CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram:
Shri R. Krishnamoorthy, Member
Shri S. Jayaraman, Member
Shri V.S. Verma, Member

Petition No. 109/2009

In the matter of

Approval of tariff of SUGEN 1147.5 MW power plant of Torrent Power Limited for the period from the date of commercial operation of Block 10 (First Block) up to 31.03.2014.

And

In the matter of

Torrent Power Ltd., Ahmedabad

….Petitioner

Vs

1. Torrent Power Ltd. (Ahmadabad Distribution), Ahmedabad
2. Torrent Power Ltd. (Surat Distribution),Surat
3. PTC India Ltd., New Delhi
4. M.P. Power Trading Company Limited, Jab **…Respondents**

The following were present:

1. Shri T.P.Vijayasarathy,TPL
2. Shri A.K.Ghosh, TPL
3. Shri Jayesh Desai, TPL
4. Shri Vinod Khanna, TPL
5. Shri R.S.Negi, TPL
6. Shri Ajasra Gupta, MPPTCL

O R D E R
(Date of Hearing: 8.10.2009)

This petition has been filed by the petitioner, Torrent Power Ltd, for approval of tariff of SUGEN Power Plant (1147.5 MW) (hereinafter referred to as “the generating station”) located at Taluka Kamrej, District Surat in the

State of Gujarat for the period from the date of commercial operation of Block 10 (first block) up to 31.3.2014, based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "the 2009 regulations").

2. The generating station comprises three blocks with capacity of 382.5 MW each. The scheduled and actual dates of commercial operation of each of the blocks and the generating station are as under:

	Scheduled date of commercial operation	Actual date of Commercial operation
Block –10	17.8.2007	19.7.2009
Block –20	17.12.2007	28.7.2009
Block –30 & the generating station	17.2.2008	15.8.2009

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

(Rs. in lakh)

Particulars	**19.7.09 to 27.7.09**	**28.7.09 to 14.8.09**	**15.8.09 to 31.3.10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Depreciation	4936.49	9853.68	14835.16	15139.94	15355.45	15355.45	15355.45
Interest on Loan	6870.79	13689.90	20130.10	19307.84	18052.80	17149.24	16383.06
Return on Equity	5050.99	10082.23	15179.26	15491.12	15711.62	15711.62	15711.62
Interest on Working Capital	3304.05	6606.00	9902.20	9929.32	9987.81	10073.79	10123.15
O & M Expenses	10183.64	20367.28	30550.91	30968.66	31983.45	33384.33	34263.46
Total	**30345.96**	**60599.09**	**90597.64**	**90836.88**	**91091.12**	**91674.42**	**91836.74**

4. The petitioner has furnished the details of working capital and its claim for interest thereon as under:

(Rs. in lakh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Fuel Cost [1 month]	5136.34	10272.68	15409.02	15409.02	15409.02	15409.02	15409.02
O&M Cost [1 month]	848.64	1697.27	2545.91	2580.72	2665.29	2782.03	2855.29
Maintenance Spares [30% of O&M Expenses]	3055.09	6110.18	9165.27	9290.60	9595.04	10015.30	10279.04
Receivables [2 months]							
Fuel Cost [2 months]	10272.68	20545.35	30818.03	30818.03	30818.03	30818.03	30818.03
Fixed cost	5057.66	10099.85	15099.61	15139.48	15181.85	15279.07	15306.12
Sub-Total Receivables	15330.34	30645.20	45917.64	45957.51	45999.88	46097.10	46124.15
Total Working Capital [WC]	**24370.40**	**48725.33**	**73037.84**	**73237.84**	**73669.22**	**74303.44**	**74667.50**
Interest on Working Capital							
On 75% of WC at SBI PLR of 12.25%	2239.03	4476.64	6710.35	6728.73	6768.36	6826.63	6860.08
On 25% of WC at ROE rate of 17.481%	1065.02	2129.36	3191.85	3200.59	3219.45	3247.16	3263.07
Total Interest on Working Capital	**3304.05**	**6606.00**	**9902.20**	**9929.32**	**9987.81**	**10073.79**	**10123.15**

5. In addition, the petitioner has claimed energy charges as under:

(Paisa/Kwh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Energy charge rate ex bus from generating station	223.10	223.10	223.10	226.39	239.71	248.16	255.60

6. The reply to the petition was filed by M.P. Power trading Company Ltd. (MPPTCL), respondent No.4 herein. In response to the public notices published by the petitioner in accordance with the procedure specified by the Commission, Consumer Protection and Action Committee (Gujarat State) (hereinafter referred to as "the Objector") has filed its objections. The petitioner has filed its response to the replies of respondent No.4 and the objections of the Objector. The issues pertaining to tariff determination raised

by respondent No.4 and the Objector have been dealt with under the relevant heads in this order. However, certain general issues raised by them are discussed in the subsequent paragraphs.

7. Respondent No.4 in its reply has submitted that though the generating station was commissioned on 15.8.2009, no power was made available to it as per the Power Sale Agreement (PSA) between PTC India Ltd and MPPTCL and this breach of contract should be considered while determining tariff. The generating station has attained mega power status on the basis of commitment of respondent No.4 and therefore, the Commission may direct the petitioner to immediately commence supply of 100 MW power and the benefits gained by the petitioner on account of diverting MPPTCL's share may be accounted for in tariff. The petitioner in its rejoinder affidavit dated 14.11.2009 has submitted that though the petitioner had taken up with respondent Nos. 3 and 4 for fulfilling the conditions precedent for operationalising the Power Purchase Agreement(PPA)/Power Sale Agreement(PSA) since February 2008 and sought guidance regarding long term strategy in fuel procurements, these respondents have failed to respond as a result of which PPA/PSA could not be operationalised for supply of power. The petitioner has sought a direction to respondent Nos. 3 and 4 to take time bound steps for operationalising the PPA/PSA including fulfillment of conditions precedent, arrangement of open access, provisions of Letter of Credit, compliance with scheduling procedure etc. As regards the benefits gained on account of diverting power of MPPTCL's share, the petitioner has submitted that Block 30 of the generating station, from which power was to be supplied to respondent No.4 subject to fulfillment of conditions of PPA/PSA got commissioned on 15.8.2009 and power from the Block was

supplied to respondent Nos.1 and 2 as per the PPAs, 25 % power was supplied to GUVNL as per the directives of Government of Gujarat on the basis of the provisional tariff calculated as per the 2009 regulations/ State Government directed price and a minor quantity was disposed off through specific short-term arrangements either through power exchange or bilateral trade. The petitioner has denied the allegation of mega power benefits not being passed on to the consumers.

8. We are of the view that the non-operationalisation of PPA between the petitioner and respondent Nos.3 and 4 with regard to the fulfillment of conditions of PPA/PSA or the scheduling of MP's share of power is outside the scope of the present petition which has been filed for determination of tariff of the generating station which needs to be decided as per the terms and conditions of the PPA/PSA. It is however observed that under Section 79(1)(b) of the Electricity Act, 2003, this Commission has been vested with the function to regulate the tariff of the generating company other than those owned and controlled by the Central Government if such generating company enter into or otherwise have a scheme for generation and sale of electricity in more than one State. In order that the tariff determined by this Commission remains applicable to the generating station, it is necessary that the petitioner should take necessary steps to maintain its inter-State character as provided in the Act.

9. The Objector in its letter dated 16.7.2009 has raised the objections regarding non-compliance of procedure by the petitioner for making of application for determination of tariff. The petitioner vide its affidavit dated 21.9.2009 has submitted that as per Regulation 5(1) of the 2009 regulations,

the generating station may make an application for determination of tariff in respect of units of the generating station completed or projected to be completed from the date of application. Based on its assessment that commercial operation of the generating station would be achieved by 15th August 2009, the petitioner had submitted the application on 8.6.2009 in accordance with the Central Electricity Regulatory Commission (Procedure for making the application for determination of tariff, publication of the application and other related matters) Regulations, 2004. We have noticed that the application has been made by the petitioner as per the provisions of the regulations and a public notice regarding the application has been published by the petitioner on 19.6.2009 in Haribhomi, Hitavada, Navnirman, the Statesman, and the Business Standard. The petitioner has complied with the regulations with regard to the procedure for making application for determination of tariff. The Objector has also raised the issue of transmission and distribution loss which in our view lies outside the scope of the petition and will be dealt with by Gujarat Electricity Regulatory Commission while determining the distribution tariff of respondent Nos. 1 and 2. With regard to the objection regarding gas pricing, the petitioner has submitted that pricing of gas from Reliance Industries Ltd. are determined by Empowered Group of Ministers and pricing information is already available in public domain. Moreover, the pricing of PMT gas with GAIL is based on price determined through limited tendering process carried out by ONGC. We are of the view that pricing of gas does not fall within the jurisdiction of this Commission and hence the objection is not relevant in the context of the present petition for determination of tariff.

CAPITAL COST

10. Regulations 7, 8 and 9 of the 2009 regulations pertaining to capital cost, additional capital expenditure and initial spares provide as under:

"*7* ***Capital Cost: (****1) Capital cost of a project shall include:*

(a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan – (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, - up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;

(b) Capitalized initial spares subject to the ceiling rates specified in regulation 8; and

(c) additional capital expenditure determined under regulation 9:

Provided that the assets forming part of the project, but not in use shall be taken out of the capital cost.

(2) The capital cost admitted by the Commission after prudence check shall form the basis for determination of tariff.

8. ***Initial Spares.*** *Initial spares shall be capitalised as a percentage of the original project cost, subject to following ceiling norms:*

(i) Coal-based/lignite-fired thermal generating stations – 2.5%
(ii) Gas Turbine/Combined Cycle thermal generating stations – 4.0%
(iii) Hydro generating stations – 1.5%
(iv)Transmission system
(a) Transmission line – 0.75%
(b) Transmission Sub-station – 2.5%
(c) Series Compensation devices and HVDC Station – 3.5%

Provided that where the benchmark norms for initial spares have been published as part of the benchmark norms for capital cost under first proviso to clause (2) of regulation 7, such norms shall apply to the exclusion of the norms specified herein.

9. ***Additional Capitalisation.*** *(1) The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

(i) Undischarged liabilities;

(ii) Works deferred for execution;

(iii) Procurement of initial capital spares within the original scope of work, subject to

the provisions of regulation 8;

(iv) Liabilities to meet award of arbitration or for compliance of the order or decree of

a court; and

(v) Change in law:

Provided that the details of works included in the original scope of work along with estimates of expenditure, undischarged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.

(2) The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:

(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;

(ii) Change in law;

(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;"

11. The Commission vide its order dated 26.9.2007 in Petition No. 154/2005 had accorded `in principle` approval of the capital cost of US $ 349.58 Million + Rs. 1458.80 crore including IDC and FC equivalent to Rs. 304645 lakh @ foreign exchange rate of Rs. 45.20/US $ for the generating station under the second proviso to Regulation 17 of the Central Electricity

Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004. As per third proviso to the said regulation, “where the Commission has given ‘in principle’ acceptance to the estimate of the project capital cost and financing plan, the same shall be the guiding factor for applying prudence check on the actual capital expenditure”. The in-principle approved cost included initial spares amounting to Rs.16741 lakh @ 5.87% of the approved project cost.

12. The petitioner has considered a capital cost of Rs. 96316 lakh, Rs. 192256 lakh and Rs.287709 lakh as on the date of commercial operation of Block 10, Block 20, Block 30 (COD of the generating station) respectively. Further, the petitioner has claimed projected additional capital expenditure of Rs. 3482.54 lakh during 2009-10 (15.8.2009-31.3.2010) and Rs.8408.50 lakh during 2010-11. The above claimed project cost is inclusive of IDC and FC of Rs. 44360.43 lakh as on date of commercial operation of the generating station which includes IDC of Rs.1798 lakh on account of treating equity above 30% as normative loan in accordance with Regulation 7(1)(a) of the 2009 regulations . As such, the capital cost excluding IDC and FC i.e. the hard cost as on the date of commercial operation of the generating station works out to Rs. 243348.57 lakh.

13. There is a delay of 18 months in commissioning of the generating station. Respondent No.4 has submitted that all liabilities and additional cost on account of delay in completion of the project should be borne by the petitioner. The petitioner has explained in its submission in the main petition and in its rejoinder that the reasons for the delay was mainly on account of delay by M/s Siemens, EPC Contractor of the project and an amount of

Rs.27628 lakh was received from the contractor as liquidated damages for the delay. The petitioner has further submitted that though there is increase in the capital cost due to time over-run mainly on account of increase in IDC and financing cost of Rs. 24945 lakh, and overheads and establishment cost of Rs. 4450 lakh, the overall capital cost has declined to Rs. 299600 lakh which is lower than the estimated project cost accepted in principle by the Commission. The petitioner has submitted that reduction in capital cost has been possible on account of receipt of liquidated damages from EPC contractor, decrease in pre-commissioning expense, and reduction in value of spares, plant and equipments.

14. It is observed that delay due to time over run has resulted in increase in IDC and FC and overheads and establishment cost. Since the delay is on part of M/s Siemens, EPC contractor, the amount recovered as liquidated damages from the EPC contractor has been reduced from capital cost. It is observed that the total project cost has been reduced to Rs.299597.38 lakh compared to the in-principle accepted capital cost of Rs.304645 lakh. We approve the project capital cost of Rs.299597.38 lakh which includes capital cost of Rs.287706.34 lakh up to the date of commercial operation and additional capital expenditure of Rs.3482.54 lakh during 2009-10 (15.8.2009-31.3.2010) and Rs. 8408.50 lakh during 2010-11.

15. The petitioner has capitalized initial spares amounting to Rs.15073 lakh till the date of commercial operation of the generating station. The petitioner has also claimed Rs.935 lakh towards initial spares in its projected additional capital expenditure. Total amount claimed by the petitioner for initial spares

works out to Rs. 16008 lakh (@ 5.34% of the claimed project cost including projected additional capital expenditure.

16. The petitioner had filed I.A.No. 80/2006 in Petition No. 154/2005 for review of the norms of the spares as provided in Regulation 17 of the 2004 regulations and allow higher amount of Rs.16741 lakh as initial spares for the new efficient advance class technology to be used by the petitioner in the generating station. The Commission in its order dated 26.9.2007 directed as under:

> *"10. On perusal of the material furnished, we are satisfied that sufficient justification has been made out by the petitioner for allowing full amount of initial spares in the instant case. By invoking our power under regulation 13 of the tariff regulations, 2004, we allow the full cost of initial spares of Rs. 16741 lakh (comprising US$ 30.57 Million at the exchange rate of Rs. 45.42 per US $+Rs. 28.56 crore) as part of the project capital cost. As a result, the project capital cost now approved in-principle shall be US $ 349.58 Million + Rs. 1458.80 crore including IDC and FC and excluding WCM."*

17. Respondent No. 4 had challenged the order of 26.9.2007 in Appellate Tribunal for Electricity (hereinafter "Appellate Tribunal") in Appeal No.11 of 2008. The Appellate Tribunal in its judgment dated 19.1.2009 has upheld the decision of the Commission in the following terms:

> *"13. In view of the aforesaid we conclude that there are sufficient reasons which justify the enhancement of the percentage of initial spares from 4 to 5.87. The Commission is vested with the power to relax its Regulations and therefore we decide not to interfere with the order of the Commission."*

18. Regulation 8(ii) of 2009 regulations provides for the ceiling norms of 4% of the original project cost in case of gas turbine/combined cycle

generating station to be capitalized as part of the capital cost. Considering the fact that the Commission has already accorded in-principle acceptance of the initial spares at the enhanced rate in relaxation of the 2004 tariff regulations which has been upheld by the Appellate Tribunal, we allow capitalization of spares of Rs. 16008 lakh @ 5.34% of the claimed project cost including projected additional capital expenditure in relaxation of the norms as specified in Regulation 8 (ii) of the 2009 regulations.

19. Proviso to Regulation 11 of 2009 regulations provides that any revenue earned by the generating company from sale of infirm power after accounting for fuel expenses shall be applied for reduction in capital cost. The petitioner has submitted Statutory Auditor's Certificate dated 1.10.2009 in which it has been certified that the revenue earned from sale of infirm power in excess of fuel cost in respect of the generating station has been adjusted in the capital cost. As per the Statutory Auditor's Certificate, the capital cost as on the date of commercial operation of the generating station is Rs.285911 lakh.

20. In view of the foregoing, the capital expenditure incurred as on date of commercial operation is approved as under:

(Rs. in lakh)

Particulars	As on the date of commercial operation of Block 10 (19.7.2009)	As on the date of commercial operation of Block 20 (28.7.2009)	As on the date of commercial operation of Block 30 (15.8.2009)
Hard Cost	81735.64	162935.47	243348.57
IDC on actual funding	13,410.79	26,973.68	40,822.93
Financial Charges (FC)	578.95	1157.89	1,736.84
IDC as per regulation treating excess equity above 30% as normative loan	590.62	1,188.95	1,798.00
Capital cost for tariff	**96,316.00**	**192,256.00**	**287,706.34**

21. Capital expenditure incurred up to the date of commercial operation and additional capital expenditure projected to be incurred during the tariff period for the purpose of tariff are allowed as under:

(Rs. in lakh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Opening Capital cost	96316.00	192256.00	287706.34	291188.88	299597.38	299597.38	299597.38
Projected expenditure	0.00	0.00	3482.54	8408.50	0.00	0.00	0.00
Closing Capital cost	**96316.00**	**192256.00**	**291188.88**	**299597.38**	**299597.38**	**299597.38**	**299597.38**
Average Capital cost	96316.00	192256.00	289447.61	295393.13	299597.38	299597.38	299597.38

DEBT-EQUITY RATIO

22. Regulation 12 of the 2009 Regulations provides for the debt equity ratio of funding of the projects as under:

> *"(1) For a project declared under commercial operation on or after 1.4.2009, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.*
>
> *Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.*
>
> *Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.*
>
> *Explanation.- The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.*
>
> *(2) In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the*

period ending 31.3.2009 shall be considered.

(3) Any expenditure incurred or projected to be incurred on or after 1.4.2009 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation."

23. The actual debt-equity ratio as on the date of commercial operation is 60.59 : 39.41. However, the petitioner has claimed debt-equity ratio of 70:30 in accordance with the Regulation 12 of the 2009 regulations. Therefore, debt-equity ratio of 70:30 is allowed for the purpose of tariff for the period 2009-14.

24. Accordingly, the capital cost including the projected capital expenditure is apportioned between debt and equity as under:

(Rs. In lakh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Normative loan (Opening)	67421.20	134579.20	201394.43	203832.22	209718.17	209718.17	209718.17
Normative Equity (opening)	28894.80	57676.80	86311.90	87356.66	89879.22	89879.22	89879.22

RETURN ON EQUITY

25. Regulations 15 of the 2009 Regulations provides for the computation of return on equity as under:

"(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation.

Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in Appendix-II.

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

(3) The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate for the year 2008-09 applicable to the concerned generating company or the transmission licensee, as the case may be.

Provided that return on equity with respect to the actual tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective year during the tariff period shall be trued up separately for each year of the tariff period along with the tariff petition filed for the next tariff period.

(4) Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where t is the applicable tax rate in accordance with clause (3) of this regulation."

26. With the change in the MAT rate by the Finance Act, 2009 from earlier 10% (plus applicable surcharge and education cess) to 15% (plus applicable surcharge and education cess), the petitioner has prayed that return on equity should be based on current MAT @ 16.995% (inclusive of surcharge and education cess) and the resultant return on equity should be 18.674%. However, in terms of the provisions contained in the 2009 regulations, MAT @ 11.33% (inclusive of surcharge and education cess) has been considered to calculate the return on equity @ 17.481%.

27. Return on equity has been worked out as under:

(Rs. in lakh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Normative Equity (opening)	28894.80	57676.80	86311.90	87356.66	89879.22	89879.22	89879.22
Addition due to Additional Capitalization (Projected)	0.00	0.00	1044.76	2522.55	0.00	0.00	0.00
Normative Equity (closing)	28894.80	57676.80	87356.66	89879.22	89879.22	89879.22	89879.22
Normative Equity	28894.80	57676.80	86834.28	88617.94	89879.22	89879.22	89879.22
Return on equity @ 17.481%	5050.97	10082.22	15179.11	15490.90	15711.38	15711.38	15711.38

INTEREST ON LOAN

28. Regulation 16 of the 2009 regulations provides for the following principles for computation of interest on loan:

"(1) The loans arrived at in the manner indicated in regulation 12 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2009 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2009 from the gross normative loan.

(3) The repayment for the year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year.

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the project.

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered.

***Provided further** that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.*

(6) The interest on loan shall be calculated on the normative average

loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute.

Provided that the beneficiary or the transmission customers .shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan."

29. The interest on loan has been worked out as mentioned below:

(a) Gross normative loan corresponding to 70% of admissible capital cost has been worked out to Rs.67421.20 lakh as on 19.7.2009, Rs.134579.20 lakh as on 28.7.2009 and Rs.201394.43 lakh as on 15.8.2009.

(b) Since the tariff of the generating station is being fixed for the first time, net loan (opening) as on 19.7.2009 has been considered as gross loan, cumulative repayment of loan being nil.

(c) Repayment for the period / year during the tariff period 2009-14 has been considered equal to the depreciation allowed for that period / year.

(d) The rate of interest used is the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each period / year as submitted in the petition.

(e) Loan drawls as submitted by the petitioner have been considered.

30. Necessary calculation in support of weighted average rate of interest on loans is appended at Annexure I to this order.

31. The interest on loan by applying the weighted average rate of interest has been computed as under:

(Rs. in lakh)

Particulars	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Gross Loan (Normative)	67421.20	134579.20	201394.43	203832.22	209718.17	209718.17	209718.17
Addition due to Additional capitalization	0.00	0.00	2437.78	5885.95	0.00	0.00	0.00
Cumulative Repayment up to previous year	0.00	121.72	607.66	9915.10	25054.83	40410.04	55765.25
Net Loan-Opening	67421.20	134457.48	200786.78	193917.12	184663.34	169308.13	153952.91
Depreciation during the year= Repayment	121.72	485.93	9307.44	15139.73	15355.21	15355.21	15355.21
Net Loan-Closing	67299.48	133971.54	193917.12	184663.34	169308.13	153952.91	138597.70
Average Loan	67360.34	134214.51	197351.95	189290.23	176985.73	161630.52	146275.31
Weighted Average Rate on Interest on Loan	10.2304%	10.2302%	10.2297%	10.2309%	10.2678%	10.3310%	10.3760%
Interest	6891.24	13730.41	20188.52	19366.07	18172.57	16698.09	15177.54

32. Any variation in actual rate of interest at the time of reset of interest rate at the beginning of each year shall be dealt with in accordance with Regulations16(5) of the 2009 Regulations.

DEPRECIATION

33. Regulations 17 of the 2009 Regulations provides for computation of depreciation in the following manner, namely:

> *"(1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.*
>
> *(2) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.*
>
> *Provided that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site.*
>
> *Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciable value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff.*
>
> *(3) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.*
>
> *(4) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system.*
>
> *Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets.*
>
> *(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting 3[the cumulative depreciation including Advance against Depreciation] as admitted by the Commission upto 31.3.2009 from the gross depreciable value of the assets.*
>
> *(6) Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis."*

34. The petitioner has claimed depreciation at the weighted average rate of depreciation of 5.1253% on the capital expenditure. Calculation of depreciation rates is based on gross value of the assets as furnished by the petitioner at applicable rates as per Appendix-III to the 2009 regulations. The same being in accordance with Regulation 17 of the 2009 Regulations is allowed on pro rata basis on the admitted capital cost.

35. The gross depreciable value of the generating station has been calculated as 90% of the average capital cost (exclusive of freehold land amounting to Rs.1449.87 lakh). Accordingly, gross depreciable asset value of Rs.85379.52 lakh, Rs.171725.52 lakh, Rs.259197.96 lakh and 264548.94 lakh has been calculated for the period/year 19.7.2009 to 27.7.2009, 28.7.2009 to 14.8.2009, 15.8.2009 to 31.3.2010 and 2010-11, respectively. For the year 2011-12 onwards, the gross depreciable value of the assets shall remain constant at Rs.268332.76 lakh.

36. Accordingly, depreciation has been worked out as Rs 121.72 lakh for the period 19.7.2009 to 27.7.2009, Rs 485.93 lakh for the period 28.7.2009 to 14.8.2009, Rs 9307.44 lakh for the period 15.8.2009 to 31.3.2010 and Rs 15139.73 lakh for the year 2010-11. From the year 2011-12 onwards the depreciation has been worked out as Rs 15355.21 lakh per annum on pro rata basis as per the details given in the table below:

(Rs. in lakh)

Details of Depreciation	19.7.09 to 27.7.09	28.7.09 to 14.8.09	15.8.09 to 31.3.10	2010-11	2011-12	2012-13	2013-14
Depreciable Value	85379.52	171725.52	259197.96	264548.94	268332.76	268332.76	268332.76
Remaining Depreciable Value	85379.52	171603.80	258590.31	254633.84	243277.93	227922.72	212567.51
Depreciation	121.72	485.93	9307.44	15139.73	15355.21	15355.21	15355.21

Operation & Maintenance Expenses

37. The Petitioner has submitted that this is a project with state of the art technology using advance class gas turbines [equivalent to F class] in single shaft configuration with high operating efficiency and low NOx emissions with model code 'SGT5 4000F' (earlier model number V94.3A) supplied by Siemens AG Germany. These gas turbines are installed for the first time in India and the main features of the machines are high reliability at competitive performance, higher thermal efficiency and low environmental emissions. These gas turbines and its auxiliaries constitute the heart of the CCPP. Critical success factor for performance of these machines are dependent on the availability of spares and after-sales service of Gas Turbines by skilled manpower with specialised technical knowledge from OEM supplier over a long period. Since the machines are being handled for the first time in India, the Petitioner has made arrangements for supplies of spares and servicing of the machines with M/s Siemens, the OEM on a time bound basis.

38. The petitioner has further submitted that it has formed a joint venture with M/s Siemens AG for providing operation and maintenance services to the generating station for ensuring uninterrupted supply of quality power to the beneficiaries. The Petitioner has also entered into Long Term Supply

agreement (LTSA) with Siemens AG, Germany for supply of critical spares including replacement of critical components and Long Term Maintenance Agreement (LTMA) with Siemens Limited, India for provision of skilled manpower with specialized technical knowledge. These agreements are expected to take care of the specialized maintenance requirements of the gas turbines as per manufacturer's specifications and improve the operational efficiency of the machines on a continuous basis. The petitioner has submitted that pricing for LTSA and LTMA is based on the bids submitted by Siemens Consortium in the process of International Competitive Bidding [ICB] for the EPC scope, based on which EPC Contractor was selected on lowest cost basis.

39. The petitioner has further submitted that Regulation 19 of the 2009 regulations provides for the norms for O&M expenses per MW for gas-based stations for the tariff period 2009-14 which are provided generally and not specifically for plants with advance class gas turbines. The petitioner has further stated that `F` class gas turbines with unit size of more than 260 MW have not been in continuous operation in the country and accordingly, no experience has been gathered for O&M expenses for such turbines. Therefore, it is difficult to draw comparison of the advance class gas turbines with the existing gas turbines in terms of the cost including O&M expenses. It has been further submitted that as the critical parts and services are being sourced from the OEM suppliers with proprietary knowhow, such spares and services are costlier in comparison to older models. Moreover, a major part of the cost of the such components and spare parts are payable in foreign

exchange and its variation vis-s-vis rupee has impact on the escalation of O&M expenditure. The petitioner has submitted that the project capital cost per MW of the generating station despite delay in completion of the project is at Rs 261 lakh/MW which is highly competitive. The petitioner has, therefore, submitted that it would not be appropriate to apply the normative O&M expenses as per the 2009 regulations for these classes of machines because of the difference in technology, the nature of critical spares and components, and the specialized maintenance services required from OEM suppliers.

40. The petitioner has sought indulgence of the Commission for relaxation of the O&M norms for the generating station and approve the following O&M expenses for the period 2009-14:

(Rs. in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
20423	30969	31983	33384	34263

41. Respondent No.4 has submitted that the Commission under regulation 19 (c) of the 2009 regulations has already specified the norms for the O&M expenses for gas turbines/combined cycle generating stations irrespective of the class of the technology and no additional O & M cost should be allowed over and above the specified norms.

42. Regulation 44 of the 2009 regulations which vests power of relaxation in the Commission reads as under:

> *"44. **Power to Relax.** The Commission, for reasons to be recorded in writing, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person."*

It needs to be examined as to whether there exist sufficient grounds andreasonable justifications for relaxation of the O&M norms specified in case of the generating station for Commission to exercise its power of relaxation.

43. The petitioner was directed vide Record of Proceedings dated 8.10.2009 to submit certain information/clarifications regarding LTSA/LTMA, firing temperature of F class machines and E class machines including their actual assessment at the inlet to the turbine, and detailed working along with assumptions and parameters for O & M cost in rupees in lakh per MW for LTSA/LTMA and other components. The petitioner has submitted the required information vide its affidavit dated 28.10.2009.

44 The claims of the Petitioner for O&M expenses in MW terms as against the O&M norms specified in the regulations are as under:

(Rs. in lakh/MW)

	2009-10	2010-11	2011-12	2012-13	2013-14
O&M Claimed	26.52	26.99	27.87	29.09	29.86
Normative O&M	14.80	15.65	16.54	17.49	18.49

45. We find that the main ground taken by the petitioner for relaxation is that the normative O&M expenses for Combined Cycle generating stations in terms of the 2009 regulations are based on the normalized O&M expenses of the NTPC Plants which are having older class of gas turbines, namely `E` Class, which cannot be made applicable to advance class gas turbines which are subjected to much higher thermal stresses and higher blade temperatures as compared to the `E` class machines.

46. The 2009 regulations provides for three sets of norms of O&M expenses for gas turbine/ liquid fuel based stations, namely specific norm for open cycle operation of Agartala GPS, another set of norms for small gas turbine stations and third set of norms for gas based stations other than small gas turbine stations. No distinction has been made between the generating station based on the class of technology. The O&M norms for the gas/liquid fuel based stations other than small gas turbine stations in the 2009 regulations were arrived at after due consideration of actual of NTPC stations for the period from 2002-03 to 2007-08 which are not using advance class technology. In the absence of O&M data for the gas/liquid fuel based stations in the country using advance class technology, no distinction was made at the time of finalization of norms based on class of technology.

47. We have noticed that gas turbine technology is getting more and more advanced, promising the best of economic and environmental performance. The advance class machines of different make have achieved efficiency levels of the order of 55%-60% by targeting a firing temperature of around 1300°C or more. As project developers continue to select advance technologies to obtain competitive advantages in heat rate, emissions performance and specific costs, a quantitative risk assessment becomes more critical. To reduce financial exposure to technical risk, long-term services agreements (LTSA/LTMA) with the OEM are becoming more prevalent and desirable in order to have appropriate confidence level for the availability and efficiency levels of operation of the advance class machine

48. We notice that there are significant technological differences between `E ` class and `F` class gas turbines. `F` class gas turbines have been designed for fuel firing temperature of the order of 1250 - 1320°C, which is much higher than `E`-class gas turbine with firing temperature of 1090 - 1100°C.

49. In the light of these facts, we are of the view that there is a case for a review and relaxation of O&M expenses norms in case of Sugen CCGT station using advance class gas turbines.

50. The petitioner has estimated following O&M expenses for the generating station with `F` Class gas turbines:

(Rs. in lakh / MW)

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
LTSA – LTMA	17.00	17.06	17.08	17.36	17.36
O&M Cost other than LTSA – LTMA	9.52	9.93	10.79	11.73	12.50
Total	26.52	26.99	27.87	29.09	29.86

51. The petitioner has further submitted that advanced class gas turbines require close monitoring based on Equivalent Operating Hours (EOH), which corresponds to actual or Logged Operating Hours (LOH) plus a factor depending upon operating regime and loading and unloading cycles. Such monitoring calls for services of specialists especially factory trained for the purpose and having sufficiently long experience. Such experts carry out periodic close inspection of internals of Gas Turbine when threshold EOH is reached. The petitioner has submitted that the inspection and logged EOH together form the basis of requirement of replacement and/or refurbishment of

these highly specialized active components which are not available in open market and are proprietary to respective Gas Turbine OEMs and have to be necessarily sourced from them.

52. The petitioner further submitted that as the technology is proprietary, the cost of spare parts and services of specialists who possess the requisite technical knowhow results in higher O&M expenses. Therefore, it is a common practice throughout the world for the users of advanced class (F-class) gas turbines to avail long term service and supply services from the Gas Turbine OEMs. Such services cover monitoring and inspection of the machines, management of spares and components that require replacement, repairs and refurbishment.

53. The petitioner had prepared comprehensive tender specifications for EPC, under International Competitive Bidding (ICB), scope of which, included specification for Long Term Supplies Agreement [LTSA] /Long Term Maintenance Agreement [LTMA] [collectively called “LTSA”] for three Gas Turbines. The advertisement for ICB for EPC was issued in month of October 2003 and the bidders were requested to submit the ICB offers along with offers for LTSA of Gas Turbine for evaluation. The bids were received for LTSA from the bidders, namely (a) Siemens Consortium and (b) Alstom Consortium in the month of February 2004, along with their EPC Bids. Though the LTSA/LTMA bids were received as part of EPC, the finalization of LTSA/LTMA agreements had to be dealt with separately. The petitioner has submitted that it had been negotiating EPC for advanced class gas turbine

through ICB route at a time when implementation aspects, knowledge of advanced class GT was not available in India. Therefore, the negotiations for EPC had taken considerable time. Also both the bidders were not willing to spend time for finalizing the LTSA agreements as they were generally interested in finalization of the EPC contracts first. Further, at the time of final stage of negotiation of EPC, only the broad range of prices for LTSA/LTMA was available from the bidders. Moreover, bid validity of EPC bids referred to earlier from both the bidders, were on the verge of expiry. At this stage, Alstom wanted to increase their EPC offer price. Also the EPC prices were on an increasing trend. Under this background, the EPC negotiations had to be given priority and the EPC contract was finalized with Siemens in June 2005.

54. The petitioner has submitted that the value of financial bids quoted by (a) Alstom bid dated February 2004 was for approximate Euro 251 million (1CHF=0.65 Euro) and (b) Siemens bid dated July/October 2004 was for approximately Euro 185 – Euro 195 million. In July 2004 Alstom submitted revised offer, mainly in line with ICB requirements for around Euro 170 million, with alternative method of payment (milestone method) up to 92000 EOH. All the bids were exclusive of price escalation, forex variation, customs duty, etc.

55. The EPC was finalized in June 2005 and thereafter, the petitioner, had several rounds of negotiation until November 2006 with OEM. Based on the intensive price negotiation on the offers submitted by OEM, the LTSA/LTMA agreements were finalised with Siemens on 22nd December 2006. The finalized values of the contracts are Euro 145.907 million (1 Euro=Rs 55),

which was much lower than the last bids submitted by both of the EPC bidders at the time of EPC finalization.

56. The petitioner had checked up the prevailing LTSA cost for F Class machines through the owners Engineers i.e. TCE Consulting Engineers Ltd. and subsequently obtained confirmation from Parsons Brinckerhoff Power [hereinafter called PB Power] headquartered in New York City with Asia Pacific Office in Singapore and India office in Bangalore. PB power is a renowned firm engaged in providing strategic consulting in Power Sector. Pursuant to the above, the base cost of LTSA/LTMA of Generating Station of the Petitioner is stated to be highly comparable.

57. It has been noted that the Contracts are for 12 years corresponding to the running hours of 100000 hours (i.e. Equivalent Operating Hours) at standard levels of operation for each GT. During this period, Major Spare parts like program parts are to be replaced at 25000/50000/75000/100000 hours, which shall be treated as Major Maintenance.

58. Based on the finalized Base Contract price of Euro 145.907 million (1 Euro = Rs 55) up to 100000 EOH, the petitioner has worked out the following cost of LTSA/LTMA in Indian Rupees (INR) for the tariff Period 2009-14 after impacting customs duty, price escalation for Indian inflation and European inflation on labour and material, foreign exchange variation on account of €/$ and Re/$ depreciation etc. as below:

Financial Year	Total (Rs in lakh)	LTSA/LTMA cost in Rs in Lakh/MW
2009/10 [from COD]	13090	17.00
2010/11	19580	17.06
2011/12	19600	17.08
2012/13	19920	17.36
2013/14	19920	17.36
	92110	

59. The petitioner has considered following while calculating the LTSA/LTMA cost, based on contractual value as above:

	Factors	Assumptions	
1	LTSA/LTMA-Taxes & Duties		
	Customs Duty	24.67%	
2	LTSA/LTMA-Fx Variation		
		Euro/$	**$/Re**
	2009-10 [Base Price]	1.3699	50.67
3	LTSA/LTMA-Price Escalation		
a	CPI of Indian Wages	0.5% per month	
b	Index on the basic wages for skilled workers of the metal/electrical industry in Berlin, Germany	0.27% per month	
c	Combustion Engine & Turbine Index for Chamber of Commerce, Nurnberg, Germany	0.34% / 0.20% per month	

60. Based on above, the total liability to be incurred under the LTSA/LTMA has been worked out to Rs. 100505.90 lakh and Rs. 12001.20 lakh for the period from September 2009 to 15th June 2015 about 6 years. Against this, petitioner has claimed about Rs. 92110 lakh during the tariff period 2009-14 spreading over the years of tariff period based on the number of hours. However, there is minor discrepancy in no. of hours considered by them in different years of the tariff period. The same has been corrected and the revised figure worked out are as under:

Financial Year	EOH Consumed	Total (Rs. in lakh)	Cost in Lakh/MW
2009-10	17,568	13180	17.18
2010-11	26,280	19710	17.18
2011-12	26,352	19770	17.22
2012-13	26,280	19710	17.18
2013-14	26,280	19710	17.18
	122,760	**92080**	

61. The petitioner has also submitted the detailed workings of following estimated O&M expenses (other than LTSA/LTMA) based on the estimates of consumables, chemicals, inventories etc based on prudent operating and maintenance practices and man power being deployed whether security personals or the operating and maintenance staff, insurance etc.:

(Rs in lakh/MW)

	2009-10	2010-11	2011-12	2012-13	2013-14
Cost other than LTSA/LTMA	9.52	9.93	10.79	11.73	12.50

62. The above estimates of O&M expenses other than LTSA/LTMA are found to be in order considering the fact that repair and maintenance cost in the gas based generating station of NTPC is of the order of 35-40% of the total O&M cost.

63. The petitioner has submitted that with the recent hike in prices of advanced class gas turbines it would not have been possible to get maintenance spares at cheaper rates as has been done in the case of generating station.

64. The petitioner has submitted the per kW cost of CCGT plant at 2004 price level and at 2009 price level are as under:

Machine Type/Model	Price Level per KW [2004] in USD	Price Level per KW [2009] in USD
V94.3A [Siemens]/ SCC5-4000F [Siemens]	278	476

65. We find that the above prices are based on the GTW Handbooks for the year 2004-05 volume 24 and GTW Handbook 2009 volume 27 and represents the offshore main equipment price comprising gas turbine, HRSG, steam turbine, generator, transformer, standard controls etc. on FOB basis and is exclusive of the cost of civil work, BOP and other onshore cost which are extra.

66. It is noted that there has been sharp increase in price level of power block of advanced class machines (`F` Class) which is around 71% in 2009 as compared to prices prevailing in 2004-05. As per the GTW Handbooks for the year 2004-05, the lower prices in the 2004-05 were attributed to extraordinary increase in prices of gas in the world market and general reluctance on the part of buyers to go for gas turbine stations.

67. The petitioner has also submitted the current market price of EPC of gas based plants with advance class machines (F Class) plus corresponding LTSA cost based on the information available in the public domain. The details are as under:

	Bagged By	Order Value [Euro]	Capacity [MW]	Per MW Cost [Euro]	Location of Plant	Developer	Composition of Order	Approx Date	Name of F Class Gas Turbine
1	Siemens	700	870	804,598	Netherland	Rotterdam	EPC+LTSA	2009	SGT5-4000F
2	Siemens	830	850	976,471	Britain	Severn Power Ltd	EPC+LTSA	2008	SGT5-4000F
3	Alstom	340	400	850,000	Spain	Hc Energia	EPC+LTSA	2008	GT 26

68. The petitioner has submitted that its EPC plus LTSA cost of the generating station is lower by around 40-50% compared to the prevailing market price, the benefit of which will be passed on to the consumer through tariff.

69. The petitioner claims that there is a net benefit to the beneficiaries even after accounting for the relaxation of O&M norms as prayed. The petitioner has submitted that the benefit of lower capital cost of CCGT plants (at 2004 price level) and higher efficiency are already being passed to the beneficiaries. The petitioner has submitted a guaranteed designed heat rate (Gross basis) of 1765.60 kCal/kWh. Taking into consideration the margin of 5%, allowed as per the CERC norms for gas based/liquid fuel based thermal generating units/blocks, the heat rate norm is worked out as 1853.88 kCal/kWh. The benefit of improved efficiency are getting passed on through lower energy charge due to lower heat rate of the order of 1853.88 kCal/kWh as against 2000-2100 kCal/kWh for conventional `E` class machines. The petitioner has also worked out the cost benefit to the beneficiaries comparing savings due to improvement in efficiency with additional cost due to LTSA/LTMA resulting in net benefit to beneficiaries ranging from 4 paisa/ kWh to 11 paisa/kWh at prevailing fuel prices as per the details given below:

		F Class	Machines with Lower Version [E Class or below]		
		Torrent	Gandhar	Kawas/Anta/Dadri	Auraiya
1	Station Heat Rate	1853.88	2040	2075	2100
2	Gas Price per MMBTU (in USD)	5.72	5.72	5.72	5.72
3	Conversion Rate	47	47	47	47
4	Energy Charge Rate [Rs/kWh]	2.04	2.24	2.28	2.31
5	savings due to efficiency improvement (Rs/kWh)		0.20	0.24	0.27
6	O&M Per Unit Cost [including LTSA/LTMA] (in Rs.)	**0.3671**	**0.3671**	**0.3671**	**0.3671**
7	O&M Allowable as per CERC [per unit]	0.2049	0.2049	0.2049	0.2049
8	Additional Cost for LTSA/ LTMA		0.16	0.16	0.16
9	**Net befit to beneficiaries (Rs/kWh) (5-8)**		**0.04**	**0.08**	**0.11**

70. We are of the view that these advanced class machines require extra care and precautions for sustaining high level of availability of the station and maintaining higher efficiency. The beneficiaries would derive a net benefit as compared to the existing machines in spite of incurring additional cost in LTMA/LTSA etc. as discussed. The O&M expenses norms therefore, needs to be relaxed. We accordingly, allow O&M cost norms for the station by invoking our power under Regulation 44 of CERC Regulation 2009, in relaxation of the norms specified in Regulation 19(c) of the 2009 regulations as under:

(Rs. in Lakh / MW)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
LTSA – LTMA	17.18	17.18	17.22	17.18	17.18
O&M Cost other	9.52	9.93	10.79	11.73	12.50
	26.70	**27.11**	**28.01**	**28.91**	**29.68**

71. The petitioner is directed to maintain a detailed record of maintenance activities under taken under LTSA/LTMA and on other heads of the O&M on quarterly basis including details of EOH when minor, HGPI or major overhaul is under taken, no. of hours spent on these inspections/repairs, list of parts replaced /repaired, services provided by the OEM, OEM personals visiting station and their duration of stay, payments made etc. The above information should be submitted annually to the Commission to facilitate in taking a view on O&M cost norms for the advanced class machines in future. It is made clear that relaxation of norms in the instant case would not be cited as a precedent in other cases. Each case of relaxation would be considered on merit and the promoter would be required to make out its case with cost benefit analysis and negotiated LTSA/LTMA, preferably with the EPC itself.

72. It is noticed from the LTSA that the Gas Turbine Supplier has given guaranteed availability of gas turbine for the contractual period of 12 years, the average of which comes to 92.07%. It is presumed that the station availability would also be equal to the gas turbine availability. This higher availability of plant above the norm would envisage higher incentive, if so achieved. Therefore, the Commission is of the view that on account of the higher incidence of O & M expenses, it may be fair that the developer makes certain sacrifice for the benefit of the consumers. Therefore, we direct that the availability norm for the purpose of incentive for the generating company shall be 88% and above instead of 85% and above as stipulated in the 2009 regulations of the Commission. However, for the purpose of recovery of fixed charges, the normative availalibity of the plant shall remain 85%.

73. The O&M expenses considered for the purpose of tariff has been calculated based on the O&M cost norms as discussed above for the period under consideration. The O&M expenses allowed for calculation of tariff for the tariff period are as under:

(Rs. in lakh)

Particulars	2009-10			2010-11	2011-12	2012-13	2013-14
	19.07.09 to 27.07.09	28.07.09 to 14.08.09	15.08.09 to 31.03.09				
O&M Expenses (annualized)	10212.75	20425.50	30638.25	31108.73	32141.48	33174.23	34057.80

Interest on Working Capital:

74. Regulations 18(1)(b) of the 2009 Regulations provides for the computation of the interest on working capital as under:

"18(1)(b) Open-cycle Gas Turbine/Combined Cycle thermal generating stations:

(i) *Fuel cost for one month corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;*

(ii) *Liquid fuel stock for ½ month corresponding to the normative annual plant availability factor, and in case of use of more than one liquid fuel, cost of main liquid fuel;*

(iii) *Maintenance spares @ 30% of operation and maintenance expenses specified in regulation 19.*

(iv) *Receivables equivalent to two months of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel.*

(v) *Operation and maintenance expenses for one month."*

75. In accordance with the above provision, interest on working capital has been worked out as under:

(a) The cost of fuel has been worked out for one month consumption on the basis of operational parameters and weighted average price of fuel as allowed.

(b) The petitioner has not used any liquid fuel in the generation of electricity. As such nothing has been allowed under this head.

(c) We allow maintenance spares @ 30% of the O & M expenses allowed.

(d) The receivables have been worked out on the basis of two months of fixed and variable charges. For this purpose, the operational parameters and weighted average price of fuel as allowed has been considered.

(e) O&M expenses for one month has been worked out on the approved O&M expenses.

(f) Interest on working capital has been allowed based on SBI PLR as on 1.4.2009 (i.e. 1st April of the year in which the generating station or unit thereof is declared under commercial operation). SBI PLR of

12.25% has been considered as the rate of interest on working capital during the tariff period in accordance with provisions of 2009 regulations.

76. Necessary computations in support of calculation of interest on working capital are as under:

(Rs. in lakh)

Particulars	2009-10			2010-11	2011-12	2012-13	2013-14
	19.7.2009 to 27.7.2009	28.7.2009 to 14.8.2009	15.8.2009 to 31.3.2009				
Fuel Cost (Gas) - 1 months	5,136.37	10,272.75	15,409.12	15,409.12	15,451.34	15,409.12	15,409.12
Maintenance Spares (30% of O&M Expenses allowed)	3,063.83	6,127.65	9,191.48	9,332.62	9,642.44	9,952.27	10,217.34
O & M expenses - 1 months	851.06	1,702.13	2,553.19	2,592.39	2,678.46	2,764.52	2,838.15
Receivables - 2 months	15,284.85	30,554.20	45,780.80	45,829.57	45,971.72	45,817.74	45,716.42
Total Working Capital	24,336.11	48,656.72	72,934.58	73,163.70	73,743.95	73,943.64	74,181.03
SBI PLR as on 01.04.2009	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Working Capital	2,981.17	5,960.45	8,934.49	8,962.55	9,033.63	9,058.10	9,087.18

NORMATIVE ANNUAL PLANT AVAILABILITY FACTOR

77. Normative Annual Plant Availability Factor of 85% as per Regulation 26 of 2009 Regulations has been considered for recovery of full fixed charges and computation of fuel element in the working capital.

ANNUAL FIXED CHARGES

78. The annual fixed charges for the period 19.7.2009 to 31.3.2014 allowed in this order are summed up in the table below**:**

Rs. in lakh)

Particulars	2009-10			2010-11	2011-12	2012-13	2013-14
	19.07.09 - 27.07.09	28.07.09 - 14.08.09	15.08.09 - 31.03.10				
Return on Equity	5,050.97	10,082.22	15,179.11	15,490.90	15,711.38	15,711.38	15,711.38
Interest on Loan	6,891.24	13,730.41	20,188.52	19,366.07	18,172.57	16,698.09	15,177.54
Depreciation	4,936.47	9,853.66	14,835.01	15,139.73	15,355.21	15,355.21	15,355.21
Interest on Working Capital	2,981.17	5,960.45	8,934.49	8,962.55	9,033.63	9,058.10	9,087.18
O&M Expenses	10,212.75	20,425.50	30,638.25	31,108.73	32,141.48	33,174.23	34,057.80
Total	**30,072.60**	**60,052.24**	**89,775.37**	**90,067.98**	**90,414.27**	**89,997.00**	**89,389.11**

Note: All figures are on annualized basis.

79. Annual fixed charges as calculated above shall be trued up at the end of the tariff period as per the provisions of Regulation 6 of the 2009 regulations.

ENERGY/VARIABLE CHARGES

80. Energy Charge rate (ECR) in Rs./kWh on ex-power plant is calculated up to three decimal places in accordance with the formulae given in Regulation 21(6)(b) of the 2009 regulations. For calculating ECR, the following norms are approved and applied:

Description	Units	Norm
Gross Station Heat Rate of the generating station (Combined Cycle)	kCal / kWh	1853.88
Auxiliary Energy Consumption (Combined Cycle)	%	3.00

81. The base rate of energy charge has been computed based on the following weighted average price and GCV of gas for the preceding three months of June, May and April, 2009 as furnished by the petitioner on 26.11.2009.

Description	As furnished by the Petitioner	As adopted by CERC
Gas price (Rs./1000 SCM)	11270.78	11270.78
Gas GCV (kcal/SCM)	9655.00	9655.00

82. The base energy charge has been worked out as under:

Capacity	MW	1147.5
Gross Station Heat Rate	kCal/kWh	1853.88
Aux. Energy Consumption	%	3.00
Weighted Average GCV of gas	kCal/SCM	9655.00
Weighted Average Price of gas	Rs./1000SCM	11270.78
Rate of Energy Charge ex-bus per kWh Sent	Paise/kWh	223.11

83. However, energy charge on month to month basis will be billed by the petitioner as per Regulation 21 (5) of the 2009 regulations which is extracted below:

> *"21 (5) The energy charge shall cover the primary fuel cost and limestone consumption cost (where applicable), and shall be payable by every beneficiary for the total energy scheduled to be supplied to such beneficiary during the calendar month on ex-power plant basis, at the energy charge rate of the month (with fuel and limestone price adjustment). Total Energy charge payable to the generating company for a month shall be:*
>
> *(Energy charge rate in Rs./kWh) x {Scheduled energy (ex-bus) for the month in kWh.}"*

Application fee and the publication expenses

84. The petitioner has sought approval for the reimbursement of fee paid by it for filing the petition. Regulation 42 of the 2009 regulations provides as under:

> *"The application filing fee and the expenses incurred on publication of notices in the application for approval of tariff, may in the discretion of the Commission, be allowed to be recovered by the generating company or the transmission licensee, as the case may be, directly*

from the beneficiaries or the transmission customers, as the case may be."

85. The Commission after careful consideration has decided that filing fee will be reimbursed in the following cases:

(a) Main petitions for determination of tariff;

(b) Petitions for revision of tariff due to additional capital expenditure;

(c) Petitions for truing up of expenditure.

Filing fees paid for filing the Review Petitions, Interlocutory Applications and other Miscellaneous Applications will not be reimbursed in tariff. The Commission has decided to reimburse the expenses on publication of notices as such expenses are incurred to meet the statutory requirement of transparency in the process of determination of tariff.

86. Accordingly, expenses incurred by the Petitioner on application filing fees and publication of notices in connection with the present petition shall be directly recovered from the beneficiaries on pro rata basis.

87. The petitioner shall be entitled to compute and recover the annual fixed charges and energy charges in accordance with Regulation 21 of the 2009 Regulations.

88. This order disposes of Petition No.109/2009.

Sd-	**Sd-**	**Sd-**
(V.S.VERMA)	**(S.JAYARAMAN)**	**(R.KRISHNAMOORTHY)**
MEMBER	**MEMBER**	**MEMBER**

New Delhi, the 11th January 2010

Annexure 1

Calculation of Weighted Average Rate of Interest

(Rs. in lakh)

	Details of Loan		2009-10			2010-11	2011-12	2012-13	2013-14
	From		19-7-09	28-7-09	15-8-09	1-4-10	1-4-11	1-4-12	1-4-13
	To		27-7-09	14-8-09	31-3-10	31-3-11	31-3-12	31-3-13	31-3-14
1	PFC	Gross Loan - Opening	46486.47	46486.47	46486.47	49251.31	49251.31	49251.31	49251.31
		Cumulative repayment of loan up to Previous period	7500.00	7500.00	7500.00	10000.00	15000.00	20000.00	25000.00
		Net Loan - Opening	38986.47	38986.47	38986.47	39251.31	34251.31	29251.31	24251.31
		Add: Drawl du the period	0.00	0.00	2764.84	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	2500.00	5000.00	5000.00	5000.00	5000.00
		Net Loan - Closing	38986.47	38986.47	39251.31	34251.31	29251.31	24251.31	19251.31
		Average Loan	38986.47	38986.47	39118.89	36751.31	31751.31	26751.31	21751.31
		Rate of Int on Loan	11.81%	11.81%	11.85%	11.95%	12.06%	12.17%	12.24%
		Interest on Loan	4602.63	4602.63	4634.48	4391.32	3829.59	3255.35	2663.07
2	UCO	Gross Loan - Opening	25258.36	25258.36	25347.08	29715.11	29715.11	29715.11	29715.11
		Cumulative repayment of loan upto Previous period	3750.00	3750.00	3750.00	5000.00	7500.00	10000.00	12500.00
		Net Loan - Opening	21508.36	21508.36	21597.08	24715.11	22215.11	19715.11	17215.11
		Add: Drawl du the period	0.00	88.72	4368.03	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	1250.00	2500.00	2500.00	2500.00	2500.00
		Net Loan - Closing	21508.36	21597.08	24715.11	22215.11	19715.11	17215.11	14715.11
		Average Loan	21508.36	21552.72	23156.10	23465.11	20965.11	18465.11	15965.11
		Rate of Int on Loan	9.41%	9.41%	9.44%	9.55%	9.71%	9.81%	9.87%
		Interest on Loan	2023.18	2027.28	2184.97	2240.78	2034.97	1811.19	1576.07
3	IDFC	Gross Loan - Opening	33759.53	34352.69	34352.69	39206.15	39206.15	39206.15	39206.15
		Cumulative repayment of loan upto Previous period	5000.00	5000.00	5000.00	6666.67	10000.00	13333.33	16666.67
		Net Loan - Opening	28759.53	29352.69	29352.69	32539.49	29206.15	25872.82	22539.49
		Add: Drawl du the period	593.16	0.00	4853.46	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	1666.67	3333.33	3333.33	3333.33	3333.33
		Net Loan - Closing	29352.69	29352.69	32539.49	29206.15	25872.82	22539.49	19206.15
		Average Loan	29056.11	29352.69	30946.09	30872.82	27539.49	24206.15	20872.82
		Rate of Int on Loan	10.74%	10.74%	10.71%	10.71%	10.77%	10.82%	10.83%
		Interest on Loan	3121.18	3151.19	3313.28	3306.66	2966.62	2619.61	2260.60
4	PNB	Gross Loan - Opening	24150.22	24150.22	24150.22	26610.11	26610.11	26610.11	26610.11
		Cumulative repayment of loan upto Previous period	3337.50	3337.50	3337.50	4450.00	6675.00	8900.00	11125.00
		Net Loan - Opening	20812.72	20812.72	20812.72	22160.11	19935.11	17710.11	15485.11
		Add: Drawl du the period	0.00	0.00	2459.90	0.00	0.00	0.00	0.00
		Less: Repayment du the	0.00	0.00	1112.50	2225.00	2225.00	2225.00	2225.00

		period							
		Net Loan - Closing	20812.72	20812.72	22160.11	19935.11	17710.11	15485.11	13260.11
		Average Loan	20812.72	20812.72	21486.41	21047.61	18822.61	16597.61	14372.61
		Rate of Int on Loan	10.15%	10.15%	10.11%	10.09%	10.15%	10.21%	10.23%
		Interest on Loan	2113.45	2113.45	2171.30	2123.47	1910.36	1693.81	1470.66
5	Canara	Gross Loan - Opening	25762.35	25762.35	25762.35	27219.53	27219.53	27219.53	27219.53
		Cumulative repayment of loan up to Previous period	3750.00	3750.00	3750.00	5000.00	7500.00	10000.00	12500.00
		Net Loan - Opening	22012.35	22012.35	22012.35	22219.53	19719.53	17219.53	14719.53
		Add: Drawl du the period	0.00	0.00	1457.19	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	1250.00	2500.00	2500.00	2500.00	2500.00
		Net Loan - Closing	22012.35	22012.35	22219.53	19719.53	17219.53	14719.53	12219.53
		Average Loan	22012.35	22012.35	22115.94	20969.53	18469.53	15969.53	13469.53
		Rate of Int on Loan	9.60%	9.60%	9.60%	9.61%	9.61%	9.59%	9.55%
		Interest on Loan	2113.80	2113.80	2123.13	2014.42	1774.51	1530.76	1287.01
6	IDBI	Gross Loan - Opening	25561.85	25561.85	25561.85	29394.28	29394.28	29394.28	29394.28
		Cumulative repayment of loan upto Previous period	3750.00	3750.00	3750.00	5000.00	7500.00	10000.00	12500.00
		Net Loan - Opening	21811.85	21811.85	21811.85	24394.28	21894.28	19394.28	16894.28
		Add: Drawl du the period	0.00	0.00	3832.42	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	1250.00	2500.00	2500.00	2500.00	2500.00
		Net Loan - Closing	21811.85	21811.85	24394.28	21894.28	19394.28	16894.28	14394.28
		Average Loan	21811.85	21811.85	23103.07	23144.28	20644.28	18144.28	15644.28
		Rate of Int on Loan	8.25%	8.25%	8.37%	8.50%	8.53%	8.57%	8.62%
		Interest on Loan	1799.48	1799.48	1934.75	1966.89	1760.64	1554.39	1348.14
*	Total	Gross Loan - Opening	180978.77	181571.94	181660.66	201396.50	201396.50	201396.50	201396.50
		Cumulative repayment of loan upto Previous period	27087.50	27087.50	27087.50	36116.67	54175.00	72233.33	90291.67
		Net Loan - Opening	153891.27	154484.44	154573.16	165279.84	147221.50	129163.17	111104.84
		Add: Drawl du the period	593.16	88.72	19735.84	0.00	0.00	0.00	0.00
		Less: Repayment du the period	0.00	0.00	9029.17	18058.33	18058.33	18058.33	18058.33
		Net Loan - Closing	154484.44	154573.16	165279.84	147221.50	129163.17	111104.84	93046.50
		Average Loan	154187.86	154528.80	159926.50	156250.67	138192.34	120134.00	102075.67
		Wt. Avg. Rate of Int on Loan at the begining of the period	10.2304%	10.2302%	10.2297%	10.2309%	10.2678%	10.3310%	10.3760%
		Interest on Loan	15773.72	15807.84	16361.90	16043.54	14276.69	12465.12	10605.54