

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Coram:**

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

**Petition No.99/2002**

**In the matter of**

Approval of tariff from 1.4.1998 to 31.3.2001 of Kawas Gas Power Station

**And in the matter of**

National Thermal Power Corporation Ltd.

**.... Petitioner**

Vs

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

**...Respondents**

**The following were present:**

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

**ORDER  
(DATE OF HEARING 25.11.2003)**

The petitioner has filed this petition for approval of tariff in respect of Kawas Gas Power Station (Kawas GPS) for the period from 1.4.1998 to 31.3.2001. Initially, the

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

2. Kawas GPS was declared under commercial operation on 1.11.1993. The tariff was notified by Ministry of Power vide notification dated 30.4.1994, which was subsequently amended vide notifications dated 16.1.1997, 30.11.1998 and 14.5.1999 to account for change in rate of depreciation, increase in return on equity from 12% to 16% and additional capitalisation and FERV up to 31.3.1997. The notification dated 30.4.1994 was valid up to 31.3.1998, but was continued on ad hoc basis beyond that date in view of Clause 6 thereof.

3. The petitioner had filed Petition No. 76/2000 to claim revised fixed charges due to additional capital expenditure and FERV capitalised in respect of Kawas GPS for the years 1997-98 to 1999-2000. The said petition was disposed of vide the Commission's order dated 19.4.2002. The Commission approved additional capitalisation and FERV up to 31.3.1998 and further directed the petitioner to file fresh petition for determination of tariff for the period from 1.4.1998 to 31.3.2001, based on the terms and conditions notified by Ministry of Power as per the notification dated 30.4.1994. The present petition has been filed in pursuance of these directions of the Commission contained in the order dated 19.4.2002 to claim the revised fixed charges as under:

(Rs in lakh)

SI No	Particulars	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
1	Interest on Loan	2600	2600	1444	395
2	Interest on Working Capital	2696	2844	2827	4672
3	Depreciation	11657	11657	10993	10897

4	Return on Equity	9108	12144	12297	12242
5	O&M Expenses including water Charges	3718	3718	4352	5027
	<b>TOTAL</b>	29778	32962	31913	33234

4. In addition the petitioner has claimed the variable charges @ of 90.68 paise/kWh for the year 1998-1999, @ 88.18 paise/kWh for the year 1999-2000 and @ 107.59 paise/kWh for the year 2000-2001.

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

(Rs. in lakh)

	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
Fuel Cost	4094	4094	4823	7820
Naphtha stock	1839	1839	2098	5757
O & M expenses	273	273	316	391
Spares	1311	1311	1516	1878
Recievables	13994	14798	16339	22597
Total Working Capital	21511	22314	25091	38444
Working Capital Margin (WCM)	2030	2030	2030	2030
Total Working Capital allowed	19481	20284	23061	36414
Rate of Interest	13.43%	13.43%	13.43%	13.43%
Interest on allowed Working Capital	2616	2724	3097	4890
Interest on WCM	117	117	118	118
Return on WCM	122	162	162	162
<b>Total Interest on Working capital</b>	2855	3004	3377	5171

6. Reply to the petition has been filed on behalf of Respondent No. 1 (MPSEB). It has been contended on behalf of Respondent No.1 that before undertaking the process of determination of tariff for the period from 1.4.1998 to 31.3.2001, the Commission should decide the terms and conditions of tariff for that period under Section 28 of the

Electricity Regulatory Commissions Act, 1998. It has been stated that the terms and conditions of tariff notified by Ministry of Power on 30.4.1994 applicable to Kawas GPS was valid for a period of 5 years and it expired on 31.3.1998. This issue has already been considered by the Commission. The Commission in its order dated 21.12.2000, while laying down the terms and conditions of tariff, directed that these terms and conditions would be applicable with effect from 1.4.2001 and for the period prior to that, the terms and conditions earlier notified by the Central Government in Ministry of Power would continue to apply. Therefore, the terms and conditions of tariff in respect of Kawas GPS for the period from 1.4.1998 to 31.3.2001 are not required to be determined by the Commission afresh. Accordingly, while disposing of Petition No. 76/2000, the Commission in its order dated 19.4.2002 had directed the petitioner to file the petition based on terms and conditions decided by Ministry of Power. The present petition has been filed in compliance with those directions. Therefore, we do not find any merit in the preliminary submission made on behalf of Respondent No.1.

7. It was contended by Respondent No.1 that debt and equity should be in the ratio of 70:30 as applicable to IPPs, though as per notification dated 28.4.1997, debt and equity have been taken in the ratio of 50:50. It is further contended that ROE should be payable at 12% as there was no justification to increase ROE to 16% with effect from 1.11.1998. Similarly, on the question of depreciation, it has been submitted that prior to 1992, depreciation was charged at the rate of 3.4%. However, this was increased to 7.4% after 1994. Respondent No.1 has prayed that depreciation should be charged at the rate applicable prior to 1992. It is also contended that the respondents should not meet the income-tax liability of the petitioner who should pay it out of its own profits. We do not find any force in any of these submissions made on behalf of Respondent No.1. We have

already noted that the petition has been filed based on the terms and conditions contained in Ministry of Power's notification dated 30.4.1994. Respondent No.1 has not been able to pin point any deviation on account of ROE, debt-equity ratio, depreciation and incentive from the said notification. In view of earlier decisions, we are bound to follow the terms and conditions for determination of tariff in respect of Kawas GPS based on notification dated 30.4.1994.

8. Respondent No.1 has also raised the issues of interest on loan, interest on working capital, O&M expenses and the water charges. We have taken these submissions into account while considering the impact of these components on tariff. Respondent No.1 also raised certain issues regarding the applicability of operational norms like specific fuel oil consumption, auxiliary energy consumption, etc. These aspects are not being considered in this petition as the Commission has already decided to follow the Ministry of Power project specific tariff notification up to 31.3.2001 and the operational norms have been considered in accordance with the notification dated 30.4.1994 applicable to Kawas GPS. We now proceed to examine the different components of tariff separately.

### **CAPITAL COST**

9. The investment approval for the project was accorded by the Central Government, Ministry of Power vide letter dated 18.9.1996 at a cost of Rs.1579.27 crore, excluding working capital margin (WCM) of Rs. 20.30 crore.

10. Ministry of Power while issuing tariff notification dated 30.4.1994 considered the project cost of Rs.127589.00 lakh, as on 31.3.1994. Ministry of Power had allowed

additional capitalisation of Rs.7663.50 lakh and FERV of Rs. 11509.00 lakh during 1994-95 to 1996-1997. Therefore, the total admitted cost of the project works out to Rs.146761.50 lakh as on 31.3.1997. The Commission in its order dated 19.4.2002 in Petition No 76/2000 had allowed additional capitalisation and FERV amounting Rs 1264.37 lakh and Rs.114.20 lakh respectively for the year 1997-98. Thus, the closing capital cost as on 31.3.1998 would be Rs. 148140.10 lakh. This has been considered as the opening gross block as on 1.4.1998 for the purposes of present tariff petition.

11. The petitioner has claimed following amounts on account of additional capitalisation during the year 1998-1999 to 2000-2001:

(Rs. in lakh)

<b>Financial Years</b>	1998 -1999	1999-2000	2000-2001	Total
1. New work				
(a) Within the scope of RCE	<b>1783.670</b>	<b>28.437</b>	<b>44.747</b>	<b>1856.854</b>
(b) Not in the scope of RCE	<b>23.533</b>	<b>58.001</b>	<b>22.116</b>	<b>103.650</b>
<b>Total (a + b)</b>	1807.203	86.438	66.863	1960.504
2. Balance Payments	<b>-23.111</b>	<b>340.643</b>	<b>2540.711</b>	<b>2858.243</b>
<b>Total (1+2)</b>	1784.092	427.081	2607.574	4818.747

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

(Rs. in lakh)

<b>Financial Years</b>	1998 -1999	1999-2000	2000-2001	Total
New work				
(a) Within the scope of RCE	1785.692	28.437	44.754	1858.883
(b) Not in the scope of RCE	23.421	57.487	20.531	101.439
<b>Total (a + b)</b>	1809.113	85.924	65.285	1960.322

13. It can be seen that there is difference in amount of claim and amount for which justification has been furnished. On reconciliation it was found that amount justified in the new works under the category of "within the scope of RCE" for the years 1998-99 and 2000-2001 is higher than the amount claimed as per Annexure III of the petition. As such, additional capitalisation has been considered with reference to claimed amount as per Annexure III. The amount justified in the new works under category of "not in the scope of RCE" in respective years is less than the amount claimed. The difference is because of expenditure on certain items in the nature of miscellaneous brought out items like armoured table, wall mounted fans, tong tester, pedestal fan, public address system items etc.

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

**New Works**

- (a) The expenditure on any works, which was in the scope of approved project cost but undertaken after the date of commercial operation has been allowed.
- (b) The expenditure incurred for the replacement of existing equipment/facility due to technology becoming obsolete or the equipment having outlived its utility in the normal course of operation, has also been allowed for capitalisation.
- (c) The expenditure on the works undertaken/on purchase of additional equipment/facility which is giving benefit exclusively to the petitioner without any apparent benefit to the beneficiaries has not been allowed, unless it is found that expenditure was necessary for the benefit of the employees for giving necessary facilities at the remote location of the power project.

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

15. The balance payments pertaining to:

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

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

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

16. The balance payments pertain to adjustments positive or negative for the works already executed in the previous tariff periods or expenditure on balance work undertaken in previous tariff periods or capitalisation/de-capitalisation of assets due to I/U transfers or replacement of assets, etc. Separate justification is not required for the balance payments, presuming them to be pertaining to the works to be within the scope of approved project cost. The guiding factor in this regard is placement of order for the



work. The expenditure against capital spares claimed by the petitioner of Rs.2855.832 lakh for the years 1999-2000 and 2000-2001 has been disallowed. Accordingly, an expenditure of Rs. (-) 2311141.00, (-) 1098161.53 and Rs. 3650270.00 in the years 1998-1999, 1999-2000 and 2000-2001 totaling to Rs. 240967.47 has been found justified

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

(Rs. in lakh)				
Financial Year	1998 -1999	1999-2000	2000-2001	Total
1. New works				
(a) Within the scope of RCE	1779.789	27.036	35.584	1842.409
(b) Not in the scope of RCE	23.528	57.691	22.116	103.335
Total (a + b)	1803.317	84.727	57.700	1945.744
2. Balance Payments	-23.111	-10.982	36.503	2.410
Total (1+2)	1780.206	73.745	94.203	1948.154

18. The amount allowed under the category of "New Works not in the scope of RCE" is more than the amount for which justification was given. This is due to allowing of expenditure on certain items in the nature of miscellaneous brought out items for which separate justification was not considered necessary. These items are armoured table, wall mounted fans, tong tester motor, public address system, pedestal fan, dining table, pump for drainage, exhaust fan etc.

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

(Rs. in lakh)				
		1998 -1999	1999-2000	2000-2001
(i)	Opening project cost as on 1 <sup>st</sup> April	148140.10	149920.30	149994.00
(ii)	Additional capitalisation during the year	1780.20	73.70	94.20

(iii)	Closing project Cost as on 31 <sup>st</sup> March of the year	149920.30	149994.00	150088.20
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### **DEBT-EQUITY RATIO**

20. Ministry of Power in its notification dated 30.4.1994 had considered the normative debt-equity ratio of 50:50. For the purpose of calculation of fixed charges in this petition, same debt-equity ratio has been adopted.

### **RETURN ON EQUITY (ROE)**

21. ROE @ 12% per annum up to 31.10.1998 and @ 16% thereafter has been allowed as provided in the notifications issued by Ministry of Power. The charges payable by the respondents on account of return on equity works out to as under:

(Rs. in lakh)

	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
Opening Balance	74070	74070	75867	77927
Increase/ Decrease due to FERV	2967	2967	-255	-2097
Increase/ Decrease due to Additional Capitalisation	890	890	47	37
Closing Balance	77927	77927	75659	75867
Average Equity	75999	75999	75763	76897
Rate of Return on Equity	12%	16%	16%	16%
<b>Return on Equity</b>	<b>9120</b>	<b>12160</b>	<b>12304</b>	<b>12122</b>

### **INTEREST ON LOAN**

22. The normative loan amount has been worked out based on the normative debt-equity ratio of 50:50. The annual repayment of loan up to 31.3.1998 as per the notification dated 30.4.1994 has been considered. The annual repayment amount has been worked out as per the following formula:

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

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

24. For the purpose of calculation of amount of interest on loan, the weighted rate of interest on loan has been worked out on the basis of actual rate of interest on actual average loans and the same is applied on the normative average loan during the year.

25. The weighted average rate of interest has been calculated as shown hereunder:

#### **Calculation of weightage Average Rate of Interest**

		(Rs in lakh)		
		1998-1999	1999-2000	2000-2001
1A	GOI loan-I			
	Opening Balance	5414	4737	4060
	Addition/Drawl	0	0	0
	Repayments	677	677	677
	Closing Balance	4737	4060	3384
	Average Loan	5075	4399	3722
	Rate of Interest	15.00%	15.00%	15.00%
	Interest on loan	761	660	558
1B	GOI loan-II			
	Opening Balance	290	257	225
	Addition/Drawl	0	0	0
	Repayments	32	32	32
	Closing Balance	257	225	193
	Average Loan	274	241	209
	Rate of Interest	16.00%	16.00%	16.00%
	Interest on loan	44	39	33
1C	GOI loan-III			
	Opening Balance	483	435	387
	Addition/Drawl	0	0	0
	Repayments	48	48	48

	Closing Balance	435	387	338
	Average Loan	459	411	363
	Rate of Interest	17.00%	17.00%	17.00%
	Interest on loan	78	70	62
1	GOI loan			
	Opening Balance	6187	5430	4672
	Addition/Drawl	0	0	0
	Repayments	757	757	757
	Closing Balance	5430	4672	3915
	Average Loan	5808	5051	4294
	Rate of Interest	15.21%	15.21%	15.22%
	Interest on loan	883	768	653
2	UTI-II			
	Opening Balance	0	0	0
	Addition/Drawl	0	0	0
	Repayments	0	0	0
	Closing Balance	0	0	0
	Average Loan			
	Rate of Interest			
	Interest on loan			
3A	Bond 11th Issue-1st series			
	Opening Balance	48	48	48
	Addition/Drawl	0	0	0
	Repayments	0	0	48
	Closing Balance	48	48	0
	Average Loan	48	48	24
	Rate of Interest	15.57%	15.57%	15.57%
	Interest on loan	7	7	4
3B	Bond 11th Issue-2ndseries			
	Opening Balance	2649	2649	2649
	Addition/Drawl	0	0	0
	Repayments	0	0	2649
	Closing Balance	2649	2649	0
	Average Loan	2649	2649	1325
	Rate of Interest	14.07%	14.07%	14.07%
	Interest on loan	373	373	186
3C	Bond 11th Issue-3rd series			
	Opening Balance	2098	2098	2098
	Addition/Drawl	0	0	0
	Repayments	0	0	0
	Closing Balance	2098	2098	2098
	Average Loan	2098	2098	2098

	Rate of Interest	10.55%	10.55%	10.55%
	Interest on loan	221	221	221
3	Bonds -Total			
	Opening Balance	4795	4795	4795
	Addition/Drawl	0	0	0
	Repayments	0	0	2697
	Closing Balance	4795	4795	2098
	Average Loan	4795	4795	3447
	Rate of Interest	12.55%	12.55%	11.94%
	Interest on loan	602	602	411
4	French credit			
	Opening Balance	57204	53143	40788
	Addition/Drawl	0	0	0
	Repayments	9279	8669	8414
	Closing Balance	53143	40788	31925
	Average Loan	55173	46965	36357
	Rate of Interest	10.45%	10.45%	10.45%
	Interest on loan	5765	4907	3799
	FERV	5218	-3686	-449
5	Belgian credit			
	Opening Balance	7967	7393	5678
	Addition/Drawl	0	0	0
	Repayments	1290	1206	1170
	Closing Balance	7393	5678	4447
	Average Loan	7680	6536	5063
	Rate of Interest	11.60%	11.60%	11.60%
	Interest on loan	891	758	587
	FERV	716	-509	-61
	TOTAL LOAN			
	Opening Balance	76152	70760	55933
	Addition/Drawl	0	0	0
	Repayments	11327	10632	13039
	Closing Balance	70760	55933	42385
	Average Loan	73456	63347	49159
	Rate of Interest	11.08%	11.11%	11.09%
	Interest on loan	8140	7035	5451
	FERV	5935	-4195	-509

26. The calculations of actual interest on normative loan are also given hereunder:

	(Rs. in lakh)		
	1998-1999	1999-2000	2000-2001
Gross loan-Opening	74070	77927	75867
Cumulative repayments of Loans up to previous year	47750	59077	69709

Net loan-Opening	26320	18851	6158
Increase/ Decrease due to FERV	2967	-2097	-255
Increase/ Decrease due to Additional Capitalisation	890	37	47
Total	30177	16790	5951
Repayments of Loans during the year	11327	10632	5951
Net loan-Closing	18851	6158	0
Average Net Loan	22585	12504	3079
Rate of Interest on Loan	11.08%	11.11%	11.09%
<b>Interest on loan</b>	<b>2503</b>	<b>1389</b>	<b>341</b>

27. The commitment fees in case of French and Belgian credit loans as indicated by the petitioner in Form-7 of the petition have not been allowed for working out the interest rate as commitment fees are generally applicable on un-disbursed portion of loans and would have been capitalised. As no specific clarification has been given by the petitioner regarding capitalisation of management fees in case of French and Belgian credit loans, these have not been allowed for working out the interest rate. However, the Govt. Guarantee fees @ 1.20% per annum in case of these foreign loans have been allowed.

28. The issue charges (Insurance premium) in case of Belgian credit loan have not been allowed for working out the interest rate as the petitioner has mentioned in its submissions dated 22.1.2004 that the same was paid at the time of initial draw down. As the petitioner has mentioned in its submission dated 22.1.2004 that the Insurance premium paid on French credit loan for draws from FY 1994-95 onwards was charged to revenue, the Insurance premium percentage has been worked out accordingly for draws from FY 1994-95 onwards and the same has been considered for working out the interest rate in case of French credit loan.

## **DEPRECIATION**

29. Depreciation recovered in tariff from 1.11.1993 to 31.3.1998 as notified by Ministry of Power has been taken into account. Ministry of Power in the notification dated 30.4.1994 had allowed depreciation @ 7.25% and the same rate has been followed for the purpose of calculation of depreciation from 1.4.1998 to 31.3.2001. The capital base considered for this purpose includes additional capitalisation for the years 1998-1999 to 2000-2001. The amount of depreciation to be recovered from respondents in tariff shall be as given hereunder:

(Rs in lakh)

	1998-1999	1999-2000	2000-2001
Opening Balance	148140	155855	151734
Increase/ Decrease due to FERV	5935	-4195	-509
Increase/ Decrease due to Additional Capitalisation	1780.21	73.75	94.20
Closing Balance	155855	151734	151319
Rate of Depreciation	7.25%	7.25%	7.25%
<b>Depreciation recovered in tariff</b>	<b>10740</b>	<b>11299</b>	<b>11001</b>

## **O&M EXPENSES**

30. The petitioner has claimed the following O&M expenses inclusive of water charges for the years 1998-99, 1999-2000 and 2000-01 based on actuals:

(Rs. in lakh)

1998-99	1999-2000	2000-2001
3718	4352	5027

31. The petitioner has clarified that the generating station was running on low PLF due to non-availability of gas up to mid-1997, and generation improved thereafter. As a result, the maintenance requirement, that is, periodic inspection/overhauling of machines after certain hours of operation as detailed in O&M Manual which was earlier low due to low PLF, also increased since 1998. The petitioner has, therefore, claimed the actual O&M expenses.

32. The actual O&M expenses for the years 1995-96 to 2000-01 are as follows:

(Rs. in lakh)

1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001
1685.91	1836.62	2861.27	3717.58	4351.70	5027.38

33. The Commission, as a matter of policy has allowed the O&M expenses in such cases in line with the practice followed by Ministry of Power in the project specific notifications. The practice has been to consider 10% escalation over the actual O&M expenses for the year immediately preceding the first year of the tariff period, to arrive at the allowable O&M expenses for the first year. O&M expenses for the subsequent years of tariff period are determined by considering 10% escalation every year over O&M expenses for the previous year so determined. As per above methodology, actual O&M expenses of 1997-98 were to be escalated at the rate of 10% to arrive at allowable O&M expenses for the year 1998-99 and similarly thereafter. In view of the explanation furnished by the petitioner, the actual O&M expenses for the year 1997-98 are not considered to be representative of O&M expenses. As per the explanation given by the petitioner, the PLF/generation level has picked up from mid-1997 and onwards. Hence the actual O&M expenses of 1998-99 account for about 9 months of O&M at higher PLF/generation level. If this would not have been the case, the normal O&M expenses



would have been of the order of 10% more than the actual O&M expenses of Rs.1836.62 lakh, that is, Rs.2020.28 lakh. As such, 9 months operation at higher generation level accounts for Rs.840.988 lakh (2861.27-2020.18) additional O&M expenses. Thus, additional O&M expenses for 12 months operation would be of the order of Rs.1121.38 lakh (12/9x840.988=1121.38). Thus, the base O&M expenses for the year 1997-98 may be taken as Rs.3141.70 lakh for determining the allowable O&M expenses for each year. By applying the methodology adopted by Ministry of Power, the following O&M expenses have been allowed for the years 1998-99 to 2000-01.

(Rs. in lakh)

1998-99	1999-2000	2000-01
3455.87	3801.45	4181.60

### **INTEREST ON WORKING CAPITAL**

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

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

	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
<b>Natural Gas</b>				
Weighted Avg. GCV of gas (kCal/SCM))	10013	10013	10013	10013
Specific gas Consumption (SCM/kWh)	0.212	0.212	0.212	0.212
Annual Requirement of Gas (1000 SCM)	835569	835569	835569	835569
1 Month Requirement of Gas (1000 SCM)	69631	69631	69631	69631
Weighted Avg. Price of gas (Rs./1000 SCM)	4144.58	4144.58	4144.58	4144.58
Fuel Cost (Natural gas) - 1 month ( Rs. in lakh)	2886	2886	2886	2886

(b) Liquid fuel Naptha Stock: As actual naphtha stock for the year 1997-1998 as per the audited balance sheet of Kawas GPS is nil, naphtha stock has not been considered in the working capital.

(c) O&M Expenses: O&M expenses for working capital has been considered for 1 month for the respective year in accordance with Ministry of Power notification dated 30.4.1994.

(d) Spares: The actual spares for the year 1997-1998 as per the audited balance sheet of Kawas GPS has to be considered in the working for the years 1998-1999 to 2000-2001.

(e) Receivables: Receivables have been worked out on the basis of two months of fixed and variable charges. The variable charges component of the receivables in the working capital have been estimated on the basis of variable charges as calculated in the table below. The fixed charge component of the receivables is based on the calculations for the period 1998-99 to 2000-2001.

(Rs in lakh)

	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
Variable Charges (Natural Gas)				
Gas (Rs/kWh)	0.9068	0.9068	0.9068	0.9068
Variable Charges per year	34631	34631	34631	34631
Variable Charges (Liquid Fuel )				
Liquid Fuel (Rs/kWh)	1.8312	1.8312	1.8312	1.8312
Receivables				
Variable Charges -2 months (Natural Gas)	5772	5772	5772	5772
Fixed Charges - 2 months	4538	5063	5025	4813
<b>Total</b>	<b>10310</b>	<b>10835</b>	<b>10797</b>	<b>10585</b>

35. Ministry of Power in its notification dated 30.4.1994 had considered the working capital margin of Rs.2030 lakh. The same has been adopted for the purpose of calculating working capital for the years 1998-1999 to 2000-01. 50% of the working capital margin has been treated as equity and remaining 50% has been treated as loan

by retaining the debt-equity ratio of 50:50 and respective return and interest is allowed thereon. For sake of uniformity, the Commission has decided to follow the SBI PLR for computing interest on working capital. Accordingly, the SBI PLR of 13% for the year 1998-1999, 12% for the year 1999-2000 and 11.5% for the year 2000-2001 has been considered as the rate of interest on working capital. Based on the above methodology, the interest on working capital payable by the respondents to the petitioner shall be as per the details extracted below.

(Rs. in lakh)

	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
Fuel Cost	2886	2886	2886	2886
Naphtha stock	0	0	0	0
O & M expenses	257	257	283	311
Spares	464	464	464	464
Recievables	10310	10835	10797	10585
Total Working Capital	13917	14442	14430	14246
Working Capital Margin (WCM)	2030	2030	2030	2030
Total Working Capital allowed	11887	12412	12400	12216
Rate of Interest	13.00%	13.00%	12.00%	11.50%
Interest on allowed Working Capital	1545	1614	1488	1405
Interest on WCM	112	112	113	113
Return on WCM	122	162	162	162
<b>Total Interest on Working capital</b>	<b>1780</b>	<b>1888</b>	<b>1763</b>	<b>1680</b>

36. Annual fixed charges for the period 1.4.1998 to 31.3.2001 allowed are summed up as below:

(Rs. in lakh)

Sl No	Particulars	1.4.1998 to 31.10.1998	1.11.1998 to 31.3.1999	1999-2000	2000-2001
1	Interest on Loan	2503	2503	1389	341
2	Interest on Working Capital	1780	1888	1763	1680
3	Depreciation	10740	10740	11299	11001
4	Return on Equity	9120	12160	12304	12122
5	O&M Expenses including water Charges	3086	3086	3395	3734
	<b>TOTAL</b>	<b>27229</b>	<b>30378</b>	<b>30150</b>	<b>28878</b>

### **Energy Charge**

37. The respondent No 1 has contended that actual or the normative operational parameters, whichever is lower should be the basis for computation of energy charge. It is pointed out that the Commission had directed the petitioner to furnish the actual operating parameters achieved during the tariff period under consideration as recorded in the Commission's order dated 13.12.2002. It was submitted that the petitioner had not complied with the direction. The Commission had asked the petitioner to file an appropriate reply. The petitioner in IA dated 14.7.2003 as follows:

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

38. The petitioner sought modification of the order dated 13.12.2002 so that it was not required to file the actual operational parameters. The Commission vide order

dated.1.10.2003, recalled its earlier direction to the petitioner to file actual parameters achieved, observing that the actual operating parameters were not required to be looked into and the energy charges needed to be determined in the light of norms contained in Ministry of Power notification dated 30.4.1994.

39. From the information placed on record by the petitioner it is not possible to arrive at one weighted average price and GCV for a month. This is due to different units of measurement for natural gas and liquid fuel. In view of this, base energy charges have been computed based on Natural gas and Liquid fuel (operation on liquid fuel during the year 1998-99 as 27.9%) corresponding as per the actual prices indicated in FPA bills raised by the petitioner and GCV value indicated in the petition for the months of April, May, June 1998. The base energy charges have been worked out as under:

Description	Unit	Norms	1998-1999
Capacity	MW	656.2	656.2
Normative PLF(68.49%)	Hours/ Kw /year	6000	6000
Gross Station Heat Rate in combined cycle corresponding to GCV (With NO <sub>x</sub> Control)	kCal/kWh	2125	2125
Aux. Energy Consumption (Combined Cycle)	%	3	3
GCV of Gas (average)	kCal/SCM		10013
GCV of Liquid Fuel (average)	KCal/Kg		11253.33
Price of Gas (average)	Rs./1000SCM		4144.58
Price of Liquid Fuel (average)	Rs./MT		9406.58
Rate of Energy Charge ex-bus per kWh Sent for Combined cycle (With NO <sub>x</sub> Control)	Paise/kWh		90.68
Rate of Energy Charge ex-bus per kWh Sent for Combined cycle (With NO <sub>x</sub> Control)	Paise/kWh		183.12

40. The base energy charges have been calculated on base value of GCV, base price of gas and normative operating parameters. Ministry of Power notification dated 30.4.1994 provides for fuel price adjustment for variation in fuel price and GCV of fuels. Accordingly, the above base energy charges shall be subject to following adjustments: -

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

$$FPA = \frac{10 \times (SHR_n) \times \left[ \frac{P_m}{K_m} - \frac{P_s}{K_s} \right]}{(100 - AC_n)}$$

Where,

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

SHR<sub>n</sub> = Normative Gross Station Heat Rate expressed in kcal/kWh

AC<sub>n</sub> = Normative Auxiliary Consumption in percentage

P<sub>m</sub> = 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<sub>m</sub> = Weighted average gross calorific value of Gas or Liquid fuel for the month in Kcal/ SCM or kcal/ Litre or kcal/ Kg

P<sub>s</sub> = 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<sub>s</sub> = Base value of gross calorific value of Gas or Liquid fuel as taken determination of base energy charge in tariff order in Kcal/ SCM or kcal/ Litre or kcal/ Kg

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

(iii) The actual energy charge for the month shall be computed as follows:

$$(EC)_m = \frac{K}{100} (EC)_{lf} + (1 - k/100) (EC)_g$$

Where,

$$(EC)_g = (BEC)_g + (FPA)_g$$

$$(EC)_{lf} = (BEC)_{lf} + (FPA)_{lf}$$

$$K = \text{\% generation on liquid fuel during the month}$$

And,

$$(EC)_m = \text{Monthly energy charge in paise/kWh}$$

$$(EC)_g = \text{Monthly energy charge (gas) in paise/kWh}$$

$$(BEC)_g = \text{Base energy charge (gas) for a month in paise/kWh}$$

$$(FPA)_g = \text{Fuel price Adjustment (gas) for a month in Paise/kWh}$$

$$(EC)_{lf} = \text{Monthly energy charge (liquid) in paise/kWh}$$

$$(BEC)_{lf} = \text{Base energy charge (liquid) for a month in paise/kWh}$$

$$(FPA)_{lf} = \text{Fuel price Adjustment (liquid) for a month in Paise/kWh}$$

41. The petitioner has charged tariff for the period 1997-1998 to 2000-2001 on ad-hoc basis in accordance with para 6 of the notification dated 30.4.1994. The tariff already charged is subject to adjustment in the light of final tariff now determined by us.

42 . This order disposes of Petition No. 99/2002.

**Sd/-**  
**(K.N. SINHA)**  
**MEMBER**

**Sd/-**  
**(ASHOK BASU)**  
**CHAIRMAN**

New Delhi dated the 18<sup>th</sup> May 2004