Rate', Secondary Fuel Oil Consumption' and 'Auxiliary Consumption' shall be determined on the basis of actuals or norms, whichever is lower. Accordingly, the base energy charges approved on the basis of norms shall be subject to following adjustments: -

(i) Fuel price and GCV variation (Gas and liquid fuel) based on monthly weighted average as per the formula given below :-

$$\text{FPA} = \frac{10 \times (\text{SHR}_n) \times [(\text{P}_m/\text{K}_m) - (\text{P}_s/\text{K}_s)]}{(100 - \text{AC}_n)}$$

Where,

FPA = Fuel price Adjustment for a month in Paise/kWh Sent out

SHR_n = Normative Gross Station Heat Rate expressed in kcal/kWh

AC_n = Normative Auxiliary Consumption in percentage

P_m = Weighted average price of Gas or Liquid fuel as per PSL for the month in Rs. / 1000 SCM or Rs./ KL or Rs./MT

K_m = Weighted average gross calorific value of Gas or Liquid fuel for the month in Kcal/ SCM or kcal/ Litre or kcal/ Kg

- P_s = Base price of Gas or Liquid fuel as taken for determination of base energy charge in tariff order in Rs. / 1000 SCM or Rs./ KL or Rs./MT
- K_s = Base value of gross calorific value of Gas or Liquid fuel as taken determination of base energy charge in tariff order in Kcal/ SCM or kcal/ Litre or kcal/ Kg

Note: FPA shall further be adjusted for monthly operating pattern adjustment (MOPA) for % open cycle operation as certified by NREB corresponding to open cycle gross station heat rate of 2900 kCal/kWh.

(ii) The energy charges shall be finally adjusted on annual basis as per actual annual average values of operating parameters achieved for the station, that is, gross station heat rate and auxiliary energy consumption provided any or all of the actual operating parameters are lower than their respective normative values indicated in the table under para 32 above. The annual energy charge adjustment shall be done as per the formula given below: -

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

Where,

- AECA - Annual Energy Charge Adjustment in Rs. Crore
- P - Energy charge payable for the year based on operational parameters (Actual or normative whichever is lower) and weighted average price and GCV of fuels for the year in paise
- Q - Total amount recovered as monthly fuel price adjustment for the year in Paise
- R - Total amount recovered as base energy charge for the year in Paise

And,

$$P = (ESO_{\text{Annual}}) \times 10 \times \left[\frac{\{(SHR_A) \times (P_{\text{Annual}}) / (K_{\text{Annual}})\}}{\{100 - (AC_A)\}} \right]$$

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

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

Where;

ESO_{Annual} Energy sent out in the year in kWh sent out based on actual drawal for period up to 31.3.2001 and based on generation schedules given by RLDC for the period 1.4.2001 to 31.3.2004.

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

P_{Annual} - Weighted average price of Gas or Liquid fuel for the year in Rs. / 1000 SCM of Rs./ KL or Rs./MT

K_{Annual} - Weighted average GCV of Gas or Liquid fuel for the year in Kcal/ SCM or kcal/ Litre or kcal/ Kg

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

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

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

AC_A - Actual average Auxiliary Consumption of the station for the year in percentage

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

35. For tariff period 2001-04, capacity based on gas and liquid are to be dispatched separately and hence annual adjustment for the gas & liquid would also be done separately based on generation schedules on respective fuels.

36. The revised fixed and variable charges have been decided by us in the preceding paras for Faridabad GPS for the previous years as well. The petitioner has already recovered fixed and variable charges from the respondent based on the interim orders of the Commission. The amount already recovered shall be adjusted against the revised charges decided by us through this order.

37. In addition to these charges, the petitioner is entitled to recover other charges also like incentive, claim for reimbursement of Income-tax, other taxes, cess levied by a statutory authority and other charges in accordance with Ministry of Power notification dated 30.3.1992 and the Commission's notification dated 26.3.2001, as applicable..

39. This order disposes of Petitions No 23/1999 and.81/2002.

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(G.S. RAJAMANI)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRMAN

New Delhi dated the 30th June, 2003

