

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. **Shri Ashok Basu, Chairman**
2. **Shri K.N.Sinha, Member**
3. **Shri A. H. Jung, Member**

Petition No 32/2003

In the matter of

Approval of tariff in respect of Agartala Gas Turbine Power Project for the period from 1.4.2001 to 31.3.2004.

And in the matter of

North Eastern Electric Power Corporation Ltd.

.....**Petitioner**

Vs

1. Agartala State Electricity Board, Guwahati
2. Meghalya State Electricity Board, Shillong
3. Department of Power, Govt. of Tripura, Agartala
4. Power & Electricity Department, Govt. of Mizoram, Aizawl
5. Electricity Department, Govt. of Manipur, Imphal
6. Department of Power, Govt. of Arunachal Pradesh, Itanagar
7. Department of Power, Govt. of Nagaland, Kohima
8. North-Eastern Regional Electricity Board, Shillong
9. North-Eastern Regional Load Despatch Centre, Shillong. **Respondents**

The following were present

1. Shri Alok K. Agarwal, Advocate, NEEPCO
2. Shri Sudhir Misra, Advocate, NEEPCO
3. Shri Shashank Kumar, Advocate, NEEPCO
4. Shri A.G. West, GM (F), NEEPCO
5. Shri J. Barkakati, D(T), NEEPCO
6. Shri P.K. Borah, NEEPCO
7. Shri R. Malik, NEEPCO
8. Shri B. Goswami, NEEPCO
9. Shri N. Medhi, Dy. Mgr (E), NEEPCO
10. Shri R. Kapoor, ASEB
11. Shri D. Das, Addl CE (Com), ASEB
12. Shri H.M. Sharma, ASEB
13. Shri K. Goswami, ASEB
14. Shri Anup Mahanta, MeSEB
15. Shri C.M. Bhogal, Member Secretary, NEREB

ORDER
(DATE OF HEARING 7.6.2005)

This petition has been filed by the petitioner, NEEPCO, a generating company owned by the Central Government for approval of tariff for Agartala Gas Turbine Power Project, (hereinafter referred to as “Agartala GTPP”) for the period from 1.4.2003 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. Agartala GTPP (84 MW) consists of four gas turbines of 21 MW each. The following project cost approvals are available for the generating station:

Approval/Date	Project cost
Original approval vide Ministry of Power letter dated 9.12.1994	Rs.294.05 crore including IDC of 26.97 crore and WCM of 2.36 Crore (Rs.291.69 crore excluding WCM)
RCE approved vide Ministry of Power letter dated 28.12.2004	Rs.322.55 crore including IDC of Rs. 10.57 crore and WCM of Rs.4.95 crore (Rs.317.6 crore excluding WCM)

3. Therefore, the latest approved capital cost is Rs. 317.6 crore excluding WCM as per approval of Ministry of Power under letter dated 28.12.2004.

COMMISSIONING SCHEDULE

4. The scheduled and actual dates of commercial operation of the units and the generating station are as follows-

	GT – 1	GT- 2	GT –3	GT-4 and the station as a whole
Actual dates of commercial operation	1.4.1998	1.4.1998	1.4.1998	1.8.1998
Scheduled date of commercial operation	Feb., 1996 for first unit and May, 1996 for the station (Total commissioning schedule of 18 months for the generating station from the date of investment approval vide Ministry of Power letter dated 9.12.1994)			

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

(Rs. in lakh)

Sl. No.	Particulars	2003-04
1	Interest on Loan	539
2	Interest on Working Capital	264
3	Depreciation	1845
4	Advance against Depreciation	0
5	Return on Equity	2639
6	O & M Expenses	1022
	TOTAL	6310

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

(Rs. in lakh)

	2003-04
Fuel Cost	915
O & M expenses	85
Spares	63
Receivables	1715
Total Working Capital	2778
Rate of Interest	9.50%
Total Interest on Working capital	264

7. In addition, the petitioner has claimed Energy Charges @ 83.35 paise/kWh for the period from 1.4.2003 to 31.3.2004.

CAPITAL COST

8. 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.

10. The present petition is for approval of tariff for the year 2003-04 for which the capital cost as on 31.3.2003 needs to be ascertained. The petitioner earlier approached the Commission for determination of tariff from the date of commercial operation of the generating station in Petition No.5/2000. The Commission confirmed the single part tariff of 190 paise/kWh earlier charged, up to 31.3.2003 vide order dated 5.2.2003.

11. The tariff of 190 paise/kWh was as per the decision at NEREB forum and was based on project cost of Rs. 299.53 crore, including IDC of Rs. 8.65 crore. The issue of capital cost as on the date of commercial operation of the generating station was deliberated before the Commission in petition No.5/2000.

12. The Commission did not decide on the issue of capital cost of the generating station for the purpose of tariff in petition No.5/2000. Therefore, in order to arrive at the capital cost as on 31.3.2003, we have to arrive at the reasonable capital cost of the generating station on the date of commercial operation and also to consider the additional capitalisation and FERV subsequent to the date of commercial operation, that is, 1.8.1998. In order to assess the reasonability of the capital cost of the generating station, the issues of time and cost overrun need to be deliberated first.

13. The capital cost as on the date of commercial operation (1.8.1998) has been indicated as Rs.308.56 crore (including works in progress). However, closing gross block figure reconciled from books of accounts by the petitioner stands at Rs.298.10 crore as on 31.3.1999. The following table indicates the opening gross block figures, additional capital expenditure, FERV and closing gross block figures for various

years subsequent to the date of commercial operation as claimed by the petitioner and as reconciled from books of accounts.

(Rs. in crore)

Year	Opening Gross Block	FERV	Additional capitalisation	Closing gross block
1998-99	-	-	-	298.10
1999-2000	298.10	(-)9.06	8.19	297.23
2000-01	297.23	(-)2.18	6.14	301.19
2001-02	301.19	3.86	(-)0.01	305.04
2002-03	305.04	15.27	4.57	324.88
2003-04	324.88	3.83	1.83	330.54
Total		11.72	20.72	

14. The closing gross block of Rs. 298.10 crore as on 31.3.1999 includes initial capital spares of Rs.13.41 crore which is considered to be reasonable. The additional capital expenditure of Rs. 20.72 crore has been claimed on account of balance works/payments. The petitioner had submitted the Revised Cost Estimates for Rs. 322.55 crore, including IDC of Rs.10.57 crore and WCM of Rs.4.95 crore as on 31st July 1998 to the Central Government, which were approved by Ministry of Power letter dated 28.12.2004.

Time overrun

13. There is a time overrun of 26 months between the actual and the scheduled dates of commercial operation as per original approval. According to the petitioner, the delay is attributable to the following factors, namely:-

- (i) Delay due transportation bottlenecks.
- (ii) Delay in award of contract for switchyard package.
- (iii) Adverse law and order situation prevailing in the State of Tripura

Delay due to transportation bottlenecks

14. As per original schedule the gas turbines and generators should have reached the project site in December 1995. However, these were actually delivered at project site in June 1997, after a delay of 18 months. The petitioner has explained that the delay of 18 months was because of transportation bottlenecks, the details of which are given hereunder.

- (i) It is stated that transportation of eight Heavy Lift packages (4 generators and 4 gas turbines, each weighing above 90MT) from Kolkata port to Badarpurghat in Assam was carried out by barges through the inland waterways via Bangladesh. The first consignment of 4(Four) packages (Two GTs and Two Turbines) left Kolkata port on 10.9.1995. It was delayed en-route by a week due to the general strike in Bangladesh, (which affected Customs Deptt. also) from 14.9.1995 to 21.9.1995. The Heavy Lift packages were to be unloaded at Badarpurghat by "Roll-on-Roll-off Operation" for which a jetty was built. However, by the time all the barges carrying Heavy Lift packages reached Badarpurghat in October 1995, there was an untimely receding of water level, much below the jetty mark and consequently, it was not possible to unload the packages by "Roll-on-Roll-off Operation". Therefore, a special ramp way had to be constructed for unloading of the packages. The last consignment could be unloaded by the end of November 1995. The Heavy Lift consignments were then to be transported from Badarpurghat to the project site by road, covering a distance of 287 KM.
- (ii) Route survey was carried out by the petitioner in 1994 and also by the prospective bidders well in advance (since 1992 by GEC Alsthom) and it was

envisaged that construction of permanent bridges and strengthening of bridges where necessary would be completed by March 1995. Therefore, construction of bypass was envisaged at only one place, that is, across the river Manu. The issue was taken up by the petitioner with BRTF, Setuk, Shillong on 28.3.1995 for construction of bypass and strengthening of bridges for smooth transportation of the consignments. However, these bridges were not completed even till December 1995. Therefore, works had to be taken up at last minute for construction of bypasses at Ram Nagar and Pichartal also.

- (iii) In December 1995, 70 R Class bridge at Powamara and 9 (nine) culverts between Badarpurghat and Powamara were declared weak by BRTF (the agency responsible for maintenance of roads between Badarpurghat and Agartala). A load restriction of upto 55 MT only was imposed by BRTF for the Bowamara bridge. In order to facilitate transportation of Heavy Lift consignments, works had to be undertaken for strengthening of the culverts and construction of a bypass at Powamara for which permission of BRTF was required. After obtaining permission from BRTF, construction of bypasses at Powamara, Ramnagar, Pichartal and Manu (construction of bypass at Manu was as per original plan) commenced in December 1995 and were completed in January 1996. Unfortunately, unseasonal showers during January end washed away the Manu bypass. The Manu bypass was reconstructed by the end of February 1996. However, the transportation could not start in absence of security for which Govt. of Tripura agreed only on 10.3.1996. Because of unseasonal rains in the months of February and March 1996, the bypass constructed in Powmara was affected and was not in a position to be utilized for

transportation of the heavy lifts. Subsequently, in the last week of March 1996, the bypasses constructed in Powmara, Pichartal and Manu were washed away by unprecedented rains. Since the water level in Powamara had not receded till the end of April 1996, with the approaching monsoons, the equipment had to be kept stored at Karimganj. As per the advice of BRTF, the petitioner had to initiate action to remove the bypasses already constructed and the idea of transporting the equipment prior to monsoon of 1996 was aborted. After the monsoons of 1996, the transportation was re-scheduled according to which the equipment was to reach site by 10.2.1997. With a view to avoiding any hurdle experienced in the previous year, the petitioner wrote to BRTF on 17.8.1996 for construction of bypass at River Manu, so that the equipment could be transported as per programme. The re-construction of bypass at Powamara began on 25.10.1996. However, due to sudden rainfall, the bypass construction had to be stopped. There was a rise in water-level of the river. By the end of November 1996, the Heavy lifts had crossed Powamara bypass and the consignment was moving towards the Manu river, across which BRTF was to construct the bypass. The packages were stored at Nalkata School Grounds and Suprakandi Storage site. However, due to severe pressure from local populace, the transportation contractors required Police Escort for moving the packages to Manu storage. In view of the local resistance faced in transportation of the heavy lifts, the Commissioner (Power), Govt. of Tripura wrote to the Inspector General of Police to provide full security to the convoy on 25.1.1997. On 14.2.1997, BRTF intimated the petitioner that crossing places at Sardhuchera bridge, Kamalachera bridge and Nilophchera bridge had been completed.

15. It has been submitted that for these reasons, the heavy consignments were delivered at site during the period between April 1997 to June 1997 against the scheduled delivery in December 1995, after a delay of 18 months.

16. Responding to the above reasons explained by the petitioner, the respondents pointed out that originally air transportation was envisaged in place of sea-cum-road transportation actually carried out by the petitioner, leading to delay in commissioning of the generating station. As per the clarifications furnished by the petitioner vide affidavit dated 6.5.2005, the change in mode of transport was envisaged even before the project cost approval by the Central Government in 1994 in order to save on cost of transportation. The petitioner has brought out that a feasibility study of the transportation by sea-cum-road route was carried out based on the assurance of M/S BHEL that they had successfully achieved substantial reduction in the weight and dimension of consignment of Frame-5 GTG sets and it would be possible to transport the same to the site by road. According to the feasibility study report furnished by the petitioner, the cost of road transport was assessed to be substantially lower than the total cost associated with the air transport and improvement in runway of Agartala airport. Accordingly, air lifting was deleted from the scope of revised project report placed before the Public Investment Board. In view of the above, the petitioner has urged that the issue raised by the respondents is not considered to be relevant.

17. As per the above statements of the petitioner, it took up the issue of construction of permanent bridges and strengthening of en-route bridges with BRTF on 28.3.1995 for the first time. However, it has not been made clear as to what action

was taken during April 1995 to December 1995 in view of the approaching scheduled delivery of the equipment at site in December 1995. Going by the submission of the petitioner, it appears that the delay in commissioning of the project could have been avoided, had the petitioner been diligent in pursuing the matter with BRTF and State Government/Central Government for the speedy construction/strengthening of en-route bridges/bypasses. The petitioner was expected to foresee the eventualities and ought to have taken advance action or chalked out contingency plans for timely completion of the generating station. The petitioner was well aware of the law and order situation and weather conditions prevailing in the State of Tripura. Further delay has been caused by cascading effects of heavy rain and adverse law and order situation en-route. As such, the delay of 18 months due to transportation bottlenecks cannot be held to be beyond the control of the petitioner.

Delay in award of contract for switchyard package

18. In an earlier affidavit dated 23.11.2004, the petitioner attributed further delay to the litigation problems in completion of the switchyard package. The petitioner maintains that the tenders for the switchyard package were opened in October 1995. However, one of the unsuccessful bidders went into litigation and the court cleared the decks in favour of the petitioner only in July 1996. The tenders of the switchyard package were opened in October 1995 leaving only 4 months time for the completion of switchyard before the scheduled date of commissioning (Feb. 1996) of GT-1 considering that the order was placed in the same month. This indicates that there was delay in initiating the tendering process by the petitioner. Further, this being a parallel activity, delay in execution of switchyard package was on petitioner's own volition.

Adverse law and order situation prevailing in the State of Tripura

19. The petitioner in its earlier submissions had not mentioned any thing about the adverse law and order situation to explain the delay in execution of project. However, the petitioner vide its latest affidavit dated 6.5.2005 has submitted that the further delay of 8 months (over and above the delay of 18 months attributed to transportation bottlenecks) was on account of adverse law and order situation prevailing in the State of Tripura at the time of the erection and commissioning. The petitioner has submitted that the law and order situation in the State turned from bad to worse during the project construction period. The petitioner has placed on record a copy of request from Embassy of Federal Republic of Germany mentioning of such incidents and seeking security for the German Engineers during their stay at Agartala. As such, for security reasons, these engineers had to be provided accommodation in Agartala City, and they commuted daily from Agartala City to the project site (about 12 km away). The engineers were to travel during daytime and night travel was totally restricted. There was an atmosphere of fear amongst the engineers and workers affecting the working hours at site. Therefore, the erection and commissioning, which was originally scheduled to be completed within 6 months, took 14 months, causing a delay of 8 months and the construction of the generating station was completed by the end of July 1998.

20. From the above reasons cited by the petitioner it is clear that petitioner was not in position to commission the project because of delay on account of non-transportation of plant and equipment and delay in commissioning of the switchyard. The deterioration in law and order was only the cascading effect of delay in

transportation of equipment to site and construction of switchyard. Had the petitioner maintained the original schedule by organising its affairs properly, the adverse law and order situation might not have been encountered. In view of above, any implication on project cost because of delay of 26 months cannot be passed on to the beneficiaries.

Cost overrun

21. The original investment approval of Rs. 294.05 crore, including IDC of Rs.26.97 crore and WCM of Rs. 2.36 crore approved vide Ministry of Power letter dated 9.12.1994 was based on December 1992 price level. The revised cost estimates submitted by the petitioner on July 1998 price level for Rs. 322.55 crore, including IDC of Rs.10.57 crore and WCM of Rs.4.95 crore was subsequently approved by the Central Government vide letter dated 28.12.2004.

22. Having decided that any implication on project cost and tariff due to delay of 26 months cannot be passed on to the beneficiaries, we may have to limit the completed capital cost as on the date of commercial operation, that is, 1.8.1998 by reducing the elements of cost increase which may be linked to time-overrun of 26 months. The elements of cost which can be linked to time overrun may have to be limited in the ratio of original commissioning schedule (18 months) to actual commissioning schedule (44 months), including delay of 26 months.

23. The following table brings out the comparison of originally approved cost with the approved revised cost estimates:-

(Rs. In crore)

Sl. No.	Cost Component	Originally Approved cost estimates (1)	Revised cost Estimates (2)	Difference (2-1)
1.	Project cost excluding IDC &WCM	264.72	307.03	42.31
2.	IDC	26.97	10.57	(-)16.40
3.	WCM	2.36	4.95	2.59
	Total	294.05	322.55	28.5
4.	Project cost excluding WCM (1+2)	291.69	317.60	25.91

Allowable increase in Project cost (excluding IDC &WCM)

24. There is an increase of Rs. 42.31 crore in the project cost because the originally approved cost estimates were on December 1992 price level and because of time overrun of 26 months. The break-up of this increase in hard cost is as follows-

Sl.No.	Factors of variation	Amount of variation (Rs. in crore)
1.	Increase in prices	23.83
2.	Foreign Exchange rate variation	27.33
3.	Increase in the cost of Main plant package due to FERV	1.94
4.	Increase in custom duty due to FERV	4.68
5.	Bank charges	5.05
6.	Decrease due to change in scope	(-)20.52
	Total	42.31

25. Increase of Rs.23.83 crore in prices is due to revision of prices at the time of placement of orders for Mechanical, Electrical and Civil works in 1995. This increase includes an amount of Rs.9.63 crore due to increase in prices of Mechanical and

Electrical works, increase in cost of general civil works by Rs. 5.99 crore due to additional scope and increase in prices of steel and cement, increase of Rs. 0.77 crore in cost of land and balance due to additional scope of works on account of pile foundation, change in ratings of transformers etc. The expenditure of Rs. 5.05 crore under the head 'Bank Charges' includes the guarantee fee paid to the GOI on account of supplier credit. As such, it can be seen that the above increase in expenditure is not related to the escalation beyond the schedule date of commercial operation and is being admitted in full to arrive at the reasonable capital cost of the generating station on the date of commercial operation, that is, 1.8.1998.

26. FERV of Rs. 27.33 crore is up to 31.7.98 under the main plant contract. FERV being pass through, has been admitted in full to arrive at the allowable capital cost on the date of commercial operation, that is, 1.8.1998. However, to arrive at the capital cost as on scheduled date of commercial operation, FERV of Rs.27.33 crore which is over a period of 67 months, that is, Dec 1992 price level to July 1998 price level has been reduced on pro-rata upto the scheduled date of commercial operation in May 1996 and works out to Rs.16.72 crore in the ratio of 41:67.

27. There are certain consequential increases of Rs. 4.68 crore in custom duty, of Rs.1.94 crore in the cost of main plant package, due to exchange rate variation. However, there was no delay in placement of orders and subsequent arrival of the main plant equipment in India. As such, increase in custom duty and increase in the cost of main plant package due to FERV is being admitted in full. As such, increase in project cost (excluding IDC and WCM) up to scheduled date of commercial operation

over and above originally approved project cost of Rs.264.72 crore, would be as follows:

Sl. No.	Factors of variation	Amount of variation (Rs. in crore)
1.	Increase in prices	23.83
2.	Foreign Exchange rate variation	16.72
3.	Increase in the cost of Main plant package due to FERV	1.94
4.	Increase in custom duty due to FERV	4.68
5.	Bank charges	5.05
6.	Decrease due to change in scope	(-)20.52
	Total	31.70

28. As such, the justified project cost (excluding IDC) on scheduled date of commercial operation in May 1996 works out to Rs. 296.42 crore (264.72+31.70).

29. It is observed that though there was a time overrun of 26 months, IDC component has decreased by Rs.16.40 crore. This is because of the fact that financial package envisaged at the time of approval was subsequently changed in which the Central Government provided budgetary support, mostly in the form of equity. The loan component from the Central Government was reduced considerably. In the final approval, Ministry of Power has allowed an IDC of Rs.10.57 crore, corresponding to project cost of Rs.307.03 crore (excluding IDC & WCM) and commissioning schedule of 44 months. Pro rata allowable corresponding to justified project cost (excluding IDC) of Rs. 296.42 crore on scheduled date of commercial operation corresponding to commissioning schedule of 18 months would be as follows –

Allowable IDC= Rs.(10.57 x18/44x 296.42/307.03) crore.= 4.17 crore

30. In view of the above the justified completed cost as on scheduled date of commercial operation, i.e., May 1996 including IDC should have been Rs. 300.59 crore as detailed below:-

Sl. No.	Cost Component	Rs. in crore
1.	Project cost as per original approval excluding IDC &WCM	264.72
2.	Allowable increase in prices	31.70
3.	Allowable IDC	4.17
	Reasonable Capital cost as in May 1996 (Scheduled COD)	300.59

31. The actual date of commercial operation is 1.8.1998. FERV for the period of May 1996 to July 1998, of Rs. 10.61 crore (27.33-16.72), may have to be added to the reasonable capital cost of Rs. 300.59 crore on Scheduled date of commercial operation in May 1996, to arrive at the allowable capital cost as on 1.8.1998. The same works out as Rs. 311.20 crore as on 1.8.1998 (300.59+10.61).

Adjustment in capital cost on account of sale of infirm power

32. The petitioner was asked to submit the details of the infirm power sold and the corresponding revenue earned. The petitioner has indicated that infirm power to the tune of 24.66 MUs was sold @ of 190 paise /kWh, thereby earning a revenue of Rs.4.69 crore. This rate of 190 paise /kWh included energy charge of 80 paise /kWh based on the prevailing prices of gas and the computations furnished at the NEREB forum. Hence, the net revenue earned over and above the fuel cost works out to 110 paise /kWh amounting to Rs. 2.71 crore for the sale of infirm power. This will have to be deducted from the actual capital expenditure as on 31.3.2003 to arrive at the capital cost for the purpose of the tariff for the period 2003-04.

Capital cost for the purpose of tariff

33. As per reconciliation of accounts furnished by the petitioner, the actual capital expenditure in the respective year from the year of the date of commercial operation is as follows-

(Rs. in crore)

YEAR	Opening Gross Block	FERV	Additional capitalisation	Closing gross block including FERV	Closing gross block excluding FERV
1998-99	-	-	-	298.10	
1999-00	298.10	-9.06	8.19	297.23	306.29
2000-01	297.23	-2.18	6.14	301.19	312.43
2001-02	301.19	3.86	-0.01	305.04	312.42
2002-03	305.04	15.27	4.57	324.88	316.99
Total		7.89	18.89		

34. The actual capital expenditure as on 31.3.2003 (as per reconciliation of accounts submitted by the petitioner) is Rs.324.98 crore, including FERV of Rs.7.90 crore and additional capitalisation of Rs.18.89 crore for the period 1999-2003 (subsequent to the date of commercial operation). The additional capitalisation has been stated to be on account of balance works. As such, actual capital expenditure as on 31.3.2003 excluding FERV stands at Rs.317.09 crore. After deducting the net revenue of Rs.2.71 crore from sale of infirm power from this actual expenditure as on 31.3.2003, the net expenditure works out to Rs.314.38 crore, which has been restricted to the completed capital cost of Rs.311.20 crore found justified. It has been observed from the Form-10 submitted along with the petition that the petitioner has not employed any foreign loan/foreign equity after the date of commercial operation to finance the additional capital expenditure. As such, FERV subsequent to the date of commercial operation is due to foreign loan employed during construction period and being pass through, the capital cost of Rs.319.10 crore (311.20+7.90) including FERV

has been allowed as capital cost for the purpose of tariff as on 31.3.2003. It is pointed out that though the petitioner has claimed additional capitalisation of Rs. 7.89 crore on account of FERV, it actually works out to Rs. 7.90 crore, which has been considered.

ADDITIONAL CAPITALISATION

35. The notification dated 26.3.2001 provides that tariff revisions during the tariff period on account of capital expenditure within the approved project cost incurred during the tariff period may be entertained by the Commission only if such expenditure exceeds 20% of the approved cost. In all cases, where such expenditure is less than 20%, tariff revision shall be considered in the next tariff period.

36. The petitioner has claimed an additional capital expenditure of Rs.1.83 crore during 2003-04 on account of balance works within the original scope of the project. However, the same has not be admitted because we are restricting the capital cost, excluding FERV to Rs.311.20 crore. As such, the capital cost for the purpose of tariff (excluding FERV for the period 2003-04) as on 31.3.2004, shall also be restricted to Rs.319.10 crore.

DEBT-EQUITY RATIO

37. As per the notification dated 26.3.2001, 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.

38. The letter dated 28.12.2004 regarding approval of RCE of the project is silent regarding Debt Equity ratio, the following debt- equity ratio is worked out from debt and equity amount mentioned in Ministry of Power letter dated 23.1.2003 on rescheduling of loan and equity for the project:

(Rs. in lakh)

	Total	%age
Debt amount	14250	48.46%
Equity amount	15156	51.54%
	29406	100%

39. The debt-equity ratio claimed by the petitioner is 1:1. As the actual debt-equity ratio seen from the above table also works out in the ratio of 1:1 approximately, debt-equity in ratio claimed by the petitioner has been considered. In this manner debt and equity amounts considered are Rs. 15955.00 lakh each, against the total capital cost of Rs. 31910.00 lakh.

TARGET AVAILABILITY

40. Based on the notification dated 26.3.2001, full fixed charges are recoverable at the target availability of 80%. Therefore, the target availability of 80% has been considered in the working.

RETURN ON EQUITY

41. As per the notification dated 26.3.2001, 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%. In our computation of tariff, return on equity @ 16% per annum has been allowed.

42. The return on equity of Rs. 15955.00 lakh has been worked out as under:

Particulars	(Rs in lakh)
	2003-04
Opening Balance	15955
Increase/ Decrease due to FERV	0
Increase/ Decrease due to Additional Capitalisation	0
Closing Balance	15955
Average	15955
Rate of Return on Equity	16.00%
Return on Equity	2553

INTEREST ON LOAN

43. 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.

44. The normative loan amount has been worked out by considering debt and equity in the ratio of 50:50 as already decided. The salient features of computation of interest on loan allowed in tariff are summarised below:

- (a) The cumulative repayment of loan up to 31.3.2003 has been taken as per the loan details given by the petitioner in the petition.
- (b) The annual repayment amount for the year 2003-04 has been worked out as per the methodology followed by the Commission in cases pertaining to other central power sector utilities. The annual repayment amount calculated is based on the actual repayment during the year or repayment calculated in accordance with the following formula, whichever is higher;

$$\frac{\text{actual repayment during the year} \times \text{normative net loan at the beginning of the year}}{\text{actual net loan at the beginning of the year}}$$
- (c) The loan draws up to 31.3.2003 have been considered.

(d) In the present case, some of the GOI loans having higher rate of interest were pre-paid during 2002-03 by syndicated loan having floating rate of interest on 19.3.2004.

The Commission in its order dated 13.12.2002 in petition no 94/2002, and other petitions of NTPC stations observed that the benefit of re-financing should be passed on to the beneficiaries and through them the ultimate consumer when a costlier loan is re-financed through cheaper loan with fixed rate of interest.

In line with the Commission's above decision, the interest rate applicable on re-financed /substituted loans by syndicated loan having floating rate of interest has not been considered in the working as the Commission's above order dated 13.12.2002 permitted passing of the benefits to the beneficiaries only when costlier loan is re-financed through cheaper loan with fixed rate of interest. As such, the interest rate on GOI loan has been worked out by considering the original loan and its repayment schedule.

(e) Deutsche Bank loan is having four tranches and each tranche carries floating rate of interest. Therefore, the base rate of interest applicable for the tariff period for each tranche of Deutsche Bank loans has been worked out on weighted average basis, based on the petitioner's submission dated 23.6.2005. Then, the weighted average interest rate of Deutsche Bank loan on consolidated basis applicable for the tariff period has been worked out. The interest rate considered in the present computation is base rate of interest plus 0.60% margin. However, the

interest on loan would be subject to adjustment in case of any change in base interest rate during the tariff period.

(f) The petitioner has also claimed Guarantee fee of Rs. 84.86 lakh in case of Deutsche Bank loan for the year 2003-04 in their submission dated 23.6.2005 which works out to 1.12% approx of average loan amount for the year 2003-04 and the same has been allowed in the present computations.

(g) On the basis of actual rate of interest 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.

45. The computations of interest by applying the methodology indicated in the preceding para are appended hereinbelow:

COMPUTATION OF INTEREST ON LOAN

(Rs. in lakh)

	2003-04
Gross loan-Opening	15955
Cumulative repayments of Loans up to previous year	7522
Net loan-Opening	8433
Increase/ Decrease due to FERV	0
Increase/ Decrease due to Additional Capitalisation	0
Total	8433
Repayments of Loans during the year	1543
Net loan-Closing	6890
Average Net Loan	7662
Rate of Interest on Loan	5.81%
Interest on loan	445

DEPRECIATION

46. 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.

47. The weighted average depreciation rate for the tariff period has been calculated by taking the individual assets of gross block as on 31.3.2003 and the respective depreciation rates as per the notification dated 26.3.2001. The weighted average depreciation rate works out as 5.53 %.

48. The exact depreciation recovered in the tariff since the date of commercial operation of the generating station cannot be ascertained as the exact break up is not known. However, the cumulative depreciation up to 31.3.2003 as per balance sheet is indicated as Rs. 9784 lakh. Since earlier as per Ministry of Power notification dated 30.3.1992, the rate of depreciation for the tariff purpose and accounts purpose was same, we have taken note of this cumulative depreciation as per the books of accounts as the depreciation recovered in the tariff up to 31.3.2003.

49. Depreciation has been allowed at opening gross block of Rs. 31910.00 lakh. The petitioner is entitled to an amount of Rs.1765.00 lakh during 2003-04 on account of depreciation. The necessary calculations in support of the amount of depreciation allowed are given hereunder:

(Rs. in lakh)	
	2003-04
Capital Cost	
Opening Balance	31910
Increase/ Decrease due to FERV	0
Increase/ Decrease due to Additional Capitalisation	0
Closing Balance	31910
Rate Of Depreciation	5.53%
Depreciation	1765

ADVANCE AGAINST DEPRECIATION

50. 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.

51. The actual gross loan and actual repayment as on 1.4.2003 has been considered for computing Advance Against Depreciation. The petitioner is not entitled to claim any Advance Against Depreciation as shown below:

	(Rs. in lakh)
	2003-04
1/12 th of Loan(s)	1330
Scheduled Repayment of the Loan(s)	1543
Minimum of the above	1330
Depreciation during the year	1765
Advance Against Depreciation	0

O&M EXPENSES

52. As per the notification dated 26.3.2001, operation and maintenance (O&M) expenses, including insurance for the stations belonging to the petitioner, in the case of new thermal stations which have not been in existence for a period of five years, the Base O&M expenses shall be fixed at 2.5 percent of the actual capital cost as approved by the Authority or an appropriate Independent agency, as the case may be, in the year of commissioning and shall be escalated at the rate of 10 percent per annum for subsequent years to arrive at O&M expenses for the base year 1999-2000 level. Thereafter the Base O&M expenses shall be further escalated at the rate of 6 percent per annum to arrive at permissible O&M expenses for the relevant year.

53. Working on the above principle, O&M expenses for the year 2003-04 work out as Rs.1035.00 lakh based on the actual capital expenditure of Rs.298.10 crore on the date of commercial operation.

INTEREST ON WORKING CAPITAL

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

(a) **Fuel Cost:** As per the notification dated 26.3.2001, 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 para 2.3 of the notification dated 26.3.2001. The fuel cost allowed in working capital is given hereunder:

	2003-2004
Weighted Avg. GCV of Gas (kCal/SCM)	9092.34
Specific gas Consumption (SCM/kWh)	0.3937
Annual Requirement of gas (1000 SCM)	232418
Weighted Avg. Price of Gas (Rs./1000 SCM)	2100
Fuel Cost (Rs. in lakh)	4881
Fuel Cost - 1 month (Rs. in lakh)	406.73

(b) **O&M Expenses:** As per the notification dated 26.3.2001, operation and maintenance expenses for one month are permissible as a part of the working capital. Accordingly, O&M expenses for working capital have been worked out for 1 month of O&M expenses approved above.

(c) **Spares:** As per the notification dated 26.3.2001, 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. The spares consumption for 2003-04 has been worked out by first taking average of actual spares consumption of

last 5 years that is, from 1998-99 to 2002-03 to arrive at the spares consumption figure for the year 2000-01 and thereafter escalating the same @ 6% every year to arrive at spares consumption figure for the year 2003-04. This methodology is similar to the methodology adopted by the Commission for working out spares consumption for NTPC Stations for the tariff period 2001-04. As the amount of initial spares stated to be capitalised by the petitioner is Rs. 1301 lakh, the spares requirement for the purpose of working capital has been worked out 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. The calculations in support of spares allowed in working capital are as under:

(Rs. in lakh)

		1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
Capitalised initial spares	1301						
		0.074	11.71	45.53	115.72	87.67	62
1% of capital cost							319
Min of above							62
1/5th of initial spares							87
Spares considered for working capital							0

(d) **Receivables:** As per the notification dated 26.3.2001, 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)

	2003-2004
Variable Charges	
Gas(Rs/kWh)	0.8352
Variable Charges per year	4881
Variable Charges -2 months	813.46
Fixed Charges - 2 months	1003
Receivables	1816

55. The interest rate of 9.50% as claimed by the petitioner has been considered as the rate of interest on working capital.

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

Calculation of Interest on Working Capital

(Rs. in lakh)

	2003-2004
Fuel Cost	407
O & M expenses	86
Spares	0
Receivables	1816
Total Working Capital	2309
Rate of Interest	9.50%
Interest on allowed Working Capital	219

ANNUAL FIXED CHARGES

57. The annual fixed charges for the period 1.4.2003 to 31.3.2004 allowed in this order are summed up as below:

(Rs. in lakh)

	Particulars	2003-2004
1	Interest on Loan	445
2	Interest on Working Capital	219
3	Depreciation	1765
4	Advance against Depreciation	0
5	Return on Equity	2553
6	O & M Expenses	1035
	TOTAL	6017

ENERGY/VARIABLE CHARGES

58. The Commission vide its order dated 10.10.2003 in IA 37/2003 for provisional energy charges allowed the petitioner to claim these charges @ 83.35 paise/kWh on provisional basis.

59. The provisional energy charge allowed was based on the following operational norms, weighted average GCV and price of the gas for the months of March, April and May, 2003-

Description	Unit	
Capacity	MW	84
Gross Station Heat Rate	KCal/kWh	3580
Aux. Energy Consumption	%	1
GCV of Gas (average)	KCal/SCM	9092.34
Price of Gas (average)	Rs./1000SCM	2100
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	83.52

60. The provisional energy charge of 83.52 paise/kWh earlier approved is hereby confirmed.

61. 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) based on monthly weighted average as per the formula given below :-

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

Where,

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

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

AC_n = Normative Auxiliary Consumption in percentage

P_m = Weighted average price of Gas per PSL for the month in Rs. / 1000

SCM

K_m = Weighted average gross calorific value of Gas for the month in Kcal/
SCM

P_s = Base price of Gas as taken for determination of base energy charge in
tariff order in Rs. / 1000 SCM

K_s = Base value of gross calorific value of Gas as taken determination
of base energy charge in tariff order in Kcal/ SCM

- (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 3225k.cal/kwh and aux. energy consumption of 1%.
- (iii) The energy charges shall be finally adjusted on annual basis as per actual annual average values of operating parameters achieved for the station, that is, gross station heat rate and auxiliary energy consumption, provided any or all of the actual operating parameters are lower than their respective normative values indicated in the table. The annual energy charge adjustment shall be done as per the formula given below:

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

Where,

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

And,

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

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

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

Where;

- ESO_{Annual} - Energy sent out in the year in kWh sent out
- SHR_A - Actual yearly weighted average gross station heat rate in kCal/kWh generated
- P_{Annual} - Weighted average price of Gas or Liquid fuel for the year in Rs. / 1000 SCM of Rs./ KL or Rs./MT
- K_{Annual} - Weighted average GCV of Gas or Liquid fuel for the year in Kcal/ SCM or kCal/ Litre or kCal/ Kg
- FPA_{mi} - Fuel price adjustment for the i^{th} month in paisa/kwh sent out
- ESO_{mi} - Energy sent out for the i^{th} month in kwh sent out
- BEC** - Base Energy Charge as per tariff order in Paise/kWh sent out

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

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

63. In addition to the charges approved above, the petitioner is entitled to recover other charges also like incentive, claim for reimbursement of Income-tax, other taxes, cess levied by a statutory authority, and other charges in accordance with the notification dated 26.3.2001, as applicable. 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.

64. This order disposes of Petition No 32/2003.

Sd/-
(A.H. JUNG)
MEMBER

Sd/-
(K.N. SINHA)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRMAN

New Delhi dated the 9th September 2005