CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 239/2009

Coram: **Dr. Pramod Deo, Chairperson**
Shri S. Jayaraman, Member
Shri V.S. Verma, Member
Shri M.Deena Dayalan, Member

Date of Hearing: 13.9.2011 **Date of Order: 20.4.2012**

In the matter of

Approval of tariff of Anta Gas Power Station (419.33 MW) for the period from 1.4.2009 to 31.3.2014

And

In the matter of

NTPC Ltd **……Petitioner**

Vs.

1. Uttar Pradesh Power Corporation Ltd., Lucknow
2. Jaipur Vidyut Vitran Nigam Ltd., Jaipur
3. Ajmer Vidyut Vitran Nigam Ltd., Ajmer
4. Jodhpur Vidyut Vitran Nigam Ltd., Jodhpur
5. North Delhi Power Ltd., Delhi
6. BSES Rajdhani Power Ltd., New Delhi
7. BSES Yamuna Power Ltd., Delhi
8. Haryana Power Purchase Centre, Haryana
9. Punjab State Electricity Board, Patiala
10. Himachal Pradesh State Electricity Board, Shimla
11. Power Development Department (J&K), Jammu
12. Power Department, Union Territory of Chandigarh, Chandigarh
13. Uttrakhand Power Corporation Ltd., Dehradun **……Respondents**

Parties present:

1. Shri V.K. Padha, NTPC
2. Shri D. Kar, NTPC
3. Shri A.R. Mohanty, NTPC
4. Shri A Basu Roy, NTPC
5. Shri K.P. Satpathy, NTPC
6. Smt. Alka Saigal, NTPC
7. Shri Ajay Dua, NTPC
8. Shri Manish Garg, UPPCL
9. Shri Dushyant Manocha, Advocate, BYPL
10. Shri Hari Das Maity, BYPL
11. Shri Anurag Sharma, BYPL

12. Shri Sunil Kakkar, BYPL
13. Shri Abhishek Srivastava, BYPL
14. Shri V.P.Singh, BYPL
15. Shri Padamjit Singh, PSPCL
16. Shri T.P.S. Bawa, PSPCL

ORDER

This petition has been filed by the petitioner, NTPC, for approval of tariff of Anta Gas Power Station (419.33 MW) (hereinafter referred to as "the generating station") for the period 2009-14 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "the 2009 Tariff Regulations").

2. The generating station with a capacity of 419.33 MW comprises of three Gas Turbine units of 88.71 MW each and one Steam Turbine unit of 153.20 MW. The dates of commercial operation of different units of the generating station are as under:

	Date of commercial operation (COD)
Unit-I (GT)	1.4.1989
Unit-II (GT)	1.5.1989
Unit-III (GT)	1.7.1989
Unit-IV (ST)/ Generating Station	1.8.1990

3. The tariff of the generating station for the period from 1.4.2004 to 31.3.2009 was approved by the Commission *vide* its order dated 9.5.2006 in Petition No.160/2004. Subsequently, *vide* Commission's order dated 18.12.2009 in Petition No. 32/2009, the annual fixed charges for the period 2004-09 were revised considering the additional capital expenditure incurred for the years 2004-05, 2005-06, 2006-07 and 2007-08. Subsequently, the Commission *vide* its order dated 21.1.2011 in Petition No. 127/2009 with I.A.No.40/2009 revised the tariff of the generating station for 2004-09 considering the impact of additional capital expenditure incurred during the year 2008-09 based on the capital cost of ₹71558.65 lakh as on 31.3.2009. Thereafter, the Commission *vide* its order dated 12.10.2011 revised

the tariff of the generating for the period 2004-09 in the light of the judgment of the Appellate Tribunal for Electricity dated 13.6.2007 in Appeal Nos.139 to 142 etc., of 2006 and Appeal Nos. 10, 11 and 23 of 2007 and the judgment dated 16.3.2009 in Appeal Nos. 133, 135, 136 and 148/2008, considering the capital cost of ₹71657.93 lakh as on 31.3.2009. The revised annual fixed charges determined by order dated 12.10.2011 was as under:

(₹in lakh)

	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**
Interest on loan	374.04	303.07	306.05	210.57	537.96
Interest on Working Capital	1382.82	1379.62	1378.71	1408.50	1475.39
Depreciation	2270.72	1612.22	840.91	1746.08	2970.98
Advance Against Depreciation	0.00	0.00	0.00	0.00	0.00
Return on Equity	3234.87	3239.49	3277.77	3340.32	3833.86
O & M Expenses	3270.77	3400.77	3539.15	3677.52	3824.29
Total	**10533.22**	**9935.17**	**9342.59**	**10382.99**	**12642.48**

4. In terms of the directions contained in the order of the Commission dated 29.6.2010 in Petition No. 245/2009, the petitioner has filed amended petition *vide* affidavit dated 21.3.2011 taking into consideration the revised figures as per order of the Commission dated 12.10.2011 in Petition No. 127/2009 .The revised annual fixed charges claimed by the petitioner for the period 2009-14 is as under:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Depreciation	2197	2816	2918	2961	2961
Interest on Loan	547	417	384	344	299
Return on Equity	7588	8009	8088	8118	8118
Interest on Working Capital	2442	2486	2520	2543	2571
O&M Expenses	6206	6563	6936	7334	7753
Total	**18980**	**20290**	**20845**	**21300**	**21703**

5. Reply to the petition has been filed by the respondents, namely, UPPCL (respondent No. 1), JVVNL (respondent No.2), AVVNL (respondent No.3), JoVVNL (respondent No.4), NDPL (respondent No.5), HPPC (respondent No.8) and PSPCL (respondent No.9). Rejoinder to the said replies has been filed by the petitioner.

CAPITAL COST

6. Regulation 7 (1) (a) of the 2009 Tariff 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 capital cost as on 31.3.2009 as per order dated 12.10.2011 is ₹71657.93 lakh. The annual fixed charges claimed in the petition is based on opening capital cost of ₹71658 lakh as on 1.4.2009. The petitioner *vide* its affidavit dated 16.6.2011 has revised the value of capital cost and liabilities as on 1.4.2009 in the Form-9A as per books of accounts (the original values given by affidavit dated 7.6.2010).The details of liabilities and capital cost has been reconciled with the information available 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	82853.48	82853.48	0.00
Liabilities included above	1079.26	1079.26	0.00

8. The total liabilities included in the gross block as on 1.4.2009 is ₹1079.26 lakh. Out of this, un-discharged liabilities of ₹1078.14 lakh (pertaining to period 2004-09) has been included in the approved capital cost of ₹71657.93 lakh (as on 31.3.2009) and the balance amount of ₹1.12 lakh corresponds to assets disallowed in the period 2004-09.

9. The last proviso to clause 2 of Regulation 7 of the 2009 Tariff 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.*"

10. Accordingly, in terms of the last proviso to Regulation 7 of the 2009 Tariff Regulations, the capital cost as on 1.4.2009, works out to ₹70579.79 lakh, after removal of un-discharged liabilities of ₹1078.14 lakh. Further, out of the un-discharged liabilities deducted as on 1.4.2009 the petitioner has discharged liabilities amounting to ₹572.03 lakh during 2009-10 (liabilities corresponding to assets capitalized during the period 2004-09) and ₹396.02 lakh (pertaining to liabilities corresponding to assets capitalized during the period 2004-09) during 2010-11. The liabilities discharged during the years 2009-10 and 2010-11 have been allowed as part of the additional capital expenditure.

Projected /Actual Additional Capital Expenditure

11. Regulation 9 of the 2009 Tariff Regulations, as amended on 23.6.2011, provides as under:

"9. Additional Capitalization. (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;

(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;

(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-materialization of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any undischarged 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."

12. The petitioner has claimed the actual/projected additional capital expenditure for the period 2009-14 as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Additional Capital Expenditure	11079.6	1391.08	859.40	0	0	13330.08

13. The cut-off date for the generating station has expired. Hence, the petitioner's claim for additional capital expenditure has to be examined in terms of Regulation 9 (2) of the 2009 Tariff Regulations. Accordingly, we examine the admissibility of the additional capital expenditure claim by the petitioner in the subsequent paragraphs.

Submissions of the petitioner

14. 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 established;

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

15. The petitioner has also submitted the following in support of its claim in the petition and in its affidavit dated 26.3.2010:

(a) In addition to the capital expenditure covered by Regulation 9 (1) and 9 (2) and 19 (e) of the 2009 Tariff 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 for successful and efficient operation of the generating station has not been included in Regulation 9 of 2009 Tariff 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 19 (e) of the 2009 Tariff Regulations.

(b) Regulations 7(1), 8 and 9 of 2009 Tariff Regulations pertain to the capital cost of new generating station commissioned after 1.4.2009 and do not cover the existing projects commissioned prior to 1.4.2009. Moreover, the term ‘additional capital expenditure’ defined in Regulation 3 (3) refers to 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. The scope and meaning of additional capitalization is not confined to Regulation 9 but subject to Regulation 9 which would mean that if additional capitalization is 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 is not of the nature as referred to in Regulation 9, the provisions of Regulation 9 could not be applied.

(c) The last proviso to Regulation 7 is an independent provision dealing with the existing projects and additional capitalization for the existing projects is comprehensively covered by the said provision. 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 is not covered under Regulation 9 (1) and (2).

(d) 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 and 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. 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.

(e) The Commission has allowed additional capital expenditure for successful and efficient operation in case of hydro power stations and transmission systems under Regulation 9(2) (iv) and (v) of 2009 Tariff Regulations. The additional capital expenditures allowed for hydro generating station and transmission system are equally relevant in case of thermal power stations. It has been further submitted that while compensation allowance for expenditure on minor items in case of coal based station has been allowed under Regulation 19(e), no capital expenditure has been allowed to mitigate the technological obsolescence and for efficient and successful operation throughout the life of the generating station. Moreover, compensation allowance has not been allowed in case of gas based generating station during the entire life of the gas station including extended life of 25 years since it was not possible to estimate the same on normative basis. The petitioner has requested to allow capital expenditure incurred on items mentioned in Regulation 9.2(iv) and (v) in respect of hydro generating station and transmission system may be allowed for the gas based stations for successful and efficient operation of the station for 25 years.

16. We have considered the submissions of the petitioner. The following two issues arise for our consideration:

(a) Whether additional capitalization projected to be incurred after the cut-off date during period 2009-14 is admissible under Regulation 9(2) of the 2009 Tariff Regulations.

(b) Whether additional capital expenditure for successful and efficient operation of the thermal generating station including the gas power stations could be admissible under Regulation 9(2) of the 2009 Tariff Regulations.

17. As regards the first issue, it is noticed that the last proviso to Regulation 7(2) of the 2009 Tariff Regulations provides that in case of existing projects, capital cost admitted by the Commission prior to 1.4.2009 duly trued up by excluding the un-discharged liability, if any, as on 1.4.2009 and the additional capital expenditure projected to be incurred for the respective year and the tariff period 2009-14, as may be admitted by the Commission, shall form the basis of determination of tariff. Thus, as per the last proviso projected additional capital expenditure to be incurred for the respective years of the tariff period 2009-14 shall be considered by the Commission while determining the tariff in respect of the existing project. The said proviso does not make any distinction between the additional capital expenditure projected to be incurred before the cut-off date and additional capital expenditure projected to be incurred after the cut-off date. It therefore follows that in case of existing projects, additional capital expenditure projected to be incurred after the cut-off date can be considered by the Commission for determination of tariff. Regulation 9 of the 2009 Tariff Regulations provides for the additional capital expenditure to be admissible during the year 2009-14. While Clause (1) of Regulation 9 deals with the expenditure incurred before the cut-off date, Clause (2) of the said regulation deals with the expenditure incurred after the cut-off date. However, Clause (2) of Regulation 9 provides that only expenditure incurred after the cut-off date shall be admissible. It thus emerges that while the additional capital expenditure can be claimed under last proviso to Regulation 7(2) on projection basis, the same is not admissible under Regulation 9(2), since the expenditure has not been incurred. It is a settled principle of law that the provisions of the Act or Regulations should be read harmoniously keeping in view the objective of the legislation. During the period 2004-09, the additional

expenditure was being admitted after the same was incurred. However, the Commission decided to allow additional capital expenditure on projection basis during the period 2009-14. In this connection, reference is drawn to paragraphs 10.1.3 and 10.1.4 of the Statement of Reasons to the 2009 Tariff Regulations, wherein the concept of claiming additional capitalization on projection basis has been explained in the following terms:

> *"10.1.3 The Commission has carefully examined the issue again and is of the view that the generating companies/transmission licensees as well as the beneficiaries should appreciate the regulation in its proper perspective. Apart from meeting the intended objective of certainty of tariff and minimal retrospective adjustments, the procedure would have following additional advantages:*
>
> *(a) From beneficiaries' perspective, they would be aware of the intended additional capitalization in advance and be able to voice their concern before the Commission about the reasonableness and necessity of additional capitalization before the actual expenditure is made by the generating companies/transmission licensees. As regards their concern about the expected expenditure being considered in capital base without putting assets to use, the Commission would like to clarify that anticipated expenditure would be considered only after it is found justified and reasonable with the expectation that asset would be put to use. In the absence of expenditure actually made, the same would be taken out from the capital cost at the time of truing up exercise with appropriate refund/adjustment with interest. Further, if the expenditure indeed materializes, the actual retrospective adjustment is expected to be bare minimum as a result of truing up exercise.*
>
> *(b) From the prospective of the generating companies/transmission licensees, they would be assured of the expenditure to be admitted once accepted by the Commission in the capital cost before making the expenditure. Moreover, they would be more careful about the expenditure to be made as it would require to be justified before the Commission.*
>
> *10.1.4 The Commission is of the view that the approach adopted with regard to consideration of the expenditure including additional capital expenditure projected to be incurred for the purpose of determination of capital cost is a win-win situation for all. The Commission has decided to retain the said provisions with regard to capital cost including projected additional capital expenditure in Regulations 7 and 9 of these regulations."*

18. It thus emerges from the scheme of the 2009 Tariff Regulations that the additional capital expenditure projected to be incurred after the cut-off date can be admitted by the Commission after prudence check. Keeping in view the scheme of the 2009 Tariff Regulations and in order to remove the inconsistency between last proviso to Regulation 7(2)

and Regulation 9(2), we have relaxed in our order dated 13.4.2012 in Petition No. 282 of 2009 the provisions of Regulation 9(2) of the 2009 Tariff Regulations in exercise of our power under Regulation 44 to allow additional capital expenditure projected to be incurred after the cut-off date. The said decision is applicable in the present case.

19. As regards the second issue, it is noticed that as per the scheme of the 2009 Tariff Regulations, additional capital expenditure incurred or projected to be incurred prior to the cut-off date and the additional capital expenditure incurred after the cut-off date is admissible under Regulation 9(1) and 9(2) of the 2009 Tariff Regulations. We have relaxed the provisions of the Regulation 9(2) to allow the expenditure on projected basis to be incurred after the cut-off date. Regulation 9(2) provides for the different provisions for admissibility of the additional capital expenditure. In respect of the hydro generating stations, Regulation 9(iv) provides for expenditure which has become necessary for successful and efficient operation of the hydro generating stations and similar provisions have been made under Regulation 9(v) in respect of the transmission systems. In case of the thermal generating stations, Regulation 19(e) provides for compensation allowance. Regulation 19(e) of 2009 Tariff Regulations is extracted as under:-

> *"(e) In case of coal-based or lignite-fired thermal generating station a separate compensation allowance unit-wise shall be admissible to meet expenses on new assets of capital nature including in the nature of minor assets, in the following manner from the year following the year of completion of 10, 15, or 20 years of useful life*:

Years of operation	**Compensation Allowance *(Rs lakh/MW/year)***
0-10	Nil
11-15	0.15
16-20	0.35
21-25	0.65"

20. It is evident from the provisions of Regulation 19(e) that the expenditure in case of coal based or lignite fired thermal generating stations is admissible to meet the expenses on

new assets of capital nature including in the nature of minor assets. Correspondingly, no provision has been made to admit additional capital expenditure of capital nature for successful operation of the thermal generating station under Regulation 9(2) of the 2009 Tariff Regulations. On the other hand, clear provisions have been made for admitting the expenditure for efficient and successful operation of the hydro generating stations and transmission systems under certain conditions. The provisions of the Regulation 9(2) are clear and unambiguous in that the expenditure for successful and efficient operation of the thermal generating stations have not been provided since a normative compensation allowance has been provided under Regulation 19(e) of 2009 Tariff Regulations to meet the expenses on new assets of capital nature. In our view, last proviso to Regulation 7(2) cannot be considered as independent of Regulation 9 of 2009 Tariff Regulations. The "additional expenditure projected to be incurred for the respective year of the tariff period 2009-14 as may be admitted by the Commission" occurring in last proviso to Regulation 7(2) have to be considered and allowed in terms of provisions of Regulation 9(2) of 2009 Tariff Regulations. The Commission after taking into account the requirements of the gas based generating stations and coal based thermal generating stations has made specific provisions under Regulation 9(2)(vi) and (viii) through second amendment to the 2009 Tariff 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-materialization of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station."

Thus the Commission has consciously provided for the expenditure of specific nature under Regulation 9(2)(vi) and (vii) which are considered necessary for the successful and efficient operation of the coal based thermal generating station and gas based stations. In other words, additional capital expenditure for successful and efficient operation of the generating stations for reasons other than those provided for under Regulation 9(2) of 2009 Tariff Regulations is not permissible.

21. In case of the instant generating station, since the additional expenditure required for R&M of Gas Turbine as per the scheme approved by the CEA is covered under Regulation 9(2)(vi) of the 2009 Tariff Regulations, the same has been accordingly considered in the succeeding paragraphs.

22. The respondent Nos. 1 and 5, namely UPPCL and NDPL, have submitted that since the petitioner has not submitted details for expenditure on R&M for life extension for approval of the Commission as per Regulation 10 (1) of the 2009 Tariff Regulations, the prayer of the petitioner should not be allowed. The petitioner while objecting to the above submissions has stated that additional capitalization does not pertain to Regulation 10(1) and that the Commission had already admitted similar works for GT-I and GT-3 and the said works are an extension of similar works for GT-2. It has also submitted that capitalization of such works is permissible under the 2009 Tariff Regulations.

23. We have heard the parties and taken into consideration the submissions of the parties and the documents available on record.

24. The petitioner in its amended petition has claimed capital expenditure of ₹11354.50 lakh towards Renovation & Modernization (R&M) of GT-2 along with expenditure for R&M activities on other assets. The Commission *vide* its order dated 3.5.2011 directed the

petitioner to furnish the cost-element wise break-up of expenditure of ₹11354.56 lakh during 2009-10 and ₹377.49 lakh during 2010-11 on R&M of GT-2, the petitioner *vide* its affidavit dated 8.6.2011 has stated that the actual expenditure for 2009-10 is ₹118.68 crore as against the expenditure of ₹113.54 crore indicated in the amended petition. Further, it has been submitted that expenditure of ₹114.29 crore is towards R&M of GT-2 and the balance amount of ₹4.38 crore is towards the reconditioning of vanes of GT-1. Also, an expenditure of ₹3.77 crore is the balance amount towards reconditioning of vanes for GT-3. Based on the submissions of the petitioner in the amended petition and the additional details furnished by the petitioner *vide* its affidavit dated 8.6.2011, the break-up of the actual/projected additional capital expenditure claimed during 2009-14 is as under:

(₹ in lakh)

Sl. No.		**Actual/Projected Capitalization**				
		2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
1	Renovation of Gas Turbines- GT-2in 2009-10	11429.27	377.49	0.00	0.00	0.00
2	Corresponding de-capitalization for (1) above	(-) 1281.19	0	0.00	0.00	0.00
3	Balance amount towards reconditioning of vanes for GT-3 (R&M allowed by the Commission in Petition .No. 127/2009)	438.85	0	0.00	0.00	0.00
4	Installation of Online Compressor Cleaning System	0	231	0.00	0.00	0.00
5	Rotor of GT-3	4.27	0	94	0.00	0.00
6	Installation of Additional CT Pump	0	240.83	0.00	0.00	0.00
7	Installation of Online Gas Measurement	0	0	145.53	0.00	0.0
8	Up gradation of GT & ST Control System (C&I)	385.7	300	0.00	0.00	0.00
9	Corresponding de-capitalization for Sl.No. 7 above	(-) 315.43	0.00	0.00	0.00	0.00

10	Installation of Fire Protection & Detection System for cable galleries	31.71	0.00	0.00	0.00	0.00
11	Replacement of Hot Water Pipeline of Cooling Tower	0	0	157.39	0.00	0.00
12	Replacement of Underground Fire Fighting Pipelines	0.00	0.00	217.33	0.00	0.00
13	Phasing out of Halon Fire Fighting System	0.00	0.00	245.15	0.00	0.00
14	Augmentation of Raw Water Reservoir Capacity	369.78	82	0.00	0.00	0.00
15	Increase in WHRB stack height	0.00	159.76	0.00	0.00	0.00
	New Works in 2009-10					
16	Welfare Centre Building	16.64	0.00	0.00	0.00	0.00
	Total	**11079.6**	**1391.08**	**859.4**	0.00	0.00
	Total claim of the petitioner for the period 2009-14	**13330.08**				

25. The break-up of the expenditure for ₹11868.12 lakh (11429.27 +438.25) on R&M of Gas Turbines (GTs) as furnished by the petitioner (Sl. Nos 1 and 3 in the table above) is as under:

(₹in lakh)

ITEM		**GT-1**	**GT-2**	**GT-3**
COMPRESSOR COMPONENTS		**2009-10**	**2009-10**	**2010-11**
1	Compressor Vanes	0.00		
2	Compressor Diffuser complete	0.00	365.94	
COMBUSTOR COMPONENTS				
1	Inner Liner Set		373.52	
2	Dual Burner Set		238.40	
3	Upper Combustion Chamber		127.72	
GAS TURBINE COMPONENTS				
1	Vane Carrier Complete		1041.63	
2	Gas Turbine Stator Blading		2982.02	
3	Stator HSS		677.64	
4	Inlet Segment (ELS)		193.49	
5	Entry Segment (ETS)		67.17	
6	Tip Sealing Segment (KDS)		12.64	
7	Gas Turbine Rotor Blading		3878.13	
ASSEMBLY MATERIAL				
1	Assembly material for blades		114.35	
2	Assembly material for stator hss		19.74	

3	Assembly materials for compressor vanes		238.60	
4	Assembly material for tip sealing		0.63	
5	Assembly material entry segment		1.06	
6	Assembly material for inlet segment		1.43	
DETAILS OF INSPECTION CONSUMABLES				
1	Assembly Material for HGC		54.49	
2	Assembly Material for Combustion Chamber		155.46	
BOLTING PACKAGE				
1	Bolting for Cch Bottom Flange		58.01	
2	Bolting for Burner Cover		13.77	
3	GT Casing + Exhaust Diffuser		43.08	
4	GT Horizontal Split Casing		85.14	
5	Compressor Horizontal Split Cashing		56.61	
6	GT Compressor Casing (Rount Flang)		27.04	
COUPLING BOLT SET				
1	Coupling bolt		26.16	
2	Coupling screw		16.04	
3	Countersunk nut		17.08	
4	Retaining pin		0.24	
5	Securing ring		1.78	
6	Locking pin		1.13	
Reconditioning of Compressor Vanes		**408.28**	**-**	**377.49**
Other Items				
1	Insulation		130.83	-
2	Tool	30.56	-	-
Total		**438.85**	**11429.27**	**-**

26. It can be seen that the R&M expenditure claimed by the petitioner includes expenditure on compressor components, combustion chamber components, Gas Turbine components, assembly materials, consumables, fasteners and coupling materials, insulation etc. Some of these expenditure like expenditure on consumables, insulation and a part of expenditure on assembly material, fasteners and couplings, part of combustion chambers, and gas turbine initial stage blades etc are already covered in O&M as part of major overhauls. In view of this the expenditure on consumables and insulation is not to be capitalized.

27. On scrutiny of the above break-up details, the issue for the consideration is the treatment of the expenditure involved in the replacement of Hot gas path components like vanes, gas Turbine stator and rotor blades, Inlet segment, entry segment, Tip sealing

segment etc. which would be covered under O&M expenses allowed to the generating station. Hence, the capitalization of expenditure on replacement of Hot gas path components under R&M would require the deduction of expenditure towards the cost of hot gas path components covered under O&M expenditure from the additional capital expenditure to be allowed for R&M to the generating station during 2009-10.

28. The 2009 Tariff Regulations provides the following O&M expense norms for gas based stations, like the instant generating station, as under:

(₹in lakh/MW)

2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
14.80	15.65	16.54	17.49	18.49

29. The O&M norms allowed for the period 2009-14 includes about 35% of the total expenses for Repair Maintenance, Stores & capital spares etc, which works out to ₹29.04 lakh/MW during the 5 year period, which would include at least one major inspection, one Hot gas path inspection and three Combustion inspections for each GTs. This translates into the cost of capital spares in the major Inspection/overhaul as (29.04/19.5*6)= ₹8.94 lakh/MW (approx). As such, the cost of Hot gas path components for one GT included in the O&M expenses, is *pro rata* worked out as under:

(8.94 x 419.33 * 1/3) = ₹1249.60 lakh

30. Based on the above, the amount of ₹1249.60 lakh is deducted from the additional capital expenditure to be allowed for R&M of GT-2 during 2009-10.

31. Accordingly, out of the expenditure of ₹11429.27 lakh claimed during 2009-10 for R &M of GT-2 , the expenditure which have been deducted are detailed as under:

(₹ in lakh)

Sl. No.		Amount
1.	Expenditure on hot gas path components included in the O&M expenditure allowed to the station	1249.60
2.	Expenditure on inspection consumables	209.95

3.	Insulation	130.83
	Total	**1590.38**

32. After deduction of the above expenditure, the total amount allowed for capitalization on renovation of the GT-2 for 2009-10, is ₹9838.89 lakh.

Basis adopted by petitioner for arriving at the value of de-capitalization

33. The petitioner *vide* affidavit dated 8.6.2011, has submitted the details of de-capitalization of ₹1281.20 lakh in the books of accounts for 2009-10 against the additional capital expenditure of ₹11429.27 lakh, as under:

(₹)

	GT - 2
Opening Gross block as on 1-4-2009	323192508
Total amount de-capitalized	128119910

34. The petitioner has submitted that de-capitalization has been worked out on the basis of engineering estimates considering R&M coverage of various items as the actual historical value item-wise were not available. The methodology for de-capitalization which was discussed in the submission of the petitioner dated 15.3.2010 in Petition No.127/2009 is stated briefly as under:

(i) The percentage of components covered under R&M is 41.10% which is to be applied on the Gross Block as on 01-04-2006 for de-capitalization as the R&M was started during 2006-07.

(ii) Rotor reconditioning & spring loaded tiles have already been de-capitalized during the previous periods. The percentage (41.10%) comprises of R&M for GT-1 replacement of Vane Carrier, Rotor reconditioning & replacement of Tiles.

(iii) To arrive at the amount to be de-capitalized during the year 2009-10, the amount already de-capitalized in 2006-07 & 2007-08 has been deducted.

*(iv) The Hot Gas Casing & casing of Thermal Block (Part of Thermal Block) & Casing of Combustor Chamber are not covered under R&M. In view of above the value Covered under R&M against item Thermal Block and Combustor Chamber is **90%** of original work.*

35. The Gross block of the three GTs as per the books of accounts for the years 2003-04 and 2004-05 as submitted by the petitioner in Petition No. 127/2009 is as follows:

(₹)

	2003-04	2004-05
GT-1	715873974	496626932
GT-2	574098093	521914570
GT-3	562741354	511373244
Initial Spares	included in the above	322798675

36. It is observed that the gross block of GT-2 as on 31.3.2004 is higher than the gross block considered by the petitioner for GT-2 as on 1.4.2009 for working out the de-capitalization amount for the assets replaced and hence not in order. Hence, the de-capitalisation amount worked out by the petitioner is not accepted.

37. Based on the methodology adopted by the petitioner, the de-capitalization amount has been worked as under considering the gross block as on 1.4.2004:

(₹)

	GT - 2
Opening Gross Block as on 1-4-2004 **(A)**	521914570.00
Percentage covered in R&M to be de-capitalized **(B)**	41.10%
Total Amount to be De-capitalized **(AxB)**	214506888.30
Amount de-capitalized in 2009-10	**214506888.30**

De-capitalization considered for the purpose of tariff

38. In view of the fact that an amount of ₹9838.89 has been allowed for capitalization (as in para 34 above) against the claim for capitalization of ₹11429.27 lakh, the corresponding de-capitalization value allowed for the purpose of tariff is ₹1846.58 lakh (2145.07 x 9838.89 / 11429.27). Accordingly, the expenditure allowed for R&M of GTs after de-capitalization of old assets is ₹7992.31 lakh (9838.89-1846.58).

39. In addition to the above, the petitioner has claimed expenditure of ₹438.84 lakh for GT-1 during 2009-10 and ₹377.49 lakh for GT-3 during 2010-11 towards reconditioning of compressor vanes as balance amount of R&M expenditure which was allowed during the

year 2008-09. The petitioner has submitted that against the balance R&M work for GT-1 and GT-3, de-capitalization on an estimated basis was considered in order dated 21.1.2011 in Petition No. 127/2009. The balance amount of ₹377.49 lakh for R&M work during 2010-11 for reconditioning of compressor vanes for GT-3 is allowed as the de-capitalization (on an estimated basis) from the gross block has already been considered in order dated 21.1.2011. It is observed from records and the Commission's order dated 21.1.2011, that no expenditure has been allowed for compressor vanes for GT-1 during 2008-09 and consequently, the estimated de-capitalization had not taken into account the gross value of compressor vanes for GT-1. In view of this, the expenditure on balance work amounting to ₹438.84 lakh for GT-1 is not allowed.

Expenditure on Gas Turbine (GT-3) rotor:

40. The petitioner has claimed expenditure of ₹98.27 lakh for the said asset and the justification submitted by the petitioner is as under:

"As per OEM, the expected life of the rotor 100000 operation hours and the rotor has exceeded that life. As per experience of OEM, after 100000 operating hours of running life of rotor there is chance of failures of welding joints of welded discs and if these welding defects originate, due to high speed of running etc., the same may lead to catastrophic failure of the rotor and thus the turbine as a whole. To avoid this, OEM have recommended to recondition the GT rotor at 100000 operating hours so as to further enhance their operation life to 100000 operating hours. Under reconditioning work the Compressor portion of the Rotor has been reconditioned whereas the turbine portion has been cut and removed as this portion cannot be reconditioned due to continuous operation at high temperatures."

41. As the expenditure pertains to balance work which was allowed by the Commission during 2008-09, the same is allowed.

Other Capital additions on R&M activities

Installation of Online Compressor cleaning system

42**.** The petitioner has claimed an expenditure of ₹231.00 lakh during 2010-11 towards the installation of Online Compressor cleaning system. Apart from increase in the availability, on line compressor cleaning would also improve the performance of GTs. However, the benefit of such improvement in performance would be retained by the generator and hence it may not be appropriate to allow such expenditure, especially in the absence of any commitment on the part of the petitioner to pass on the benefit of efficiency improvement to the beneficiaries. Hence the said claim is not allowed.

Installation of Additional CT Pump

43**.** The petitioner has claimed an expenditure of ₹240.83 lakh during 2010-11 for installation of additional CT pump. The justification furnished by the petitioner for such expenditure is that there are 2 x 50% capacity Cooling Tower Pumps installed in the Cooling Water System and the failure of one pump affects approximately 50% of generation of the Steam Turbine. For sustained availability, another pump is required for emergency purpose. Since the expenditure in respect of the asset which is in the nature of spares, the capitalization of the same is not allowed.

Installation of On-line Gas measurement

44. The petitioner has claimed an expenditure of ₹145.53 lakh during 2011-12 for installation of on-line Gas Measurement system for better control of GTs and to validate the information on generation-vs- gas consumption. Since modernization of GT control contribute to the efficient and successful operation of the generating station, the expenditure is allowed to be capitalized in terms of Regulation 9(2)(vi) of the 2009 Tariff Regulations.

Up gradation of GT & ST Control System (C&I)

45. The petitioner has claimed expenditure of ₹385.70 lakh during 2009-10 and ₹300 lakh during 2010-11for up-gradation of C&I system. The petitioner has submitted that since the present control systems were installed and commissioned as part of original main plant C&I package, the Original Equipment Manufacturer has declared all these systems as obsolete

and the spares for the same are no more available. The claim of the petitioner is justified and the expenditure is allowed to be capitalized along with the corresponding de-capitalization of ₹177.43 lakh during 2009-10 and ₹138.00 lakh during 2010-11.

Installation of Fire Protection & Detection System for cable galleries

46. The petitioner has claimed expenditure of ₹31.71 lakh during 2009-10 for installation of fire fighting system in cable galleries. The petitioner has submitted that the cable galleries have not been provided with a fire fighting system and that there was only one entrance in the cable gallery. In the present layout it is not feasible to provide additional regular fire exits for the cable galleries and also there is no clear passage available for movement in cable galleries. In case of fire it would be extremely difficult as all cables are provided in the basement of building. In view of this there is a need to install a fixed fire fighting system, the petitioner has stated. The justification submitted by the petitioner has been examined and since safety of the plant and personnel is an essential requirement for efficient and successful operation of the generating station, the expenditure claimed is allowed to be capitalized.

Replacement of Hot Water Pipeline of Cooling Tower

47. The petitioner has claimed an expenditure of ₹157.39 lakh during 2011-12 for the said asset and has submitted that due to high humidity in the vicinity of cooling tower and raw water media, external and internal corrosion /erosion of the pipelines was taking place. Due to this the pipe thickness has reduced and if the problem aggravates, the cooling tower system may be affected disrupting the generation from Steam Turbine. It has also been submitted that in order to have sustained availability, the existing hot water duct is proposed to be replaced by a new one. The submissions of the petitioner appear reasonable and the capitalization is justified. However, the petitioner has not submitted the de-capitalized value of

the old asset. From the de-capitalized value computed by the Commission for GT components on which R&M has been carried out, the estimated value of original component is found to be 18% (approx) of the new assets. Accordingly, the de-capitalization value of the old hot water duct works out to ₹(157.39 x 0.18) lakh = ₹28.33 lakh. In view of this, the expenditure of ₹129.06 lakh (157.39- 28.33) is allowed to be capitalized for efficient and successful operation of the generating station.

Replacement of underground fire fighting pipelines

48. The petitioner has claimed expenditure of ₹217.33 lakh during 2011-12 in respect of the said asset and has submitted that the underground fire fighting water pipe lines have got corroded and eroded with passage of time, which has made the fire fighting system unreliable. Considering the fact that the life of the generating station is more than 15 years and the possibility of increase in failure of pipe lines leading to risk of reduced safety, the justification furnished by the petitioner is accepted keeping in view the overall interest of the safety of the generating station and its personnel. Hence, capitalization is allowed. However, the petitioner has not submitted the de-capitalized value of the old asset. From the de-capitalized value computed by the Commission for GT components on which R&M has been carried out, the estimated value of original component is found to be 18% (approx) of the new assets. Accordingly, the de-capitalized value of the old fire fighting pipe line works out to ₹39.12 lakh (217.33 x 0.18). Accordingly, the capitalization of ₹178.21 lakh (217.33-39.12) is allowed for efficient and successful operation of the generating station.

Phasing out of Halon system fire fighting system

49. The petitioner has claimed expenditure of ₹245.15 lakh during 2011-12 for the said asset towards the replacement of Halon system to protect the ozone layer. Considering the fact that the expenditure is statutory in nature (under National Fire Protection Association Standard on Clean Agent Fire Extinguishing system (NFPA-2001), capitalization of the same

is allowed with corresponding de-capitalization. Since the petitioner has not submitted the de-capitalized value of the said asset, the estimated value of original component is considered as 18% of the value of new assets (as stated above). Accordingly, the de-capitalization value of Halon system works out to ₹44.13 lakh (245.15 x 0.18) lakh. In view of this, capitalization of ₹201.02 lakh (245.15 – 44.13) is allowed to be capitalized.

Augmentation of Raw Water Reservoir Capacity

50. The petitioner has claimed expenditure of ₹369.78 lakh during 2009-10 and ₹82.0 lakhs during 2010-11 for enhancing the storage capacity of reservoir. The petitioner has submitted that the reservoir was designed for 30 days storage capacity as the Irrigation department, Government of Rajasthan at that time had indicated the canal closure period for 30 days. Subsequently, the Irrigation department had increased the canal closure period to 65 days. It has also submitted that the scheme for augmentation of raw water reservoir capacity has been recommended by CEA *vide* its letter dated 12.6.2006. The canal closure period which was increased by the Irrigation department of Rajasthan Government has been may be taken as a change in policy of the State Government, which is beyond the control of the petitioner. In view of this, we allow the claim of the petitioner for ₹369.78 lakh during 2009-10 and ₹82.0 lakhs during 2010-11 under Regulation 9(2)(ii) of the 2009 Tariff Regulations.

Increase in WHRB stack height

51. The petitioner has claimed expenditure of ₹159.76 lakh during 2010-11 towards increasing the stack height from +28 M level to +30 M level. According to the petitioner, the said expenditure is necessary for compliance with the provisions of Air Act, 1981, since the Rajasthan Pollution Control Board has issued show cause notice dated 5.5.2009 to this generating station for not increasing the stack height. Accordingly, the expenditure is allowed.

Welfare Centre Building

52. The petitioner has claimed expenditure of ₹16.64 lakh during 2009-10 towards Welfare Centre Building. The petitioner has submitted that expenditure for construction of welfare Centre building form part of a statutory requirement, and no welfare Centre building was available in the plant to fulfill the social needs of the employees of the generating station. The submission of the petitioner is not justifiable as it does not give any direct benefit to the beneficiaries. We are not inclined to load this expenditure on the beneficiaries and the capitalization of the expenditure is not allowed.

53. Based on the above discussions, the following additional capital expenditures may be allowed during 2009-14:

(₹in lakh)

		Actual/Projected Capitalization				
Sl. No.	**Package**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**
1	Renovation of Gas Turbines	7992.31	377.49	0.00	0.00	0.00
2	Balance amount towards reconditioning of vanes for GT-3 (R& M allowed by the Commission in Petition No. 127/2009)	0.00	0.00	0.00	0.00	0.00
3	Installation of Online Compressor Cleaning System	0.00	0.00	0.00	0.00	0.00
4	Rotor of GT-3	4.27	0.00	94.00	0.00	0.00
5	Installation of Additional CT Pump	0.00	0.00	0.00	0.00	0.00
6	Installation of Online Gas Measurement	0.00	0.00	145.53	0.00	0.00
7	Up gradation of GT & ST Control System (C&I)	208.27	162.00	0.00	0.00	0.00
8	Installation of Fire Protection & Detection System for cable galleries	31.71	0.00	0.00	0.00	0.00
9	Replacement of Hot	0.00	0.00	129.06	0.00	0.00

	Water Pipeline of Cooling Tower					
10	Replacement of underground Fire Fighting Pipelines	0.00	0.00	178.21	0.00	0.00
11	Phasing out of Halon Fire Fighting System	0.00	0.00	201.023	0.00	0.00
12	Augmentation of Raw Water Reservoir Capacity	369.78	82.00	0.00	0.00	0.00
13	Increase in WHRB stack height	0.00	159.76	0.00	0.00	0.00
	New Works in 2009-10					
14	Welfare Centre Building	0.00	0.00	0.00	0.00	0.00
	Total	**8606.34**	**781.25**	**747.82**	**0.00**	**0.00**
	Total Additional Capital Expenditure allowed for the period 2009-14	**10135.41**				

Extension in life of the generating station after R&M

54**.** The Commission *vide* order dated 21.01.2011 in Petition No. 127/2009 while approving the additional capital expenditure for R&M of GT-1 and GT-3 during 2008-09 had extended the life of the generating station for 13 years from 1.4.2008 provided the expenditure on Renovation of left over GT-2 is allowed during 2009-10. The observation of the Commission was as follows**:**

> *"The Commission in its 2009 Tariff regulations for the period 2009 -14, has increased the life of gas turbines from 15 years to 25 years. Accordingly, the life of the generating station would expire on 31.7.2015 i.e. 25 years from date of commercial operation i.e. 1.8.1990. However, based on the above, the life of the generating station would end on 31.3.2021 i.e 13 years from 1.4.2008, provided the expenditure on renovation of left over GT-2 is allowed during 2009-10."*

55*.* Accordingly the life of the generating station from 1.4.2009 is considered as 12 years for the purpose of tariff.

56. Considering the discharge of liabilities, 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	Total
Additional capital expenditure allowed	8606.34	781.25	747.823	0.00	0.00	10135.41
Discharges of liabilities	572.03	396.02	0.00	0.00	0.00	0.00
Net Additional capital expenditure allowed	**9178.37**	**1177.27**	**747.82**	**0.00**	**0.00**	**11103.46**

Capital Cost for 2009-14

57. Based on the above, 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	70579.79	79758.16	80935.43	81683.26	81683.26
Projected Additional capital expenditure	9178.37	1177.27	747.82	0.00	0.00
Closing Capital cost	**79758.16**	**80935.43**	**81683.26**	**81683.26**	**81683.26**
Average Capital cost	**75168.98**	**80346.80**	**81309.34**	**81683.26**	**81683.26**

DEBT- EQUITY RATIO

58. Regulation 12 of the 2009 Tariff Regulations provides that:

"(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.

59. The gross loan and equity amounting to ₹40928.42 lakh and ₹30729.51 lakh, respectively as approved as on 31.3.2009, *vide* order dated 12.10.2011 in Petition No.127/2009 has been considered as gross loan and equity as on 1.4.2009. However, un-discharged liabilities amounting to ₹1078.14 lakh deducted from the capital cost as on 1.4.2004 has been adjusted to debt and equity in the debt-equity 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 ₹40173.72 lakh and ₹30406.07 lakh, respectively. Further, the projected additional expenditure admitted above is allocated in debt-equity ratio of 70:30, which is subject to truing up in terms of Regulation 6 of the 2009 Tariff Regulations.

RETURN ON EQUITY

60. Regulation 15 of the 2009 Tariff Regulations, as amended on 21.6.2011, provides that:

"(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 charges 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 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."*

61. Accordingly, return on equity has been worked out @23.481% per annum on the normative equity after accounting for the additional capital expenditure.

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Notional Equity- Opening	30406.07	33159.58	33512.76	33737.11	33737.11
Addition of Equity due to additional capital expenditure	2753.51	353.18	224.35	0.00	0.00
Normative Equity-Closing	33159.58	33512.76	33737.11	33737.11	33737.11
Average Normative Equity	31782.82	33336.17	33624.93	33737.11	33737.11
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	**7462.92**	**7827.67**	**7895.47**	**7921.81**	**7921.81**

Interest on Loan

62**.** Regulation 16 of the 2009 Tariff Regulations provides that:

"(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.

63. The interest on loan has been worked out as under:

(i) The gross normative loan of ₹40173.72 lakh as on 1.4.2009 has been considered.

(ii) Cumulative repayment of loan of ₹19466.88 lakh as on 31.3.2009 as considered in order dated 12.10.2011 in Petition No. 127/2009 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 to ₹19498.42 lakh.

(iii) Accordingly, the net normative opening loan as on 1.4.2009 works out to ₹20675.30 lakh.

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

(v) The petitioner has considered originally contracted GOI loans as actual loan portfolio for the purpose of calculating weighted average rate of interest. However, these GOI loans were refinanced with Bonds earlier, which were repaid fully in 2007-08. Accordingly, in line with the provisions of the regulation 16 (5) stated above, weighted average rate of interest has been calculated considering the actual loan portfolio existing as on 1.4.2009.

(vi) In line with the provisions of the regulations stated above, the Weighted Average Rate of Interest (WAROI) has been calculated applying the actual loan portfolio existing as on 1.4.2009 (Annexure-I to this order). For this purpose the rate of interest corresponding to individual loans as provided by petitioner has been considered except to the extent stated below for reasons recorded:

LIC-III (T4, D4) – The petitioner has calculated WAROI considering rate of 8.75% on this loan. However, as per submitted Form-8, this rate of interest is 8.7281%, which was also considered during the previous tariff period. In absence of any reasons / documentary evidence, the rate of interest has been considered as 8.7281%.

(vii) The cumulative repayment has been adjusted @70% due to de-capitalization of assets/works.

64. The necessary calculation for interest on loan is as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Gross opening loan	40173.72	46598.58	47422.67	47946.15	47946.15
Cumulative repayment of loan upto previous year	19498.42	20182.13	22749.39	25422.13	28221.52
Net Loan Opening	20675.30	26416.45	24673.28	22524.02	19724.62
Addition due to Additional capitalisation	6424.86	824.09	523.48	0.00	0.00
Repayment of loan during the year	2117.25	2675.44	2750.85	2799.39	2799.39
Less: Repayment adjustment on account of de-capitalization	1416.81	96.60	78.11	0.00	0.00
Add: Repayment adjustment on account of discharges / reversals corresponding to un-discharged liabilities deducted as on 1.4.2009	(-) 16.74	(-) 11.59	0.00	0.00	0.00
Net Repayment	683.71	2567.26	2672.74	2799.39	2799.39
Net Loan Closing	26416.45	24673.28	22524.02	19724.62	16925.23
Average Loan	23545.87	25544.86	23598.65	21124.32	18324.93
Weighted Average Rate of Interest on Loan	2.2548%	1.5521%	1.5522%	1.5544%	1.5633%
Interest on Loan	**530.91**	**396.47**	**366.30**	**328.35**	**286.47**

Depreciation

65. Regulation 17 of the 2009 Tariff Regulations provides that:

"(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."

66. The cumulative depreciation as on 31.3.2009 as per order dated 12.10.2011 in Petition No. 127/2009 works out to ₹42786.95 lakh. Further, proportionate adjustment has been made to this 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 ₹42143.20 lakh. Further, the value of freehold land as considered in the said order as on 31.3.2009 is ₹113.17 lakh. Accordingly, the balance depreciable value (before depreciation) for 2009-10 works out to ₹25407.03 lakh. Since, as on 1.4.2009 the generating station is more than 12 years old from the effective date of commercial operation of 21.10.1989, depreciation has been calculated by spreading over the balance depreciable value. The balance useful life as on 1.4.2009 as per order dated 12.10.2011 in Petition No.127/2009 is 12 years. Cumulative depreciation has been adjusted @90% of value of de-capitalized assets/works. Further, proportionate adjustment has been made to the cumulative depreciation on account of 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 shown below:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Opening capital cost	70579.79	79758.16	80935.43	81683.26	81683.26
Closing capital cost	79758.16	80935.43	81683.26	81683.26	81683.26
Average capital cost	75168.98	80346.80	81309.34	81683.26	81683.26
Depreciable value @ 90%	67550.23	72210.26	73076.56	73413.08	73413.08
Remaining useful life at the	12.00	11.00	10.00	9.00	8.00

beginning of the year					
Balance depreciable value	25407.03	29429.87	27508.45	25194.55	22395.15
Depreciation (annualized)	**2117.25**	**2675.44**	**2750.85**	**2799.39**	**2799.39**
Cumulative depreciation at the end	44260.45	45455.84	48318.95	51017.92	53817.32
Less: Cumulative depreciation reduction due to de-capitalization	1821.61	124.20	100.42	0.00	0.00
Less: Cumulative depreciation adjustment on account of discharges / reversal of liabilities out of liabilities deducted as on 01.04.2009	(-) 341.56	(-) 236.47	0.00	0.00	0.00
Net Cumulative depreciation (at the end of the period)	42780.40	45568.11	48218.53	51017.92	53817.32

OPERATION & MAINTENANCE EXPENSES

67. Clause (c) of Regulation 19 of Regulation of the 2009 Tariff 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

68. 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	6206	6563	6936	7334	7753

69. Based on above norms, the Operation & Maintenance expenses are allowed as under:

(₹ in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
O&M expenses	6206.08	6562.51	6935.72	7334.08	7753.41

Normative Annual Plant Availability Factor (NAPAF)

70. The NAPAF of the generating station is considered as 85% for the period 1.4.2009 to 31.3.2014.

Interest on Working Capital

71. Regulation 18 (1) (b) of the 2009 Tariff 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.

72. Clause (3) of Regulation 18 of the 2009 Tariff 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*.

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

Fuel cost and Energy charges

74. 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 for preceding three months from January, 2009 to March, 2009. The petitioner has submitted that there was no use of LNG in January, 2009. The mode of operation between APM, RLNG gas and Naphtha as achieved by the generating station during the year 2008-09 was 82.71%, 4.45% and 12.85% respectively. The same has been used to arrive at the Fuel component and Energy Charges (for two months) for the purpose of working capital. Accordingly, the fuel components and energy charges (for two months) is worked out as under:

(₹*in lakh)*

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Fuel Cost for one month	4491.37	4491.37	4503.67	4491.37	4491.37
Liquid fuel stock for 1/2 month (Naphtha)	924.79	924.79	927.32	924.79	924.79
Energy charges for 2 months	8982.74	8982.74	9007.35	8982.74	8982.74

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

Maintenance Spares

76. 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	1862	1969	2081	2200	2326

77. The 2009 Tariff Regulations provide for maintenance spares @ 30% of the operation & maintenance expenses specified in Regulation 19. Accordingly, the maintenance spares @ 30% worked out, as under:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Cost of maintenance spares	1861.83	1968.75	2080.72	2200.22	2326.02

Receivables

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

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Variable Charges -2 months	8982.74	8982.74	9007.35	8982.74	8982.74
Fixed Charges - 2 months	3125.90	3323.54	3410.08	3486.50	3554.07
Total	**12108.64**	**12306.28**	**12417.43**	**12469.24**	**12536.81**

O&M Expenses

79. O&M expenses for 1 month for the purpose of working capital is allowed as under.

(₹in lakh)

	2009-10	2010-2011	2011-12	2012-13	2013-14
O& M for 1 month	517.17	546.88	577.98	611.17	646.12

80. 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 given as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Fuel copt (APM, RLNG & Naptha) – 1 month	4491.37	4,491.37	4,503.67	4,491.37	4,491.37
Liquid fuel stock – 1/2 month	924.79	924.79	927.32	924.79	924.79
Maintenance Spares	1861.83	1,968.75	2,080.72	2,200.22	2,326.02
O&M expenses – 1 month	517.17	546.88	577.98	611.17	646.12
Receivables – 2 months	12108.64	12,306.28	12,417.43	12,469.24	12,536.81
Total working capital	**19903.79**	**20,238.07**	**20,507.12**	**20,696.80**	**20,925.11**
Rate of interest	12.2500%	12.2500%	12.2500%	12.2500%	12.2500%
Interest on working capital	**2438.21**	**2479.16**	**2512.12**	**2535.36**	**2563.33**

Annual Fixed charges for 2009-14

81. 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	2117.25	2675.44	2750.85	2799.39	2799.39
Interest on Loan	530.91	396.47	366.30	328.35	286.47
Return on Equity	7462.92	7827.67	7895.47	7921.81	7921.81
Interest on Working Capital	2438.21	2479.16	2512.12	2535.36	2563.33
O&M Expenses	6206.08	6562.51	6935.72	7334.08	7753.41
Total	**18755.38**	**19941.26**	**20460.46**	**20918.99**	**21324.41**

82. The annual fixed charges allowed as above is subject to truing up as per Regulation 6 of the 2009 Tariff Regulations.

Energy/Variable Charge

83. Sub-clause (a) of clause (6) of Regulation 21of the 2009 Tariff Regulations provides that the Energy Charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the formulae as under:

For gas and liquid fuel based stations

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.

84. The petitioner has claimed Energy Charge Rate (ECR) of 177.923 paisa/kWh. ECR has been computed on the weighted average rate price, GCV of fuel procured and burnt for the preceding three months of January, 2009, February, 2009 and March, 2009 and as per operational norms specified by the Commission. The Energy Charge Rate worked out by the Commission is as under and the same is allowed:

	Unit	**2009-14**		
Capacity	MW	419.33		
Gas		**APM**	**RLNG**	**Naptha**
Normative Heat Rate	Kcal/kWh	2075	2075	2075
Aux. Energy Consumption	%	3	3	3
Weighted average rate of fuel	`/1000SCM	4293.027	19934.73	30228.27
Weighted average GCV of fuel	Kcal/SCM	9071.5	9062.163	11338.643
Rate of energy charge ex-bus	Paise/kWh	101.235	470.571	570.294
Mode of Operation on Fuel during 2008-09 (% of schedule generation)	%	82.71	4.45	12.85
ESO in one month @ 85% PLF	Paise/kWh	252.39	252.39	252.39
Weighted average cost of fuel in 2008-09 (Ex-bus)	Paise/kWh	**177.955**		

85. The year-wise computation of ESO and fuel cost is as under:

	Unit	2009-10	2010-11	2011-12	2012-13	2013-14
Total ESO in one month	Mus	252.39	252.39	253.08	252.39	253.08
Fuel cost for one month	₹in lakh	4491.37	4491.37	4503.67	4491.37	4491.37

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

Application fee and the publication expenses

87. The petitioner has sought approval for the reimbursement of fee of ₹838660/- each for the years 2009-10, 2010-11 and 2011-12 paid by it for filing the petition and for the expenses incurred for publication of notices in connection with the petition. The petitioner by its affidavit

dated 4.6.2010 has submitted the original copies of the publication of notice made in the newspapers. However, the amount incurred towards publication has not been submitted.

88. In terms of Regulation 42 of the 2009 Tariff Regulations and based on our decision in order dated 11.1.2010 in Petition No.109/2009 (pertaining to approval of tariff for SUGEN power plant for the period from DOCO to 31.3.2014) the filing fees in respect of main petitions for determination of tariff and the expenses on publication of notices are to be reimbursed. Accordingly, the expenses of Rs 8,38660/- incurred by the petitioner on application filing fees for each of the years 2009-10, 2010-11 and 2011-12 and expenses towards publication of notices in connection with the present petition shall be directly recovered from the beneficiaries, on pro rata basis on production of documentary proof. 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, 2012.

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

91. 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 accordance with the proviso to Regulation 5 (3) of the 2009 Tariff Regulations.

92. This order disposes of Petition No.239/2009.

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

Sl. No.	Name of loan	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
1	CBI I	Net opening loan	120.00	80.00	40.00	-	-
		Add: Addition during. the period					
		Less: Repayment during. the period	40.00	40.00	40.00		
		Net Closing Loan	**80.00**	**40.00**	**-**	**-**	**-**
		Average Loan	100.00	60.00	20.00	-	-
		Rate of Interest	7.0000%	7.0000%	7.0000%	7.0000%	7.0000%
		Interest	7.00	4.20	1.40	-	-
2	LIC III (T4,D4)	Net opening loan	850.00	750.00	650.00	550.00	450.00
		Add: Addition during the period					
		Less: Repayment during. the period	100.00	100.00	100.00	100.00	100.00
		Net Closing Loan	**750.00**	**650.00**	**550.00**	**450.00**	**350.00**
		Average Loan	800.00	700.00	600.00	500.00	400.00
		Rate of Interest	8.7281%	8.7281%	8.7281%	8.7281%	8.7281%
		Interest	69.82	61.10	52.37	43.64	34.91
3	KFW (D1 24.9.07)	Net opening loan	2,374.47	2,374.47	2,035.26	1,696.05	1,356.84
		Add: Addition during the period					
		Less: Repayment during the period	-	339.21	339.21	339.21	339.21
		Net Closing Loan	**2,374.47**	**2,035.26**	**1,696.05**	**1,356.84**	**1,017.63**
		Average Loan	2,374.47	2,204.86	1,865.65	1,526.44	1,187.24
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	44.40	23.37	19.78	16.18	12.58
4	KFW (D2	Net opening loan	1,031.91	1,031.91	884.50	737.08	589.66

	8.1.08)						
		Add: Addition during. the period					
		Less: Repayment during. the period		147.42	147.42	147.42	147.42
		Net Closing Loan	**1,031.91**	**884.50**	**737.08**	**589.66**	**442.25**
		Average Loan	1,031.91	958.20	810.79	663.37	515.96
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	19.30	10.16	8.59	7.03	5.47
5	KFW (D3 7.3.08)	Net opening loan	484.40	484.40	415.20	346.00	276.80
		Add: Addition during. the period					
		Less: Repayment during. the period		69.20	69.20	69.20	69.20
		Net Closing Loan	**484.40**	**415.20**	**346.00**	**276.80**	**207.60**
		Average Loan	484.40	449.80	380.60	311.40	242.20
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	9.06	4.77	4.03	3.30	2.57
6	NIB (D1 - 27.3.08)	Net opening loan	5,255.88	5,255.88	5,255.88	4,671.89	4,087.90
		Add: Addition during. the period					
		Less: Repayment during. the period			583.99	583.99	583.99
		Net Closing Loan	**5,255.88**	**5,255.88**	**4,671.89**	**4,087.90**	**3,503.92**
		Average Loan	5,255.88	5,255.88	4,963.88	4,379.90	3,795.91
		Rate of Interest	2.2100%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	116.15	85.67	80.91	71.39	61.87
7	KFW (D4 2.6.200 8)	Net opening loan	1,240.07	1,240.07	1,062.92	885.77	708.61
		Add: Addition during. the period					
		Less: Repayment during. the period		177.15	177.15	177.15	177.15
		Net Closing Loan	**1,240.07**	**1,062.92**	**885.77**	**708.61**	**531.46**

		Average Loan	1,240.07	1,151.50	974.34	797.19	620.04
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	23.19	12.21	10.33	8.45	6.57
8	KFW (D5 9.9.2008)	Net opening loan	1,002.33	1,002.33	859.14	715.95	572.76
		Add: Addition during. the period					
		Less: Repayment during. the period		143.19	143.19	143.19	143.19
		Net Closing Loan	**1,002.33**	**859.14**	**715.95**	**572.76**	**429.57**
		Average Loan	1,002.33	930.74	787.55	644.36	501.17
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	18.74	9.87	8.35	6.83	5.31
9	KFW (D6 - 2.3.2009)	Net opening loan	273.44	273.44	234.38	195.31	156.25
		Add: Addition during the period					
		Less: Repayment during. the period		39.06	39.06	39.06	39.06
		Net Closing Loan	**273.44**	**234.38**	**195.31**	**156.25**	**117.19**
		Average Loan	273.44	253.91	214.84	175.78	136.72
		Rate of Interest	1.8700%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	5.11	2.69	2.28	1.86	1.45
10	NIB (D2 - 16.4.2008)	Net opening loan	2,076.72	2,076.72	2,076.72	1,845.97	1,615.22
		Add: Addition during. the period					
		Less: Repayment during. the period			230.75	230.75	230.75
		Net Closing Loan	**2,076.72**	**2,076.72**	**1,845.97**	**1,615.22**	**1,384.48**
		Average Loan	2,076.72	2,076.72	1,961.34	1,730.60	1,499.85
		Rate of Interest	2.2100%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	45.90	33.85	31.97	28.21	24.45

11	NIB (D3 - 1.8.2008)	Net opening loan	3,876.24	3,876.24	3,876.24	3,445.55	3,014.85
		Add: Addition during. the period					
		Less: Repayment during. the period			430.69	430.69	430.69
		Net Closing Loan	**3,876.24**	**3,876.24**	**3,445.55**	**3,014.85**	**2,584.16**
		Average Loan	3,876.24	3,876.24	3,660.89	3,230.20	2,799.51
		Rate of Interest	2.2100%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	85.66	63.18	59.67	52.65	45.63
12	NIB (D4 - 26.9.2008)	Net opening loan	80.40	80.40	80.40	71.47	62.53
		Add: Addition during the period					
		Less: Repayment during. the period			8.93	8.93	8.93
		Net Closing Loan	**80.40**	**80.40**	**71.47**	**62.53**	**53.60**
		Average Loan	80.40	80.40	75.93	67.00	58.07
		Rate of Interest	2.2100%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	1.78	1.31	1.24	1.09	0.95
13	NIB (D5 - 03.12.2008)	Net opening loan	1,199.10	1,199.10	1,199.10	1,065.86	932.63
		Add: Addition during. the period					
		Less: Repayment during the period			133.23	133.23	133.23
		Net Closing Loan	**1,199.10**	**1,199.10**	**1,065.86**	**932.63**	**799.40**
		Average Loan	1,199.10	1,199.10	1,132.48	999.25	866.02
		Rate of Interest	2.2100%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	26.50	19.55	18.46	16.29	14.12
14	NIB (D6 - 27.01.2009)	Net opening loan	2,736.16	2,736.16	2,736.16	2,432.14	2,128.13
		Add: Addition during. the period					

		Less: Repayment during the period			304.02	304.02	304.02
		Net Closing Loan	**2,736.16**	**2,736.16**	**2,432.14**	**2,128.13**	**1,824.11**
		Average Loan	2,736.16	2,736.16	2,584.15	2,280.14	1,976.12
		Rate of Interest	2.1400%	1.6300%	1.6300%	1.6300%	1.6300%
		Interest	58.55	44.60	42.12	37.17	32.21
15	KFW (D7)	Net opening loan		3,686.41	3,159.78	2,633.15	2,106.52
		Add: Addition during. the period	3,686.41				
		Less: Repayment during. the period		526.63	526.63	526.63	526.63
		Net Closing Loan	**3,686.41**	**3,159.78**	**2,633.15**	**2,106.52**	**1,579.89**
		Average Loan	3,686.41	3,423.09	2,896.47	2,369.84	1,843.21
		Rate of Interest	1.2300%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	45.34	36.28	30.70	25.12	19.54
16	KFW (D8)	Net opening loan		2,519.55	2,159.61	1,799.68	1,439.74
		Add: Addition during. the period	2,519.55				
		Less: Repayment during. the period		359.94	359.94	359.94	359.94
		Net Closing Loan	**2,519.55**	**2,159.61**	**1,799.68**	**1,439.74**	**1,079.81**
		Average Loan	1,259.78	2,339.58	1,979.65	1,619.71	1,259.78
		Rate of Interest	0.9200%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	11.59	24.80	20.98	17.17	13.35
17	KFW (D9)	Net opening loan		1,693.58	1,451.64	1,209.70	967.76
		Add: Addition during. the period	1,693.58				
		Less: Repayment during. the period		241.94	241.94	241.94	241.94
		Net Closing Loan	**1,693.58**	**1,451.64**	**1,209.70**	**967.76**	**725.82**
		Average Loan	846.79	1,572.61	1,330.67	1,088.73	846.79
		Rate of Interest	1.0600%	1.0600%	1.0600%	1.0600%	1.0600%
		Interest	8.98	16.67	14.11	11.54	8.98

18	**Gross Total**	**Net opening loan**	22,601.12	30,360.66	28,176.92	24,301.58	20,466.23
		Add: Addition during. the period	7,899.54	-	-	-	-
		Less: Repayment during. the period	140.00	2,183.74	3,875.35	3,835.35	3,835.35
		Net Closing Loan	**30,360.66**	**28,176.92**	**24,301.58**	**20,466.23**	**16,630.88**
		Average Loan	26,480.89	29,268.79	26,239.25	22,383.90	18,548.56
		Rate of Interest	2.2548%	1.5521%	1.5522%	1.5544%	1.5633%
		Interest	597.08	454.27	407.29	347.93	289.96