

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram:

1. **Shri Ashok Basu, Chairperson**
2. **Shri Bhanu Bhushan, Member**
3. **Shri A.H. Jung, Member**

**Petition No.80/2005
and IA No.31/2006**

In the matter of

Approval of tariff in respect of Jhanor Gandhar Gas Power Station (657.39 MW) for the period 1.4.2004 to 31.3.2009.

And in the matter of

NTPC Limited.

.... **Petitioner**

Vs

1. Madhya Pradesh State Electricity Board, Jabalpur
2. Maharashtra State Electricity Distribution Co Ltd, Mumbai
3. Gujarat Urja Vikas Nigam Ltd, Vadodara
4. Chhattisgarh State Electricity Board, Raipur
5. Electricity Department, Govt. of Goa, Panaji
6. Electricity Department, Administration of Daman & Diu, Daman
7. Electricity Deptt., Administration of Dadra and Nagar Haveli, Silvassa... **Respondents**

The following were present

1. Shri V.B.K.Jain, NTPC
2. Shri S.K. Sharma, NTPC
3. Shri S.K.Khanna, NTPC
4. Shri A.S.Pandey, NTPC
5. Shri Manoj Saxena, NTPC
6. Shri S.D.Jha, NTPC
7. Shri Balaji Dubey, NTPC
8. Ms. Alka Sehgal, NTPC
9. Shri A.K. Garg, MPPTC
10. Shri U.V.Jiwani, MSEDCL

ORDER
(DATE OF HEARING : 20.7.2006)

The petitioner, NTPC Limited, has filed this petition for approval of tariff in respect of Jhanor Gandhar Gas Power Station (657.39 MW) (hereinafter referred to as “the generating station”) for the period from 1.4.2004 to 31.3.2009 in terms of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 (hereinafter referred to as “the 2004 regulations”).

2. The generating station comprises of three gas turbines of 144.3 MW each and one steam turbine of 224.49 MW. The date of commercial operation of the generating station is 1.11.1995.

3. The tariff for the generating station for the period ending 31.3.2004 was approved by the Commission vide order dated 1.4.2005 in Petition 33/2001, based on capital cost of Rs.242505 lakh as on 1.4.2001. Subsequently, by order dated 9.5.2006, in Petition No.109/2005, the Commission approved de-capitalisation of Rs. 2044 lakh for the period 2001-04 and arrived at the capital base of Rs.240461 lakh (excluding FERV and including capital liabilities) as on 1.4.2004 for the purpose of determination of tariff.

4. On the request made by the petitioner, the Commission by its order dated 20.3.2006 permitted the petitioner to file the amended petition. Accordingly, the petitioner filed the amended petition on 2.5.2006. The details of fixed charges claimed by the petitioner in the amended petition are given hereunder:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Depreciation	12086	12086	12086	12086	12086
Interest on loan	10499	8448	6398	4349	2304
Return on equity	17032	17032	17032	17032	17032
Advance Against Depreciation	0.00	0.00	0.00	0.00	0.00
Interest on Working Capital	2466	2461	2458	2460	2457
O&M Expenses	5128	5331	5548	5765	5995
Total	47211	45358	43522	41692	39874

5. The details of Working Capital furnished by the petitioner and its claim of interest thereon are as follows:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Fuel Cost	3898	3898	3898	3909	3898
Spares	4066	4310	4568	4843	5133
O&M expenses	427	444	462	480	500
Receivables	15665	15357	15051	14767	14443
Total working capital	24057	24009	23980	23999	23974
Rate of Interest	10.25%	10.25%	10.25%	10.25%	10.25%
Total Interest on Working capital	2466	2461	2458	2460	2457

6. In addition, the petitioner has claimed energy charges @ 105 Paise/ /kWh.

7. Replies to the petition have been filed by MSEDCL and MPSEB. In response to the public notices published by the petitioner in accordance with the procedure specified by the Commission, no objection or suggestion has been received from the general public.

CAPITAL COST

8. As per the second proviso to Regulation 17 of the CERC (Terms and Conditions of Tariff) Regulations, 2004, in case of the existing generating stations, the capital cost

admitted by the Commission prior to 1.4.2004 shall form the basis for determination of tariff.

9. In the instant case, the petitioner has claimed tariff based on the capital cost of Rs.243316 lakh as on 1.4.2004 including additional capitalization of Rs.811 lakh claimed for the period 2001-04. As already noted, the Commission in its order dated 1.4.2005 in Petition No. 33/2001, has approved capital cost of Rs.242505 lakh as on 31.3.2001, for the period 2001-04. Thereafter, vide its order dated 9.5.2006 in Petition No.109/2005, the Commission has approved a net reduction in the gross block for the period 2001-04 as follows against the claim of capitalization of Rs.811 lakh:

(Rs in lakh)	
2001-2002	(-) 2231
2002-2003	114
2003-2004	73
Total	(-) 2044

10. In view of the above, the capital cost as on 1.4.2004, for the purpose of tariff for the period 2004-09, shall be Rs.240461 lakh (excluding FERV and including capital liabilities).

11. The petitioner in its affidavit dated 28.4.2006 has confirmed that all the assets included in the balance sheet of the generating station for the year 2003-04 were in use as on 1.4.2004. The petitioner has further submitted that the assets that will be out of use in the tariff period 2004-09 will be de-capitalised and the details of such assets not in use

and the amounts de-capitalised shall be furnished separately along with the claims for capitalisation to be filed separately.

DE-CAPITALIZATION OF ASSETS

12. The petitioner has de-capitalised certain assets during the period 2001-04. These de-capitalised assets were removed from the gross block to arrive at the admissible capital cost as on 31.3.2004 by order dated 9.5.2006 in Petition No.109/2005. These assets broadly fall under two categories viz. items which were capitalised on the date of commercial operation and subsequently withdrawn due to non-materialisation and the physical assets not in use. It is observed that the petitioner is maintaining accounts on accrual basis. This resulted in inflated capital base in earlier tariff periods due to capitalization of liability provision. The expenditure for which provision was made did not materialise and it was de-capitalised by order dated 9.5.2006. But the petitioner had been charging tariff on the inflated capital base till 31.3.2004. In these cases, the past period calculations to assess impact on tariff have not been re-opened and are to be mutually settled between the petitioner and the beneficiaries. In case of a dispute, any of the parties may approach the Commission for appropriate relief. The amount decapitalised under this head for this generating station is Rs.38.74 lakh. As regards the physical assets not in use, the petitioner has replaced assets, during the period 1.4.2001 to 31.3.2004, amounting to Rs.0.48 lakh. In addition, a sum of Rs 0.74 lakh has been decapitalised on account of inter-unit transfer of assets. Reduction in cumulative depreciation of these assets has not been considered as the corresponding adjustment in cumulative depreciation of other generating stations of the petitioner where assets have been transferred, has not been carried out.

13. The petitioner's claim for capitalization on account of FERV is nil, as there is no foreign loan in respect of the generating station.

14. The petitioner in its affidavit dated 9.10.2006 has submitted details of actual capital expenditure incurred as on 1.4.2004 wherein the gross block of Rs. 233299 lakh includes an amount of Rs.813 lakh, being provision for capital liabilities. As such, the actual capital expenditure on cash basis after excluding provision for capital liabilities, works out to Rs.232486 lakh as on 31.3.2004. For the purpose of determination of tariff actual capital expenditure as on 1.4.2004 has to be considered and not the provision for capital liabilities. Consequently, the capital cost as on 1.4.2004 after adjustment of additional capitalisation during 2001-04 and capital liabilities works out as under:-

(Rs in lakh)	
Capital cost as on 31.3.2004 admitted by Commission	242505
Additional Capitalisation during 2001-04	(-) 2044
FERV for 2001-04 as calculated on normative loan	Nil
Provision for Capital liabilities	(-) 813
Capital Cost as on 1.4.2004 for the purpose of tariff	239648

DEBT-EQUITY RATIO

15. Clause (1) of Regulation 20 of the 2004 regulations provides that in case of the existing generating stations, debt-equity ratio considered by the Commission for fixation of tariff for the period ending 31.3.2004 shall be considered for determination of tariff.

16. Debt-equity ratio of 50:50 was considered by the Commission in its order dated 1.4.2005 in Petition No.33/2001 for the tariff period 1.4.2001 to 31.3.2004. In accordance with the provision of Regulation 20(1), as amended, debt-equity ratio of 50:50 has been adopted for computation of tariff for the period 1.4.2004 to 31.3.2009. Accordingly, for the

purpose of tariff, an amount of Rs.119824 lakh has been considered as equity as on 1.4.2004, after accounting for de-capitalisation on works for the period 1.4.2001 to 31.3.2004.

TARGET AVAILABILITY

17. The petitioner has considered Target Availability of 80%, based on the provisions of the 2004 regulations. Accordingly, 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 1.4.2004 to 31.3.2009.

RETURN ON EQUITY

18. As per Regulation 21(iii) of 2004 regulations, return on equity shall be computed @14% per annum on the equity base determined in accordance with Regulation 20. The return on equity worked out @14% per annum on the normative equity works out to Rs.16775 lakh per annum.

INTEREST ON LOAN

19. Clause (i) of regulation 21 of the 2004 regulations as amended *inter alia* provides that,-

- (a) Interest on loan capital shall be computed loan-wise on the loans arrived at in the manner indicated in regulation 20;
- (b) The loan outstanding as on 1.4.2004 shall be worked out as the gross loan as per regulation 20 minus cumulative repayment as admitted by the Commission

or any other authority having power to do so, for the period up to 31.3.2004. The repayment for the period 2004-09 shall be worked out on normative basis;

(c) The generating company shall make every effort to re-finance the loan as long as it results in net benefit to the beneficiaries. The costs associated with such re-financing shall be borne by the beneficiaries;

(d) The changes to the loan terms and conditions shall be reflected from the date of such re-financing and benefits passed on to the beneficiaries;

(e) In case of any dispute, any of the parties may approach the Commission with proper application. However, the beneficiaries shall not withhold any payment as ordered by the Commission to the generating company during the pendency of any dispute relating to re-financing of loan;

(f) In case any moratorium period is availed of by the generating company, depreciation provided for in the tariff during the years of moratorium shall be treated as repayment during those years and interest on loan capital shall be calculated accordingly;

(g) The generating company shall not make any profit on account of re-financing of loan and interest on loan;

(h) The generating company may, at its discretion, swap loans having floating rate of interest with loans having fixed rate of interest, or vice-versa, at its own cost and gains or losses as a result of such swapping shall accrue to the generating company;

Provided that the beneficiaries shall be liable to pay interest for the loans initially contracted, whether on floating or fixed rate of interest.

20. The fixed charges for the period prior to 1.4.2004 were allowed by the Commission on normative loan. Therefore, the interest on loan has been worked out as under :

(a) Normative loan outstanding as per order dated 1.4.2005, amounting to Rs.48273 lakh has been considered.

(b) Notional loan has reduced during the current tariff period due to reduction in capital base approved by the Commission for the period 2001-04 and removal of the provision for capital liabilities. By this, reduction in notional loan is Rs.1429 lakh and the total outstanding notional loan as on 1.4.2004 is Rs. 46844 lakh.

(c) Normative repayment of loan or depreciation whichever is higher has been treated as repayment during the year.

(d) The weighted average rate of interest considered for calculating the interest on loan is that of Bonds Series XIII (A&B) actually outstanding in the books of accounts of the petitioner. These Bonds replaced the high interest bearing GOI loans considered in earlier tariff period.

(e) For the reasons recorded in order dated 5.5.2006 in Petition No.162/2004, interest on loan has been allowed by considering the interest of the Bonds, though the petitioner has claimed interest with reference to GOI loans.

(f) Financial charges at 0.03% incurred towards Surveillance fee by the petitioner have been allowed and taken into consideration for calculation for interest on loan.

(g) The entire notional loan gets repaid in the year 2008-09.

21. The calculations in support of weighted average rate of interest are appended below:

CALCULATIONS OF WEIGHTED AVERAGE RATE OF INTEREST

(Rs. in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Bond-XIII A Series					
Net Loan opening	14745.00	14745.00	14745.00	14745.00	14745.00
Repayments	0.00	0.00	0.00	0.00	1474.50
Net loan closing	14745.00	14745.00	14745.00	14745.00	13270.50
Average Loan	14745.00	14745.00	14745.00	14745.00	14007.75
Rate of Interest	9.58%	9.58%	9.58%	9.58%	9.58%
Interest on loan	1412.57	1412.57	1412.57	1412.57	1341.94
Repayment .Schedule	10 annual installments w.e.f.18.4.2008				
Bond-XIII B Series					
Net Loan opening	27793.00	27793.00	27793.00	27793.00	27793.00
Repayments	0.00	0.00	0.00	0.00	2779.30
Net loan closing	27793.00	27793.00	27793.00	27793.00	25013.70
Average Loan	27793.00	27793.00	27793.00	27793.00	26403.35
Rate of Interest	9.58%	9.58%	9.58%	9.58%	9.58%
Interest on loan	2662.57	2662.57	2662.57	2662.57	2529.44
Rep.Schedule	10 annual instalments w.e.f.30.4.2008				
Total Loan					
Net Loan opening	42538.00	42538.00	42538.00	42538.00	42538.00
Repayments	0.00	0.00	0.00	0.00	4253.80
Net loan closing	42538.00	42538.00	42538.00	42538.00	38284.20
Average Loan	42538.00	42538.00	42538.00	42538.00	40411.10
Rate of Interest	9.58%	9.58%	9.58%	9.58%	9.58%
Interest on loan	4075.14	4075.14	4075.14	4075.14	3871.38

22. The computation of interest on notional loan by applying weighted average interest rate as determined above is given below:

COMPUTATION OF INTEREST ON NOTIONAL LOAN

(Rs. in lakh)

	Upto 1.4.2004	2004-05	2005-06	2006-07	2007-08	2008-09
Gross loan-Opening	121253					
Addition due to Additional capitalisation	(-) 1022					
Addition due to FERV	0					
Less provision for liabilities	407					
Gross normative loan	119824	119824	119824	119824	119824	119824
Cumulative repayments of Loans up to previous year		72980	84546	96113	107679	119246
Net loan-Opening		46844	35278	23711	12145	578
Repayments of Loans during the year		11567	11567	11567	11567	11567
Net loan-Closing		35278	23711	12145	578	0
Average Net Loan		41061	29495	17928	6361	289
Rate of Interest on Loan		9.58%	9.58%	9.58%	9.58%	9.58%
Interest on loan		3934	2826	1717	609	28

DEPRECIATION

23. Sub-clause (a) of clause (ii) of Regulation 21 of the 2004 regulations provides for computation of depreciation in the following manner:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually based on straight line method over the useful life of the asset and at the rates prescribed in Appendix II to the regulations. The residual value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the historical capital cost of the asset. Land is not a depreciable asset and its cost shall be excluded from the capital cost while computing 90% of the historical cost of the asset. The historical capital cost of the asset shall include additional capitalisation on account of Foreign Exchange Rate Variation up to 31.3.2004 allowed by the Central Government/Commission.

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

24. The cost of land in the present case is Rs.255 lakh. The gross depreciable value of the asset, excluding land cost, is $0.9 \times (\text{Rs.}239648 \text{ lakh} - \text{Rs.}255 \text{ lakh}) = \text{Rs.}215454$ lakh. Cumulative depreciation and AAD recovered in tariff up to 31.3.2004 is Rs.143323 lakh, including depreciation on de-capitalised amount for the period 1.4.2001 to 31.3.2004. After adjustment of cumulative depreciation due to de-capitalisation, the balance depreciable value as on 1.4.2004 comes to Rs.72131 lakh.

25. Weighted average rate of depreciation calculated based on gross value of assets is 4.83% as against the petitioner's claim of 4.97%. For capital assets not owned by the petitioner, depreciation rate calculated is 1.8% as against the rate of 25% claimed by the petitioner. For temporary assets which have completed useful life of 5 years, the rate of depreciation applied is nil. Similarly, for other assets, viz. electrical aux. equipment, fire fighting engines, workshop equipment, earth moving equipment, print room machines, hospital equipment etc. for which rates are not provided in the 2004 regulations, depreciation rate of 6%, being the rate followed in other petitions for 2004-09, has been adopted in order to avoid accelerated recovery of depreciation.

26. The petitioner has submitted that a part of the fixed charges amounting to Rs.23878 lakh could not be recovered for the reason that during the years 1995-96 to

2000-01 availability was lower than the target availability. Consequently, depreciation recovered till 31.3.2001 works out to be Rs. 95683 lakh as against the depreciation of Rs.102624 lakh allowed in the fixed charges. The petitioner has prayed that the short recovery of depreciation due to non-achievement of target availability up to 31.3.2001 should be allowed to be compensated by the beneficiaries. We are unable to accept the plea of the petitioner. When the regulations provided for disincentive for not meeting the target availability norms by proportionate reduction in fixed charges, which includes depreciation, accepting the petitioner's plea will amount to nullifying the effect of disincentive on account of failure of the generating station to achieve the threshold target availability during the previous tariff period. We are of the considered view that depreciation recoverable as part of fixed charges in a year disallowed because of non-fulfillment of a condition of availability, cannot be passed on to the beneficiaries in the subsequent years. Under these circumstances, for the purpose of calculation of cumulative depreciation recovered, depreciation approved and recoverable in tariff is to be considered. Hence, cumulative depreciation as computed remains unchanged.

27. The petitioner is entitled to recover yearly depreciation of Rs.11567 lakh for the period 1.4.2004 to 31.3.2009 as shown below:

(Rs. in lakh)

Depreciation		2004-05	2005-06	2006-07	2007-08	2008-09
Gross Block as on 1 st April of the year		239648	239648	239648	239648	239648
Rate of Depreciation	4.83%					
Depreciable Value	90%	215454	215454	215454	215454	215454
Cumulative Depreciation as on 1.4.2004	143323					
Remaining Depreciable Value		72131	60564	48998	37431	25864
Depreciation		11567	11567	11567	11567	11567

ADVANCE AGAINST DEPRECIATION

28. The petitioner has not claimed Advance Against Depreciation and even as per norms is not entitled to Advance Against Depreciation as the cumulative depreciation exceeds cumulative repayment of loan.

O & M EXPENSES

29. O&M Expenses as claimed by the petitioner are as detailed below:

Years	2004-05	2005-06	2006-07	2007-08	2008-09
O&M Expenses	5128	5331	5548	5765	5995

30. The petitioner has claimed the above O&M expenses based on the normative O&M expenses applicable to Gas Turbine/Combined Cycle generating stations without warranty spares, as per the 2004 regulations. The petitioner has submitted that originally the generating station was not covered under operational warranty for supply of free spares. The original bidding documents did not have any provision for operational guarantee for critical components. However, the petitioner got the provision for extended warranty for certain components incorporated after the bidding within the prices quoted by the bidders.

31. The petitioner has filed an affidavit dated 28.4.2006 listing the items covered under the extended warranty and the warranty period. The details furnished by the petitioner in this regard are as under:

Item	EOH (Equivalent Operating Hours)	Maximum years *
Rotor Blade Row 1	50,000	10
Stator Blade Vane 5	50,000	10
Coating of Rotor Blade Row 1	20,000	5
Hot Gas Casing	50,000	8
Burner Outer Ring	50,000	8
Burner Inner Ring	20,000	5
Tiles	50,000	8
Combustor Liner	50,000	8
Inlet Segment	50,000	8

*From the date of successful completion of the Trial Operation of each Gas Turbine Unit

32. It is observed from the above table that the extended warranty period of the above mentioned critical components of the gas turbines ranged from 5-10 years, similar to other gas power generating stations covered under operational warranty periods of 10 years or 50,000 of EOH, whichever is earlier. The petitioner in its tariff petition No. 33/2001 for the tariff period 2001-04 has all along contended that the generating station was covered by operational warranty for 10 years when the issue was first deliberated at length. However, since Madhya Pradesh State Electricity Board had opposed the plea of the petitioner, the Commission vide order dated 6.6.2006 directed the petitioner to submit certain additional information.

33. The petitioner has submitted the required information vide affidavit dated 10.7.2006. The information, in brief, is as follows:

(a) The NIT for supply, erection, testing and commissioning of the main plant equipment was issued/published in Sept, 1990. From the excerpts of relevant portion of general conditions of contract and technical conditions of contract it is seen that the bid documents did not provide for operational warranty of the critical components of the gas turbine.

(b) No pre-bid conference was held with the prospective bidders and since the bid documents did not provide for operational warranty, the different bidders did not seek details or the clarifications/information prior to submission of financial bids on this issue.

(c) There was no change/alteration, modification or amendment in the bid documents with reference to warranty spares after issue of NIT.

(d) The price negotiations were conducted with the lowest evaluated bidder i.e. consortium of M/s Marubeni and ABB after obtaining concurrence from funding agency OECF in view of the gap between the quoted price and the petitioner's cost estimates. The following rebate from the quoted price was taken during the price negotiations:

Bid Price		Award Value		Difference	Rebate in %
Currency	Value		Value		
Total JY	56,108,000,000	LOA-I Total in JY	48,538,400,000	7,569,600,000	13.49
Total Rs.	1,795,237,000	LOA-II(Indian portion Total in Rs.	2,218,937,000	(423,700,000)	-23.60
	12,351,772,000	Grand Total in Rs.	11,351,276,746	1,000,495,254	8.10

(e) The price negotiations held with the bidder were independent and unrelated to the issue of the spares supplied under extended warranty, which the successful bidder agreed to provide in view of failure of the similar machines at Hemweg etc, as noticed from the Record Notes of Discussions/Negotiations held with Marubeni led consortium 6th November and 5th December 1991 at Annexure-D to the affidavit dated 10.7.2006.

34. At hearing on 20.7.2006, the Commission directed the petitioner vide order dated 3.8.2006 to submit certain additional information, which was submitted by the petitioner on 13.9.2006. The relevant extracts of bid evaluation report are reproduced herein below:-

“ ----- as the requirement of 50,000 equivalent fired hours operational guarantee for critical spares(as is applicable for Anta, Auraiya, Kawas and Dadri GPPs) has been deleted in the present case. Such an operational guarantee provides that critical spares as may be required during the 50,000 equivalent fired hours period would be supplied (free of cost) by the contractor. Moreover, at the end of the operational guarantee period the critical spares originally ordered along with the main equipment would still be available in NTPC ' s stock. In the absence of operational guarantee of critical spares in the present case, NTPC may require additional quantities of spares in the future.....”

35. On scrutiny of the bid evaluation report, particularly the portion extracted above that there was no loading of costs of warranty spares in the main plant equipments, we are satisfied with the petitioner's claim.

36. Accordingly, the following O&M expenses have been allowed for the tariff purpose:

(Rs. in lakh)					
Year	2004-05	2005-06	2006-07	2007-08	2008-09
O&M expenses allowed	5128	5331	5548	5765	5995

37. In addition, the petitioner has prayed for a specific deviation pertaining to water charges in normal O&M expenses on the ground that the State Governments have been resorting to manifold increase in the rates of water charges / royalty which cannot be covered under normal O&M expenses allowed in the tariff. The normative O&M expenses finalized by the Commission, after consulting all concerned and based on the data furnished by the concerned utilities for different components of O&M including water charges, provides for an escalation of 4% per year. Of the number of heads in the O&M expenses, there could be increase in some of the heads and decrease in other heads in comparison to the norms. Therefore, it would not be justified to allow increase in one head in isolation of other heads of O&M. As such, the direct recovery of additional O&M expenses on account of any increase in the rates of water charges / royalty etc. during tariff period is not allowed. However, in case State Governments resort to manifold increase in the rates of water charges / royalty, the petitioner is free to approach the Commission with a separate petition with justification as per regulations.

38. The petitioner has also submitted that the salary/wage revision of the employees is due from 1.1.2007 and the escalation of 4% provided in the O&M expenses would not cover the enhanced employee cost from 1.1.2007. On this count also the petitioner may approach the Commission in accordance with the 2004 regulations.

INTEREST ON WORKING CAPITAL

39. In accordance with clause (v) of Regulation 21 of the 2004 regulations, working capital in case of Gas Turbine/Combined Cycle generating station shall cover :

- (i) Fuel cost for one month corresponding to the target availability duly taking into account the mode of operation of the generating station on gas fuel and liquid fuel;
- (ii) Liquid fuel stock for half month;
- (iii) Operation and maintenance expenses for one month;
- (iv) Maintenance spares @1% of the historical cost escalated @6% per annum from the date of commercial operation;
- (v) Receivables equivalent to two months of fixed and variable charges for sale of electricity calculated on target availability.

40. (a) **Fuel Cost:** The petitioner has claimed following cost for fuel component in working capital:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08 (Leap year)	2008-09
Cost of Fuel for 1 month	3898	3898	3898	3909	3898

The fuel component in working capital as worked out by the petitioner is in order and is allowed.

(b) **O&M Expenses:** Operation and maintenance expenses for one month as permissible have been considered in tariff of the respective year.

(c) **Spares:** The value of maintenance spare has been calculated by the petitioner considering the additional capital expenditure in respective year after date of commercial operation (1.11.1995). The regulation 21(v) of the 2004 regulations regarding maintenance spares for working capital, for Gas Turbine/ Combined Cycle generating stations provides for maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation. The regulations do not provide for taking into account additional capital expenditure for working out the cost of maintenance spares for the working capital. Accordingly, the cost of maintenance spares for working capital has been worked out based on historical cost as on date of commercial operation (1.11.1995) and escalated at 6% per annum. However, the amount of over-capitalization prior to the date of commercial operation amounting to Rs. 35 lakh and initial spares amounting to Rs.10622 lakh has been deducted to arrive at the applicable historical cost as on date of commercial operation, for the purpose of maintenance spares. Further, additional capitalization incurred during the period from the date of commercial operation to the relevant period has not been considered for computation of maintenance spares. Thus, maintenance spares has been computed based on capital cost of Rs. 23291 lakh as on 31.3.1996 as considered by Ministry of Power in the notification dated 28.4.1997.

(d) **Receivables:** Receivables have been worked out on the basis of two months of fixed and variable charges. For this purpose, the operational parameters as per the 2004 regulations and weighted average price of gas have been considered.

(Rs in lakh)

Receivables	2004-05	2005-06	2006-07	2007-08	2008-09
Variable charges					
(Rs /kWh)	1.0467	1.0467	1.0467	1.0467	1.0467
Variable charges for the period	46775	46775	46775	46903	46775
Variable charges -2 months	7796	7796	7796	7817	7796
Fixed charges – 2 months	6614	6465	6318	6172	6117
Receivables	14410	14261	14114	13989	13912

41. As per the 2004 regulations, rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2004 or on 1st April of the year in which the generating station or a unit thereof is declared under commercial operation, whichever is later. SBI PLR of 10.25% as on 1.4.2004 has been considered for computation for interest on working capital .

Calculation of Interest on Working Capital

(Rs.in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Fuel cost (one month)	3898	3898	3898	3909	3898
O&M expenses	427	444	462	480	500
Spares	3543	3755	3980	4219	4472
Receivables	14410	14261	14114	13989	13912
Total working capital	22278	22358	22455	22598	22782
Rate of interest	10.25%	10.25%	10.25%	10.25%	10.25%
Interest on working capital	2283	2292	2302	2316	2335

ANNUAL FIXED CHARGES

42. A summary sheet showing the details of capital cost, depreciation, etc is annexed with this order. The annual fixed charges for the period 1.4.2004 to 31.3.2009 allowed in this order are summed up below:

(Rs in lakh)

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on Loan	3934	2826	1717	609	28
Interest on Working Capital	2283	2292	2302	2316	2335
Depreciation	11567	11567	11567	11567	11567
Advance against Depreciation	0	0	0	0	0
Return on Equity	16775	16775	16775	16775	16775
O & M Expenses	5128	5331	5548	5765	5995
TOTAL	39687	38791	37909	37033	36700

RATE OF ENERGY CHARGE

43. The energy charges of 105 Paise/kWh of sent out energy as claimed by the petitioner are based on the operational parameters as per the 2004 regulations, which are as follows:

Gross Station Heat Rate(Kcal/kWh)	2000.00
Auxiliary Consumption (%)	3.00
Wt. Avg GCV of Gas (Kcal/SCM)	9525.67
Wt. Avg price of Gas (Rs /1000SCM)	4836.39

44. The petitioner has submitted auditor's certificate in support of price and GCV of fuel. The petitioner has taken simple average of gas prices for the period January 2004 to March 2004 instead of taking weighted average price for computation of energy charges. Accordingly, the prices and GCV of the fuel as indicated in the petition and as adopted in tariff calculation herein for base energy charges are as follows:-

Description	As considered in petition	As adopted
Gas price (Rs./1000 SCM)	4836.39	4835.68
Gas GCV (kcal/SCM)	9525.67	9525.67

45. Based on the operational parameters, fuel prices and GCV mentioned above, the base energy charges works out to 104.67 paise/kWh and are allowed.

46. The Base Energy Charges have been calculated on base value of GCV , base price of fuel and normative operating parameters as above and are subject to fuel price adjustment. The 2004 regulations provide for fuel price adjustment for variation in fuel price and GCV of fuels. The fuel price adjustment for fuel price and GCV variation (gas and liquid fuel) shall be as per the following formula :

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

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 for determination of base energy charge in tariff order in Kcal/ SCM or kCal/ Litre or kCal/ Kg

47. FPA shall further be subjected to adjustment for monthly operating pattern adjustment (MOPA) for percentage open cycle operation as certified by REB/SLDC and

corresponding to Gross Station Heat Rate of 2900 kCal/kWh and auxiliary energy consumption of 1%, as per formula given below:

$$\mathbf{MOPA} = (\mathbf{BEC} + \mathbf{FPA}) \times \left[\frac{\{(SHR_{no})/(100-AC_{no})\}}{\{(SHR_{nc})/(100-AC_{nc})\}} - 1 \right] \times \mathbf{POCM}/100$$

Where,

- MOPA** - Monthly Operating Pattern Adjustment in Paise/kWh Sent Out
- BEC** - Base Energy Charge as per tariff order in Paise/kWh sent out
- FPA** - Fuel price Adjustment for a month in Paise/kWh Sent out
- SHR_{no}** - Normative Gross Station Heat Rate for Open cycle operation expressed in kCal/kWh (2900 kCal/kWh)
- SHR_{nc}** - Normative Gross Station Heat Rate for Combined cycle operation expressed in kCal/kWh (2000 kCal/kWh)
- AC_{no}** - Normative Auxiliary Consumption for Open cycle operation in percentage (1%)
- AC_{nc}** - Normative Auxiliary Consumption for Combined cycle operation in percentage (3%)
- POCM** - Open cycle generation during the month in percentage

48. Since there is provision for monthly operating pattern adjustment to take care of open cycle operation, there is no need for specifying base energy charges for open cycle operation separately.

IMPACT OF ADDITIONAL CAPITALISATION/DE-CAPITALISATION FOR THE YEARS 2001-04

49. In Petition No 109/2005 filed by the petitioner for approval of revised fixed charges for additional capitalization for the period 1.4.2001 to 31.3.2004, the Commission has decided that additional capital expenditure be added to the gross block as on 1.4.2001 to arrive at gross block as on 1.4.2004 for the purpose of fixation of tariff for the period 2004-05 to 2008-09. On the amount of additional capitalization the Commission has allowed return on equity @ 16% on equity portion of additional capitalization and interest on loan at the rate as applicable during 2001-02 to 2003-04. The return on equity and interest on loan are payable on additional capitalization from 1st April of the financial year following the financial year to which additional capital expenditure relates.

50. In the present case, there was a net reduction in the capital base during 2001-04. Therefore, the petitioner has charged return on equity and interest on loan in excess of its entitlement. Accordingly, the petitioner shall reimburse a sum of Rs. 561.48 lakh to the respondents in five equal instalments of Rs. 112.30 lakh each during 2004-09 on account of excess return on equity and interest on loan already recovered during 2001-04, with respect to reduced capital base as worked out below:

IMPACT OF ADDITIONAL CAPITAL EXPENDITURE DURING 2001-04

(Rs. in lakh)

	2001-02	2002-03	2003-04	Total
Additional capitalisation	(-)2230.65	113.80	72.80	(-)2044.05
Financing of Additional capitalisation				
Notional Loan	(-)1115.33	56.90	36.40	(-)1022.02
Notional Equity	(-)1115.33	56.90	36.40	(-)1022.02
Effective Additional capitalisation				
Opening Loan balance	0.00	(-)1115.33	(-)1058.42	
Addition of loan	(-)1115.33	56.90	36.40	(-)1022.02
Repayment of loan	0.00	0.00	0.00	0.00
Closing loan balance	(-)1115.33	(-)1058.42	(-)1022.02	
Effective loan		(-)1115.33	(-)1058.42	
Weighted average rate of interest on loan		10.0674%	9.5800%	
Effective Equity		(-)1115.33	(-)1058.42	
IMPACT				
(i) Interest on Loan		(-)112.28	(-)101.40	(-)213.68
(ii) Return on Equity	16%	(-)178.45	(-)169.35	(-)347.80
Total		(-)290.74	(-)270.74	(-)561.48

51. The petitioner has sought approval for the reimbursement of expenditure of Rs. 2,78,697/- incurred on publication of notices in the newspapers. The petitioner shall claim reimbursement of the said expenditure directly from the respondents in one installment in the ratio applicable for sharing of fixed charges. The petitioner has also sought reimbursement of filing fee of Rs.25 lakh paid. A final view on reimbursement of filing fee is yet to be taken by the Commission for which views of the stakeholder have been called for. The view taken on consideration of the comments received shall apply in the present case as regards reimbursement of filing fee.

52. In addition to the charges approved above, 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 the 2004 regulations, as applicable.

53. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's interim directions. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us.

54. This order disposes of Petition No 80/2005 as also IA No.31/2006.

Sd/-
(A.H. JUNG)
MEMBER

Sd/-
(BHANU BHUSHAN)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRPERSON

New Delhi dated the 15th December 2006

Summary Sheet			
Name of the Company		NTPC Ltd.	
Name of the Station		Gandhar GPS	
Tariff setting Period		2004-09	
Petition No.		80/2005	
			Rs.in lakh
1	Capital Cost of the Project as on 31.3.2001		242505
2	Additional Capitalisation(works)		(-) 2044
	2001-02	(-) 2231	
	2002-03	114	
	2003-04	73	
	Total	(-) 2044	
3	Additional Capitalisation(FERV)		0
4	Liabilities provision in capital cost		(-) 813
5	Total Capital Cost as on 1.4.2004(2+3+4)		239648
6	Means of Finance		
	Debt	50.00%	119824
	Equity	50.00%	119824
	Total	100.00%	239648
7	Normative loan as on 1.4.2004		46844
	Normative loan outstanding as on 31.3.2004		48273
	Normative loan due to ACE+FERV in 2001-04		(-) 1022
	Reduction due to liabilities provision		(-) 407
	Total Normative Loan as on 1.4.2004		46844
8	Cumulative repayment upto 31.3.2009		119824
	Repaid up to 31.3.2004		72980
	1.4.2001 to 31.3.2004(ACE &FERV)		0.00
	1.4.2004 to 31.3.2009		46844
	Total		119824
9	Balance Normative Loan to be repaid beyond 31.3.2009		0
10	Depreciation recovered upto 31.3.2009 :		
		Dep	AAD
		Total	
	Recovered upto 31.3.2004	143323	0
	1.4.2001 to 31.4.2004		0
	1.4.2004 to 31.3.2009		57833
	Adjustment of depreciation due to de-capitalisation		0
	Total		201156
11	Balance Depreciation to be recovered beyond 31.3.2009 :		14298
	Capital cost for the purpose of Depreciation		242505
	ACE + FERV		(-) 2044
	Liabilities provision		813
	Capital cost as 1.4.2004		239648
	Less: Land Cost		255
			239393
	90% of Capital Cost as above		215454
	Cumulative Depreciation to be recovered upto 31.3.2009		201156
	Balance depreciation to be recovered beyond 31.3.2009		14298