

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 224/2009

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

Date of Hearing: 16.2.2012

Date of Order: 14.6.2012

In the matter of

Approval of tariff of Dadri Gas Power Station (829.78 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 Limited, Lucknow
2. Jaipur Vidyut Vitran Nigam Limited, Jaipur
3. Ajmer Vidyut Vitran Nigam Limited, Ajmer
4. Jodhpur Vidyut Vitran Nigam Limited, Jodhpur
5. North Delhi Power Ltd., Delhi
6. BSES Rajdhani Power Ltd., New Delhi
7. BSES Yamuna Power Ltd.,
8. Haryana Vidyut Prasaran Nigam Limited, Panchkula
9. Punjab State Electricity Board, Patiala
10. Himachal Pradesh State Electricity Board, Shimla
11. Power Development Department Government of Jammu & Kashmir, Jammu
12. Power Department, Union Territory of Chandigarh, Chandigarh
13. Uttarakhand Power Corporation Limited, Dehradun

.....Respondents

Parties present:

1. Shri Ajay Dua, NTPC
2. Shri Sameer Agarwal, NTPC
3. Shri Shankar Saran, NTPC
4. Shri Naresh Anand, NTPC
5. Shri V.Ramesh, NTPC
6. Shri S.K.Pathak, NTPC
7. Shri G.K.Dua, NTPC
8. Shri R.B.Sharma, Advocate, BRPL
9. Shri Sanjay Srivastav, BRPL
10. Shri Sunil Barnwal, BRPL
11. Shri Manish Garg, UPPCL
12. Shri Padamjit Singh, PSPCL

13. Shri Tejpal Singh Bawa, PSPCL
14. Shri Haridas Maity, BYPL

ORDER

This petition has been filed by the petitioner, NTPC, for approval of tariff of Dadri Gas Power Station (829.78 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 Tariff Regulations”).

2. The generating station with a capacity of 829.78 MW comprises of four Gas Turbine (GT) units of 130.19 MW each and two Steam Turbine (ST) unit of 154.51 MW. The dates of commercial operation of the different units of the generating station are as under:

	Date of commercial operation (COD)
Unit-I (GT)	1.5.1992
Unit-II (GT)	1.6.1992
ST-I	1.8.1996
Unit-III (GT)	1.8.1992
GT-IV	1.12.1992
ST-II/ Generating station	1.4.1997

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.155/2004, which was subsequently revised by order dated 3.2.2009 in I.A. No.53/2006 (in Petition No.155/2004) on account of revision of O&M expenses. Thereafter, by order dated 21.7.2011 in Petition No. 155/2004, the annual fixed charges approved by order dated 3.2.2009 were revised in the light of the directions contained in the judgment of the Appellate Tribunal of Electricity dated 13.6.2007 in Appeal Nos.139 to 142 etc of 2006, 10, 11 and 23/2007 (NTPC-v-CERC & ors)], subject to the final outcome of the Civil Appeals (C.A. Nos. 5434/2007 to 5452/2007 and 5622/2007 etc) filed by the Commission against the said judgments and pending before the Hon'ble Supreme Court. The annual fixed charges determined by order dated 21.7.2011 considering the capital cost of ₹87974.06 lakh is as under:

	(₹ in lakh)				
	2004-05	2005-06	2006-07	2007-08	2008-09
Interest on loan	2516.26	1855.55	1194.85	627.92	313.30
Interest on Working Capital	3349.93	3353.33	3357.65	3371.85	3375.97
Depreciation	4328.32	4328.32	4328.32	4328.32	4328.32
Advance Against Depreciation	0.00	0.00	0.00	0.00	0.00
Return on Equity	6158.18	6158.18	6158.18	6158.18	6158.18
O & M Expenses	6472.28	6729.52	7003.34	7277.17	7567.59
Total	22824.98	22424.91	22042.35	21763.45	21743.37

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

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	46	62	914	3783	7135
Interest on Loan	232	241	1002	2906	4404
Return on Equity	10329	10340	10868	12423	13978
Interest on Working Capital	6658	6707	6818	6989	7179
O&M Expenses	12281	12986	13725	14513	15343
Total	29545	30337	33327	40613	48039

5. Reply to the petition has been filed by the respondents, namely, UPPCL (respondent No. 1), NDPL, BRPL (respondent Nos.5 and 6) HPPC and PSPCL (respondent Nos. 8 and 9). The petitioner has filed its rejoinder to the said replies.

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 annual fixed charges claimed in the petition are based on the opening capital cost of ₹87974 lakh as on 1.4.2009. The annual fixed charges of the generating station approved by order dated 21.7.2011 is based on the capital cost of ₹87974.06 lakh as on 31.3.2009. As such, the opening capital cost as on 1.4.2009 is ₹87974.06 lakh.

8. The petitioner vide its affidavit dated 22.7.2010 has furnished the details 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 have been reconciled with the information available with the records of the Commission as under:

	(₹ in lakh)	
	As per Form-9A	As per records of Commission
Capital cost as on 1.4.2009, as per books	104562.88	104562.88
Liabilities included above	48.24	48.24

9. The total liabilities included in the gross block as on 1.4.2009 are ₹48.24 lakh, the approved capital cost of ₹87974.06 lakh is inclusive of un-discharged liabilities amounting to ₹19.74 lakh (corresponding to capitalization allowed prior to 1.4.2004). Balance differential liabilities pertain to assets disallowed/exclusions not claimed for capitalization.

10. The last proviso 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.”

11. 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 ₹87954.32 lakh, after removal of un-discharged liabilities of ₹19.74 lakh. Further, out of the un-discharged liabilities deducted as on 1.4.2009 the petitioner has not discharged any liability during the period 2009-14.

Actual/ Projected Additional Capital Expenditure

12. Regulation 9 of the 2009 Tariff Regulations, as amended on 21.6.2011, 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, 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-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.”

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

<i>(₹ in lakh)</i>						
	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Additional Capital Expenditure	0.00	329.00	14666.00	29477.00	14663.00	59135.00

14. 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 submissions made by the petitioner on the admissibility of additional capital expenditure for 2009-14 in the subsequent paragraphs.

Submissions of the petitioner

15. 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.

16. 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. No generating station can operate on a sustainable basis to achieve the level of performance parameters specified by the Commission without incurring capital expenditure from time to time. The expenditure on such capital assets to be incurred by generating stations are therefore necessary for proper and effective working and therefore beneficial to the respondents. Over a long period of 25 years of the life of the stations, many a times the Original Equipment Manufacturer (OEM) stop providing spares & service and this necessitates the replacement of obsolete equipment's with new items, to ensure support from OEMs. 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 the 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 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.

(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 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.

17. Similar submissions of the petitioner have been considered and disposed of by the Commission by its orders dated 20.4.2012, 7.5.2012, 23.5.2012, 25.5.2012 in Petition No. 239/2009, 256/2009, 332/2009 and 279/2009 respectively, pertaining to determination of tariff some of the generating stations of the petitioner for 2009-14 as under:

"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 (₹ in 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."

21. 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.

18. In line with the above decisions, we consider the additional capital expenditure claimed by the petitioner for 2009-14 in this petition under the provisions of Regulation 9 (2) of the 2009 Tariff Regulations.

19. The actual/projected additional capital expenditure claimed by the petitioner during the period 2009-14 is mainly towards Renovation & Modernization of four Gas Turbines (GTs) and modernization of Control & Instrumentation (C&I) system. The category-wise break-up of the additional capital expenditure is as under:

Sl. No	Head of Work/ Equipment	Regulations	Actual/Projected Capital expenditure					Total
			2009-10	2010-11	2011-12	2012-13	2013-14	
1	Replacement of PGB coolers by plate type heat exchanger.	9(2)(ii)	0.00	0.00	0.00	274.00	0.00	274.00
2	Replacement of condensate pre-heater & LP economizer tubes of WHRB 3		0.00	0.00	0.00	51.00	0.00	51.00
3	Phasing out of Halon Fire fighting system and replacement with Inergen system.	9(2)(ii)	0.00	329.00	0.00	0.00	0.00	329.00
4	Renovation of Generator Excitation system.	9(2)(ii)	0.00	0.00	0.00	58.00	58.00	116.00
5	Renovation of Generator & Transformer protection relays.	9(2)(ii)	0.00	0.00	119.00	0.00	60.00	179.00
6	R&M of Control and Instrumentation System (C&I)	9(2)(ii)	0.00	0.00	948.00	1896.00	946.00	3790.00
7	Renovation & Moderation of Gas Turbines and its associated equipments including rotational spares. (including taxes, duties, erection charges of ₹16417 lakh)	9(2)(vi)	0.00	0.00	13599.00	27198.00	13599.00	543.96
	Total additional expenditure claimed (with taxes, duties, erection charges etc)		0.00	329.00	14666.00	29477.00	14663.00	59135.00

20. It is noticed from the above table that the total additional capital expenditure claimed by the petitioner is ₹59135.00 lakh during 2009-14. Against the proposed expenditure of ₹47607.00 lakh (excluding taxes, duties, erection charges, contingency & IDC etc) for R&M of the Gas TPS and

some other system/equipments of the generating station, by the petitioner, the Central Electricity Authority (CEA) *vide* its letter dated 30.5.2008 had approved an expenditure, of ₹41657.00 lakh. Out of this, the expenditure approved by CEA for R&M of GT's is ₹37978.00 lakh (excluding taxes, duties, erection charges, contingency & IDC).

21. The additional capital expenditure claimed by the petitioner for R&M of GTs for life extension for 2009-14 is ₹54395.00 lakh, which includes ₹37978.00 lakh towards CEA approved cost *vide* affidavit dated 30.5.2011 and ₹16417.00 lakh towards taxes, duties and erection charges. The expenditure towards taxes, duties and erection charges works out to 30% of the cost of ₹54395.00 lakh ($16417/54395 \times 100$) claimed towards R&M of GTs. Considering the fact that the custom duty on imported power equipments for Gas Based conventional power plants is 21-23% (approx) and the balance 7-9% is considered towards erection charges, the expenditure, in our view, is reasonable.

22. It is observed that the petitioner has claimed additional capital expenditure of ₹54396.00 lakh (instead of ₹54395.00 lakh, as above) for R&M of GTs as per details in Form-9 of the petition *vide* affidavit dated 9.10.2009. The expenditure of ₹54396.00 lakh claimed has been considered for the period 2011-14 for the purpose of tariff and the difference on this count is subject to truing-up. The petitioner shall also furnish the details of IDC, FC or contingency etc, if any, included in the projected capital expenditure or incurred at the time of actual capitalization, at the time of truing-up, in terms of Regulation 6 of the 2009 Tariff Regulations.

23. The petitioner has submitted that R&M of GTs of the generating station has been undertaken based on the recommendation of the Original Equipment Manufacturer (OEM) as all the GTs are in operation for more than 15 years and having clocked more than 100000 Equivalent Operating Hours (EOH). The complete replacement of Hot Gas Path components in R&M work shall extend the life of all the GTs for another 10 years or 100000 EOH. The admissibility of R&M expenditure

for life extension of all GTs is considered under Regulation 9(2) (vi) of the 2009 Tariff Regulations.

24. The respondent No.6, BRPL has submitted that the claim of the petitioner for additional capital expenditure under Regulation 9(2) of the 2009 Tariff Regulations is permissible only on the ground that the said expenditure is incurred at the discretion of the Commission. Since, the petitioner has not incurred the said expenditure the claim for capitalization cannot be entertained at this stage. The learned counsel further submitted that supply of power to housing colonies or township of the generating station is to be accounted for and accordingly adjusted as the petitioner was deriving huge benefits on this account. He also submitted that as the proposed works intended to be undertaken by the petitioner are in the nature of R&M works, the approval of the Commission as per Regulation 10(1) of the 2009 Tariff Regulations was required to be taken by the petitioner. Similar submission has also been made by the respondent, UPPCL. The respondent, BRPL has also pointed out that the petitioner has not furnished the list of assets forming part of the project, but not in use, in terms of proviso to Regulation 7(1)(c) of the 2009 Regulations and hence directions be issued to the petitioner accordingly. In response, the petitioner has objected to the above submissions of the respondent and has reiterated its submissions made in its petition and its affidavit dated 26.3.2010 as regards the admissibility of additional capital expenditure in the case of existing generating stations. It has also submitted that the expenditure claimed for the generating station falls under Regulation 9(2)(vi) and therefore the contention of the respondents BRPL and UPPCL was not valid. The petitioner by affidavit dated 3.6.2010 has confirmed that all assets forming part of the capital cost as on 1.4.2009 are in service as on 1.4.2009. As regards supply of power to housing colonies, the petitioner has submitted that in that in terms of the definition of 'generating station' under Section 2(30) of the Act and the Electricity (Removal of Difficulties) Order, 2005, colony consumption form part of auxiliary energy consumption and no undue benefit is derived out of this by the petitioner.

25. The respondents, PSPCL and HPPC have submitted that the additional capital expenditure in respect of the generating station should be considered in terms of the provisions contained in the 2009 Tariff Regulations. In response, the petitioner has clarified that the expenditure claimed for the generating station for 2009-14 falls under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

26. The respondent, NDPL has submitted that any expenditure included in the R&M on consumables and cost of components and spares generally covered under in O&M expenses during the major overhaul of GTs shall be suitable deducted after due prudence from the R&M expenditure to be allowed. It has also submitted that any capitalization can be considered only after corresponding de-capitalization of the assets and reduction from capital cost. In response, the petitioner has submitted that details of de-capitalization for the period 2009-14 had already been submitted and copy served on the respondents.

27. We have considered the submissions of the parties and the documents available on record. The projected capital expenditure under Regulation 9(2) has been considered in accordance with our decision in paragraphs 17 and 18 of this order. As regards supply to housing colonies, the observations of the Commission in paragraph 73 of the order dated 13.4.2012 in Petition No. 282/2009 is adopted in the present case. The relevant portion is extracted as under:

"...It is also noticed from the Electricity (Removal of Difficulty) Fourth order, dated 8.6.2005 issued by the Central Government that the supply of electricity by a generating company to the housing colonies of, or township housing the operating staff of its generating station will be deemed to be an integral part of its activity of generating electricity and the generating company shall not be required to obtain license under the Act for supply of electricity. Thus, the supply of electricity to the housing colony or township housing the operating staff of the generating station having deemed to form an integral part of the generating company by the said order, the submissions of the respondent GRIDCO stands rejected."

28. Taking into consideration the submissions of the parties and after prudence check, the admissibility of R&M Expenditure for life extension of GTs and the additional capital expenditure claimed are discussed in subsequent paragraphs.

Additional Capital Expenditure for R&M of GTs

29. As stated in paragraph 20 above, the proposed expenditure is ₹47607.00 lakh, out of which the estimated expenditure for R&M of GTs and its auxiliaries as submitted to CEA by the petitioner was ₹43043.00 lakh excluding taxes, duties etc. However, the expenditure approved by CEA for R&M of GTs was ₹37978.00 lakh excluding taxes, duties etc. The petitioner has claimed expenditure of ₹54395.00 lakh, including taxes and duties for ₹16417.00 lakh for R&M of GTs. In this regard, the Commission by its letter dated 30.3.2011, directed the petitioner to submit information/details on the following:

- (a) Item wise break-up of Rs. 37978 lakh approved by CEA vide letter dated 30.5.2008 for R&M of Main Gas Turbine Package (GTs, Compressor & Hot Gas Path equipments)*
- (b) The Gross Block of GTs and associated equipments including the rotational spares as on COD of the station for which R&M schemes have been approved by CEA.*
- (c) The gross value of old assets wherever the existing assets have been proposed to be replaced by new assets.*

30. In response, the petitioner vide its affidavit dated 30.5.2011 has furnished the required information. From the item-wise cost break-up of the R&M proposal submitted to CEA, enclosed at Annexure-I of the said affidavit, it is noticed that the same also includes expenditure on compressor components, combustion chamber components, GT components, assembly materials, and coupling materials. However, the expenditure for replacement of hot gas path components like vanes, GT stator and rotor blades, Inlet segment, entry segment, Tip sealing segment etc. form part of the normative O&M expenses specified by the Commission under the 2009 Tariff Regulations. As such, the capitalization of expenditure on replacement of Hot Gas path components under R&M would require the adjustment of the said to the extent covered under O&M expenses allowed to the generating station during 2009-14.

31. Hence, in order to arrive at the cost of Hot Gas path components covered under O&M expenses allowed to the generating station during 2009-14, we examine the provisions of

Regulation 19(c) of the 2009 Tariff Regulations which specifies the O&M expense norms for the gas based generating stations, as under:

(₹ in lakh/MW)					
2009-10	2010-11	2011-12	2012-13	2013-14	Total
14.80	15.65	16.54	17.49	18.49	82.97

32. The O&M norms allowed for the period 2009-14 includes about 35% for Repair Maintenance, Stores & Capital spares etc, and the same works out to ₹29.04 lakh/MW during the 5 year period, which includes at least one Major Inspection (MI), one Hot Gas path Inspection (HGPI) and three Combustion Inspections (CI) for each GTs. Considering the weightage of cost of 1, 1.5 & 2 respectively in the above inspections, the same would translate into the cost of capital spares in the Major Inspection/Overhaul as ₹8.94 lakh/MW (29.04/26x8). The relevant calculations are as under:

Nature of inspections	No. of inspections in each GT	Weightage of Cost/Inspection/GT	Total Weightage of 4 GTs
CI	3	1	12
HGPI	1	1.5	6
MI	1	2	8
		Total	26

- Cost of capital spares in Major Inspection = $\frac{29.04 \times 8}{26} = ₹8.94 \text{ lakh/MW}$
- Total capacity of the generating station = 829.78 MW
- Thus, the total cost of capital spars included in Major Inspection in normative O&M = $8.94 \times 829.78 = ₹7418.233 \text{ lakh}$

33. Based on the above, the amount of ₹7418.23 lakh is deducted from the additional expenditure of ₹54396.00 lakh claimed during the years 2011-12, 2012-13 & 2013-14 for R&M of GT's. Hence, the additional capital expenditure considered for R&M of GTs during the period 2009-14 works out to ₹46977.77 lakh (54396-7418.23). Thus, the total amount allowed for R&M of GTs is ₹46977.77 lakh, subject to de-capitalization of the gross value of the old assets replaced.

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

34. The petitioner *vide* its affidavit dated 30.5.2011 has submitted the value of de-capitalization as ₹14511.00 lakh. The percentage of the components covered under R&M is 38% and accordingly, the petitioner has computed the value of de-capitalization as 38% of the gross block of ₹38187.00 lakh for GTs. The gross block of GTs as furnished by the petitioner works out to 40% (approx) of the gross block of the project, as admitted by the Commission for determination of tariff for the period from 1.4.1998 to 31.3.2000. In view of this, the de-capitalization value of ₹14511.00 lakh is found to be in order and is considered for the purpose of tariff.

35. As stated in paragraph 33 above, the expenditure allowed for R&M of GTs is ₹46977.77 lakh, against the claim of ₹54396.00 lakh. Accordingly, the corresponding de-capitalization value for old assets arrived at is ₹12532.07 lakh ($14511 \times 46977 / 54396$) and the same is considered for the purpose of tariff. Accordingly, the expenditure allowed for R&M of GTs after de-capitalization of gross block of old assets of ₹12532.07 lakh is ₹34445.70 lakh ($46977.77 - 12532.07$). Based on this, the additional capital expenditure for R&M of GTs allowed during the years 2011-12, 2012-13 and 2013-14 is worked out as under:

$\text{₹}(13599/54396 \times 34445.70)$ lakh = ₹8611.43 lakh during 2011-12

$\text{₹}(27198/54396 \times 34445.70)$ lakh = ₹17222.85 lakh during 2012-13

$\text{₹}(13599/54396 \times 34445.70)$ lakh = ₹8611.43 lakh during 2013-14.

Additional capital expenditure claimed under Regulation 9 (2) (ii)

Replacement of PGB coolers by plate type heat exchanger

36. The petitioner has claimed expenditure of ₹274.00 lakh during 2012-13 towards replacement of PGB coolers by plate type heat exchanger under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner has submitted that the existing PGB coolers have deteriorated and are unable to reduce the air temperature. High generator cold/hot air temperature is restricting load on the machine and causing generation loss. Replacement /modification of existing PGB coolers which have outlived their life by a combination of cooling towers and plate type heat

exchangers have been planned and this would achieve desired cold water temperature and generation loss on account of high temperature can be avoided. The justification submitted by the petitioner for replacement of PGB coolers by plate type heat exchanger is found to be in order and since the asset is necessary for efficient and successful operation of the generating station, the expenditure is allowed to be capitalized under Regulation 9(2)(vi) of the 2009 Tariff Regulations, along with corresponding de-capitalization. The petitioner has not submitted the de-capitalization value of the original asset. However, from the de-capitalization value of GTs components on which R&M has been carried out, it is found that the estimated value of the original component is about 26.67% of the value of the new asset. Accordingly, the de-capitalization value of existing PGB coolers works out to ₹73.07 lakh (274.00 x 0.2667). Based on this, the expenditure of ₹200.93 lakh (274.00-73.07) is allowed for capitalization under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

Replacement of Condensate Pre Heater & LP Economizer tubes of WHRB- 3

37. The petitioner has claimed expenditure of ₹51.00 lakh during 2012-13 for replacement of Condensate Pre Heater (CPH) and LP Economizer tubes of WHRB- 3. The petitioner has submitted that the existing WHRBs are in operation for the last 11 years. Due to acid corrosion of tubes of CPH area and economizer area due to HSD firing several tubes have been damaged causing loss in generation and efficiency. The submission of the petitioner is accepted and since the asset is considered necessary for efficient and successful operation of the generating station, the expenditure is allowed under Regulation 9(2)(vi) of the 2009 Tariff Regulations along with corresponding de-capitalization. The petitioner has not submitted the de-capitalization value of the old asset. However, it has been found from the de-capitalization value of GT components on which R&M has been carried out that the estimated value of original component is about 26.67% of the new assets. Accordingly, the de-capitalization value of old assets works out to ₹13.60 lakh (51 x 0.26.67). Accordingly, the expenditure of ₹37.40 lakh (51-13.6) is allowed to be capitalized under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

Phasing out Of Halon system Fire Fighting System

38. The petitioner has claimed expenditure of ₹329.00 lakh during 2010-11 towards the replacement of Halon system for protection of ozone layer under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner has submitted that for reducing the production and consumption of chlorofluorocarbons and several other halons, which are main contributing factors for depletion of ozone layer, the halon system is to be replaced with CO₂ /inert gas system. As the asset is required as statutory compliance under National Fire Protection Association Standard on Clean Agent Fire Extinguishing system (NFPA-2001), the claim of the petitioner is allowed along with the corresponding de-capitalization. It is noticed that the petitioner has not submitted the de-capitalization value of Halon system. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of Halon system works out to ₹87.74 lakh (329 x 0.2667). In view of this, capitalization of ₹241.26 lakh (329-87.74) is allowed under Regulation 9(2)(ii) of the 2009 Tariff Regulations.

Renovation of Generator Excitation system

39. The petitioner has claimed expenditure of ₹58.00 lakh during 2012-13 and ₹58.00 lakh during 2013-14 towards the Renovation of Generator Excitation system under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner has submitted that the said asset has become obsolete with no availability of spares. This system requires complicated tuning and calibration procedures. High failure rate and troubleshooting time has directly lead to generation loss and thus replacement of Automatic voltage Regulator (AVR) with Digital Voltage Regulator is required. The submissions of the petitioner is found reasonable and since the asset is considered necessary for efficient and successful operation of the generating station, the expenditure is allowed under Regulation 9(2)(vi) of the 2009 Tariff Regulations along with corresponding de-capitalization. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of Generator Excitation system

works out to ₹15.50 lakh (58 x 0.2667) during 2012-13 and ₹15.50 lakh (58 x 0.2667) during 2013-14. In view of this, the additional capital expenditure of ₹42.5 lakh (58-15.5) is allowed for capitalization during 2012-13 and ₹42.5 lakh during 2013-14 under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

Renovation of Generator & Transformer Protection Relays

40. The petitioner has claimed expenditure of ₹119.00 lakh during 2011-12 and ₹6.00 lakh during 2013-14 towards the Renovation of Generator & Transformer Protection Relays under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner has submitted that the present Relay systems were installed and commissioned as part of original main plant C&I package and M/s Siemens AG (OEM) has declared all these systems to be obsolete and no spares for the same are being provided. The associated disturbance recorders are not installed and hence fault finding, phase segregation, differentiation between primary and secondary faults takes lot of time resulting in generation loss. Any outage of generator protection relays results in heavy generation loss. Hence replacement of the relays with numerical protection device along with disturbance recorder is envisaged under this scheme. In view of the justification submitted by the petitioner and since the asset is considered necessary for efficient and successful operation of the generating station, we allow the capitalization of this asset under Regulation 9(2)(vi) of the 2009 Tariff Regulations along with corresponding de-capitalization. However, the petitioner has not submitted the de-capitalization value of the original asset. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of Generator & Transformer Protection Relays works out to ₹31.74 lakh (119 x 0.2667) during 2011-12 & ₹1.60 lakh (6 x 0.2667) during 2013-14. Based on this, the additional capital expenditure of ₹87.26 lakh (119-31.74) during 2011-12 and ₹4.40 lakh (6-1.6) during 2013-14 is allowed to be capitalized under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

R&M of Control and Instrumentation System (C&I)

41. The petitioner has claimed expenditure of ₹948.00 lakh during 2011-12, ₹1896.00 lakh during 2012-13 and ₹946.00 lakh during 2013-14 towards R&M of Control and Instrumentation System (C&I) under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner has submitted that the present control systems were installed and commissioned as part of original main plant C&I package and M/s Siemens (OEM) has declared all these systems as obsolete and has been phased out and spares for the same are no more available. The submission of the petitioner is found to be in order and since the asset is considered necessary for efficient and successful operation of the generating station, the expenditure is allowed to be capitalized under Regulation 9(2)(vi) of the 2009 Tariff Regulations along with corresponding de-capitalization. However, the petitioner has not submitted the de-capitalization value of the original asset. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of C&I works out to ₹252.83 lakh (948 x 0.2667) during 2011-12, ₹505.66 lakh (1896 x 0.2667) during 2012-13 and ₹252.30 lakh (946 x 0.2667) during 2013-14. Based on this, the additional capital expenditure of ₹695.17 lakh (948-252.83) during 2011-12, ₹1390.34 lakh (1896-505.66) during 2012-13 and ₹693.7 lakh (946-252.3) during 2013-14 is allowed to be capitalized under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

42. Based on the above discussions, the additional capital expenditure allowed during for the purpose of tariff for the period 2009-14 is as under:

Sl. No.	Regulation	Actual/Projected Expenditure allowed					
		2009-10	2010-11	2011-12	2012-13	2013-14	
1	Replacement of PGB coolers by plate type heat exchanger.	9(2)(vi)	0.00	0.00	0.00	200.93	0.00
2	Replacement of condensate pre-heater & LP economizer tubes of WHRB-3		0.00	0.00	0.00	37.40	0.00
3	Phasing out of Halon Fire Fighting System and replacement with Inergen system.	9(2)(ii)	0.00	241.26	0.00	0.00	0.00
4	Renovation of Generator		0.00	0.00	0.00	42.5	42.5

	Excitation system.						
5	Renovation of Generator & Transformer Protection Relays.	9(2)(vi)	0.00	0.00	87.26	0.00	4.40
6	R&M of Control and Instrumentation System (C&I)		0.00	0.00	695.17	1390.34	693.70
9	Renovation & Moderation of Gas Turbines and its associated equipments including rotational spares.		0.00	0.00	8611.43	17222.85	8611.43
	Total		0.00	241.26	9393.86	18894.02	9352.03

Balance Useful life of the generating station after R&M of Gas Turbines

43. 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 1.4.2014 (completion of major R&M works) and the extended life after R&M of GTs and their weighted average period of operation on above dates and weighted average life are as under:

(₹ in lakh)

Units	Capacity (MW)	COD	Elapsed life up to 31.3.2009	Elapsed life up to 31.3.2014	Useful life after extension of life by 15 years for GTs	Balance life as on	
						1.4.2009	1.4.2014
GT-I	130.19	1.5.1992	16.92	21.92	36.92		
GT-II	130.19	1.6.1992	16.83	21.83	36.83		
GT-III	130.19	1.8.1992	16.67	21.67	36.67		
GT-IV	130.19	1.12.1992	16.33	21.33	36.33		
ST-I	154.51	1.8.1996	12.67	17.67	25.00		
ST-II	154.51	1.4.1997	12.00	17.00	25.00		
Total	829.78		15.07	20.07	32.33	17.27	12.27

44. The weighted average of the elapsed life (period of operation) of the generating station, as on 1.4.2009 works out to 15.07 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 i.e. complete R&M work of all GTs would be completed by 31.3.2014. The weighted average of the period of operation of the generating station as on 1.4.2014 works out to 20.07 years. Considering the life extension of GTs by 15 years from 1.4.2014, the weighted average life of the generating station after R&M of GTs works out to 32.33 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 to 17.27

years as on 1.4.2009 and 12.27 years on 1.4.2014.

45. As, there is no discharges of any liabilities during the period 2009-14, the 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	0.00	241.26	9393.86	18894.02	9352.03	37881.17

Capital Cost for 2009-14

46. 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	87954.32	87954.32	88195.58	97589.44	116483.46
Additional capital expenditure	0.00	241.26	9393.86	18894.02	9352.03
Closing Capital cost	87954.32	88195.58	97589.44	116483.46	125835.49
Average Capital cost	87954.32	88074.95	92892.51	107036.45	121159.48

Debt-Equity Ratio

47. 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.

48. The gross loan and equity amounting to ₹43987.03 lakh, as considered in order dated 21.7.2011 in Petition No.155/2004 has been considered as gross loan and equity as on 1.4.2009. However, the un-discharged liabilities amounting to ₹19.74 lakh included in the capital cost as on 1.4.2009, has been adjusted to debt and equity in the ratio of 50:50. As such, the gross normative loan and equity as on 1.4.2009 is revised to ₹43977.16 lakh each. Further, the additional expenditure admitted above is allocated in debt-equity ratio of 70:30, and the same is subject to truing up in terms of Regulation 6 of the 2009 Tariff Regulations.

Return on Equity

49. 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.”

50. 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	43977.16	43977.16	44049.54	46867.70	52535.90
Addition of Equity due to additional capital expenditure	0.00	72.38	2818.16	5668.21	2805.61
Normative Equity-Closing	43977.16	44049.54	46867.70	52535.90	55341.51
Average Normative Equity	43977.16	44013.35	45458.62	49701.80	53938.71
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)	10326.28	10334.77	10674.14	11670.48	12665.35

Interest on loan

51. 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.

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

- (i) The gross normative loan after adjustment of un-discharged liabilities, amounting to ₹43977.16 lakh as on 1.4.2009 has been considered.
- (ii) Cumulative repayment of loan of ₹42516.04 lakh as on 31.3.2009 as considered in order dated 21.7.2011 in Petition No.155/2004 has been considered as cumulative repayment as on 1.4.2009. However, after taking into 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 ₹42506.50 lakh.
- (iii) Accordingly, the net normative opening loan as on 1.4.2009 works out to ₹1470.66 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) Depreciation allowed 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-capitalizations considered in the projected additional capital expenditure approved above.
- (vi) 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. As such, these Bonds represent the actual loan portfolio as existing on 1.4.2009. Accordingly, in line with the provisions of the Regulation 16 (5) as stated above, weighted average rate of interest has been calculated considering the actual loan portfolio comprising of Bonds Series existing as on 1.4.2009.

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

	<i>(₹ in lakh)</i>				
	2009-10	2010-11	2011-12	2012-13	2013-14
Gross opening loan	43977.16	43977.16	44146.04	50721.75	63947.56
Cumulative repayment of loan upto previous year	42506.50	42532.78	42504.32	40434.08	37052.04
Net Loan Opening	1470.66	1444.38	1641.72	10287.67	26895.52
Addition due to Additional capitalisation	0.00	168.88	6575.70	13225.81	6546.42

Repayment of loan during the year	26.28	32.96	322.07	1429.66	2853.72
Less: Repayment adjustment on account of de-capitalization	0.00	61.42	2392.31	4811.71	2381.69
Add: Repayment adjustment on account of discharges / reversals corresponding to un-discharged liabilities deducted as on 1.4.2009	0.00	0.00	0.00	0.00	0.00
Net Repayment	26.28	(-) 28.46	(-) 2070.24	(-)3382.04	472.03
Net Loan Closing	1444.38	1641.72	10287.67	26895.52	32969.92
Average Loan	1457.52	1543.05	5964.69	18591.59	29932.72
Weighted Average Rate of Interest on Loan	9.3160%	9.3160%	9.3160%	9.3160%	9.3160%
Interest on Loan	135.78	143.75	555.67	1731.99	2788.52

Depreciation

54. 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.”

55. The cumulative depreciation of ₹78660.75 lakh as on 31.3.2009 as per order dated 21.7.2011 in Petition No.155/2004 has been considered. However, 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 ₹78643.10 lakh. Further, the value of freehold land as considered in order dated 21.7.2011 is ₹68.76 lakh as on 31.3.2009. Accordingly, considering the capital cost admitted for the year 2009-10, the balance depreciable value (before depreciation) for the year 2009-10 works out to ₹453.90 lakh. Since, the balance life of the generating station as on 1.4.2009 is 17.27 years, 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. 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	87954.32	87954.32	88195.58	97589.44	116483.46
Closing capital cost	87954.32	88195.58	97589.44	116483.46	125835.49
Average capital cost	87954.32	88074.95	92892.51	107036.45	121159.48
Depreciable value @ 90%	79097.01	79205.57	83541.38	96270.92	108981.65
Remaining useful life at the beginning of the year	17.27	16.27	15.27	14.27	13.27
Balance depreciable value	453.90	536.19	4918.00	20401.31	37868.84
Depreciation (annualized)	26.28	32.96	322.07	1429.66	2853.72
Cumulative depreciation at the end	78669.39	78702.34	78945.44	77299.28	73966.52
Less: Cumulative depreciation reduction due to de-capitalization	0.00	78.97	3075.83	6186.48	3062.18
Add: Cumulative depreciation adjustment on account of discharges	0.00	0.00	0.00	0.00	0.00
Net Cumulative depreciation (at the end of the period)	78669.39	78623.37	75869.62	71112.80	70904.34

Operation & Maintenance expenses

56. 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 Gas Turbine/ Combined cycle generating stations	14.80	15.65	16.54	17.49	18.49

57. 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	12281	12986	13725	14513	15343

58. Based on above norms, the Operation & Maintenance expenses allowed is as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
O&M Expenses	12280.74	12986.06	13725	14513	15343

Normative Plant Availability Factor (NAPAF)

59. The Normative Plant Availability Factor of the generating station is considered as 85% for the period 1.4.2009 to 31.3.2014.

Interest on Working Capital

60. 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.

61. 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.

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

Fuel cost and Energy charges

63. 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 mode of operation between APM, RLNG gas achieved by the generating station during the year 2008-09 was 74% & 1.0% respectively. The same has been used to arrive at the Fuel component (for one month) and Energy Charges (for two months) for the purpose of working capital. Further, the petitioner has not considered any liquid fuel 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	13459.79	13459.79	13496.66	13459.79	13459.79
Liquid fuel stock for 1/2 month	4339.03	4339.03	4350.92	4339.03	4339.03
Energy charges for 2 months	26919.58	26919.58	26993.33	26919.58	26919.58

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

Maintenance Spares

65. 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	3684	3896	4117	4354	4603

66. The 2009 Tariff Regulations provide for maintenance spares @ 30% of the operation & maintenance expenses specified under Regulation 19. Accordingly, the maintenance spares considered for the purpose of tariff is as under.

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Cost of maintenance spares	3684.22	3895.82	4117.37	4353.86	4602.79

Receivables

67. Receivables have been worked out on the basis of two months of fixed and energy charges as shown below:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Variable Charges-2 months	26919.58	26919.58	26993.33	26919.58	26919.58
Fixed Charges- 2 months	4904.09	5033.66	5344.78	6040.75	6779.87
Total	31823.66	31953.24	32338.11	32960.32	33699.45

O&M Expenses

68. O&M expenses for 1 month for the purpose of working capital are allowed as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
O & M for 1 month	1023.40	1082.17	1143.71	1209.40	1278.55

69. 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 stock (APM & RLNG) – 1 month	13459.79	13459.79	13496.66	13459.79	13459.79
Liquid fuel stock – 1/2 month	4339.03	4339.03	4350.92	4339.03	4339.03
Maintenance Spares	3684.22	3895.82	4117.37	4353.86	4602.79
O&M expenses – 1 month	1023.40	1082.17	1143.71	1209.40	1278.55
Receivables – 2 months	31823.66	31953.24	32338.11	32960.32	33699.45
Total working capital	54330.10	54730.05	55446.77	56322.40	57379.61
Rate of interest	12.2500%	12.2500%	12.2500%	12.2500%	12.2500%
Interest on working capital	6655.44	6704.43	6792.23	6899.49	7029.00

Annual Fixed charges for 2009-14

70. 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	26.28	32.96	322.07	1429.66	2853.72
Interest on Loan	135.78	143.75	555.67	1731.99	2788.52
Return on Equity	10326.28	10334.77	10674.14	11670.48	12665.35
Interest on Working Capital	6655.44	6704.43	6792.23	6899.49	7029.00
O&M Expenses	12280.74	12986.06	13724.56	14512.85	15342.63
Total	29424.52	30201.97	32068.67	36244.48	40679.22

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

Energy/Variable Charge

72. Sub-clause (b) of clause (6) of Regulation 21 of 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

$$ECR = \{(GHR \times LPPF \times 100 / \{CVPF \times (100 - Aux)\})\}$$

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.

73. The petitioner has claimed Energy Charge Rate (ECR) of 269.49 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 claimed by the petitioner based on the operational norms specified by the Commission works out as under, and the same is allowed:

	Unit	2009-14		
Capacity	MW	829.78		
Fuel		APM	RLNG	Naphtha
Normative Heat Rate	Kcal/kWh	2075	2075	2075
Aux. Power Consumption	%	3.0	3.0	3.0
Weighted average rate of fuel	Rs./1000SCM	5410.6864	18560.5782	29407.2229
Weighted average GCV of fuel	Kcal/SCM	9361	9360.57	9051
Rate of energy charge ex-bus	Paise/kWh	123.65	424.166	695.035
Mode of Operation on Fuel during 2008-09 (% of schedule generation)	%	74.0	1.0	25.0
ESO in one month @ 85% PLF	MU	499.43	500.80	
Weighted average cost of fuel in 2008-09 – (Ex-bus)	Paise/kWh	269.5018		

74. 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	499.43	499.43	500.80	499.43	499.43
Fuel cost for one month	₹ in lakh	13459.79	13459.79	13496.66	13459.79	13459.79

75. The petitioner shall be entitled to recover the energy charges in accordance with Regulation 21(6)(b) of the 2009 Tariff Regulations.

Application fee and the publication expenses

76. The petitioner has sought approval for the reimbursement of fee of ₹16,59,560/- 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 28.4.2010 has submitted an amount of ₹6,58,304/- has been incurred by it for publication of notice in the newspapers.

77. 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, 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 incurred by the petitioner on application filing fees for 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.

Expenditure incurred for implementation of scheme for provision of supply of electricity in 5 km area around Central Power plants.

78. The petitioner has submitted that in terms of the notification dated 27.4.2010 of the Government of India of 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.

79. 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.

80. 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.

81. This order disposes of Petition No. 224/2009.

Sd/-
[M.DEENA DAYALAN]
MEMBER

Sd/-
[S.JAYARAMAN]
MEMBER

Sd/-
[DR.PRAMOD DEO]
CHAIRPERSON

Annexure -I

Calculation of weighted average rate of interest on loan

Sl. No.	Name of loan		(₹ in lakh)				
			2009-10	2010-11	2011-12	2012-13	2013-14
1	GOI 15% Total (Refinanced with 9.55% bonds on 18.4.2002)	Net opening loan	19.80	17.60	15.40	13.20	11.00
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	2.20	2.20	2.20	2.20	2.20
		Net Closing Loan	17.60	15.40	13.20	11.00	8.80
		Average Loan	18.70	16.50	14.30	12.10	9.90
		Rate of Interest	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
		Interest	1.79	1.58	1.37	1.16	0.95
2	GOI 16% Total (Refinanced with 3982 at 9.55% bonds on 18.4.2002 & 5730 at 8.05%)	Net opening loan	3,584.02	3,185.80	2,787.57	2,389.35	1,991.12
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	398.22	398.22	398.22	398.22	398.22
		Net Closing Loan	3,185.80	2,787.57	2,389.35	1,991.12	1,592.90
		Average Loan	3,384.91	2,986.68	2,588.46	2,190.23	1,792.01
		Rate of Interest	8.70%	8.70%	8.70%	8.70%	8.70%
		Interest	294.32	259.69	225.07	190.44	155.82
3	GOI 17% Total (Refinanced with 2202 at 9.55% bonds on 18.4.2002 & 7141 at 9.55% on 30.4.2002)	Net opening loan	8,409.06	7,474.72	6,540.38	5,606.04	4,671.70
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	934.34	934.34	934.34	934.34	934.34
		Net Closing Loan	7,474.72	6,540.38	5,606.04	4,671.70	3,737.36
		Average Loan	7,941.89	7,007.55	6,073.21	5,138.87	4,204.53
		Rate of Interest	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
		Interest	760.83	671.32	581.81	492.30	402.79
4	Gross Total	Net opening loan	12,012.88	10,678.12	9,343.35	8,008.59	6,673.82
		Add: Addition during the period	-	-	-	-	-
		Less: Repayment during the period	1,334.76	1,334.76	1,334.76	1,334.76	1,334.76
		Net Closing Loan	10,678.12	9,343.35	8,008.59	6,673.82	5,339.06
		Average Loan	11,345.50	10,010.73	8,675.97	7,341.20	6,006.44
		Rate of Interest	9.3160%	9.3160%	9.3160%	9.3160%	9.3160%
		Interest	1,056.94	932.60	808.25	683.90	559.56