CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 285/2009

Coram: 1. Dr. Pramod Deo, Chairperson
2. Shri S. Jayaraman, Member
3. Shri V.S.Verma, Member
4. Shri M.Deena Dayalan, Member

[Date of Hearing: 14.6.2011]
[Date of Order: 30.12.2011]

IN THE MATTER OF

Approval of tariff of Kawas Gas Power Station (656.20 MW) for the period from 1.4.2009 to 31.3.2014

And

IN THE MATTER OF

NTPC Ltd, New Delhi **...Petitioner**

Vs

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

.....**Respondents**

Parties present:

1. Shri V.K.Padha, NTPC
2. Shri D.G.Salpekar, NTPC
3. Shri A.S.Pandey, NTPC
4. Shri Ajay Dua, NTPC
5. Shri S.K.Sharma, NTPC,
6. Shri G.K.Dua, NTPC
7. Shri A.K.Juneja, NTPC
8. Shri A.Mehta, NTPC
9. Shri S.K.Jain, NTPC

ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff for Kawas Gas Power Station, (656.20 MW) (hereinafter referred to as "the generating station") for the period from 1.4.2009 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 with a capacity of 656.20 MW comprises of four Gas Turbine (GT) units of 106 MW each and two Steam Turbines (ST) units of 116.10 MW units. The dates of commercial operation of different units of the generating station are as under:

Units	**Date of commercial operation (COD)**
Unit-I (GT)	1.6.1992
Unit-II (GT)	1.8.1992
Unit-III (GT)	1.9.1992
Unit-IV (GT)	1.11.1992
Unit-V (ST)/Generating Station	1.11.1993
Unit-VI (ST)	1.9.1993

3. The tariff of the generating station for the period 1.4.2004 to 31.3.2009, was determined by the Commission by its order dated 30.12.2009 in Petition No.44/2009 considering the capital cost of ₹151422.86 lakh as on 31.3.2009. Thereafter, the Commission by its order dated 28.5.2010 in Petition No. 160/2009 revised the annual fixed charges for the generating station for 2004-09 after determination of impact of additional capital expenditure incurred during the year 2008-09 in respect of the generating station. Subsequently, the annual fixed charges for the generating station for 2004-09 determined by order dated 28.5.2010 was revised by Commission's order dated 21.1.2011 in Petition No.44/2009 (based on order dated 28.9.2010 in Review Petition No. 27/2010 against Petition No.44/2009) filed by the petitioner.

Subsequently, by order dated 17.10.2011 in Petition No.160/2009, the Commission revised the annual fixed charges for the generating station for 2004-09 after taking into consideration the judgments of the Appellate Tribunal for Electricity dated 19.4.2011 in Appeal No.159/2010, subject to the final outcome of the Civil Appeals (C.A. Nos. 5434/2007 to 5452/2007, 5622/2007 etc, C.A Nos.4112-4113/2009 and C.A Nos.6286 to 6288/2009 and other connected appeals) pending before the Hon'ble Supreme Court, based on the capital cost of ₹153793.03 lakh as on 31.3.2009. The annual fixed charges determined by the Commission by its order dated 17.10.2011 are as under:

(₹ in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on loan	204.89	44.00	27.22	13.56	4.66
Interest on Working Capital	4503.32	4523.21	4546.84	4581.86	4917.76
Depreciation	8214.43	8219.49	8226.61	8229.38	2742.29
Advance Against Depreciation	0.00	0.00	0.00	0.00	0.00
Return on Equity	10788.84	10792.83	10798.44	10800.62	10788.71
O & M Expenses	5118.36	5321.78	5538.33	5754.87	5984.54
Total	**28829.84**	**28901.31**	**29137.44**	**29380.29**	**24437.96**

4. The annual fixed charges claimed by the petitioner for 2009-14 is as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	42	47	2118	10162	8553
Interest on Loan	3	3	1668	3826	4310
Return on Equity	18069	18072	19167	20846	21856
Interest on Working Capital	7254	7293	7451	7724	7767
O&M Expenses	9712	10270	10854	11477	12133
Total	**35079**	**35685**	**41257**	**54034**	**54620**

5. Reply to the petition has been filed by MPPTCL (respondent No.1) and MSEDCL (respondent No.2).

CAPITAL COST

6. Regulation 7 (1) (a) of the 2009 regulations provides as under:

> *"7. **Capital Cost.** (1) Capital cost for 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;"

7. The annual fixed charges claimed in the petition are based on opening capital cost of ₹153710 lakh as on 1.4.2009. As stated earlier, the annual fixed charges of the generating station was revised based on the judgments dated 13.6.2007 and 16.3.2009 of the Tribunal, considering the capital cost of ₹153793.03 lakh as on 31.3.2009. As such, the opening capital cost as on 1.4.2009 is ₹153793.03 lakh. The petitioner vide its affidavit dated 27.6.2011 has furnished the value of capital cost and liabilities as on 1.4.2009 as per books of accounts in Form-9A. The details of liabilities and capital cost which have been reconciled with the records of the Commission are as under:

(₹in lakh)

	As per Form-9A	**As per records of Commission**	**Difference**
Capital cost as on 1.4.2009, as per books	163385.97	163385.87	0.10
Liabilities included in the above	114.36	114.36	0.00

8. The difference in the capital cost of ₹0.10 lakh is on account of rounding off the amounts, which has not been considered for the purpose of tariff.

9. The total liabilities included in the gross block, as on 1.4.2009 is ₹114.36 lakh. Out of this, un-discharged liabilities of ₹101.32 lakh (₹8.07 lakh relating to period prior to 1.4.2004 and ₹93.25 lakh for 2004-09) have been included in the admitted capital cost of ₹153793.03 lakh.

10. Clause (2) of Regulation 3 of the 2009 regulations define the term 'expenditure incurred' as under:

"expenditure incurred means the fund, whether the equity or debt or both, actually deployed and paid in cash or cash equivalent, for creation or acquisition of a useful asset and does not include commitments or liabilities for which no payment has been released"

11. The last proviso to Regulation 7 of the 2009 regulations, as amended on 21.6.2011 provides as under:

"Provided also that in case of the existing projects, the capital cost admitted by the Commission prior to 1.4.2009 duly trued up by excluding un-discharged liability, if any, as on 1.4.2009 and the additional capital expenditure projected to be incurred for the respective year of the tariff period 2009-14, as may be admitted by the Commission, shall form the basis for determination of tariff."

12. Accordingly, in terms of the last proviso to Regulation 7 read with Clause (2) of Regulation 3 of the 2009 regulations, the capital cost, after removal of un-discharged liabilities of ₹101.32 lakh, works out to ₹153691.71 lakh, on cash basis, as on 1.4.2009. The discharge of un-discharged liabilities, if any, made by the petitioner would be included in the capital base as additional capital expenditure, in the year of discharge.

13. Further, out of the un-discharged liabilities deducted as on 1.4.2009 the petitioner has discharged an amount of ₹92.30 lakh (₹8.07 lakh pertaining to liabilities corresponding to assets capitalized prior to 1.4.2004 and ₹84.23 lakh pertaining to liabilities corresponding to assets capitalized during the period 2004-09) and reversed an amount of ₹9.02 lakh (pertaining to liabilities corresponding to assets capitalized during the period 2004-09), during the year 2009-10. The discharge of liabilities amounting to ₹92.30 lakh is allowed during the year 2009-10, in addition to the projected additional capital expenditure.

Actual/Projected Additional Capital Expenditure

14. Regulation 9 of the 2009 regulations, as amended on 21.6.2011, provides as under**:**

"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) Un-discharged 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;

(iii) 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, un-discharged 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;

(iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and

(v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system:

Provided that in respect sub-clauses (iv) and (v) above, any expenditure on acquiring the minor items or the assets like tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2009.

(vi) In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations.

Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialisation of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any un-discharged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc.”

15. The actual/projected additional capital expenditure claimed by the petitioner is as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Additional capital expenditure	51.00	47.00	31051.00	16594.00	12105.00

16. The cut-off date of the generating station has expired. Hence, the petitioner's claim for additional capital expenditure for 2009-14 has to be examined in terms of Regulation 9(2) of the 2009 regulations. In this connection, we examine the admissibility of the additional capital expenditure claim by the petitioner in the subsequent paragraphs.

Submissions of the petitioner

17. In its petition, the petitioner has submitted that the estimated capital expenditure claims are of the following nature:

(i) The additional capital expenditure (as per Regulation 9 (1) and 9 (2) of the Tariff Regulations, 2009) as per the original scope of work of the generating station which has been put to use;

(ii) The other additional capital expenditure in respect of the existing generating stations which have to be done on on-going basis.

18. The petitioner has submitted that in addition to the capital expenditure covered by Regulation 9 (1) and 9(2) and 19(e) of the 2009 regulations, there will be capital expenditure of different nature which would be necessary for the efficient operation of the generating station within its life time. Additional capital expenditure for this purpose had constantly been allowed by the Commission under the 2001 and 2004 tariff regulations. However, additional capital expenditure on this head has not been included in Regulation 9 of 2009 regulations. Accordingly, the petitioner has claimed additional capital expenditure on 'works considered necessary for the efficient operation of the generating stations' in addition to those specified under Regulation 9 (1) and (2) and Regulation 19 (e) of the 2009 regulations.

19. The petitioner has further submitted that Regulation 3 (8) defines the capital cost to mean the capital cost as per Regulation 7. Regulation 7 deals with the capital cost of generating station which would come into operation between 1.4.2009 and 31.3.2014. Clause (b) of Regulation 7 (1) refers to the capitalized spares as specified in Regulation 8 and Clause (c) refers to additional capitalization as determined under Regulation 9.

20. According to the petitioner, Regulations 7(1), 8 and 9 pertain to the capital cost of new generating station commissioned after 1.4.2009 and does not cover the existing projects commissioned prior to 1.4.2009. The petitioner has submitted that the last proviso to Regulation 7 is an independent provision dealing with the existing projects and additional capitalization for the existing projects was comprehensively covered by the said provision. Moreover, the term 'additional capital expenditure' defined in Regulation 3 (3) was the additional capital expenditure incurred or projected to be incurred , after the date of commercial operation of the project and admitted by the Commission after prudence check, subject to Regulation 9. According to the petitioner, the scope and meaning of additional capitalization was not confined to Regulation 9 but subject to Regulation 9 which would mean that if additional capitalization was of the nature as referred to in Regulation 9, it would be read subject to the provisions of Regulation 9 and if the additional capitalization was not of the nature as referred to in Regulation 9, the provisions of Regulation 9 could not be applied. The petitioner has also submitted that in respect of the existing projects, the additional capital expenditure projected to be incurred from 1.4.2009 till 31.3.2014 and admitted by the Commission after prudence check would qualify to be capitalized,

notwithstanding the fact that this expenditure was not covered under Regulation 9 (1) and (2).

21. As Regulation 19 (e) provides for a compensation allowance to meet the expenses of new assets of capital nature including in the nature of minor assets, the petitioner has submitted that the normative compensation allowance under Regulation 19 (e) has no relevance to the additional capitalization of a substantive nature incurred by the generating company from time to time. It has further submitted that as the Regulations 9 (1) and (2) and 19 (e) do not exclude the additional capital expenditure of substantial nature in respect of the existing generating stations, the additional capital expenditure as projected by the petitioner, to be incurred during the tariff period 2009-14 for the existing generating stations, may be considered and allowed by the Commission.

22. The petitioner by its affidavit dated 25.3.2010, has made its submissions on the admissibility of additional capitalization under the 2009 Regulations and has contended that the last proviso to Regulation 7 is an exception and deals with the existing projects. The petitioner has contended that the said proviso is an independent substantive proviso applicable to existing generating stations, independent of the other provisions of the Regulation 9 which was applicable to new generating stations, i.e. generating stations commissioned after 1.4.2009. The petitioner has further submitted that Regulations 7 (1) (b) and (c) controls Regulations 8 and 9 respectively, and therefore, was applicable only to new generating stations.

23. The respondent No.1, MPPTCL has objected to the submissions of the petitioner on the ground that the claim of the petitioner amounts to additional capitalization over and above the provisions contained in the provisions of the 2009 regulations. It has

submitted that the claim of the petitioner may be restricted to the relevant provisions of the 2009 regulations. In reply, the petitioner has reiterated its submissions made in the petition and the affidavit dated 25.3.2010.

24. The above submissions have been made by the petitioner prior to the amendment of the 2009 regulations. The Commission has notified the CERC (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2011 on 21.6.2011 incorporating the following provisions for additional capital expenditure under Regulation 9(2) of the 2009 regulations, as under:

> *(vi) In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations.*
>
> *Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.*
>
> *(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialisation of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.*
>
> *(viii) Any un-discharged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc."*

25. As the claims made by the petitioner relate to the life extension of Gas Turbines for the generating station and a provision for consideration of expenditure on this count has been made under Regulation 9(2)(vi) of the 2009 regulations, amended on 21.6.2011, we do not express our views on the submissions made by the petitioner as above, in respect of this petition. Accordingly, we proceed to consider the claims of the petitioner in terms of Regulation 9(2) of the 2009 regulations, as amended on 21.6.2011.

26. The category-wise break-up details of the actual/projected additional capital expenditure claimed by the petitioner during 2009-14 is as under:

(₹ in lakh)

	Regulation	Actual/Projected Capitalization					Total
		2009-10	2010-11	2011-12	2012-13	2013-14	
CEA approved R & M							
Gas Turbine Life Extension Package	9(2)(ii)	0.00	0.00	28133.00	16388.00	10351.00	**54872.00**
C&I Control Systems for Gas Turbine	9(2)(ii)	0.00	0.00	410.00	206.00	204.00	**820.00**
C&I Control Systems for Steam Turbines	9(2)(ii)	0.00	0.00	1550.00	0.00	1550.00	**3100.00**
Simulator Package	9(2)(ii)	0.00	0.00	637.00	0.00	0.00	**637.00**
Replacement of Halon Fire extinguishers in control room	9(2)(ii)	0.00	0.00	314.00	0.00	0.00	**314.00**
Sub Total		**0.00**	**0.00**	**31044.00**	**16594.00**	**12105.00**	**59743.00**
Other Capital Works							
Procurement of CCTV	9(2)(ii)	0.00	47.00	7.00	0.00	0.00	**54.00**
Township metering system	9(2)(ii)	9.00	0.00	0.00	0.00	0.00	**9.00**
20T EOT crane	9(2)(ii)	42.00	0.00	0.00	0.00	0.00	**42.00**
Total		**51.00**	**47.00**	**31051.00**	**16594.00**	**12105.00**	**59848.00**

27. The total claim for ₹59848.00 lakh as above comprises of hard cost of ₹51709.30 lakh towards actual/projected additional capital expenditure and ₹8138.70 lakh towards Interest During Construction (IDC) and Financing charges (FC) and contingency. We now examine the claim of the petitioner for additional Capital expenditure (after exclusion of IDC and FC) in terms of Regulation 9(2)(ii) of the 2009 regulations as discussed in the subsequent paragraphs:

Claim under Regulation 9(2) (ii)--Change in law

28. The petitioner has claimed the projected capital expenditure for CEA approved R&M works under Regulation 9 [2] [ii] of the 2009 regulations. The petitioner has also submitted that the useful life of the combined cycle gas turbine plants has been increased to 25 years w.e.f 1.4.2009 under the 2009 regulations from the useful life of 15 years during the period 2004-09 when the R & M proposals were formulated and approved by CEA as per the 2004 Tariff Regulations. The petitioner has further

submitted that these gas turbines were in service for more than 15 years and that the OEM has recommended the replacement of gas turbine components after completion of 2 major inspections i.e. after about 96,000 Equivalent Operating Hours (EOH). Thus, in order to ensure gas turbine availability to full capacity and to avoid unforeseen failures of these machines, R & M of gas turbine has become necessary. Since, capitalization of expenditure on R&M of gas turbines do not fall under Change in law, we do not allow the claim under Regulation 9(2)(ii) of the 2009 regulations.

29. However, taking into consideration that the major portion of the estimated additional capital expenditure, is towards CEA approved R & M of gas turbines which have completed about 15 years of useful life and the same is based on the recommendations of the Original Equipment Manufacturer [OEM], we allow the claim of the petitioner for R&M of gas turbines in terms of Regulation 9(2)(vi) of the 2009 regulations as amended on 21.6.2011 based on prudent check and after de-capitalization of the original gross value of replaced old assets, as discussed below:

CEA approved R&M schemes for life extension and other capital works

30. The claim of the petitioner for additional capital expenditure in respect of CEA approved R&M of Gas and Steam Turbines (excluding contingency, IDC etc) for life extension scheme and for other capital works for the period 2009-14 are as under:

(₹ in lakh)

		Actual/Projected Capitalization					
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**Total**
CEA approved R&M schemes							
Gas Turbine Life Extension Package	9(2)(ii)	0.00	0.00	24298.00	14155.00	8940.00	**47393.00**
C&I Control Systems for Gas Turbine		0.00	0.00	354.00	178.00	176.00	**708.00**
C&I Control Systems for Steam Turbines		0.00	0.00	1339.00	0.00	1339.00	**2678.00**
Simulator Package		0.00	0.00	550.00	0.00	0.00	**550.00**
Replacement of Halon Fire Extinguishers in Control room		0.00	0.00	275.00	0.00	0.00	**275.00**

Sub-total		**0.00**	**0.00**	**26816.00**	**14333.00**	**10455.00**	**51604.00**
Other capital works							
Procurement of CCTV		0.00	47.00	7.00	**0.00**	0.00	**54.00**
Township Metering System	9(2)(ii)	9.00	0.00	0.00	**0.00**	0.00	**9.00**
20T EOT Crane		42.00	0.00	0.00	**0.00**	0.00	**42.00**
Total		**51.00**	**47.00**	**26823.00**	**14333.00**	**10455.00**	**51709.00**

Gas Turbine Package

31. The petitioner has claimed an amount of ₹47393.00 lakh excluding contingency, IDC etc. during the period from 2011-12 to 2013-14 on CEA approved R & M packages for life extension of Gas Turbine (GT) for another one lakh Equivalent Operating Hours (EOH).

32. The respondent No.2, MSEDCL has objected to the replacement of Torque converter of GT-IA on the ground that it has already been done during the period 2001-04 and considered in the order of the Commission dated 7.4.2005. It has also submitted that huge expenditure was incurred towards cost of under warranty spares and they do not require any immediate replacement. The respondent has prayed that the Commission may disallow the same and avoid unnecessary burden on the beneficiaries. In reply, the petitioner has submitted that R&M expenditure pertains to all the units of the generating station and was essential as per OEM recommendations. It has also been submitted that the past failure of various critical components were indicated in the proposal sent to CEA for approval of R&M, pointing to the necessity of R&M of the machine in order to extend the life of the machines and sustainability of GT performance and equipment availability and that the respondent had misunderstood the content of the project report. The petitioner has also submitted that capital expenditure infusion in respect of gas stations was required in view of the extension of life of gas turbines to 25 years as per the 2009 regulations. The Commission has been allowing O&M expenses having component of spares based on

actual consumption after prudence check. The petitioner has thus prayed that the submissions of the respondent be rejected. We have considered the submissions made by the parties and the claims of the petitioner have been allowed as discussed in the subsequent paragraphs.

33. The proposed expenditure on R&M of GTs for life extension are based on two major inspections i.e. 96,000 EOH by the OEM. From the bill of quantities furnished by the petitioner, it is observed that the requirement for combustion liners, transition piece, cross fire tubes, Nozzles, buckets & Shrouds etc., depends on the replacement intervals after definite number of Combustion Inspection (CI) and Hot Gas Path Inspections (HGPI) of GT components. It appears that the purchase of hot gas path components as proposed by the petitioner also includes certain capital spares for Stages-I, II, and III nozzle, buckets & shrouds etc, which could be used in future. Since R&M on GTs are in the nature of major overhaul, suitable adjustment of capital spares which are included in the normative operation and maintenance (O&M) expenses is required. The quantum of capital spares included in O&M corresponding to major overhaul is to the tune of ₹5866.00 lakh (expenditure towards hot gas path components) and the same has been deducted from the additional capital expenditure for CEA approved R & M scheme to be considered for capital addition during 2009-14. Thus, the expenditure for R&M of Gas Turbines & Steam Turbines to be considered for the purpose of tariff is ₹41527.00 lakh (excluding contingency & IDC etc,). This expenditure of ₹41527.00 lakh would be allowed only after de-capitalization of the gross value of old assets replaced which has been discussed below.

Value of De-capitalization

34. The petitioner by its affidavit dated 26.5.2010 had submitted that for the purpose of estimation, the historical capital cost of the assets under replacement/

refurbishment may be considered as 25% of the estimated value of replacement. However, the petitioner vide its affidavit dated 3.1.2011 has submitted the de-capitalization value of ₹19636.00 lakh, towards 100% historical cost of the assets replaced, for CEA approved R&M package of GTs is based on Letter of Award (LOA) price of the items. We have for the purpose of de-capitalization of old assets, considered the 100% historical cost of ₹19636.00 lakh of the replaced assets in respect of the CEA approved R&M package of GTs, as furnished by the petitioner vide its affidavit dated 3.1.2011. Accordingly, after de-capitalization of the value of ₹19636.00 lakh for old assets, the net expenditure for R&M of GTs works out to ₹21891 lakh (₹41527 lakh -₹19636 lakh) and the same is allowed.

R&M of Control & Instrumentation for Gas Turbines (GTs) & Steam Turbines (STs)

35. The petitioner has proposed R&M expenditure of ₹708.00 lakh for 2011-14 (₹354.0 lakh for 2011-12, ₹178.00 lakh for 2012-13 and ₹176.00 lakh for 2013-14) respectively, (exclusive of contingency, IDC etc), on Control & Instrumentation (C&I) control system for GTs. The new digital system would provide safe and reliable operation of the GTs with facilities to store historical data. Hence, the expenditure of Rs 708.00 lakh is allowed with the corresponding de-capitalization of ₹948.00 lakh. Accordingly, the net capitalization of (-) ₹240.00 lakh ₹ (708.00–948.00) lakh is allowed for the purpose of capitalization.

36. The petitioner has proposed R&M expenditure of ₹2678.00 lakh (₹1339.00 lakh for 2011-12, and ₹1339.00 lakh for 2013-14) respectively, (exclusive of contingency, IDC etc), on Control & Instrumentation (C&I) control system for STs, and other combined cycle equipment control system including Man Machine Interface (MMI) and vibration monitoring system. Taking into consideration the approval of CEA for life

extension, the expenditure for ₹2678.00 lakh is allowed with the corresponding de-capitalization of ₹2176.00 lakh. Accordingly, the net capitalization of ₹502.00 lakh ₹(2678.00–2176.00) lakh is allowed for the purpose of tariff.

Simulator Package

37. The petitioner has proposed R&M expenditure of ₹550.00 lakh (excluding contingency and IDC etc.) during 2011-12 on Simulator package. The petitioner vide its affidavit dated 3.2.2011 has furnished that these works are at present not being taken up for implementation. In view of this, the expenditure has not been considered for capitalization.

Replacement of Halon Fire Extinguishers in Control Room

38. The petitioner has proposed R&M expenditure of ₹275.00 lakh (excluding contingency & IDC etc) during 2011-12 for replacement of Halon Fire Extinguishers in control room. The petitioner vide its affidavit dated 3.2.2011 has submitted that these works are at present not being taken up for implementation. In view of this, the expenditure has not been considered for capitalization.

Others capital works under Regulation 9 (2)(ii)

39. The petitioner has proposed expenditure of ₹54.00 lakh (₹47.00 lakh for 2010-11 and ₹ 47.00 lakh for 2011-12) towards procurement of CCTV. The petitioner has submitted that installation of closed circuit TV system at all vulnerable points was necessitated to meet the threat perception under the prevailing security scenario. It has also enclosed a letter dated 17.9.2008 from the CISF, Ministry of Home Affairs advising the petitioner on this count based on input received from intelligence agencies. Thus, the petitioner has prayed for considering the expenditure under this head. The respondent No.1, MPPTCL has objected to the capitalization of the said

asset on the ground that the same is not covered under the provisions of the 2009 regulations. Considering the fact that said asset is required for safety and security of the generating station, the claim of the petitioner for ₹54.00 lakh is allowed.

40. The petitioner has proposed expenditure for ₹9.00 lakh for 2009-10 towards township metering system. The petitioner vide its affidavit dated 3.2.2011 has submitted that these meters have been installed for the first time and the cost of such energy meters was not part of the O&M expenses during the period 2004-08. Moreover, the provisions of the Electricity Act, 2003 mandate the supply of electricity with meters. In view of this, the expenditure of ₹9.00 lakh is allowed under Regulation 9(2)(ii) of the 2009 regulations.

41. The petitioner has proposed expenditure of ₹42.00 lakh for 2009-10 towards the procurement of 20T EOT Crane under Regulation 9(2)(ii). The petitioner has submitted that the expenditure is necessary to reduce the downtime during maintenance & also to ensure higher 85% availability of machine. It is observed that the generating station was able to achieve 88% availability during 2009-10 with the present lifting equipments. Since, Regulation 9(2)(ii) of the 2009 regulations do not allow capitalization of such items, the expenditure is not allowed to be capitalized.

42. Based on the above, the projected additional capital expenditure allowed for 2009-14 (excluding contingency, IDC etc.) is as stated overleaf:

(₹ in lakh)

		Actual/Projected Capital expenditure					Total
		2009-10	2010-11	2011-12	2012-13	2013-14	
CEA Approved R&M package							
Gas Turbine Life Extension Package	9(2)(vi)	0.00	0.00	20591.00	11996.00	8940.00	**41527.00**
De-capitalized amount		0.00	0.00	10067.00	5865.00	3704.00	19636.00
Net additional capital expenditure		0.00	0.00	10524.00	6131.00	5236.00	**21891.00**
C&I Control Systems for Gas Turbine	9(2)(vi)	0.00	0.00	354.00	178.00	176.00	**708.00**
De-Capitalized amount		0.00	0.00	474.00	238.00	236.00	948.00
Net additional capital expenditure		0.00	0.00	(-) 120.00	(-) 60.00	(-) 60.00	(-) 240.00
C&I Control Systems for Steam Turbines	9(2)(vi)	0.00	0.00	1339.00	0.00	1339.00	2678.00
De-Capitalized amount		0.00	0.00	1088.00	0.00	1088.00	2176.00
Net additional capital expenditure		0.00	0.00	251.00	0.00	251.00	502.00
Sub-Total on CEA approved R&M		0.00	0.00	10655.00	6071.00	5427.00	22153.00
Other capital works							
Procurement of CCTV	9(2)(ii)	0.00	47.00	7.00	0.00	0.00	54.00
Township Metering System	9(2)(ii)	9.00	0.00	0.00	0.00	0.00	9.00
Sub-Total on Other capital works		9.00	47.00	7.00	0	0	63.00
Total Add-Cap prior to de-capitalization		9.00	47.00	22291.90	12172.88	10455.52	44976.30
De-Capitalized amount		0.00	0.00	11629.42	6102.62	5027.96	22760.00
Net Additional Capital expenditure allowed		**9.00**	**47.00**	**10662.48**	**6070.27**	**5427.56**	**22216.30**

43. To summarize, out of the petitioner's claim of ₹51709.30 lakh towards expenditure on CEA approved R&M schemes for gas turbine and life extension and other control works etc, the following additional capital expenditure is allowed:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Additional capital expenditure allowed	9.00	47.00	22291.90	12172.88	10455.52
Less: De-capitalization to be allowed	0.00	0.00	11629.42	6102.62	5027.96
Projected Additional capital expenditure allowed (excluding IDC, FC & contingencies)	**9.00**	**47.00**	**10662.48**	**6070.27**	**5427.56**

44. As regards the petitioner's claim for ₹8138.70 lakh towards IDC, FC and contingencies, the same is allowed in proportion to the additional capital expenditure allowed. The revised additional capital expenditure allowed for the purpose of tariff is as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Projected Additional capital expenditure allowed (excluding IDC, FC & contingencies)	9.00	47.00	10662.48	6070.27	5427.56
Add: IDC, FC & contingencies	0.00	0.00	3516.38	1921.11	1649.48
Additional capital expenditure allowed	**9.00**	**47.00**	**14178.86**	**7991.37**	**7077.04**
Add: Liabilities Discharged	92.30	0.00	0.00	0.00	0.00
Net Additional capital expenditure allowed	**101.30**	**47.00**	**14178.86**	**7991.37**	**7077.04**

Capital Cost for 2009-14

45. Accordingly, the capital cost considered for the purpose of tariff for 2009-14 is as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Capital cost	153691.71	153793.01	153840.01	168018.86	176010.24
Projected Additional capital expenditure allowed	101.30	47.00	14178.86	7991.37	7077.04
Closing Capital cost	**153793.01**	**153840.01**	**168018.86**	**176010.24**	**183087.28**
Average Capital cost	**153742.36**	**153816.51**	**160929.44**	**172014.55**	**179548.76**

46. The capital cost allowed above is subject to truing-up in terms of the provisions contained in Regulation 6 of the 2009 regulations

Debt- Equity Ratio

47. Regulation 12 of the 2009 regulations provides 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 utilized 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 modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation."

48. The gross loan and equity amounting to Rs.76827.03 lakh and Rs.76966.00 lakh, respectively approved as on 31.3.2009, vide order dated 17.10.2011 in Petition No.160/2009, has been considered as gross loan and equity as on 1.4.2009. However, un-discharged liabilities of ₹101.32 lakh deducted from the capital cost as on 1.4.2004 has been adjusted to debt and equity in the ratio of 50:50 for liabilities pertaining to the period prior to 1.4.2004 and in the ratio of 70:30 for liabilities pertaining to the period 2004-09. As such, the gross normative loan and equity as on 1.4.2009 is revised to ₹76757.72 lakh and ₹76933.99 lakh, respectively. Further, the projected additional expenditure admitted as above has been allocated in the debt-equity ratio of 70:30. The same is subject to truing-up in terms of the provisions of Regulation 6 of the 2009 regulations.

Return on Equity

49. Regulation 15 of the 2009 regulations provides 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 Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be.

(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.

(5) The generating company or the transmission licensee, as the case may be, shall recover the shortfall or refund the excess Annual Fixed Charge on account of Return on Equity due to change in applicable Minimum Alternate/Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission:

Provided further that Annual Fixed Charge with respect to the 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 in accordance with Regulation 6 of these regulations."

50. Return on equity has been worked out @23.481% per annum on the normative equity after accounting for the admitted additional capital expenditure.

(₹in lakh)

	2004-05	2005-06	2006-07	2007-08	2008-09
Notional Equity- Opening	76933.99	76964.38	76978.48	81232.14	83629.55
Addition of Equity due to Additional capital expenditure	30.39	14.10	4253.66	2397.41	2123.11
Normative Equity-Closing	76964.38	76978.48	81232.14	83629.55	85752.66
Average Normative Equity	76949.18	76971.43	79105.31	82430.84	84691.10
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Tax Rate for the year 2008-09	33.990%	33.990%	33.990%	33.990%	33.990%
Rate of Return on Equity (Pre Tax)	23.481%	23.481%	23.481%	23.481%	23.481%
Return on Equity (Pre Tax)- (***annualised)***	**18068.44**	**18073.66**	**18574.72**	**19355.59**	**19886.32**

Interest on loan

51. Regulation 16 of the 2009 regulations provides as under*:*

'(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."

52. Interest on loan has been worked out as mentioned below:

(a) The gross normative loan of ₹76757.52 lakh as on 1.4.2009 has been considered.

(b) Cumulative repayment as on 31.3.2009 works out to ₹76827.03 lakh as per order dated 14.7.2011 in Petition Nos.44/2009. The same has been considered as cumulative repayment as on 1.4.2009. However, after taking in to account the proportionate adjustment to the cumulative repayment on account of un-discharged liabilities deducted from the capital cost as on 1.4.2009, the cumulative repayment as on 1.4.2009 is revised as ₹76757.72 lakh.

(c) Accordingly, the net normative opening loan as on 1.4.2009 works out to "nil".

(d) Addition to normative loan to the tune of 70% of the admitted additional capital expenditure above has been considered on year to year basis.

(e) Depreciation allowed subject to availability of loan, has been considered as repayment of normative loan during the respective year of the tariff period 2009-14. Further, proportionate adjustment has been made to the repayments on account of de-capitalisation considered in the projected additional expenditure approved and the discharges/reversal of liabilities out of the un-discharged liabilities deducted from the capital cost as on 1.4.2009.

(f) The petitioner has shown that there are no actual loans outstanding as on 1.4.2009 and as such considered weighted average rate of interest in line with the first proviso to Regulation 16(5) of the 2009 regulations, This weighted average rate of interest as claimed is based on originally contracted Government of India (GOI) loans. However, these GOI loans were refinanced with Bonds earlier. As such, these Bonds represent the actual loan portfolio as existing as on 1.4.2009. Accordingly, in line with the first proviso to Regulation 16(5) of the 2009 regulations, the weighted average rate of interest has been calculated considering the actual loan portfolio comprising of Bonds XIII existing as on 1.4.2009.

(g) The weighted average rate of interest has been calculated applying the actual loan portfolio existing as on 1.4.2009, for the generating station and is enclosed as Annexure –I to this order.

53. The calculations for Interest on loan are as under:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Gross opening loan	76757.72	76828.63	76861.53	86786.73	92380.69
Cumulative repayment of loan upto previous year	76757.72	76828.63	76854.15	69208.45	67049.06
Net Loan Opening	0.00	0.00	7.38	17578.28	25331.63
Addition due to additional capitalisation	70.91	32.90	9925.20	5593.96	4953.93
Repayment of loan during the year	1.60	25.52	494.90	2112.44	3166.98
Less: Repayment adjustment on account of de-capitalisation	0.00	0.00	8140.60	4271.83	3519.57
Add: Repayment adjustment on discharges /reversals corresponding to un-discharged liabilities deducted as on 1.4.2009	69.31	0.00	0.00	0.00	0.00
Net Repayment	70.91	25.52	(-) 7645.69	(-) 2159.39	(-) 352.59
Net Loan Closing	0.00	7.38	17578.28	25331.63	30638.14
Average Loan	0.00	3.69	8792.83	21454.95	27984.89
Weighted Average Rate of Interest on Loan	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
Interest on Loan	**0.00**	**0.35**	**842.35**	**2055.38**	**2680.95**

Depreciation

54. Regulation 17 of the 2009 regulations provides as under*:*

> *"(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 longterm 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 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."*

Balance useful life of the generating station as on 1.4.2009 after R&M for the purpose of Depreciation

55. The details of the date of commercial operation of the different units of the generating station, the period of operation up to 1.4.2009 and 1.4.2012 (completion of major R&M works) and the extended life after R&M of gas turbine and their weighted average period of operation on above dates and weighted average life are as under:

Description	Capacity MW	COD	Elapsed life up to 1.4.2009	Elapsed life as on 1.4.2012	Useful life after extension of life by 15 years for GTs
GT-I A	106	1.6.1992	16.83	20.83	35.83
GT-IB	106	1.8.1992	16.67	20.67	35.67
GT-2A	106	1.9.1992	16.58	20.58	35.58
GT-2B	106	1.11.1992	16.42	20.42	35.42
ST-I C	116.1	1.11.1993	15.42	19.42	25.00
ST-2C	116.1	1.9.1993	15.58	19.58	25.00
Total	**656.20**		**16.23**	**20.23**	**31.87**

56. The weighted average of the elapsed life (period of operation) of the generating station, as on 1.4.2009 works out to 16.23 years. The major expenditure on R&M of the GTs are allowed for enhancing the life of the generating station by 1,00,000 Equivalent Operating Hours (EOH) which translates into 15 years, considering the low PLF of the generating station. The major part of R&M works would be completed by 31.3.2012. The weighted average of the period of operation of the generating station as on 1.4.2013 works out to 20.23 years. Considering the life extension of GTs by more than 15 years from 1.4.2013, the weighted average life of the generating station after R&M of GTs works out to 31.87 years in relation to the date of commercial operation of the respective units of the generating station, as stated above. Accordingly, the balance useful life of the generating station works out to15.64 years as on 1.4.2009 and 11.64 years as on 1.4.2013**.**

57. The Cumulative depreciation as on 31.3.2009 as per order dated 17.10.2011 in Petition No. 160/2009 is ₹137373.02 lakh. Further, proportionate adjustment has been made to the cumulative depreciation on account of un-discharged liabilities deducted as on 1.4.2009. Accordingly, the revised cumulative depreciation as on 1.4.2009 works out to ₹137282.52 lakh. The value of freehold land as considered in said order as on 31.3.2009 is ₹734.63 lakh and the same has been considered for the purpose of calculating depreciable value. Accordingly, the balance depreciable value (before providing depreciation) for the year 2009-10 works out to ₹424.44 lakh.

58. As stated above, the elapsed life of the generating station as on 1.4.2009 is 16.23 years and the balance useful life of generating station as on 1.4.2009 is 15.64 years, after taking into account the major R&M expenditure incurred by the petitioner. Since, the elapsed life of the generating station of 16.23 years is more than the ceiling limit of

12 years (for normal depreciation) as on 1.4.2009, the balance depreciable value for each year has been spread over the remaining useful life for the purpose of calculating depreciation for the respective years. Further, proportionate adjustment has been made to the cumulative depreciation on account of de-capitalization of assets considered for the purpose of tariff as well as discharges/reversal of liabilities out of un-discharged liabilities deducted from capital cost as on 1.4.2009. The necessary calculations in support of depreciation are as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Opening capital cost	153691.71	153793.01	153840.01	168018.86	176010.24
Closing capital cost	153793.01	153840.01	168018.86	176010.24	183087.28
Average capital cost	153742.36	153816.51	160929.44	172014.55	179548.76
Depreciable value @ 90%	137706.96	137773.69	144175.33	154151.93	160932.71
Remaining useful life at the beginning of the year	15.64	14.64	13.64	12.64	11.64
Balance depreciable value	424.44	373.53	6749.65	26697.83	36858.53
Depreciation (annualized)	27.14	25.52	494.90	2112.44	3166.98
Cumulative depreciation at the end	137309.66	137425.68	137920.58	129566.54	127241.17
Less: Cumulative depreciation reduction due to de-capitalization	0.00	0.00	10466.48	5492.36	4525.16
Less: Cumulative depreciation reduction on account of discharges out of un-discharged liabilities deducted as on 1.4.2009	(-) 90.50	0.00	0.00	0.00	0.00
Net Cumulative depreciation (at the end of the period)	**137400.16**	**137425.68**	**127454.10**	**124074.18**	**122716.00**

59. In addition to the normal depreciation calculated by the petitioner for the period 2009-14, the petitioner has claimed additional depreciation amounting to ₹4322.00 lakh during the year 20012-13, based on judgment of the Tribunal dated 13.6.2007 in Appeal Nos.139, 140 etc. of 2006 corresponding to the unrecovered depreciation due to adjustment / under recovery of fixed charges from 1992-93 till 2000-01. The relevant extract of the judgment of the Tribunal is as under:

" In a regulatory cost plus regime all costs have to be reimbursed. Depreciation amount up to 90% being a cost has to be allowed over the life of the plant. If due to underperformance in a particular year the appellant is not able to recover full depreciation allowed in that year and if this denial is forever, it will tantamount to a penalty. In a contract between the appellant and the beneficiaries,

only levy of liquidated damages can be permitted. It will, therefore, be enough deterrent for the appellant if the depreciation is not allowed during the year of underperformance. However, the same cannot be denied forever and, therefore, it will be only fair to allow the unpaid portion of the depreciation after the plant has lived its designated useful life. In this view of the matter the CERC needs to examine this aspect as per the aforesaid."

60. As per order dated 17.10.2011 in Petition No. 160/2009 the balance useful life of the generating station works out to 3.39 years as on 1.4.2009. Accordingly, the useful life of the generating station would expire during 2012-13. However, in terms of the 2009 regulations, the designated useful life of the combine cycle power generating stations is 25 years. As stated earlier, the elapsed life of the generating station is 16.23 years as on 1.4.2009. However, the balance useful life useful life of the generating station got extended to 8.77 years as per the 2009 regulations, prior to the extension of useful life of the generating station due to R&M expenditure. As such, based on the above direction of the Tribunal, the unrecovered depreciation of Rs.4322.00 lakh claimed by the petitioner during 2012-13 is not allowed now, since the generating station has not completed its useful life. However, the same would be considered during the next tariff period after expiry of 8.77 years from 1.4.2009.

O & M Expenses

61. Clause (c) of Regulation 19 of Regulation of the 2009 regulations provide the following O&M expense norms for Open Cycle Gas Turbine / Combined Cycle generating stations as under:

(₹ in lakh/MW)

	2009-10	2010-11	2011-12	2012-13	2013-14
O&M expenses for 500 MW units	**14.80**	**15.65**	**16.54**	**17.49**	**18.49**

62. The petitioner has claimed the following O&M expenses during 2009-14:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
O&M expenses	9711.76	10269.53	10853.55	11476.94	12133.14

63. Based on above norms, the operation & maintenance expenses claimed by the petitioner have been allowed**.**

Target Availability

64. The Target Availability of the generating station is considered as 85% for the period 1.4.2009 to 31.3.2014.

Interest on Working Capital

65. Regulation 18(1)(a) of the 2009 regulations provides that the working capital for Open-cycle Gas Turbine/Combined Cycle thermal generating stations shall cover:

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

66. Clause (3) of Regulation 18 of the 2009 regulations, as amended on 21.6.2011, provides as under:

> *"Rate of interest on working capital shall be on normative basis and shall be considered as follows:*
>
> *(i) SBI short-term Prime Lending Rate as on 01.04.2009 or on 1st April of the year in which the generating station or unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the unit or station whose date of commercial operation falls on or before 30.06.2010.*
>
> *(ii) SBI Base Rate plus 350 basis points as on 01.07.2010 or as on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the units or station whose date of commercial operation lies between the period 01.07.2010 to 31.03.2014.*
>
> *Provided that in cases where tariff has already been determined on the date of issue of this notification, the above provisions shall be given effect to at the time of truing up.*

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

Fuel Cost and Energy charges

68. The petitioner has claimed the cost for fuel component in working capital in the Petition based on price and GCV of APM, RLNG gas and Naphtha liquid for preceding three months from January, 2009 to March, 2009. The percentage of scheduled generation achieved by the generating station through the mode of operation by APM, RLNG gas and Naphtha liquid during 2008-09 was 27.72%, 41.83% and 30.45% respectively. The same has been used to arrive at the Fuel component (for one month), liquid fuel cost for ½ month and the Energy Charges (for two months) for the purpose of working capital as under:

(₹ in lakh)

	2009-10	2010-11	2011-12 (leap year)	2012-13	2013-14
Fuel Cost for one month	15419.58	15419.58	15461.83	15419.58	15419.58
Liquid fuel cost for ½ month	3390.40	3390.40	3399.69	3390.40	3390.40
Energy charges for 2 months	30839.16	30839.16	30923.65	30839.16	30839.16

69. The claim of the petitioner as above, for the cost of fuel is found to be in order and has been considered for the purpose of tariff.

Maintenance Spares

70**.** The petitioner has claimed the following maintenance spares in the working capital.

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Cost of maintenance spares	2914	3081	3256	3443	3640

71. The 2009 regulations provide for maintenance spares @ 30% of the operation and maintenance expenses as specified in Regulation 19. Accordingly, the maintenance spares for the purpose of tariff is worked out as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Cost of maintenance spares	2913.53	3080.86	3256.06	3443.08	3639.94

Receivables

72. Receivables have been worked out on the basis of two months of fixed and energy charges (based on primary fuel only) as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Variable Charges -2 months	30839.16	30839.16	30923.65	30839.16	30839.16
Fixed Charges - 2 months	5843.54	5943.57	6358.80	7081.46	7574.51
Total	**36682.70**	**36782.73**	**37282.46**	**37920.63**	**38413.67**

O&M Expenses

73. O&M expense for 1 month for the purpose of working capital is allowed as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
O & M for 1 month	809.31	855.79	904.46	956.41	1011.09

74. SBI PLR of 12.25% has been considered in the computation of the interest on working capital. Necessary computations in support of calculation of interest on working capital are as under as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Fuel Stock (APM, RLNG & Naptha) – 1month	15419.58	15419.58	15461.83	15419.58	15419.58
Liquid fuel stock – 1/2 month	3390.40	3390.40	3399.69	3390.40	3390.40
Maintenance Spares	2913.53	3080.86	3256.06	3443.08	3639.94
O&M expenses – 1 month	809.31	855.79	904.46	956.41	1011.09
Receivables – 2 months	36682.70	36782.73	37282.46	37920.63	38413.67
Total working capital	**59215.53**	**59529.37**	**60304.50**	**61130.10**	**61874.69**
Rate of interest	12.2500%	12.2500%	12.2500%	12.2500%	12.2500%
Interest on working capital	**7253.90**	**7292.35**	**7387.30**	**7488.44**	**7579.65**

Annual Fixed charges for 2009-14

75. The annual fixed charges for the period 2009-14 in respect of the generating station are summarized as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	27.14	25.52	494.90	2112.44	3166.98
Interest on Loan	0.00	0.35	842.35	2055.38	2680.95
Return on Equity	18068.44	18073.66	18574.72	19355.59	19886.32
Interest on Working Capital	7253.90	7292.35	7387.30	7488.44	7579.65
O&M Expenses	9711.76	10269.53	10853.55	11476.94	12133.14
Total	**35061.24**	**35661.41**	**38152.82**	**42488.79**	**45447.04**

Note: *(i) All figures are on annualized basis.(ii) All the figures under each head have been rounded. (ii) The figure in total column in each year is also rounded. Because of rounding of each figure the total may not be arithmetic sum of individual items in columns.*

76. The recovery of the annual fixed charges shall be subject to truing up, in terms of Regulation 6 of the 2009 regulations.

Energy Charge Rate (ECR)

77. Sub-clause (b) of clause (6) of Regulation 21 of the 2009 regulations provides as under:

"Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

ECR = GHR x LPPF x 100 / {CVPF X (100-AUX)}

Where,

AUX = Normative auxiliary energy consumption in percentage.

CVPF = Gross calorific value of primary fuel as fired, in kCal per kg, per litre or per standard cubic metre, as applicable.

ECR = Energy charge rate, in Rupees per kWh sent out.

GHR = Gross station heat rate, in kCal per kWh.

LPPF = Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.

78. The Energy Charge Rate has been computed on the operational norms as under:

Description	**Unit**	**2009-10 to 2013-14 (except 2011-12)**	**2011-12 (leap year)**
Capacity	MW	1000	1000
Operational hours at corresponding PLF	85.00%	7446.00	7466.40
Gross Station Heat Rate	Kcal/kWh	2425.00	2425.00
Specific Fuel oil consumption	ml/kWh	1.00	1.00
Auxiliary Energy Consumption	%	6.50	6.50
Weighted average GCV of oil	Kcal/l	9980.00	9980.00
Weighted average GCV of coal	Kcal/kg	3493.743	3493.743
Weighted average price of oil	Rs/Kl	19002.47	19002.47
Weighted average price of coal	Rs/MT	883.19	883.19
Heat contributed from HFO	Kcal/kWh	9.98	9.98
Heat contributed from Coal	Kcal/kWh	2415.02	2415.02
Specific oil consumption	Kg/kWh	0.69	0.69
Rate of energy charge from coal	Paise/kWh	61.05	61.05
Rate of energy charge ex-bus	Paise/kWh	**65.294**	**65.294**

79. The petitioner has claimed an energy charge rate (ECR) of 390.41 paisa/kWh, based on the weighted average price, GCV of fuel procured and burnt for the preceding three months of January, 2009 to March, 2009 as per the 2009 regulations. The Energy Charge Rate (ECR) of 390.412 paisa/kWh, as calculated by the petitioner is in order and has been allowed for the purpose of tariff**.** The relevant calculations are as under:

Description	**Unit**	**2009-14**		
Capacity	MW	656.2		
Gas		**APM**	**RLNG**	**NAPHTHA**
Normative Heat Rate	Kcal/kWh	2075	2075	2075
Aux. Energy Consumption	%	3	3	3
Weighted average rate of fuel	Rs/1000 SCM	5106.13	19977.63	29816.04
Weighted average GCV of fuel	Kcal/SCM	9975.44	9489.79	11312.33
Rate of energy charge ex-bus	Paise/kWh	109.50	450.33	563.82
Mode of Operation on Fuel during 2008-09 (% of schedule generation)	%	27.72	41.83	30.45
ESO in one month @ 85% PLF	MUs	109.48	165.21	120.27
Weighted average cost of fuel in 2008-09 (Ex-Bus)	Paise/kWh	**390.412**		

80. The petitioner has also prayed for the following reliefs, which are disposed of as under:

(a) **Recovery of RLDC Fees and Charges**: The claim of the petitioner towards recovery of RLDC fees & charges incurred by the petitioner pursuant to the notification of the Central Electricity Regulatory Commission (Fees and Charges of Regional Load Despatch Centre and other related matters) Regulations, 2009, has not been considered at this stage and the same would be dealt with separately in accordance with law.

(b) **Expenditure incurred for implementation of scheme for provision of supply of electricity in 5 km area around Central Power plants**: The petitioner has submitted by affidavit dated 21.9.2010 that in terms of the notification dated 27.4.2010 of the Government of India for a scheme for provision of supply of electricity in 5 km area around Central Power plants, the petitioner is required to create infrastructure for supply of reliable power to the rural households of the villages within a radius of 5 km of existing and new power stations and as per the scheme, the Appropriate Commission shall consider the expenditure incurred for implementation of such scheme for the purpose of determining tariff of the generating station. The petitioner has submitted that DPR for implementation of the scheme is under preparation and it was not possible to estimate the projected expenditure at this stage. The petitioner has further submitted that it would approach the Commission for consideration of the cost incurred in implementation of this scheme for tariff purpose thereafter. The petitioner is at liberty to approach the Commission through an appropriate application, which would be considered in accordance with law.

(c) **Recovery of additional cost due to increase in water charges over and above the O&M expenses**: The petitioner has submitted that there has been manifold increase in the water charges levied by the State Governments /State Government agencies and the O&M expense norms for 2009-14 notified by the Commission cannot cover any abnormal/unnatural increase in any cost component which is beyond the control of the utility. The petitioner has further submitted that the additional cost incurred in respect of the increase in water charges over and above the O&M expenses be permitted to be billed and recovered additionally from the beneficiaries. We notice that the petitioner has filed Petition No.121/2011 claiming the same relief and the matter has been heard on 13.10.2011. Accordingly, the relief prayed for in this petition would be governed by the final decision to be taken by the Commission in Petition No. 121/2011.

Application fee and the publication expenses

81. The petitioner has sought approval for the reimbursement of fees amounting to ₹13,12,400/- each for the years 2009-10, 2010-11 and 2011-12 towards filing the petition and for the expenses incurred for publication of notices in connection with the petition. The petitioner by its affidavit dated 19.4.2010 has submitted that an expenditure of ₹4,28,276/- has been incurred by it for publication of notice in the newspapers.

82. 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."*

83. In terms of our decision contained in order dated 11.1.2010 in Petition No.109/2009, the expenses towards filing of tariff application and the expenses incurred on publication of notices are to be reimbursed. Accordingly, the expenses incurred by the petitioner for petition filing fees for the years 2009-10, 2010-11 and 2011-12 for publication of notices in connection with the present petition shall be

directly recovered from the beneficiaries, on *pro rata* basis. The filing fees in respect of the balance years of the tariff period would be recoverable as and when paid by the petitioner in terms of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2008 and /or its amendments thereof.

84. In addition to the above, the petitioner is entitled to recover other taxes etc levied by statutory authorities in accordance with the 2009 regulations, as applicable.

85. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's order dated 6.7.2011. The provisional billing of tariff shall be adjusted in the light of our order dated 26.8.2011 in Petition No. 175/2011(*suo motu*)

86. This order disposes of Petition No.285/2009.

Sd/-	*Sd/-*	*Sd/-*	*Sd/-*
[M.DEENA DAYALAN]	**[V.S.VERMA]**	**[S.JAYARAMAN]**	**[DR.PRAMOD DEO]**
MEMBER	**MEMBER**	**MEMBER**	**CHAIRPERSON**

Annexure-I

Calculation of weighted average rate of interest on loan

Sl. no.	Name of loan	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
1	GOI loan-II(Refinanced by Bonds XIII series)	Net opening loan	13.50	12.00	10.50	9.00	7.50
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	1.50	1.50	1.50	1.50	1.50
		Net Closing Loan	**12.00**	**10.50**	**9.00**	**7.50**	**6.00**
		Average Loan	12.75	11.25	9.75	8.25	6.75
		Rate of Interest	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
		Interest	1.22	1.08	0.93	0.79	0.65
2	**Gross Total**	Net opening loan	13.50	12.00	10.50	9.00	7.50
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	1.50	1.50	1.50	1.50	1.50
		Net Closing Loan	**12.00**	**10.50**	**9.00**	**7.50**	**6.00**
		Average Loan	12.75	11.25	9.75	8.25	6.75
		Rate of Interest	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
		Interest	**1.22**	**1.08**	**0.93**	**0.79**	**0.65**