

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

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

Petition No 45/2001

In the matter of

Approval of tariff in respect of Anta 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

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

..**Respondents**

The following were present

1. Shri M.G. Ramachandran, Advocate, NTPC
2. Shri K.K. Mittal, XEN(ISP), NTPC
3. Shri K.K. Garg, GM(Comml.), NTPC
4. Shri V.B.K. Jain, GM(Comml.), NTPC
5. Shri M.S. Chawla, AGM(Comml.), NTPC
6. Shri R. Singhal, Mgr (Comml.), NTPC
7. Shri Ajay Dua, NTPC
8. Shri S.D. Jha, NTPC
9. Shri A.K. Poddar, NTPC
10. Shri A. Sai, NTPC
11. Shri T.P.S. Bawa, SE, PSEB
12. Shri V.K. Gupta, PSEB
13. Shri J.S. Bhargava, AE(ISP), RRVPNL
14. Shri T.K. Srivastava, UPPCL
15. Shri D. D. Chopra, UPPCL
16. Shri R.K. Arora, XEN, HVPN

**ORDER
(DATE OF HEARING 28-8-2003)**

This petition has been filed by the petitioner, NTPC, a generating company owned by the Central Government for approval of tariff in respect of Anta Gas Power

Station, (hereinafter referred to as “Anta GPS”) for the period from 1.4.2001 to 31.3.2004, based on the terms and conditions contained in the Commission’s notification dated 26.3.2001, (hereinafter referred to as “the notification dated 26.3.2001”).

2. Anta GPS with a total capacity of 419.33 MW, comprises of three Gas Turbine units, each with a capacity of 88.71 MW and one Steam Turbine unit with a capacity of 153.2 MW. The first Gas Turbine unit of Anta GPS was declared under commercial operation on 1.3.1989 and the last unit, the Steam Turbine unit was declared under commercial operation on 1.8.1990. The tariff for the generating station was earlier notified by Ministry of Power vide its notification dated 16.1.1997 valid for a period up to 31.3.1997. The tariff for the period 1.4.1997 to 31.3.2001 was approved by the Commission vide its order dated 1.11.2002 in petition No. 36/2002. In the said order dated 1.11.2002, the Commission considered additional capitalisation up to 31.3.2001.

3. The details of the fixed charges claimed by the petitioner in the present petition are given hereunder:

(Rs. in lakh)				
SI No.	Particulars	2001-02	2002-03	2003-04
1	Interest on Loan	1079	530	0
2	Interest on Working Capital	1330	1391	1477
3	Depreciation	2570	2571	2572
4	Advance against Depreciation	0	0	0
5	Return on Equity	3880	3881	3883
6	O & M Expenses	2522	2673	2833
7	Water Charges	24	24	24
	Total	11405	11070	10789

4. The details of Working Capital furnished by the petitioner and its claim for interest thereon are summarised hereunder:

	(Rs. in lakh)		
	2001-02	2002-03	2003-04
Fuel Cost	2318	2467	2626
Naphtha Stock	372	372	372
O & M expenses	210	223	236
Spares	1009	1069	1133
Receivables	6896	7138	7409
Total Working Capital	10806	11270	11776
Working Capital Margin (WCM)	860	860	860
Total Working Capital allowed	9946	10410	10916
Rate of Interest	12.35%	12.35%	12.35%
Interest on allowed Working Capital	1228	1286	1348
Interest on WCM	33	36	60
Return on WCM	69	69	69
Total Interest on Working capital	1330	1391	1477

5. In addition, the petitioner has claimed the Energy Charges @ 96.27 paise/kWh for the period from 1.4.2001 to 31.3.2004, subject to adjustment in accordance with the Fuel Price Adjustment Formula given in the petition.

CAPITAL COST

6. As per the 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 the actual capital expenditure for the purpose of determining the tariff.

7. The petitioner has claimed tariff based on capital cost of Rs.48494 lakh. The Commission vide its order dated 1.11.2002 in Petition No.36/2002 has approved the

tariff for the period 1.4.1997 to 31.3.2001 by considering a closing capital cost of Rs.45167.00 lakh. This has been adopted as the opening gross block as on 1.4.2001 for the purpose of tariff determination in the present petition. The petitioner has also included anticipated additional capital expenditure of Rs. 40.00 lakh for 2002-2003, based on budgetary projections. The additional capitalisation claimed by the petitioner has not been considered for tariff determination since the claim of the petitioner is not in line with the notification dated 26.3.2001. Accordingly, the capital cost of Rs.45167.00 lakh has been considered.

DEBT-EQUITY RATIO

8. As per the 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 respondents that debt and equity should be in the ratio of 80:20 or 70:30 as applicable to IPPs.

9. Ministry of Power, while notifying tariff vide its notification dated 16.1.1997 had considered the normative debt-equity ratio of 50:50. Based on this, the debt-equity ratio of 50:50 was adopted by the Commission in its order dated 1.11.2002 in Petition no. 36/2002 while approving tariff for the period from 1.4.1997 to 31.3.2001. Therefore, for the purpose of present petition, debt-equity ratio of 50:50 has been adopted in the working.

TARGET AVAILABILITY

10. In accordance with the notification dated 26.3.2001, target availability of 80% is to be considered for recovery of full fixed charges. The petitioner has prayed for

relaxation in target availability with a further prayer that the target availability of 80% should be considered on the basis of availability of machines, which means that the difference between 80% availability and the declared capacity based on actual availability of fuel (gas plus naphtha) be treated as deemed availability for recovery of full fixed charges, subject to machine availability being 80% till the adequate gas supply is made available.

11. We have considered the prayer made by the petitioner. Earlier, the petitioner was facing shortage of gas. However, with the improvement in supply of gas, the petitioner have been able to achieve PLF of 71% at Dadri GPS, 73.5% at Auraiya GPS and 74.7% at the present station. It is also noted that the station is provided with dual fuel firing facility. In view of these considerations, we are not convinced that a case for relaxation of target availability has been made out. Accordingly, the 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 1.4.2001 to 31.3.2004.

RETURN ON EQUITY

12. As per the 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 respondents have, 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 respondents have 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 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.

13. The respondents have submitted that the tariff for the generating stations belonging to the petitioner was notified by Ministry of Power based on KP Rao Committee Report wherein it was recommended that once the loan is reduced to zero, the equity component would be reduced progressively to the extent of further depreciation recovered. It is, therefore, contended that the equity needs to be reduced to the extent of depreciation charged after notional loan was repaid. We have considered this submission. The tariff notification issued by Ministry of Power on 16.1.1997 does not provide for reduction of equity after the loan is fully repaid. To that extent, the recommendation of KP Rao Committee does not seem to have been accepted by the Central Government. In any case, the tariff is to be fixed in keeping with the provisions of the notification dated 26.3.2001, which also does not provide for the reduction of equity in the manner recommended by K.P. Rao Committee. Therefore, the contention raised on behalf of the respondents has been found to be without force.

14. The return on equity has been worked out on the average normative equity. The charges payable by the respondents on account of return on equity are as under:

Particulars	(Rs in lakh)		
	2001-02	2002-03	2003-04
Opening Balance	22584	22584	22584
Increase/ Decrease due to FERV	0	0	0
Increase/ Decrease due to Additional Capitalisation	0	0	0
Closing Balance	22584	22584	22584
Average	22584	22584	22584
Rate of Return on Equity	16.00%	16.00%	16.00%
Return on Equity	3613	3613	3613

15. The reasons for differences in the values of return equity claimed vis-à-vis that allowed are indicated below:

- (i) The equity amount has been worked out on the opening gross block of Rs.45167 lakh as on 31.3.2001, allowed by the Commission in its order dated 1.11.2002 in petition No. 36/2002, as against Rs. 48494 lakh considered by the petitioner.
- (ii) The petitioner's claim for additional capitalisation of Rs. 40 lakh during the year 2002-2003 has been disallowed..

INTEREST ON LOAN

16. As per the 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.

17. In the present case, the fixed charges for the period prior to 1.4.2001 were approved by the Commission on normative debt. Therefore, the interest on loan has been worked out in accordance with the methodology mentioned below:

- (a) The gross opening normative loan amount and the cumulative repayment of loan up to 31.3.2001 have been taken as per the Commission's order dated 01.11.2002 in petition No. 36/2002.
- (b) The annual repayment amounts for the years 2001-02 to 2003-04 have been worked out by taking actual repayment during the year or as worked out as per the following formula, whichever is higher:

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

- (c) On the basis of actual rate of interest as on 1.4.2001 on actual loans, the weighted rate of interest on average loan has been worked out and the same has been applied on the normative average loan during the year to arrive at the interest on loan.
- (d) Some of the loans carry floating rate of interest. Therefore, interest rates prevailing as on 1.4.2001 have been considered for interest computation for the period 1.4.2001 onwards. However, interest on loan would be subject to adjustment by the parties on the basis of actual rate of interest applicable.
- (e) In the present case, the foreign loans viz. IBJ-I loan and IBJ-II loans have been re-financed. IBJ-I loan (NTPC portion) was substituted by loan drawn from SBI (Tokyo) on 31.1.2000 and IBJ-II loan is having 4 Tranches viz. Tranche -A, Tranche -B , Tranche -C and Tranche -D with different terms and conditions. Further, IBJ-II (Tranche-A) was replaced by Sumitomo-I loan on 24.3.1997 which was entirely repaid on 25.9.2000 and substituted by Sumitomo-III loan. ING (Bahrain) loan has replaced the balance amount of IBJ-II(Tranche-A) loan on 24.3.1998 and SBI NY-II has replaced the entire outstanding balance of IBJ-II, Tranche-B and Tranche-C on 24.9.2000. The IBJ-I and IBJ-II loans which have been substituted /refinanced by loans with fixed interest rate are detailed below:

IBJ-I loan*		IBJ-II(Tranche-A)\$		IBJ-II (Tranche- B)#	IBJ-II (Tranche- C)#
Int. rate	2.70% per annum (Fixed)	5.85% per annum (Fixed)		2.80% per annum (Fixed)	2.60% per annum (Fixed)
Fin. charges	0.375% flat (Manage ment fees)				
Currency	JY	JY		JY	JY
*SBI(Tokyo)		\$Sumitomo-I	\$Sumitomo- III	#SBI NY-II	
Int. rate	1.40% per annum (Fixed)	2.52% per annum (Fixed)	1.235% per annum (Fixed)	1.14% per annum (Fixed)	
Fin. charges	1.10% flat (Manage ment fees)	0.45% Flat (Management fees)	0.33% Flat (Management fees)	0.35% Flat (Management fees)	
Currency	JY	JY	JY	JY	

The part IBJ-II loans which have been substituted /refinanced by loans with floating rate of interest are detailed below:

	IBJ-II(Tranche-A)\$	IBJ-II(Tranche-D)@	
Int. rate	5.85% per annum (Fixed)	LIBOR +0.375 % spread	
Fin. Charges			
Currency	JY	JY	JY
	\$ING(Bahring)	@No re-financing	
Int. rate	6 Months LIBOR +70 BPs		
Fin. Charges	1 % Flat (Management fees)		
Currency	JY		

(f) The interest rate applicable on re-financed /substituted loans with fixed rate of interest have been considered in the working. As such, the interest rates applicable on SBI(Tokyo), SUMITOMO-III and SBI NY-II loans have been

considered in the working . In case of SBI (Tokyo) loan, management fees @ 1.10% flat have also been considered. In case of ING (Bahrain) loan which is having floating rate of interest, the interest rate applicable on IBJ-II (Tranche-A) has been considered . As IBJ-II (Tranche-D) is having floating rate of interest and no re-financing is involved , the interest rate applicable as on 1.4.2001(LIBOR rate with 0.375 % spread) has been considered in the working.

(g) As entire notional loan has been repaid during the year 2002-03, no interest would be payable on loan for the year 2003-04.

18. The computations in support of weighted average interest rate are also appended:

COMPUTATION OF WEIGHTED AVERAGE RATE OF INTEREST

(Rs. in lakh)

GOI-I	2001-02	2002-03	2003-04
Opening Balance			
Addition/Drawl	818	716	614
Repayment	0	0	0
Closing Balance	102	102	102
Average Loan	716	614	511
Rate of Interest	767	665	562
Interest	14.00%	14.00%	14.00%
	107	93	79
GOI-II			
Opening Balance			
Addition/Drawl	602	526	451
Repayment	0	0	0
Closing Balance	75	75	75
Average Loan	526	451	376
Rate of Interest	564	489	414
Interest	14.00%	14.00%	14.00%
	79	68	58
GOI-III			
Opening Balance			
Addition/Drawl	2082	1821	1561
Repayment	0	0	0
Closing Balance	260	260	260
Average Loan	1821	1561	1301
Rate of Interest	1952	1691	1431
Interest	14.00%	14.00%	14.00%
	273	237	200

GOI-IV			
Opening Balance			
Addition/Drawl	1679	1492	1306
Repayment	0	0	0
Closing Balance	187	187	187
Average Loan	1492	1306	1119
Rate of Interest	1586	1399	1212
Interest	14.00%	14.00%	14.00%
	222	196	170
GOI-V			
Opening Balance			
Addition/Drawl	386	343	300
Repayment	0	0	0
Closing Balance	43	43	43
Average Loan	343	300	257
Rate of Interest	364	321	279
Interest	14.00%	14.00%	14.00%
	51	45	39
GOI-Total			
Opening Balance			
Addition/Drawl	5566	4899	4232
Repayment	0	0	0
Closing Balance	667	667	667
Average Loan	4899	4232	3565
Rate of Interest	5232	4565	3898
Interest	14.00%	14.00%	14.00%
	733	639	546
Bond 8th Issue			
Opening Balance			
Addition/Drawl	2133	0	0
Repayment	0	0	0
Closing Balance	2133	0	0
Average Loan	0	0	0
Rate of Interest	1067	0	0
Interest	9.05%	9.05%	9.05%
	97	0	0
IBJ-I (SBI TOKYO)			
Opening Balance			
Addition/Drawl	14970	14970	0
Repayment	0	0	0
Closing Balance	0	14970	0
Average Loan-INR	14970	0	0
Rate of Interest	14970	7485	0
Interest-INR	1.84%	1.84%	1.84%
	275	138	0
SUMITOMO-III (Replacement of IBJ-II- Tranche-A/Sumitomo-I)			
Opening balance			
Addition/Drawl	1636	1636	0
Repayment	0	0	0
Closing Balance	0	1636	0
Average Loan-INR	1636	0	0
Rate of Interest	1636	818	0
Interest-INR	1.37%	1.37%	1.37%

	22	11	0
BAHRING¹ (Replacement of IBJ-II- Tranche-A/Sumitomo-I)			
Opening balance			
Addition/Drawl	1	1	0
Repayment	0	0	0
Closing Balance	0	1	0
Average Loan-INR	1	0	0
Rate of Interest	1	0	0
Interest-INR	5.85%	5.85%	5.85%
	0.05	0.02	0.00
SBI NY-II) (Replacement of IBJ-II Tranche B&C)			
Opening Balance			
Addition/Drawl	715	358	0
Repayment	0	0	0
Closing Balance	358	358	0
Average Loan-INR	358	0	0
Rate of Interest	536	179	0
Interest-INR	1.24%	1.24%	1.24%
	7	2	0
IBJ-II (TRANCHE-D)			
Opening Balance			
Addition/Drawl	623	312	0
Repayment	0	0	0
Closing Balance	312	312	0
Average Loan-INR	312	0	0
Rate of Interest	468	156	0
Interest-INR	0.52%	0.52%	0.52%
	2	1	0
IBJ-II- Total			
Opening Balance			
Addition/Drawl	2975	2306	0
Repayment	0	0	0
Closing Balance	669	2306	0
Average Loan	2306	0	0
Rate of Interest	2641	1153	0
Interest-INR	1.19%	1.23%	0.00%
	32	14	0
TOTAL LOAN			
Opening Balance			
Addition/Drawl	25644	22175	4232
Repayment	0	0	0
Closing Balance	3469	17943	667
Average Loan	22175	4232	3565
Rate of Interest	23909	13203	3898
Interest	4.75%	5.99%	14.00%
GOI-I	1136	791	546

19. The computations of interest on notional loan by applying weighted average interest rate are also appended hereinbelow:

COMPUTATION OF INTEREST ON NOTIONAL LOAN

(Rs. in lakh)

	2001-02	2002-03	2003-04
Gross loan-Opening	22584	22584	22584
Cumulative repayments of Loans up to previous year	8244	11713	22584
Net loan-Opening	14340	10870	0
Increase/ Decrease due to FERV	0	0	0
Increase/ Decrease due to Additional Capitalisation	0	0	0
Total	14340	10870	0
Repayments of Loans during the year	3469	10870	0
Net loan-Closing	10870	0	0
Average Net Loan	12605	5435	0
Rate of Interest on Loan	4.75%	5.99%	14.00%
Interest on loan	599	326	0

20. The differences in values of interest on loan approved in tariff qua that claimed in the petition are for the reasons mentioned below:

(i) The gross opening normative loan has been worked out on the opening gross block of Rs.45167 lakh, allowed by the Commission in its order dated 1.11.2002 in petition No. 36/2002 as against gross block of Rs. 48494 lakh considered by the petitioner.

(ii) The petitioner's claim for additional capitalisation of Rs. 40 lakh during the year 2002-2003 has not been agreed to.

(iii) Due to partially refinancing /substitution of some of the foreign loans viz. IBJ-I and IBJ-II, the interest rates applicable on re-financed /substituted loans with lower fixed rates of interest have been considered in the working as against interest rates applicable to original loans with higher rates of interest claimed in the petition. The reduced weighted average rate of interest on account of above allowed in tariff is of the order of 4.75%, 5.99% & 14.00% in the working as against 7.559%, 8.446% & 14.00%

considered in the petition for the years 2001-02, 2002-03 & 2003-04 respectively

(iv) The annual repayment amounts for the years 2001-02 to 2003-04 have been worked out as per the formula mentioned above in the working as against actual repayment considered in the petition.

DEPRECIATION

21. The 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. In accordance with the notification dated 26.3.2001, after the loan is fully repaid, the balance depreciation is to be recovered over the balance useful life of the generating station.

22. The weighted average rate of interest during 2001-2002 and 2002-2003 work out to 4.63% against weighted average depreciation rate of 5.30% claimed in the petition. Therefore, weighted average rate of depreciation of 4.63% has been considered.

23. As noticed above, loan in case of Anta GPS is fully paid during 2002-03. Accordingly, depreciation has been worked out for the remaining useful life of the generating station. GT I of Anta GPS was declared under commercial operation with effect from 1.3.1989 and ST with effect from 1.8.1990. The useful life of the generating station is taken as 21.27 years. The existing life of the generating station is 13.46 years as on 31.3.2003 as calculated below:

Unit	Capacity (MW)	COD	Months of operation till 31.3.2003 from COD of unit
GT-I	88.71	1.3.89	169
GT-II	88.71	1.5.09	167
GT-III	88.71	1.7.89	165
ST-I	153.20	1.8.90	152

Therefore, if the weighted average month of operation is "X" then

$$X = \frac{88.71 \times 169 + 88.71 \times 167 + 88.71 \times 165 + 153.2 \times 152}{419.33}$$

$$= 161.52 \text{ month or } 13.46 \text{ years}$$

24. Therefore, the balance useful life of the plant is 7.81 years, say 7 years and 10 months as 1.4.2003. Depreciation chargeable has been worked out accordingly.

25. Depreciation has been allowed at opening gross block of Rs. 45167.00 lakh. The petitioner is entitled to an amount of Rs.2090.00 lakh each year during 2001-2002 and 2002-2003 and Rs. 626.00 lakh during 2003-2004 on account of depreciation. While allowing tariff, depreciation recovered in tariff up to 31.3.2001, as per the Commission's order dated 1.11.2002 in petition No.36/2002 has been taken into account. The necessary calculations are appended herein below:

		2001 -02	2002 -03	2003 -04
Rate Of Depreciation		4.63%	4.63%	
Depreciable Value (Rs. in lakh)	40651			
Balance useful life of plant in years	7.81			
Remaining Depreciable Value (Rs. in lakh)	4892			
Depreciation (Rs. in lakh)		2090	2090	626

26. The reasons for differences between the claim of the petitioner and the depreciation allowed are as under:

- (a) Additional capitalisation of Rs.40 lakh has been disallowed during the year 2002-2003.
- (b) We have considered the opening gross block of Rs.45167 lakh as against the opening gross block of Rs.48494 lakh considered by the petitioner.
- (c) The petitioner has claimed depreciation @ 5.30% whereas the depreciation rate has been calculated @ 4.63% based on the depreciation rates notified by the Commission in the notification dated 26.3.2001.
- (d) The entire notional loan stands repaid during the year 2002-2003 and therefore, the depreciation for the year 2003-2004 has been worked out by spreading the remaining depreciable value over the balance useful life of the plant as on 1.4.2003.

ADVANCE AGAINST DEPRECIATION

27. As per the 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.

28. The actual gross loan and actual repayment as on 1.4.2001 have been considered for computing Advance Against Depreciation. The petitioner is not entitled to claim any Advance Against Depreciation as shown below:

	(Rs. in lakh)		
	2001-02	2002-03	2003-04
1/12 th of Loan(s)	1882	1882	1882
Scheduled Repayment of the Loan(s)	3469	10870	0
Minimum of the above	1882	1882	0
Depreciation during the year	2090	2090	626
Advance Against Depreciation	0	0	0

O&M EXPENSES

29. As per the notification dated 26.03.2001, operation and maintenance (O&M) expenses including insurance for the stations belonging to the petitioner, in operation for 5 years or more in the base year of 1999-2000, are derived on the basis of actual O & M expenses, excluding abnormal O & M expenses, if any, for the years 1995-1996 to 1999-2000 duly certified by the statutory auditors. The average of actual O & M expenses for the years 1995-1996 to 1999-2000 is considered as O & M expenses for the year 1997-1998 which is escalated twice at the rate of 10% per annum to arrive at O & M expenses for the base year 1999-2000. Thereafter, the base O & M expenses for the year 1999-2000 are further escalated at the rate of 6% per annum to arrive at permissible O & M expenses for the relevant year. The notification dated 26.3.2001 further provides that if the escalation factor computed from the observed data lies in the range of 4.8% to 7.2%, this variation shall be absorbed by the petitioner. In case of deviation beyond this limit, adjustment shall be made by applying actual escalation factor arrived on the basis of weighted price index of CPI for industrial workers (CPI_IW) and index of selected component of WPI(WPIOM) for which the petitioner shall approach the Commission with an appropriate petition. The notification dated 26.3.2001 thus implies that the variations between $\pm 20\%$ over the previous year's expenses are to be absorbed by the petitioner.

30. The petitioner has claimed O & M expenses as under, based on the actual expenses for the years 1995-1996 to 1999-2000 the details of which have been furnished :

	(Rs. In lakh)		
	2001-2002	2002-2003	2003-2004
O&M Expenses	2522.00	2673.00	2833.00

31. The petitioner has also prayed for allowing the recovery of additional expense likely to be incurred due to consumption of major spares after warranty period as additional O&M cost over and above what is claimed in the instant petition for the period 2001 to 2004.

32. We deal with the issue of supply free warranty spares during the warranty period of 10 years before looking into claim of the petitioner towards O&M charges. The issue was deliberated during the hearing on 21.3.2003. The petitioner submitted that the details of O&M expenses furnished did not include cost of spares, which were replaced free of cost by the manufacturer during the warranty period. The petitioner after expiry of the warranty would have to incur expenditure on procurement of such spares, and therefore, an additional provision for O&M expenses on account of procurement of spares was required to be made. The Commission had directed the petitioner to file details of the notional cost of the spares supplied by the manufacturer free of cost along with the equipment/machinery as also the firmed up future requirements of spares.

33. The petitioner furnished following details of notional spares supplied free of cost under the guarantee agreement with the manufacturer for 1995-1996 to 1997-1998:

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	Total
4730	161	29	4920

34. Though the generating station is in operation since April 1989 (COD of GT-I), the details of warranty spares have been furnished only for 3 years. It was stated that the warranty period for supply of free spares had expired in 1997-1998 after 50000

EOH of operation. The value of spares consumed in these three years is about Rs. 4920 lakh i.e. Rs. 1640 lakh per year. The amount is found to be substantial considering total O&M expenses of Rs. 2479.00 lakh in 2000-01. Therefore, it is evident that the project cost quoted by the bidders included the cost of these spares supplied free of cost over 10 years period. However, petitioner and respondents were not in a position to quantify the amount of warranty spares included in the project cost. The petitioner is getting return on equity and depreciation on the value of warranty spares included in the project cost. In view of this, it would not be appropriate to allow additional cost in O&M for the consumption of such spares in future. It is, therefore, held that the recovery of additional expense likely to be incurred due to consumption of major spares after warranty period as additional O&M cost over and above the O&M expenses allowed by us shall not be admissible.

35. Having decided the issue of supply of warranty spares free of cost, we may now deal with the O&M claim of the petitioner. The above claim of the petitioner does not conform to the methodology specified in the notification dated 26.3.2001. The methodology for the computation of O&M expenses as per the notification dated 26.3.2001 takes into account actual O&M expenses incurred for the years 1995-1996 to 1999-2000 after normalisation. The petitioner has submitted the following details of O&M expenses for the years 1995-96 to 2000-01:

(Rs. in lakh)						
Year	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001
O&M	1503	1492	1572	1956	2415	2503
Water charges	21	21	23	24	19	24
Total O&M with out water charges	1482	1471	1549	1932	2396	2479

36. It can be seen that there is abnormal increase in the O&M expense for the year 1998-1999 and 1999-2000 over the respective previous year's O&M expenses. The

petitioner's claim on account of O&M expenses has been examined in terms of the notification dated 26.3.2001 as discussed in the succeeding paragraphs.

Employee Cost:

37. The petitioner has indicated following amounts under this head for 1995-1996 to 1999-2000: -

(Rs. in lakh)				
1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
304.95	352.35	434.66	520.73	706.57

38. There has been increase of 23% in the year 1997-1998 over the expenses for the previous year and 36% in the year 1999-2000 over those for 1998-1999. The petitioner has clarified that the increase is on account of pay revision of employees, was due from 01.04.1997 and therefore a provision was kept in 1997-98 for higher wages to employees. The increase in 1999-2000 is also due to crystallization effect of pay revision. The petitioner has also claimed incentive and ex gratia paid to the employees under the employee cost. The petitioner has clarified that incentive and ex gratia payments are under the productivity linked bonus scheme. The respondents have contested that incentive and ex gratia should not be included in the employee cost, should be payable from the incentive earned by the petitioner and should not be charged from beneficiaries in the O&M cost. The Commission's policy in this regard is to allow only the obligatory minimum bonus payable under the Payment of Bonus Act. As such, the following amount of incentive and ex gratia has not been considered for arriving at the normalised O&M expenses for the purpose of tariff:

(Rs. in lakh)				
1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
29.4	38.8	24.1	60.0	58.5

Repair & Maintenance

39. The petitioner has indicated following amounts under this head for 1995-1996 to 1999-2000

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
543.45	478.98	432.24	556.43	571.85

40. There has been an increase of 29% in 1998-1999 over the previous year's expenses. The petitioner has clarified that there were two major C inspections in 1998-99 compared to one C inspection in 1997-98. The petitioner vide affidavit dated 9.9.2003 has furnished additional information to justify the abnormal increase under the head of Repair and Maintenance for the year 1998-1999 clarifying that

“The unit is having 3 gas turbines and 1 steam turbine. In the gas turbine 3 types of inspections are carried out. They are 'A' after 4000 & 12000 Hrs,' B' after 8000 Hrs and 'C' after 16000 Hrs. Inspections A and B are minor inspections whereas C is major inspection (inspection at 16000 hours). During 1998-99 C inspection of 2 units (GT-1 & GT-2) was carried out. During 1997-98 C inspection for GT-3 only was carried out. As OEM has specified the overhauling schedule for the units for smooth running of the units, accordingly these overhauling were carried out.”

41. In view of above, relatively high expenditure in 1998-1999 appears to be in order. However, it is also observed that expenditure in 1995-1996 is also comparatively high. As per the details of free warranty spares furnished by the petitioner, consumption of such spares was of Rs. 47.30 crore in 1995-1996. The petitioner has clarified that the high consumption of spares was on account of breakdown maintenance of units. This also explains comparatively high expenditure under this head in 1995-1996. The expenditure in 1999-2000 is of the same order as that of 1998-1999. Since such Hot gas path inspection and major overhauls are the

regular feature in gas turbines the amounts as indicated by the petitioner in the respective years have been considered for normalization.

Stores

42. The petitioner has indicated the following amounts under this head for 1995-1996 to 1999-2000: -

(Rs. in lakh)				
1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
19.30	22.14	21.57	15.32	19.18

43. There has been increase of 25% in 1999-2000 over the previous year's expenses under this head. According to the petitioner, the stores consumed in 1999-2000 has increased due to prolonged closure of canal resulting in close cycle operation. In view of this, the amounts indicated by the petitioner have been considered to arrive at the normalized O&M expenses.

Power Charges

44. The petitioner has indicated the following amounts under this head for 1995-1996 to 1999-2000: -

(Rs. in lakh)				
1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
20.48	17.14	19.48	17.14	21.30

45. The respondents have questioned the admissibility of power charges claimed by the petitioner. The respondents have contended that the claim results in double payment by them as they are paying separately for auxiliary consumption on normative basis. On the issue the petitioner has explained during the hearings that these power charges pertain to colony power consumption taken directly from the power stations and do not include any construction power. However, the charges

booked under O&M are only the energy charges and fixed charges are not claimed. It has been further clarified that the payment received from the employees for the power consumed in residential quarters is credited to the revenue account and only net power charges for colony power consumption is charged to O&M. As such, there is no double payment by the respondent-beneficiaries. It is contended by the petitioner that in case the power had been procured from the state utility, then also power charges for the colony infrastructure would have been booked under O&M. The total colony consumption is indicated by the petitioner is of the order of 2.6 MU which is very meager about 0.08% of the total generation corresponding to 80% target availability. We are satisfied with the explanation furnished by the petitioner.

46. There has been increase of 24% in 1999-2000 over the expenses for the previous year. The petitioner has clarified that the power charges in 1999-2000 are higher due to higher consumption, as more number of employees were posted at the station as per requirement during this period. As such, the amount indicated has been considered to arrive at normalized O&M expenses.

Water Charges

47. The petitioner has indicated following amounts under this head for the years 1995-1996 to 1999-2000:-

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
20.74	20.74	22.78	23.57	18.60

48. There are no abnormal water charges in different years and hence the same has been considered in the normalized water charges.

Communication expenses

49. The petitioner has indicated following amounts under this head for 1995-1996 to 1999-2000

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
11.26	13.41	10.65	15.95	14.50

50. There has been an increase of 50% in 1998-1999 over the previous year's expenses under this head. It has been clarified that the communication expenses in 1998-1999 are higher due to various activities like co-ordination with foreign agency M/s ABB for making the station Y2K complaint. Considering reduction of 21% expenditure in 1997-1998 from expenditure of 1996-1997 the expenditure in 1998-1999 does not appear to be abnormally high. As such amounts indicated by the petitioner have been considered to arrive at normalized O&M charges.

Traveling Expenses

51. The petitioner has indicated the following amounts under this head for 1995-1996 to 1999-2000:-

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
35.61	37.78	42.53	47.70	78.08

52. It is seen that expenses for 1999-2000 are in excess by 64% over the expenses for the previous year, that is, 1998-1999. The petitioner has clarified that the traveling expenses in 1999-2000 increased because of transfer of 20 employees, confirmation and posting of 10 new Executive Trainees. The petitioner vide affidavit dated 9.9.2003 has furnished additional information for abnormal increase in the head

of traveling expenses for the year 1999-2000. It clarified that the “transfer of in and out of employees is a regular feature. Based on requirements the decision to transfer of manpower has been taken. In line with the above, the expenditure on account of transfer may be considered as routine expenditure and allowed in tariff.” However, this expenditure on bulk transfer of employees is not a regular feature, and hence, the expenditure for year 1999-2000 has been restricted to 20% increase at Rs. 57.24 lakh to arrive at normalized O&M expenses. Accordingly, following expenses have been considered for normalisation:

(Rs. in lakh0

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
35.61	37.78	42.53	47.70	57.24

Insurance:

53. The petitioner has indicated the following amounts under this head for 1995-1996 to 1999-2000: -

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
86.13	80.83	95.45	124.58	113.23

54. There has been increase of 31% in 1998-1999 over the previous year and there is reduction in subsequent year. The petitioner clarified that the insurance amount in 1998-1999 increased because of additional risk coverage. The petitioner vide affidavit dated 9.9.2003 has furnished additional clarification for abnormal increase under the head of insurance for the year 1998-1999 and reduction of expenditure in the subsequent year, that is, 1999-2000. It has been clarified that the insurance expenditure increased during 1998-1899 due to additional machinery breakdown and coverage of high rating transformers for first time. During the year 1999-2000 premium was paid based on the calculation of the reinstatement value by

independent valuer. As per the valuation reinstatement, value was on lower side than the value in the previous year. In view of this insurance expenditure for 1998-1999 the amount indicated by the petitioner cannot be considered to arrive at normalized O&M charges and therefore, these have been restricted to 20% increase of the expenditure of 1997-1998 at Rs. 114.54 lakh. Accordingly, following expenses have been considered for normalisation under this head:

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
86.13	80.83	95.45	114.54	113.23

Rent

55. The petitioner has indicated the following amounts under this head for 1995-1996 to 1999-2000:-

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
0.64	0.78	0.81	0.83	1.49

56. There has been increase of 80% in 1999-2000 than the previous year. As clarified by the petitioner the rent in 1999-00 has increased due to hiring of new transit camp at Kota. Since such hiring is likely to be continued in future also, the amounts as indicated by the petitioner have been considered to arrive at normalized O&M charges.

Security Expenses

57. The petitioner has indicated the following amounts under the head "security expenses" for 1995-1996 to 1999-2000:-

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
107.48	133.95	136.51	185.94	169.83

58. There has been increase of 25% and 36 % in 1996-1997 and 1998-1999 over the respective previous year's expenses. The petitioner has submitted that the provision for these expenses were kept in 1996-97 on account of revision of salaries of CISF personnel deployed for security of the station. The increase in 1998-1999 is stated to be on account of increase in r leave salary and pension contribution arrears due to CISF personnel. The increases could also be attributed to wage revision. As such the amounts claimed by the petitioner have been considered for the purpose of normalisation of O&M charges.

Professional Expenses

59. The petitioner has submitted the following details of the amounts under the head "profession expenses" for 1995-1996 to 1999-2000: -

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
3.68	8.69	0.48	0.58	1.75

60. There has been increase of 136% and 202% in the years 1996-1997 and 1999-2000 respectively over the respective previous year. The petitioner has clarified that the professional expenses in 1996-1997 increased due to booking of expenditure on account air/water monitoring study and canal limnological study. The professional expenses in 1999-2000 have increased due to engaging of physical verifier for fixed assets.

61. The petitioner vide its affidavit dated 9.9.2003 has furnished additional clarification for abnormal increase under the head of professional expenses for the years 1996-1997 and 1999-2000. It has been clarified that

“Air and water monitoring study, is a regular feature. Expenditure on air/water quality monitoring during the year 96-97 is Rs.3.03 lakhs.

During 97-98 our statutory auditors has suggested that this expenditure should be booked to Repair & Maintenance of plant and machinery and accordingly accounting of the expenditure has been done. The Limnological study was done to check the impact of discharge in the canal. The amount spent on the limnological study is Rs.0.75 lakhs on account of part payment for the same. The physical verification of assets and inventory is a recurring feature. As per NTPC policy, physical verification of inventory is carried out every year, where as for fixed assets it is a periodic exercise. The expenditure on physical verification & reconciliation of fixed assets in 1999-00 is Rs.0.60 lakhs.”

62. All these expenses are of very small value and thus the amount indicated by NTPC have been considered for normalisation.

Other expenses

63. The petitioner has indicated the following amounts under this head for the years 1995-1996 to 1999-2000:-

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
125.98	117.64	108.30	166.49	226.26

64. There has been an increase of 54% and 36% in the years 1998-1999 and 1999-2000 respectively from the previous year. The petitioner has clarified that the other station over heads have increased due to increase in education expenses and R&R expenses. The petitioner vide its affidavit dated 9.9.2003 has furnished additional information to clarify the abnormal increases under the head of ‘Other expenses’ for the year 1998-1999 and 1999-2000. It has clarified that “educational expense has increased due to implementation of 5th Pay commission recommendations. The R&R work is carried out in the nearby areas based on the requirements of the area and as per the policy of the corporation”

65. As per the balance sheet for the years 1998-99 and 1999-2000 the increases under the two heads are as follows:

Year	(Rs. in lakh)	
	1998-1999	1999-2000
Education Expenses	14.28	4.05
R&R (Community Development & Welfare Expenses)	11.23	19.89

66. After deducting these amounts from the expenditure of the respective year, the increase over the previous year is still higher and exceeds the limit of 20%. Further, increase in R&R cannot be considered for normalization. In view of above, the increase has been limited to 20% increase from the previous year plus increase in educational expenses for 1998-1999 to Rs. 144.24 lakh (1.2x 108.30+14.28=144.24) and correspondingly, the amount for 1999-2000 is restricted to Rs. 173.08 lakh being 20% more than the expenses of Rs.144.24 lakh for the year 1998-1999. As such, the following amounts have been considered for normalisation under this head:

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
125.98	117.64	108.30	144.24	173.08

Corporate Office Expenses

67. The petitioner has made the following allocation of corporate office expenses to the station for 1995-1996 to 1999-2000: -

(Rs. in lakh)				
1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
218.47	203.94	242.75	276.92	470.07

68. As clarified by the petitioner, the expenses common to Operational and Construction activities are allocated to Profit and Loss Account and Incidental Expenditure during Construction in proportion of sales to annual capital outlay. The corporate office expense details furnished by the petitioner are those charged to revenue only. These corporate office and other common expenses chargeable to revenue are allocated to the projects on the basis of sales.

69. There has been increase of 65.08%, and 55.30% in corporate office expenses in the year 1997-1998, and 1999-2000 respectively over the previous year. It has been clarified by the petitioner that the increases are on account of the increases due to wage revision and increase in travelling expenses of the corporate office employees. As discussed above, in the case of project employee costs, the increases on account of wage revision have been allowed for calculation of the normalised O&M expenses after deducting incentive and ex gratia. Similarly, in case of corporate office expenses also, the incentive and ex gratia have not been considered in direct employee expenses.

70. Schedule 13 of the Company balance sheets for different years reveals Rs. 55 lakh, Rs.0.40 lakh, Rs. 85 lakh and Rs. 2800 lakh as donations for the years 1996-1997 to 1999-2000 respectively, the donations were made for the benefit of society or for some social cause for which the petitioner deserves appreciation, donations cannot be directly attributed to the business of power generation, the activity in which the petitioner is engaged. Accordingly, these donations cannot be passed on to the beneficiaries. Therefore, the donation amounts have not been considered in the corporate office expenses.

71. After excluding the proportionate amount for incentive, ex gratia, and donations, the following amounts in corporate office expenses in respective year have been considered towards the normalised O&M expenses for the station:

(Rs. in lakh)					
Year	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
Amount	210.26	193.68	236.38	260.09	384.82

Other Heads

72. Under all other heads, increases are within the permissible limit of 20%. Therefore, amounts indicated by the petitioner have been considered to arrive at the normalised O&M charges. O&M computation done in accordance with the methodology prescribed in the notification dated.26.3.2001 as given in the following table:

73. A comparative tabular statement of the year-wise O&M expenses claimed by the petitioner and allowed by us is extracted hereunder:

		1995-1996		1996-97		1997-1998		1998-1999		1999-2000		1995-1996 to 1999-2000	
		Claimed	Allowed	Average As Claimed	Average as Allowed								
1	Employee cost	304.95	275.60	352.35	313.50	434.66	410.50	520.73	460.20	706.57	648.10	463.85	421.58
2	Repair and Maintenance	543.45	543.45	478.98	478.98	432.24	432.24	556.43	556.43	571.85	571.85	516.59	516.59
3	Stores consumed	19.30	19.30	22.14	22.14	21.57	21.57	15.32	15.32	19.18	19.18	19.50	19.50
4	Power charges	20.48	20.48	17.14	17.14	19.48	19.48	17.14	17.14	279.64	279.64	70.78	70.78
5	Water Charges	20.74	20.74	20.74	20.74	22.78	22.78	23.57	23.57	18.60	18.60	21.29	21.29
6	Communication expenses	11.26	11.26	13.41	13.41	10.65	10.65	15.95	15.95	14.50	14.50	13.15	13.15
7	Traveling expenses	35.61	35.61	37.78	37.78	42.53	42.53	47.70	47.70	78.08	57.24	48.34	44.17
8	Insurance	86.13	86.13	80.83	80.83	95.45	95.45	124.58	114.54	113.23	113.23	100.04	98.04
9	Rent	0.64	0.64	0.78	0.78	0.81	0.81	0.83	0.83	1.49	1.49	0.91	0.91
10	Security expenses	107.48	107.48	133.95	133.95	136.51	136.51	185.94	185.94	169.83	169.83	146.74	146.74
11	Professional expenses	3.68	3.68	8.69	8.69	0.48	0.48	0.58	0.58	1.75	1.75	3.04	3.04
12	Printing & Stationary	4.79	4.79	4.53	4.53	4.65	4.65	4.48	4.48	2.88	2.88	4.27	4.27
13	Other Expenses	125.98	125.98	117.64	117.64	108.30	108.30	166.49	144.24	226.26	173.08	148.93	133.85
14	Corporate office expenses	218.47	210.26	203.94	193.68	242.75	236.38	276.92	260.09	470.07	384.82	282.43	257.05
15	Total O&M	1502.96	1400.93	1492.90	1443.79	1572.86	1542.33	1956.66	1847.01	2673.93	2456.19	1839.86	1738.05
16	O &M without water Charges	1482.22	1380.19	1472.16	1423.05	1550.08	1519.55	1933.09	1823.44	2655.33	2437.59	1818.58	1716.76

74. O &M expenses allowed in tariff are summarised below:

(Rs. in lakh)

Year	
Base O&M expenses for 1997-1998	1738.05
Normative O&M expenses for 1998-1999	1911.85
Normative O&M expenses for 1999-2000	2103.04
Base O&M expenses for 2000-2001	2229.22

(Rs. in lakh)

Year	2000-2001 (Base Year)	2001-2002	2002-2003	2003-2004
O&M expenses claimed	2479.00	2522.00	2673.00	2833.00
Total Normalised O&M Expenses, including water charges	2229.22			
O&M Expenses		2362.98	2504.75	2655.04

INTEREST ON WORKING CAPITAL

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

- (a) Fuel Cost: As per the notification dated 26.03.2001, fuel cost for one month corresponding to normative target availability is to be included in the working capital. Accordingly, the fuel cost is worked out for one month on the basis of operational parameters as given in the notification dated 26.03.2001. The fuel cost allowed in working capital is given hereunder:

	2001-2002	2002-2003	2003-2004
Weighted Avg. GCV of Gas (kCal/SCM)	9190.60	9190.60	9190.60
Specific gas Consumption (SCM/kWh)	0.2312	0.2312	0.2312
Annual Requirement of gas (1000 SCM)	679462	679462	681323
Weighted Avg. Price of Gas (Rs./1000 SCM)	3967.02	3967.02	3967.02
Fuel Cost (Rs. in lakh)	26954	26954	27028
Fuel Cost - 1 month (Rs. in lakh)	2246.20	2246.20	2252.35

(b) Naphtha Stock : For Naphtha stock to be provided in the working capital , lower of the two values, that is, lower of the value of Naphtha stock as per audited accounts of Anta GPS for the year 2000-01 and that calculated in accordance with the following calculations has been considered:

	2001-2002	2002-2003	2003-2004
Weighted Avg. GCV of Naphtha (kCal/Lit.)	8096.12	8096.12	8096.12
Specific Naphtha Consumption (Lits/kWh)	0.26	0.26	0.26
Annual Requirement of Naphtha (Itrs)	771315	771315	773429
Naphtha Stock in KL	1590.00	1590.00	1590.00
Weighted Avg. Price of Naphtha (Rs./KL)	12413.98	12413.98	12413.98
Naphtha Stock- (Rs. in lakh)	197.38	197	197
Naphtha Stock as per audited accounts of 2000-01 (Rs in lakh)	201	201	201

(c) O&M Expenses: As per the 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 approved above are considered in tariff of the respective year.

(d) Spares: As per the 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, actual spares consumption/one year requirement has been worked out in the similar manner as prescribed for O&M expenses in the notification dated 26.03.2001, that is, the average of actual spares consumption for the years 1995-1996 to 1999-2000 has been considered as spares consumption for the year 1997-98, which has been escalated twice at the rate of 10% per annum to arrive at spares consumption for the base year 1999-2000, and the base spares consumption for the year 1999-2000 has been further escalated at the rate of 6% per annum to arrive at permissible spares consumption for the relevant year. The above amount has been restricted to 1% of capital cost as on 1.4.2001. As the plant is more than 5 years old, deduction of 1/5th of initial spares is not applicable. The calculations in support of spares allowed in working capital are as under:

(Rs. in lakh)

Spares						Average	Base	Base	Tariff Period		
	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	1995-1996 to 1999-2000	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
Actual Consumption as per Audited Balance Sheet	350	177	252	328	215						
Calculation of Base Spares	350	177	252	328	215	264	320	339	359	381	404
1% of Average Capital Cost								452	452	452	452
Minimum of the above allowed as spares								339	359	381	404

(e) Receivables: As per the 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. The receivables have been

worked out on the basis of two months of fixed and variable charges. The supporting calculations in respect of receivables are tabulated hereunder:

Computation of receivables component of Working Capital

	(Rs. in lakh)		
	2001-2002	2002-2003	2003-2004
Variable Charges			
Gas (Rs/kWh)	0.9456	0.9456	0.9456
Rs./kWh	0.9456	0.9456	0.9456
Variable Charges per year	26954.39	26954.39	27028.24
Variable Charges -2 months	4492.40	4492	4505
Fixed Charges - 2 months	1617.25	1596.47	1324.81
Receivables	6110	6089	5830

- (f) Working Capital Margin: The notification dated 26.3.2001 is silent on Working Capital Margin. The Commission had considered the Working Capital Margin of Rs.860.00 lakh while awarding tariff for the period 1.4.1997 to 31.3.2001 vide order dated 1.11.2002 in Petition No.36/2002. Accordingly, Working Capital Margin of Rs.860.00 lakh has been considered in the working. 50% of the Working Capital Margin has been considered as equity and the remaining 50% as loan. Return on equity and interest on loan have been allowed on the respective portion. The interest on loan portion of the Working Capital Margin has been allowed on the basis of weighted average ratio of interest.

76. The average SBI PLR of 11.50% as provided in the notification dated 26.3.2001 has been considered as the rate of interest on working capital during the tariff period 2001-02 to 2003-04, in line with the Commission's earlier decision, as against the rate of interest of 12.35% claimed in the petition.

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

Calculation of Interest on Working Capital

(Rs. in lakh)

	2001-2002	2002-2003	2003-2004
Fuel Cost	2246	2246	2252
Naphtha Stock	197	197	197
O & M expenses	197	209	221
Spares	359	381	404
Receivables	6110	6089	5830
Total Working Capital	9109	9122	8904
Working Capital Margin (WCM)	860	860	860
Total Working Capital allowed	8249	8262	8044
Rate of Interest	11.50%	11.50%	11.50%
Interest on allowed Working Capital	949	950	925
Interest on WCM	20	26	60
Return on WCM	69	69	69
Total Interest on Working capital	1038	1045	1054

ANNUAL FIXED CHARGES

78. 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	2001-2002	2002-2003	2003-2004
1	Interest on Loan	599	326	0
2	Interest on Working Capital	1038	1045	1054
3	Depreciation	2090	2090	626
4	Advance against Depreciation	0	0	0
5	Return on Equity	3613	3613	3613
6	O & M Expenses	2363	2505	2655
	TOTAL	9703	9579	7949

ENERGY/VARIABLE CHARGES

79. The fuel price and GCV furnished by the petitioner for the months of Jan, Feb, March 2001 in the petition have been considered for the Base Energy Charge computation. The petitioner has claimed the energy charges based on the operational norms applicable to gas-based/liquid fuel-based generating stations as per the notification dated 26.3.2001 for the tariff period 2001-2004.

80. HVPN pointed out that the petitioner was raising energy charges on a composite basis, despite the fact that capacity was to be declared separately for gas and liquid fuel under ABT. HVPN further stated that they were not buying the power from the liquid fuel but were made to pay for the power on liquid fuel in the composite billing for the time being. We feel that this is not fair, even though the bills are provisional and subject to adjustment. Since the capacity is to be declared separately for gas-based generating stations and liquid fuel-based under ABT, the base energy charges have been computed for natural gas and liquid fuel separately. The base energy charge (BEC) have been computed based on the data furnished by the petitioner and are summarised below:

Computation of Energy Charges

Description	Unit	
Capacity	MW	419.33
Normative PLF	hours/kw/year	7008.00
Gross Station Heat Rate (with Nox) Combined Cycle Operation	kCal/kWh	2125.00
Gross Station Heat Rate (without Nox) Combined Cycle Operation	kCal/kWh	2100.00
Aux. Energy Consumption Combined Cycle Operation	%	3.00
Weighted Average GCV of Naphtha	kCal/l	8096.12
Weighted Average GCV of Gas	Kcal/SCM	9190.60

Price of Gas	Rs/ 1000SCM	3967.02
Price of Naphtha	Rs./KL	12413.98
Rate of Energy Charge ex-bus per kWh Sent (With NOx Control) Combined Cycle operation with Gas	Paise/kWh	94.56
Rate of Energy Charge ex-bus per kWh Sent (Without NOx Control) Combined Cycle operation with Gas	Paise/kWh	93.45
Rate of Energy Charge ex-bus per kWh Sent (With NOx Control) Combined Cycle operation with Naphtha	Paise/kWh	335.91
Rate of Energy Charge ex-bus per kWh Sent (Without NOx Control) Combined Cycle operation with Naphtha	Paise/kWh	331.96

81. 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. The notification dated 26.3.2001 provide for fuel price adjustment for variation in fuel price and GCV of fuels. The base energy charges approved on the basis of norms shall be subject to adjustment. The formula applicable for fuel price adjustment shall be as given below: -

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

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

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

- (ii) FPA shall further be subjected to adjustment for monthly operating pattern adjustment (MOPA) for percentage open cycle operation as certified by respective REB and corresponding to Gross Station Heat Rate of 3150 kCal/kWh (without Nox) and 3190 kCal/kWh (with Nox) and aux. energy consumption of 1%.

82. In addition to the charges approved above, the petitioner is entitled to recover other charges like incentive, claim for reimbursement of income-tax, other taxes, cess levied by a statutory authority, development surcharge and other charges as applicable in accordance with the notification dated 26.3.2001. This is subject to the orders, if any, of the superior courts. The petitioner shall also be entitled to recover the filing fee of Rs. 10 lakh paid in the present petition from the respondents in ten equal monthly installments of Rs. one lakh each, payable by the respondents in proportion of the fixed charges.

83. Uttar Pradesh Power Corporation Limited, Respondent No.1 has filed an interlocutory application (IA No 31/2003) to seek a direction to the petitioner to charge tariff at the reduced rate of 80% of the fixed cost being charged provisionally till determination of final tariff by the Commission. As this order decides the final tariff for the period from 2001-2002 to 2003-2004, no separate order needs to be passed on the IA, which has become infructuous and gets disposed of through this order.

84. This order disposes of Petition No 45/2001.

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
ASHOK BASU)
CHAIRMAN

New Delhi dated the 30th April, 2004