

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram:

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

Petition No.94/2002

In the matter of

Approval of tariff from 1.4.2000 to 31.3.2001 of Gandhar Gas Power Station

And in the matter of

National Thermal Power Corporation Ltd.

.... **Petitioner**

Vs

1. Madhya Pradesh State Electricity Board, Jabalpur
2. Maharashtra State Electricity Board, Mumbai
3. Gujarat Electricity Board, Vadodara
4. Chhattisgarh State Electricity Board, Raipur
5. Electricity Department, Govt of Goa, Panaji, Goa
6. Electricity Department, Admn. Of Daman & Diu, Daman
7. Electricity Department, Admn. of Dadra and Nagar Haveli,
Silvassa

...**Respondents**

The following were present:

1. Shri V.B.K. Jain, GM (Comml), NTPC
2. Shri R. Datt, GM (Comml), NTPC
3. Shri M.S. Chawla, AGM (Comml), NTPC
4. Smt. Ranjana Gupta, NTPC
5. Shri B. Arya, NTPC
6. Shri S.K. Johar, NTPC
7. Shri S.K. Sharma, Sr. Mgr (C), NTPC
8. Shri Sandeep Mehta, NTPC
9. Shri Alka Saigal, NTPC
10. Shri Ajay Sardana, NTPC
11. Shri D. Khandelwal, S.E. MPSEB
12. Shri Deepak K. Shrivastava, EE (Comml), MSEB
13. Shri Jayant Mehta, Advocate, GEB

**ORDER
(DATE OF HEARING 25.11.2003)**

The petitioner has filed this petition for approval of approval of tariff in respect of Gandhar Gas Power Station (Gandhar GPS) for the period from 1.4.2000 to

31.3.2001. Initially, the petitioner had filed the petition for approval of fixed charges. Subsequently, however, it filed the amended petition to claim fixed charges as well as the variable charges. The amended petition was directed to be taken on record vide our order dated 1.10.2003.

2. Gandhar GPS was declared under commercial operation on 1.11.1995. The tariff for Gandhar GPS was notified by Ministry of Power vide notification dated 28.4.1997, which was subsequently amended vide notifications dated 30.11.1998 and 14.5.1999 to account for change in rate of depreciation, and increase in return on equity from 12% to 16%. The notification dated 28.4.1997 was valid up to 31.3.2000, but was continued on ad hoc basis beyond that date in view of Clause 6 thereof.

3. The petitioner had filed Petition No. 77/2000 to claim revised fixed charges due to additional capital expenditure and FERV capitalised in respect of Gandhar GPS for the years 1997-98 to 1999-2000. The said petition was disposed of vide the Commission's order dated 10.4.2002. The Commission directed the petitioner to file fresh petition for determination of tariff for the period from 1.4.2000 to 31.3.2001 based on the terms and conditions notified by Ministry of Power as per the notification dated 28.4.1997. The present petition has been filed in pursuance of these directions of the Commission contained in the order dated 10.4.2002 to claim fixed charges as under:

SI No	Particulars	Rs in lakh
1	Interest on Loan	16241
2	Interest on Working Capital	2910
3	Depreciation	19087
4	Return on Equity	19137
5	O&M Expenses including water Charges	5627
	TOTAL	63002

4. In addition the petitioner has claimed the variable charges @ of 74.54 paise/kWh.

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

(Rs. in lakh)

Fuel Cost	2376
Naphtha stock	0
O & M expenses	469
Spares	2251
Receivables ¹	16970
Total Working Capital	22066
Working Capital Margin (WCM)	5240
Total Working Capital allowed	16826
Rate of Interest	12.19%
Interest on allowed Working Capital	2051
Interest on WCM	438

6. Reply to the original petition was filed on behalf of Respondent No. 1 (MPSEB). It has been contended on behalf of Respondent No.1 that before undertaking the process of determination of tariff for the period from 1.4.2000 to 31.3.2001, the Commission should decide the terms and conditions of tariff for that period under Section 28 of the Electricity Regulatory Commissions Act, 1998. It has been stated that the terms and conditions of tariff notified by Ministry of Power on 28.4.1997 applicable to Gandhar GPS was valid for a period of 5 years and it expired on 31.3.2000. This issue has already been considered by the Commission. The Commission in its order dated 21.12.2000, while laying down the terms and conditions of tariff, directed that these terms and conditions would be applicable with effect from 1.4.2001 and for the period prior to that, the terms and conditions earlier notified by

the Central Government in Ministry of Power would continue to apply. Therefore, the terms and conditions of tariff in respect of Gandhar GPS for the period from 1.4.2000 to 31.3.2001 are not required to be determined by the Commission afresh. Accordingly, while disposing of Petition No. 77/2000, the Commission in its order dated 10.4.2002 had directed the petitioner to file the petition based on terms and conditions decided by Ministry of Power. The present petition has been filed in compliance with those directions. Therefore, we do not find any merit in the preliminary submission made on behalf of Respondent No.1.

7. It was contended by Respondent No.1 that debt and equity should be in the ratio of 70:30 as applicable to IPPs, though as per notification dated 28.4.1997, debt and equity have been taken in the ratio of 50:50. It is further contended that ROE should be payable at 12% as there was no justification to increase ROE to 16% with effect from 1.11.1998. Similarly, on the question of depreciation, it has been submitted that prior to 1992, depreciation was charged at the rate of 3.4%. However, this was increased to 7.4% after 1994. Respondent No.1 has prayed that depreciation should be charged at the rate applicable prior to 1992. It is also contended that the respondents should not meet the income-tax liability of the petitioner who should pay it out of its own profits. We do not find any force in any of these submissions made on behalf of Respondent No.1. We have already noted that the petition has been filed based on the terms and conditions contained in Ministry of Power's notification dated 2.11.1992. Respondent No.1 has not been able to pin point any deviation on account of ROE, debt-equity ratio, depreciation and incentive from the said notification. In view of earlier decisions, we are bound to follow the terms and conditions for determination of tariff in respect of Gandhar GPS based on notification dated 28.4.1997.

8. Respondent No.1 has also raised the issues of interest on loan, interest on working capital, O&M expenses and the water charges. We have taken these submissions into account while considering the impact of these components on tariff. Respondent No.1 also raised certain issues regarding the applicability of operational norms like specific fuel oil consumption, auxiliary energy consumption, etc. These aspects are not being considered in this petition as the Commission has already decided to follow the Ministry of Power project specific tariff notification up to 31.3.2001 and the operational norms have been considered in accordance with the notification dated 28.4.1997 applicable to Gandhar GPS. We now proceed to examine the different components of tariff separately.

CAPITAL COST

9. The investment approval for the project was accorded by the Central Government vide letter dated 23.01.1995 at a revised cost of Rs.2447.60 crore, excluding working capital margin (WCM).

10. Ministry of Power while issuing tariff notification dated 28.4.1997 considered the project cost of Rs.2329.21 crore, which included initial spares of Rs.106.22, crore as on 31.3.1996. This gross block was considered for the purpose of calculation of tariff from 1.11.1995. Ministry of Power had allowed de-capitalisation of Rs.3.932 crore during 1996-97. Therefore, the total admitted cost of the project, including the initial spares works out to Rs.2325.28 crore as on 31.3.1997. The Commission in its order dated 10.04.2002 in petition No 77/2000 had allowed additional capitalisation amounting Rs.580.55 lakh, Rs.246.90 lakh and Rs. 2574.38 lakh for the years 1997-98, 1998-99 and 1999-2000 respectively. Thus, the closing capital cost a of Rs.

235830.00 lakh s on 31.3.2000 has been considered as the opening gross block for the purposes of present tariff petition.

11. The petitioner has claimed the following amounts on account of additional capitalisation during the year 2000-01 as detailed below:

(Rs. in lakh)

Financial Years	2000-01
1. New work	
(a) Within the scope of RCE	465.78
(b) Not in the scope of RCE	57.67
Total (a + b)	523.45
2. Balance Payments	6051.98
Total (1+2)	6575.43

12. Against the above claim, no specific justification has been furnished by the petitioner in support of balance payments, though the petitioner has furnished justification for the following expenditure under the New Works in the respective years:

(Rs. in lakh)

Financial Years	2000-01
New work	
(a) Within the scope of RCE	464.83
(b) Not in the scope of RCE	47.85
Total (a + b)	512.68

13. The petitioner has not sought capitalisation of capital spares.

14. Respondent No 1 has opposed capitalisation of the following items of expenditure:

New Works

(a) Raising Road level	- Rs.8.92 lakh
(b) Approach Road to Garage	-Rs.4.29 lakh
(c) Office Equipment and Furniture	- Rs. 38.46 lakh

Balance Payments

(a) Permanent Road Helipad	-Rs. 11.99 lakh
(b) C& I System Equipment	-Rs. 406.52 lakh
(c) SAT/COM EDP	-Rs.22.29 lakh
(d) Naphtha Handling System	-Rs.39.66 lakh

15. The following methodology has been adopted for allowing or disallowing the claim of the petitioner for additional capitalisation:

New Works

(a) The expenditure on any works, which was in the scope of approved project cost but undertaken after the date of commercial operation has been allowed.

(b) The expenditure incurred for the replacement of existing equipment/facility due to technology becoming obsolete or the equipment having outlived its utility in the normal course of operation, has also been allowed for capitalisation.

(c) The expenditure on the works undertaken/on purchase of additional equipment/facility which is giving benefit exclusively to the petitioner without any apparent benefit to the beneficiaries has not been allowed, unless it is found that expenditure was necessary for the benefit of the employees for giving necessary facilities at the remote location of the power project.

(d) Any mandatory expenditure arising out of statutory obligation due to change of law, etc., has been allowed.

16. The balance payments pertaining to

(a) Works undertaken or order placed before the date of commercial operation which are presumed to be within the scope of approved project cost have been allowed.

(b) Works undertaken or order placed after the date of commercial operation which might have been admitted by the Central Government in the previous tariff period have been allowed.

(c) Works undertaken or order placed after the date of commercial operation which has been claimed as new works in the relevant years in the tariff period under consideration and allowed by the Commission, the balance payments in subsequent years pertaining to these new works have also been allowed.

17. The other balance payments not falling in any of the above categories have been disallowed.

18. Based on the above methodology, we allow the additional capitalisation as given below:

(Rs. in lakh)	
Financial Year	2000-01
1. New works	
(a) Within the scope of RCE	466.06
(b) Not in the scope of RCE	57.67
Total (a + b)	523.73
2. Balance Payments	6051.71
Total (1+2)	6575.44

19. In view of the above, the following items of capital cost for the purpose of tariff are allowed:

		(Rs. in lakh)
		2000-01
(i)	Opening project cost as on 1 st April	235930.00
(ii)	Additional capitalisation during the year	6575.00
(iii)	Closing project Cost as on 31 st March of the year	242505.00

DEBT-EQUITY RATIO

20. Ministry of Power in its notification dated 28.4.1997 had considered the normative debt-equity ratio of 50:50. For the purpose of calculation of fixed charges in this petition same debt-equity ratio has been adopted and accepted by the Commission. Accordingly on a capital base of Rs.242505.00 lakh, the debt works out to be Rs.121252.50 lakh.

RETURN ON EQUITY (ROE)

21. ROE @ 16% per annum has been allowed as provided in the notification issued by Ministry of Power. The charges payable by the respondents on account of return on equity works out to Rs. 19137 lakh i.e. Rs.121252.50 lakh.

INTEREST ON LOAN

22. The normative loan amount has been worked out based on the normative debt-equity ratio of 50:50. The annual repayment of loan up to 31.3.2000 as per the notification dated 28.4.1997 has been considered. The annual repayment amount for the year 2000-01 have been worked out as per the following formula.

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

23. The amount of annual repayment for calculation of interest on loan is considered as worked out by the above formula, or as given in the petition, whichever is higher.

24. For the purpose of calculation of amount of interest on loan, the weighted rate of interest on loan has been worked out on the basis of actual rate of interest on actual average loans and the same is applied on the normative average loan during the year. An amount of Rs. 15215 lakh is payable by the respondents on account of interest on loan, though Respondent No 1 has submitted that the amount on that account should be Rs. 13353 lakh against Rs. 16309 lakh claimed in the petition. The calculations in support of actual interest on loan considered are appended as under:

(Rs. in lakh)	
Gol-I	
Opening Balance	35734
Drawl	0
Repayments	3970
Closing Balance	31763
Average Net Loan	33748
Rate of Interest	17.00%
Interest on loan	5737
Gol-II	
Opening Balance	13558
Drawl	0
Repayments	0
Closing Balance	13558
Average Net Loan	13558
Rate of Interest	16.00%
Interest on loan	2169
Gol-III	
Opening Balance	1239
Drawl	0

Repayments	0
Closing Balance	1239
Average Net Loan	1239
Rate of Interest	16.00%
Interest on loan	198
GoI-IV	
Opening Balance	1313
Drawl	0
Repayments	0
Closing Balance	1313
Average Net Loan	1313
Rate of Interest	15.00%
Interest on loan	197
GoI-Total	
Opening Balance	51844
Drawl	0
Repayments	3970
Closing Balance	47873
Average Net Loan	49859
Rate of Interest	16.65%
Interest on loan	8302
Bond 10 th Issue	
Opening Balance	12767
Drawl	0
Repayments	12767
Closing Balance	0
Average Net Loan	6384
Rate of Interest	16.50%
Interest on loan	1053
UTI-IV	
Opening Balance	7582
Drawl	0
Repayments	5054
Closing Balance	2527
Average Net Loan	5054
Rate of Interest	16.50%
Interest on loan	834
TOTAL LOAN	
Opening Balance	72192
Drawl	0
Repayments	21792
Closing Balance	50401

Average Net Loan	61296
Rate of Interest	16.62%
Interest on loan	10189

25. The calculations of interest on normative loan based on actual rate of interest are also given hereunder:

(Rs. in lakh)	
Gross loan-Opening	117965
Cumulative repayments of Loans up to previous year	12096
Net loan-Opening	105869
Increase/ Decrease due to FERV	0
Increase/ Decrease due to Additional Capitalisation	3288
Total	109157
Repayments of Loans during the year	31957
Net loan-Closing	77199
Average Net Loan	91534
Rate of Interest on Loan	16.62%
Interest on loan	15215

DEPRECIATION

26. Depreciation recovered in tariff from 1.3.1995 to 31.3.2000 as notified by Ministry of Power has also been taken into account. Respondent No 1 has argued that depreciation should be allowed @ 7.25% at the capital cost of Rs. 235930 lakh. Ministry of Power in the notification dated 28.4.1997 had allowed depreciation @ 8.09% and the same rate has been followed for the purpose of calculation of depreciation from 1.4.2000 to 31.3.2001. The capital base considered for this purpose includes additional capitalisation for the year 2000-2001. The amount of depreciation to be recovered from respondents in tariff shall be Rs. 19087 lakh.

O&M EXPENSES

27. The petitioner in the amended petition has claimed O&M expenses for Rs. 5627 lakh based on the actual O&M expenses of Rs.5115.00 lakh for the year 1999-

2000 and escalating at the rate of 10%. In the original petition, O&M expenses claimed were Rs. 2654 lakh, which were the actual expenses for the period from 1.4.2000 to 31.3.2001. The petitioner did not obtain leave of the Commission to amend the petition to claim the enhanced O&M expenses of Rs. 5627 lakh. Accordingly, an amount of Rs. 2654 lakh has been allowed on account of O&M expenses for the year 2000-2001.

INTEREST ON WORKING CAPITAL

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

(a) Fuel Cost: The fuel component allowed in the working capital has been calculated as shown below:

Capacity	MW	657.39
Normative PLF	Hours/ kW /Year	6000.00
Annual Generation corresponding to Normative PLF	MU	3944.34
Annual Gas requirement	Million SCM	869.88
Monthly Gas Requirement	Million SCM	72.49
Value of 1 Month Gas requirement	Rs. in lakh	2376.52
Fuel Cost-1Month	Rs. in lakh	2376.52
Energy Charges for the year	Rs. in lakh	28518.22
Energy Charges for Two month	Rs. in lakh	4753.04

(b) O&M Expenses: O&M expenses for working capital has been considered for 1 month for the year 2000-2001 in accordance with Ministry of Power notification dated 28.4.1997.

(c) Spares: In Ministry of Power Notification dated 28.4.1997, the actual spares of the year 1996-97 less 1/5th initial capitalized spares were considered. In accordance with the above methodology adopted by Ministry of Power, the actual spares for the year 1999-2000 as per the audited balance sheet of

Gandhar GPS has to be considered in the working for the year 2000-01. However, it is noted that the actual spares for the year 1999-2000 as per the audited balance sheet are more than the value of spares claimed in the petition (Rs.968 lakh). On analysis of the spares consumption data of the project for the last 4 years, which is extracted below, it is observed that there is abrupt rise in the consumption of spares during 1999-2000 as compared to the years and the actual spares consumption during 2000-01 as per the balance sheet is only Rs. 392 lakh:

(Rs. in lakh)				
Spares	1997-98	1998-99	1999-00	2000-01
	590	229	1826	392

Further, it is observed that the year-wise allocation of spares for working capital over the tariff period of 5 years @1/5 of amount of initial spares of Rs.10622 lakh provided at the time of initial fixation of tariff of station works out to Rs.2124 lakh and *pro rata* allocation of spares for the year 2000-01 (for 7 months as the station was put on COD on 1.11.95) for working capital works out to Rs.1239 lakh, which is more than the amount of actual spares consumption of Rs. 392 lakh during 2000-01 as per the balance sheet. As such, amount of spares in the working capital in the spares has been considered as 'nil'.

(d) Receivables: Receivables have been worked out on the basis of two months of fixed and variable charges. The variable charges component of the receivables in the working capital have been estimated on the basis of variable charges as calculated below. The fixed charge component of the receivables is based on the calculations for the current tariff period.

(e) Naphtha Stock: As actual Naphtha stock for the year 1999-00 as per the audited balance sheet of Gandhar GPS is nil, Naphtha stock has not been considered in the working capital for the year 2000-01.

29. Ministry of Power in its notification dated 28.4.1997 had considered the working capital margin of Rs.5240 lakh. The same has been adopted for the purpose of calculating working capital for the year 2000-01. 50% of the working capital margin has been treated as equity and remaining 50% has been treated as loan by retaining the debt-equity ratio of 50:50 and respective return and interest is allowed thereon. The SBI PLR of 11.5% for the year 2000-2001 has been considered as the rate of interest on working capital. Based on the above methodology, the interest on working capital payable by the respondents to the petitioner shall be Rs. 2215 lakh. The details in support of interest on working capital allowed in tariff are extracted below:

(Rs. in lakh)

Fuel Cost	2377
Naphtha stock	0
O & M expenses	221
Spares	0
Receivables	14471
Total Working Capital	17069
Working Capital Margin (WCM)	5240
Total Working Capital allowed	11829
Rate of Interest	11.50%
Interest on allowed Working Capital	1360
Interest on WCM	436
Return on WCM	419
Total Interest on WCM	2215

30. Annual fixed charges for the period 1.4.2000 to 31.3.2001 allowed are summed up as below:

		(Rs. in lakh)
Particulars		2000-01
1	Interest on Loan	15215
2	Interest on Working Capital	2215
3	Depreciation	19087
4	Return on Equity	19137
5	O & M Expenses	2654
TOTAL		58308

Energy Charge

31. The respondent No 1 has contended that actual or the normative operational parameters, whichever is lower should be the basis for computation of energy charge. It is pointed out that the Commission during hearing on 2.7.2003 had directed the petitioner to furnishing the actual operating parameters achieved during the tariff period under consideration as recorded in the Commission's order dated 13.12.2002. It was submitted that the had no complied with the direction. The Commission had asked the petitioner to file an appropriate reply. The petitioner in IA dated 14.7.2003 as follows:

"The petitioner respectfully submits that it acted under bona-fide belief that having made the above submission based on norms contained in the notification for this Station issued by Gol, the actual data was not required. As such by oversight and without intending to be in non-compliance with the direction in para 6 of the said order, the data was not filed. The petitioner apologises for the oversight".

32. The petitioner sought modification of the order dated 13.12.2003 so that it was not required to file the actual operational parameters. The Commission vide order dated.1.10.2003, recalled its earlier direction to the petitioner to file actual parameters achieved, observing that the actual operating parameters were not required to be looked into and the energy charges needed to be determined in the light of norms contained in Ministry of Power notification dated 28.4.1997.

33. Gandhar GPS is gas-based project and does not have capability to fire Naphtha. The GCV and price of gas for all the months of the year are available in the amended petition. As per the methodology adopted, base energy charge for combined cycle operation has been worked out based on average GCV and price for the month of April, May and June 2000 as under:

Gross Station Heat Rate for combined cycle operation corresponding to GCV with NOx Control	kcal/kWh	2125.00
Aux. Energy Consumption	%	3.00
GCV of Gas	kcal/SCM	9635.47
Price of Gas	Rs./1000SCM	3278.40
Rate of Energy Charge from Gas	Paise/kWh	72.30
Rate of Energy Charge ex-bus per kWh Sent on Gas	Paise/kWh	74.54

34. The base energy charges have been calculated on base value of GCV, base price of gas and normative operating parameters. Ministry of Power notification dated 28.4.1997 provides for fuel price adjustment for variation in fuel price and GCV of fuels. Accordingly, the above base energy charges 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 :-

$$\text{FPA} = \frac{10 \times (\text{SHR}_n) \times \left[\left(\frac{P_m}{K_m} \right) - \left(\frac{P_s}{K_s} \right) \right]}{(100 - \text{AC}_n)}$$

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 of 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 of 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

35. FPA shall further be subjected to adjustment for monthly operating pattern adjustment (MOPA) for percentage open cycle operation as certified by WREB and corresponding to gross station heat rate of 3150 kcal/kWh (without Nox).

36. This order disposes of Petition No. 94/2002.

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRMAN

New Delhi dated the 13th April 2004