CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Coram:
Shri Gireesh. B. Pradhan, Chairperson
Shri A.K.Singhal, Member
Shri A.S. Bakshi, Member

Date of Hearing: 16.07.2015
Date of Order: 15.02.2016

IN THE MATTER OF

Petition No. 459/GT/2014

Revision of tariff in respect of Assam Gas Based Power Plant (291 MW) of North Eastern Electric Power Corporation Ltd for the period from 1.4.2009 to 31.3.2014 based on truing-up exercise.

AND

Petition No. 41/GT/2015

Approval of tariff of Assam Gas Based Power Plant (291MW) for the period from 1.4.2014 to 31.3.2019

AND

IN THE MATTER OF

North Eastern Electric Power Corporation Ltd,
Brookland Compound
Lower New Colony
Shillong-793003 **…Petitioner**

Vs

1. Assam Power Distribution Company Ltd,
"Bijulee Bhawan", Paltanbazar
Guwahati-781 001

2. Meghalaya Power Distribution Corporation Ltd,
Meter Factory Area, Short Round Road
Integrated Office Complex
Shillong-793 001

3. Tripura State Electricity Corporation Ltd,
Bidyut Bhavan, North Banamalipur,
Agartala-799001

4. Power and Electricity Department,
Government of Mizoram, P&E Office Complex,
Electric Veng, Aizawl– 796001

5. Manipur State Power Distribution Company Ltd,
Electrical Complex, Khawai Bazar,
Keishampat,
Imphal - 795001

6. Department of Power,
Vidyut Bhawan,
Government of Arunachal Pradesh,
Itanagar-791111

7. Department of Power,
Government of Nagaland,
Kohima-797001, Nagaland

8. North Eastern Regional Power Committee,
NERPC Complex, Dong Parmaw
Lapalang, Shillong-793 003

9. North Eastern Regional Load Despatch Centre,
Dongtieh, Lower Nongrah
Lapalang, Shillong-793 006 **.....Respondents**

Parties present:

1. Shri Rana Bose, NEEPCO
2. Shri Paresh Ch. Barman, NEEPCO
3. Shri Devapriya Choudhary, NEEPCO
4. Ms. Elizabeth Pyrbot, NEEPCO
5. Shri K. Goswami, APDCL

ORDER

Petition No. 459/GT/2014 has been filed by the petitioner for revision of tariff after truing-up exercise with respect to capital expenditure including additional capital expenditure incurred during the period 2009-14in respect of Assam Gas Based Power Project (291 MW) (hereinafter referred to as "the generating station") in accordance with the provisions of Regulation 6 (1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "the 2009 Tariff Regulations").

2. During the pendency of the above petition, the petitioner has filed Petition No. 41/GT/2015 for approval of tariff in respect of the generating station for the period 2014-19 in accordance with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations").

3. Assam Gas Based Power Project (AGBPP) is a Combined Cycle Power generating station and comprises of six Gas Turbines each of 33.5 MW capacity and three Steam Turbine each of 30 MW capacity. The exhaust of each Gas Turbine is fed into a Waste Heat Recovery Boiler. The steam from two such boilers is used to run one Steam Turbine Generator set.

Thus, there are three Combined Cycle Modules. The power plant uses natural gas as its fuel and the natural gas from the oil fields of Assam is received at a pressure of about 5.5 kg/cm^2 and is fed to a Gas Booster station to increase the pressure to about 21kg/cm^2 before being fed to the gas stations. The dates of commercial operation of the individual units of the generation station with corresponding unit capacities are as under:

Unit No.	Date of Commercial Operation	Capacity
GT-1	1.5.1995	33.5 MW
GT-2	1.5.1995	33.5 MW
GT-3	1.7.1995	33.5 MW
GT-4	1.8.1995	33.5 MW
GT-5	1.4.1997	33.5 MW
GT-6	1.4.1997	33.5 MW
ST-1	1.4.1999	30 MW
ST-2	1.4.1999	30 MW
ST-3	1.4.1999	30 MW
Generation Station	**1.4.1999**	**291 MW**

4. The tariff of the generating station for the period 2009-14 was determined by the Commission vide order dated 6.9.2011 in Petition No.295/2009 based on capital cost of ₹148103.44 lakh as on 1.4.2009. Subsequently, the annual fixed charges were revised after truing-up by Commission's order dated 6.4.2015 in Petition No.237/GT/2013 based on the actual additional capital expenditure incurred for the period 2009-12 and the projected additional capital expenditure incurred for the years 2012-13 and 2013-14. Aggrieved by the said order dated 6.4.2015, the petitioner had filed Review Petition (Petition No.8/RP/2015) on the ground of computation of balance useful life of the plant and calculation of depreciation for the period 2009-14. By order dated 26.11.2015 the Commission dismissed the review petition as *infructuous* and had observed as under:

> *"5. It is observed from Petition No. 459/GT/2014 filed by the petitioner for revision of tariff of the generating station for the period 2009-14 after truing-up in terms of the Regulation 6 (1) of the 2009 Tariff Regulations that the expenditure on Gas engines allowed under R&M vide Commission's order dated 6.9.2011 in Petition No. 295/2009 and order dated 6.4.2015 in Petition No. 237/GT/2013 petitioner has not been capitalized by the petitioner. It is however observed from Petition No. 41/GT/2015 filed by the petitioner for determination of tariff of the generating station for the period 2014-19 that the R&M works on Gas engines have been deferred beyond 31.3.2014 and the expenditure on this count has been claimed during the period 2014-19. Considering the fact that major R&M work on Gas engines are proposed to be undertaken and completed during the tariff period 2014-19 by revision in phasing of expenditure and that the benefit of R&M would be passed on to the beneficiaries during the next tariff period (2014-19), the prayer of the petitioner for computation of balance useful life of the plant and the calculation of depreciation for the period 2009-14 no longer survives in this petition. Accordingly, the review petition is dismissed as infructuous."*

5. Based on the above, the annual fixed charges were revised by Commission's order dated 26.11.2015 as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	13709.30	14211.07	14224.76	14233.17	14533.29
Interest on Loan	1242.30	642.22	226.78	109.99	123.82
Depreciation	7695.80	7695.05	1290.08	1300.17	1476.12
Interest on Working Capital	1362.80	1386.96	1273.90	1300.08	1341.32
O&M Expenses	6663.90	7045.11	7446.69	7874.46	8325.51
Total	**30674.11**	**30980.40**	**24462.21**	**24817.88**	**25800.06**

Petition No. 459/GT/2014

6. Clause (1) of Regulation 6 of the 2009 Tariff Regulations provides as under:

"6. Truing up of Capital Expenditure and Tariff

(1) The Commission shall carry out truing up exercise along with the tariff petition filed for the next tariff period, with respect to the capital expenditure including additional capital expenditure incurred up to 31.3.2014, as admitted by the Commission after prudence check at the time of truing up.

Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make an application before the Commission one more time prior to 2013-14 for revision of tariff."

7. The annual fixed charges claimed by the petitioner in this petition for the period 2009-14 are as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	13710.40	14212.81	14226.98	14234.34	14455.11
Interest on Loan	1294.48	654.45	222.15	83.50	4.24
Depreciation	7704.56	7704.76	1398.18	1407.74	1477.26
Interest on Working Capital	1364.56	1387.91	1291.93	1314.29	1349.71
O & M Expenses	6663.90	7045.11	7446.69	7874.46	8325.51
Total	**30737.90**	**31005.04**	**24585.93**	**24914.33**	**25611.83**

8. Both the petitions were heard on 16.7.2015 and the Commission after directing the petitioner to submit the additional information/documents in Petition No.41/GT/2015 reserved its orders in the said petitions. In compliance with the above directions, the petitioner vide affidavit dated 6.8.2015 has submitted the additional information and has also served copies of the additional information on the respondents. Reply has been filed by the respondent No.1, APDCL and the petitioner has filed its rejoinder to the same. Accordingly, based on the

submissions of the parties and the documents available on record, we proceed to revise the annual fixed charges of the generating station as stated in the subsequent paragraphs.

Capital cost

9. The last proviso of Clause 2 of Regulation 7 of the 2009 Regulations provides as under:

"Provided also that in case of the existing projects, the capital cost admitted by the Commission prior to 1.4.2009 and the additional capital expenditure 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. The Commission vide its order dated 6.4.2015 in Petition No. 237/GT/2013 had considered the opening capital cost of ₹148103.44 lakh as on 1.4.2009. The same has been considered for revision of tariff of the generating station for the period 2009-14.

Actual additional capital expenditure

11. Regulation 9 of the 2009 regulations provides as under:

"*9(2) The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:*

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

(ii) Change in law;

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

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

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

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

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

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

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

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

(ix) Expenditure on account of creation of infrastructure for supply of reliable power to rural households within a radius of five kilometres of the power station if, the generating company does not intend to meet such expenditure as part of its Corporate Social Responsibility."

12. The actual / projected additional capital expenditure allowed for the period 2009-14 by order dated 6.4.2015 in Petition No. 237/GT/2013 is summarized as under:

(₹in lakh)

Sl. No	**Head of Works/ Equipment**	**Additional Capital Expenditure**					
		2009-10 (Actual)	**2010-11 (Actual)**	**2011-12 (Actual)**	**2012-13 (Projected)**	**2013-14 (Projected)**	**Total**
A.	**Additional Capital Expenditure**						
1	Replacement of radiators of gas engines of GBS-Phase wise	0.00	0.00	0.00	0.00	802.00	802.00
2	De-capitalization	0.00	0.00	0.00	0.00	401.00	401.00
3	Net Additional Capital Expenditure (1-2)	0.00	0.00	0.00	0.00	401.00	401.00
4	Additional Inlet scrubber	0.00	0.00	0.00	0.00	112.00	112.00
5	Replacement of engine fuel gas filter system	0.00	0.00	0.00	0.00	235.00	235.00
6	Replacement of gas engines of GBS Phase wise	0.00	0.00	0.00	0.00	4238.00	4238.00
7	De-capitalization	0.00	0.00	0.00	0.00	2119.00	2119.00
8	Net Additional Capital Expenditure (6-7)	0.00	0.00	0.00	0.00	2119.00	2119.00
9	Up gradation of MEGAC MACTUS control system of NHI make gas turbines -Phase wise	0.00	0.00	0.00	0.00	2427.00	2427.00
10	De-Capitalization	0.00	0.00	0.00	0.00	1213.50	1213.50
11	Net Additional Capital Expenditure (9-10)	0.00	0.00	0.00	0.00	1213.50	1213.50
12	Up gradation of Mark IV control systems of BHEL make gas turbines	0.00	0.00	0.00	414.00	0.00	414.00
13	De-capitalization	0.00	0.00	0.00	151.90	0.00	151.90

14	Net Additional Capital Expenditure (12-13)	0.00	0.00	0.00	262.10	0.00	262.10
15	**Sub-total (3+4+5+8+11+14)**	**0.00**	**0.00**	**0.00**	**262.10**	**4080.50**	**4342.60**
B.	**New Claims**						
16	Procurement and Commissioning of 220V DC Battery Bank	0.00	0.00	0.00	19.60	0.00	19.60
18	De-Capitalization	0.00	0.00	0.00	8.43	0.00	8.43
19	Net Additional Capital Expenditure	0.00	0.00	0.00	11.17	0.00	11.17
20	Replacement of existing relays by numerical distance protection relay	0.00	0.00	0.00	20.00	0.00	20.00
21	De-Capitalization	0.00	0.00	0.00	3.75	0.00	3.75
22	Net Additional Capital Expenditure	0.00	0.00	0.00	16.25	0.00	16.25
23	**Total Additional Capital expenditure (Gross)**	0.00	0.00	0.00	**453.60**	**7814.00**	**8267.60**
24	De-capitalisation	0.00	0.00	0.00	164.08	3733.50	3897.58
25	**Total net additional capitalisation allowed**	**0.00**	**0.00**	**0.00**	**289.52**	**4080.50**	**4370.02**
26	**Exclusions not allowed**	(-) 27.94	(-)1.11	0.00	0.00	0.00	29.05
	Net additional capital Expenditure allowed	**(-) 27.94**	**(-) 1.11**	**0.00**	**289.52**	**4080.50**	**4340.97**

Actual additional capital expenditure for the period 2009-12

13. As stated above, the Commission vide its order dated 6.4.2015 in Petition No.237/GT/2013 had allowed the net additional capital expenditure of (-) ₹27.94 lakh for 2009-10, (-) ₹1.11 lakh for 2010-11 and 'nil' amount for 2011-12. However, the petitioner in this petition has claimed additional capital expenditure of ₹7.55 lakh in 2010-11 for Tools & Plants which was earlier disallowed in order dated 6.4.2015. In view of this, the claim of the petitioner has not been considered and accordingly the additional capital expenditure for the period 2009-12 has not been reopened in this order.

Actual additional capital expenditure for the period 2012-14

14. The break-up details of the actual additional capital expenditure claimed by the petitioner for the years 2012-13 and 2013-14 is as under:

(₹in lakh)

Sl. No	Head of works/equipment	2012-13	2013-14
1	Up-gradation of MEGAC MACTUS control system of MHI make gas turbines GT-3	-	1240.28
	Up-gradation of MEGAC MACTUS control system of MHI make gas turbines GT-4	-	969.02
2	Up gradation of Mark IV control systems of BHEL make gas	377.55	-

	turbines GT-4		
	New Claims		
3	Diesel Operated Forklift Truck,3.6 mtr Mast, solid Tyres, Dual Drive Model ACEAE30D	-	-
4	Procurement and Commissioning of 220 V DC Battery Bank	20.27	38.42
5	Replacement of existing relays by numerical distance protection relay	19.52	-
	Total	**417.34**	**2247.72**
	De-capitalization of old asset replaced by new assets		
6	Up gradation of MEGAC MACTUS control system of MHI make gas turbines GT-3	-	(-) 448.09
	Up gradation of MEGAC MACTUS control system of MHI make gas turbines GT-4	(-) 151.90	-
	Up gradation of MEGAC MACTUS control system of MHI make gas turbines GT-4	-	(-) 351.66
7	Procurement and Commissioning of 220 V DC Battery Bank	(-) 8.43	(-) 14.66
8	Replacement of existing relays by numerical distance protection relay	(-) 3.75	-
	Total de-capitalization	**(-) 164.08**	**(-) 814.41**
	Net additional capital expenditure claimed	**253.26**	**1433.32**

15. It could be observed from the above that there is a decrease of ₹36.26 lakh (453.60–417.34) during 2012-13 and ₹5566.28 lakh (7814.00–2247.72) during 2013-14 in the actual additional capital expenditure claimed by the petitioner as against the projected additional capital expenditure allowed in order dated 6.4.2015 in Petition No. 237/GT/2013. The variation in the actual additional expenditure claimed for 2012-13 and 2013-14 as against the projected additional capital expenditure for the period 2012-14 allowed vide order dated 6.4.2015 in Petition No. 237/GT/2013 for the period 2012-13 to 2013-14 is on account of the following:

2012-13

16. There is an increased claim for an expenditure of ₹0.67 lakh for 220 V DC Battery and reduction of ₹0.48 lakh towards replacement of existing relays by Numerical relays and ₹36.45 lakh towards up-gradation of Mark-IV control system, thereby resulting in the net reduction of ₹36.26 lakh in the expenditure claimed for this year.

2013-14

17. There is new claim for expenditure of₹38.42 lakh for 220 V DC Battery sets. Also, there is a reduction of ₹5604.70 lakh (₹802.00 lakh for replacement of radiators of gas engines, ₹112.00 lakh for additional inlet scrubber, ₹235.00 lakh claimed towards Replacement of engine fuel gas filter system, ₹4238.00 lakh for Replacement of gas engines of GBS Phase-wise and ₹217.70 lakh for Up-gradation of MEGAC control system of MHI in case of GT-3 and

GT-4, thereby resulting in the net reduction of₹5566.28 lakh in the expenditure claimed for this year.

18. The petitioner vide its affidavit dated 5.6.2015 has submitted that it had not claimed additional capital expenditure of ₹2000 lakh (₹500 lakh in 2010-11 and ₹1500 lakh in 2011-12) towards the replacement of radiators of gas engines, ₹300 lakh for additional inlet scrubber, ₹200 lakh for replacement engine fuel gas filter system during 2011-12 and ₹3700 lakh (₹1200 lakh in 2012-13 and ₹2500 lakh in 2013-14) for replacement of gas engines of Gas Booster Station (GBS) phase-wise on the ground that above works related to GBS could not be completed due to delay in supply of one of the vital items i.e. Air Cooled Heat Exchangers (ACHE). Accordingly, it has submitted that the additional capital expenditure on these items/assets have been deferred for the next tariff period i.e. 2014-19. In consideration of the submissions of the petitioner, the additional capital expenditure deferred for the tariff period 2014-19 and if claimed by the petitioner, shall be considered in terms of the provisions of the 2014 Tariff Regulations.

19. The claim of the petitioner for actual additional capital expenditure for the years 2012-13 to 2013-14 has been examined based on the submission of the parties and the documents available on record and on prudence check considered as discussed below:

Regulation 9(2)(vi)

Up-gradation of MEGAC MACTUS control system of MHI make Gas Turbines

20. As against the projected additional capital expenditure of ₹2427.00 lakh allowed in order dated 6.4.2015 in Petition No. 237/GT/2014, the petitioner has claimed actual additional capital expenditure of ₹2209.30 lakh (₹1240.28 lakh for GT-3 and ₹969.02 lakh for GT-4) in 2013-14 towards up-gradation of MEGAC MACTUS control system of MHI make Gas Turbines, resulting in a reduced claim of ₹217.70 lakh. In justification of the said claim, the petitioner vide Form-9 of the affidavit dated 5.6.2015 has submitted that the actual additional capital expenditure incurred was essential for smooth & efficient operation of the generating station and was allowed vide order dated 6.9.2011 in Petition No. 295/2009. Since the

Commission by order dated 6.4.2015 in Petition No.237/GT/2013 had allowed the projected capital expenditure for this item and there is a reduction in the additional capital expenditure claimed by the petitioner for this item, the actual additional capital expenditure of ₹2209.30 lakh (₹1240.28 lakh for GTG-3 and ₹969.02 lakh for GTG-4) towards the up-gradation of MEGAC MACTUS control system of MHI make Gas Turbines in 2013-14 is allowed. The petitioner has furnished the gross block of old asset for ₹799.75 lakh (₹448.09 lakh for GTG-3 + ₹351.66 for GTG-4). Accordingly, on net basis, the actual additional capital expenditure of ₹792.19 lakh (1240.28 – 448.09) and ₹617.36 lakh (969.02–351.66) has been allowed towards the up-gradation of MEGAC MACTUS control system of MHI make Gas Turbines (GT-3 & GT-4) under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

Up-gradation of Mark IV control systems of BHEL make Gas Turbines

21. As against the projected additional capital expenditure of ₹414.00 lakh allowed vide order dated 6.4.2015 in Petition No. 237/GT/2015, the petitioner has claimed actual additional capital expenditure ₹377.55 lakh towards the up-gradation of Mark IV control systems of M/s BHEL make Gas Turbines in 2012-13, thereby resulting in a reduced claim of ₹36.45 lakh. In justification of the same, the petitioner vide Form-9 of the affidavit dated 5.6.2015 has submitted that the up-gradation was essential due to obsolescence of the existing system and consequential absence of spares and service support and that the Commission vide order dated 6.9.2011 in Petition No. 295/2009 had allowed the said item. In consideration of the above submissions and since there is reduction in the actual additional capital expenditure claimed by the petitioner as against those allowed in order dated 6.4.2015 in Petition No.237/GT/2013, the actual additional capital expenditure of ₹377.55 lakh towards up-gradation of Mark IV control systems of M/s BHEL make Gas Turbines in 2012-13 is allowed. The petitioner has furnished the gross block of old asset for ₹151.90 lakh. Accordingly, on net basis, the actual additional capital expenditure of ₹225.65 lakh (377.55 – 151.90) is allowed under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

New claims-Regulation 9(2)(iv)

Procurement and Commissioning of 220V DC Battery Bank

22. The petitioner has claimed the actual additional capital expenditure of ₹58.69 lakh (₹20.27 lakh in 2012-13 and ₹38.42 lakh in 2013-14) towards the Procurement and Commissioning of 220V DC Battery Bank for Steam Turbine Generator (Unit-I and Unit-III) under the buyback scheme. In justification, the petitioner has submitted that the old battery has been replaced due to completion of its normal useful life of 10-12 years. In view of the submissions of the petitioner and since the expenditure is necessary for efficient and successful operation of the generating station, the actual capital expenditure of ₹58.69 lakh (₹20.27 lakh in 2012-13 and ₹38.42 lakh in 2013-14) has been allowed to be capitalised along with the corresponding de-capitalization of ₹23.09 lakh (₹8.43 lakh in 2012-12 and ₹14.66 lakh in 2013-14). Accordingly, on net basis, the actual additional capital expenditure of ₹11.84 lakh (20.27–8.43) in 2012-13 and ₹23.76 lakh (38.42 –14.66) in 2013-14 has been allowed under Regulation 9(2)(vi) of the 2009 Tariff Regulations.

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

Replacement of the existing relays by Numerical distance protection relay

23. The petitioner has claimed actual additional capital expenditure of ₹19.52 lakh in 2012-13 towards Replacement of the existing relays by Numerical distance protection relay.In justification of the same, the petitioner has submitted that in compliance to the CEA (Technical Standards of Connectivity to the Grid) Regulation, 2007,the Numerical distance protection relays are to be installed in 220 kV and above feeders. In consideration of the submissions of the petitioner and since the expenditure incurred is in compliance with the provisions of the regulations specified by the CEA, the actual capital expenditure of ₹19.52 lakh has been allowed along with the corresponding de-capitalization of ₹3.75 lakh. Accordingly, on net basis, the actual additional capital expenditure of ₹15.77 lakh (19.52 – 3.75) in 2012-13 has been allowed under Regulation 9(2)(ii) of the 2009 Tariff Regulations.

Reconciliation of actual additional capital expenditure for 2012-13 and 2013-14

24. In response to the directions of the Commission vide ROP of the hearing dated 7.4.2015, the petitioner vide its affidavit dated 5.6.2015 has submitted the audited reconciliation statement of the actual additional capital expenditure for the period 2009-14. The reconciliation statement of actual additional capital expenditure for the years 2012-13 and 2013-14 duly audited with the books of accounts is summarised as under:

(₹ in lakh)

	2012-13 (actual)	2013-14 (actual)
Opening Gross Block as on 1st April of year (A)	151520.77	151785.22
Closing Gross Block as on 31st March of year(B)	151785.22	153298.65
Addition during the year (as per books) C=(B-A)	264.45	1513.43
Exclusions (D)	11.19	80.11
Additional Capitalisation on cash basis (C-D)	**253.26**	**1433.32**

25. It is noticed from the above that the actual additional capital expenditure claimed by the petitioner is at variance with the additional capital expenditure as per books of accounts and the same is on account of exclusion of certain expenditure considered for the purpose of tariff. The exclusions for the years 2012-13 and 2013-14 under different heads are as under:

(₹ in lakh)

Sl. No	Exclusion	2012-13	2013-14
1	Minor Assets	25.03	47.72
2	Assets of O&M nature	0.00	33.11
3	De-capitalisation of the old assets replaced by new assets	(-) 3.54	(-) 0.72
4	De-capitalisation of old assets without replacement by new assets	(-) 9.77	0.00
5	Transfer to other Office/Unit	(-) 0.53	0.00
	Total Exclusions	11.19	80.11

Minor Assets

26. The petitioner has excluded amounts of ₹25.03 lakh in 2012-13 and ₹47.72 lakh in 2013-14 towards assets which are minor in nature. Since these items are not claimed for the purpose of tariff and do not form part of capital cost, the exclusions sought on this count is in order and has been allowed.

Assets of O&M nature

27. The petitioner has excluded an amount of ₹33.11 lakh in 2013-14 towards assets which are in the nature of O&M expenses. Since these assets are not claimed for the purpose of

tariff and do not form part of the capital cost, the exclusion sought on this count is in order and has been allowed.

De-capitalization of the old assets replaced by new assets under buy back scheme

28. The petitioner has sought exclusion for de-capitalization of (-)₹3.54 lakh in 2012-13 and (-)₹0.72 lakh in 2013-14 on account of these assets becoming unserviceable. It is observed from the details of de-capitalization furnished vide affidavit dated 19.9.2014 by the petitioner that the assets de-capitalized under the buyback scheme were part of the capital cost. Hence the exclusion of (-)₹3.54 lakh in 2012-13, (-)₹0.72 lakh in 2013-14 has not been allowed.

De-capitalization of old assets without any replacement by new assets

29. The petitioner has sought exclusion of (-) ₹9.77 lakh in 2012-13 for de-capitalization of assets such as Ambassador car, Gypsy Jeep etc. on account of these becoming unserviceable. It is observed from the details of de-capitalization furnished by the petitioner vide affidavit dated 19.9.2014 that the above assets de-capitalized were part of the capital cost. In view of this, the exclusion of (-)₹9.77 lakh in 2012-13 is not allowed.

Transfer to other Office/Unit

30. The petitioner has excluded an amount of (-)₹0.53 lakh in 2012-13 for assets such as EDP & Office Equipment which were transferred from the office of the generating station to Headquarters at Shillong. The Commission while dealing with the petitions for additional capitalization in respect of generating stations of NTPC had decided that both positive and negative entries arising out of inter-unit transfers of temporary nature shall be ignored for the purposes of tariff. In line with the said decision, the exclusion of (-)₹0.53 lakh in 2012-13 on account of inter-unit transfer of equipment is allowed.

31. The details of the exclusions claimed vis-à-vis allowed for the years 201-12 and 2013-14 is summarised as under:

(₹in lakh)

	2012-13	**2013-14**
Exclusion claimed(A)	11.19	80.11
Exclusion allowed(B)	24.50	80.83
Exclusion not allowed (B-A)	13.31	0.72

32. Based on the above discussions, the net actual additional capital expenditure allowed for the years 2012-13 and 2013-14 is detailed as under:

(₹in lakh)

Sl. No.	Head of works/equipment	2012-13	2013-14
1	Up gradation of MEGAC MACTUS control system of MHI make GT-3	-	1240.28
	De-capitalization	-	(-) 448.09
	Net additional capital expenditure (A)	**-**	**792.19**
2	Up gradation of MEGAC MACTUS control system of MHI make gas turbines (GT-4)	--	969.02
	De-capitalization	-	(-) 351.66
	Net additional capital expenditure (B)	**-**	**617.36**
3	Up-gradation of Mark IV control systems of BHEL make Gas turbines	377.55	-
	De-capitalization	(-) 151.90	-
	Net additional capital expenditure (C)	**225.65**	-
4	Procurement and Commissioning of 220 V DC Battery Bank	20.27	38.42
	De-capitalization	(-) 8.43	(-) 14.66
	Net additional capital expenditure (D)	**11.84**	**23.76**
5	Replacement of existing relays by numerical distance protection relay	19.52	-
	De-capitalization	(-) 3.75	-
	Net additional capital expenditure (E)	15.77	-
	Net additional capital expenditure allowed **F= (A+B+C+D+E)**	253.26	1433.31
	Exclusions not allowed **(G)**	13.31	0.71
	Net additional capital expenditure allowed (F-G)	**239.95**	**1432.60**

33. Accordingly, the net actual additional capital expenditure allowed vide order dated 6.4.2015 in Petition No. 237/GT/2013 for the period 2009-10 to 2011-12 and the net actual additional capital expenditure allowed for the years 2012-13 to 2013-14 in this order is summarised as under:

(₹In lakh)

2009-10 (actual)	2010-11 (actual)	2011-12 (actual)	2012-13 (actual)	2013-14 (actual)
(-) 27.94	**(-) 1.11**	**0.00**	**239.95**	**1432.60**

Capital Cost for 2009-14

34. Accordingly, the capital cost approved for the period 2009-14 is as under:

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Capital cost as on 1st April of the financial year	148103.44	148075.50	148074.39	148074.39	148314.34
Additional Capital expenditure allowed	(-) 27.94	(-) 1.11	0.00	239.95	1432.60
Capital Cost as on 31st March of the financial year	148075.50	148074.39	148074.39	148314.34	149746.94

Debt-Equity Ratio

35. Regulation 12 of the 2009 Tariff Regulations provides as under:

"(1) For a project declared under commercial operation on or after 1.4.2009, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

Explanation.-The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually 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"

36. In terms of the above said regulation, the debt-equity ratio of 70:30 has been considered on the additional capital expenditure after adjustment of un-discharged liability, for the purpose of tariff.

Return on Equity

37. Regulation 15 of the 2009 Tariff Regulations 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 normal tax rate for the year 2008-09 applicable to the concerned generating company or the transmission licensee, as the case may be.

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

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

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

38. The petitioner has considered MAT rate for grossing up of the Rate of Return on Equity and the same has been considered. Accordingly, the Return on Equity has been worked out as under:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Gross Notional Equity	73419.71	73411.33	73411.00	73411.00	73482.98
Addition due to Additional Capitalisation	(-) 8.38	(-) 0.33	-	71.99	429.78
Closing Equity	73411.33	73411.00	73411.00	73482.98	73912.76
Average Equity	73415.52	73411.17	73411.00	73446.99	73697.87
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Tax rate for the year (MAT)	16.995%	19.931%	20.008%	20.008%	20.961%
Rate of Return on Equity (Pre Tax)	18.674%	19.358%	19.377%	19.377%	19.610%
Return on Equity (Pre Tax)	**13709.30**	**14211.07**	**14224.76**	**14231.73**	**14452.48**

Interest on loan

39. Regulation 16 of the 2009 Tariff Regulations provides as under:

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

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

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

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

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

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

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

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

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

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

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

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

40. Interest on loan has been computed as under:

(i) The opening gross normative loan as on 1.4.2009 has been arrived at in accordance with the above regulations.

(ii) The weighted average rate of interest has been worked out on the basis of the actual loan portfolio of respective year applicable to the project.

(iii)The repayment for the year for the period 2009-14 has been considered equal to the depreciation allowed for that year.

(iv) The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest.

41. Based on the above, interest on loan for the purpose of tariff is worked out as under:

(₹ in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Gross Normative Loan	74683.73	74664.17	74663.39	74663.39	74831.36
Cumulative Repayment up to Previous Year	56309.37	64005.17	71700.22	72990.30	74288.75
Net Loan-Opening	18374.36	10659.00	2963.17	1673.09	542.61
Repayment during the year	(-) 19.56	(-) 0.78	0.00	167.97	1002.82
Addition due to Additional capitalization	7695.80	7695.05	1290.08	1298.44	1373.42
Net Loan-Closing	10659.00	2963.17	1673.09	542.61	172.01
Average Loan	14516.68	6,811.08	2318.13	1107.85	357.31
Weighted Average Rate of Interest on Loan	8.558%	9.429%	9.783%	9.783%	9.783%
Interest on loan	**1242.30**	**642.22**	**226.78**	**108.38**	**34.96**

Depreciation

42. 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".

43. The date of commercial operation of the generating station is 1.3.1999. Since the generating station has completed 12 years of operation as on 1.3.2011, the weighted average rate of depreciation of 5.202%, calculated as above, has been considered for the calculation of depreciation during the year 2009-10 and 2010-11. The remaining depreciable value has been spread over the balance useful life of the assets from the year 2011-12 onwards to 2013-14.Accordingly, in terms of the decision in Commission's order dated 26.11.2015 in Petition No.8/RP/2015, depreciation has been worked out as under:

(₹in lakh)

	2009-10	**2010-11**	**2011-12**	**2012-13**	**2013-14**
Opening Gross Block	148103.44	148075.50	148074.39	148074.39	148314.34
Additional Capitalization	(-) 27.94	(-) 1.11	0.00	239.95	1432.60
Closing Gross Block	148075.50	148074.39	148074.39	148314.34	149746.94
Average Gross Block	148089.47	148074.95	148074.39	148194.37	149030.64
Value of freehold land included in Gross Block	150.17	150.17	150.17	150.17	150.17
Value of gross block excluding land	147939.30	147924.78	147924.22	148044.20	148880.47
Rate of Depreciation	5.202%	5.202%	-	-	-
Depreciation value including amortisation of lease land in 25 years	133145.37	133132.30	133131.80	133239.78	133992.43
Balance Useful life of the asset	14.92	13.92	12.92	11.92	10.92
Remaining Depreciable value	33336.99	25648.40	17953.71	16771.61	16366.66
Depreciation	**7695.80**	**7695.05**	**1290.08**	**1298.44**	**1373.42**

Operation & Maintenance Expenses

44. The O&M expenses allowed vide order dated 6.4.2015 in Petition No.237/GT/2013 has been considered.

(₹in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
6663.90	7045.11	7446.69	7874.46	8325.51

Operational Norms

45. The operational norms considered in order dated 6.4.2015 has been considered.

Interest on Working Capital

46. In accordance with sub-clause (b) of clause (1) of Regulation 18 of the 2009 Tariff Regulations, working capital in case of open cycle gas turbine shall cover***:***

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

(ii) xxxxxxx

(iii) Maintenance spares at 30% of operation and maintenance expenses specified in Regulation 19;

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

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

47. The fuel cost for one month in working capital has been considered as under:

(₹in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
1152.69	1152.69	1155.85	1152.69	1152.69

Maintenance Spares

48. Maintenance spares as considered in order dated 6.4.2015 has been considered as under:

(₹ in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
1999.17	2113.53	2234.01	2362.34	2497.65

Receivables

49. In terms of the provisions of the above regulations, receivables equivalent to two months of capacity charge and energy charge calculated on normative plant availability factor is allowed as under:

(₹in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
7417.74	7468.78	6388.74	6440.89	6559.05

O&M Expenses (1 month)

50. In terms of the provisions of the above regulations Operation and maintenance expenses for one month as allowed in order dated 6.4.2015 is allowed as under:

(₹in lakh)

2009-10	2010-11	2011-12	2012-13	2013-14
555.33	587.09	620.56	656.21	693.79

51. In terms of Clauses (3) and (4) of Regulation 18 of the 2009 Tariff Regulations, the SBI PLR as on 1.4.2009 was 12.25%.The said interest rate has been considered in the calculations for the purpose of tariff.

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

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Fuel Cost	1152.69	1152.69	1155.85	1152.69	1152.69
O & M expenses	555.33	587.09	620.56	656.21	693.79
Maintenance Spares	1999.17	2113.53	2234.01	2362.34	2497.65
Receivables	7417.74	7468.78	6388.74	6440.89	6559.05
Total	11124.92	11322.10	10399.15	10612.12	10903.19
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
Interest on Working Capital	**1362.80**	**1386.96**	**1273.90**	**1299.98**	**1335.64**

Annual Fixed Charges

53. The annual fixed charges approved for the generating station for the period from 1.4.2009 to 31.3.2014 is as under:

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	13709.30	14211.07	14224.76	14231.73	14452.48
Interest on Loan	1242.30	642.22	226.78	108.38	34.96
Depreciation	7695.80	7695.05	1290.08	1298.44	1373.42
Interest on Working Capital	1362.80	1386.96	1273.90	1299.98	1335.64
O & M Expenses	6663.90	7045.11	7446.69	7874.46	8325.51
Total	**30674.11**	**30980.40**	**24462.21**	**24813.00**	**25522.01**

54. The difference between the annual fixed charges already recovered by the petitioner and the annual fixed charges determined by this order as above shall be adjusted in terms of Clause (6) of Regulation 6 of the 2009 Tariff Regulations.

Petition No.41/GT/2015

Determination of Annual Fixed Charges for the period 2014-19

55. As stated, the petitioner has filed Petition No.41/GT/2015 and has prayed for the determination of annual fixed charges of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	14559.41	16885.69	17952.73	18105.46	18232.40
Interest on Loan	0.00	90.66	110.97	20.31	0.00
Depreciation	1638.16	2024.34	2524.74	3188.26	3585.32
Interest on Working Capital	2339.06	2457.12	2544.02	2618.19	2691.01
O & M Expenses	9728.13	10388.70	11095.83	1185.43	12658.50
Total	**28264.76**	**31846.51**	**34228.29**	**35784.65**	**37167.23**

56. In response to the directions of the Commission, the petitioner has submitted additional information and has served copies of the same on the respondents. The respondent, APDCL has filed its reply to the petition and the petitioner has filed its rejoinder to the said reply. Based on the submissions of the parties and the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

Capital Cost

57. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

"9(3) The Capital cost of an existing project shall include the following:

(a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;

(b) xxxx

(c) xxxx

58. The petitioner has claimed capital cost of ₹149797.57 lakh as on 31.3.2014. The closing capital cost considered by the Commission as on 31.3.2014 in this order is ₹149746.94 lakh.

This amount has been considered as the opening capital cost as on 1.4.2014 for computation of tariff for the period 2014-19.

Actual/ Projected Additional Capital Expenditure during 2014-19

59. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19.

60. Regulation 14 (3) of the 2014 Tariff Regulations, provides as under:

"14.(3) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts after the cut-off date, may 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 of law;

(ii) Change in law or compliance of any existing law;

(iii) Any expenses to be incurred on account of need for higher security and safety of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

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

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal / lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii) 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) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) 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 due to obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer

insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

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

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, 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. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

61. The year-wise break-up of the projected additional capital expenditure claimed by the petitioner is as under:

(₹in lakh)

2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
2975.84	8477.00	2366.49	4313.74	1267.10

62. The break-up of the projected additional capital expenditure claimed during 2014-19 is detailed as under:

(₹in lakh)

Sl. No.	**Head of Work/Equipment**	**Projected Additional Capital Expenditure**					**Total**
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	
Additional Capital Expenditure							
1	Replacement of Gas engine along with associated Auxiliaries	1501.92	3003.84	0.00	1647.60	0.00	6153.36
2	Revamping/Modification of Gas Compressor of GBS Unit-4	778.13	1556.27	0.00	939.18	0.00	3273.58
3	Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end	500.00	0.00	0.00	0.00	0.00	500.00
4	Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3	28.00	0.00	0.00	0.00	0.00	28.00
5	Replacement of old existing 01(one) no. 220 kV/125 V/220v battery bank	34.00	182.00	0.00	0.00	28.00	244.00

6	Replacement of Generator Protection Relays by new Gen Protection Numerical relays in 1 no. BHEL make GTG and 1 no. STG along with associated interfacing computer	40.00	58.00	0.00	0.00	0.00	98.00
7	Up gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs.	65.00	0.00	0.00	0.00	0.00	65.00
8	Construction of approach road to outfall drain and newly acquired land from BDT through Bahoni Gaon	28.79	0.00	0.00	0.00	0.00	28.79
9	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2	0.00	2551.79	1167.96	1167.96	1167.96	6055.67
10	Up gradation of Control system of MHI make Gas Turbine of GTG#1 by GT Controller Megac V with Diasys Netmation system of OEM.	0.00	950.00	950.00	0.00	0.00	1900.00
11	Up gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GT 1&2	0.00	50.00	46.53	0.00	71.14	167.67
12	Up gradation of AVR system of stage-3	0.00	35.00	35.00	0.00	0.0	70.00
13	Procurement of (IR) Thermographic camera	0.00	7.10	0.00	0.00	0.00	7.10
14	Procurement of Tan delta testing kit	0.00	50.00	0.00	0.00	0.00	50.00
15	Carpeting and seal coat for Construction of approach road	0.00	33.00	63.00	0.00	0.00	96.00
16	Replacement of existing UPS with battery Bank for FT controllers and Online monitoring system	0.00	0.00	104.00	0.00	0.00	104.00
17	Up gradation of Electro hydraulic Governor of STG-1	0.00	0.00	0.00	100.00	0.00	100.00
18	Up-gradation of Mark-IV Control System of GT-6 to Mark-VI e control system of G.E	0.00	0.00	0.00	459.00	0.00	459.00
	Total Additional Capital Expenditure (1 to 18)	2975.84	8477.00	2366.49	4313.74	1267.10	19400.17
(B) De-capitalization							
19	Replacement of Gas engine along with associated Auxiliaries	525.09	1050.17	0.00	576.02	0.00	2151.28
20	Revamping/Modification of Gas Compressor of GBS Unit-4	272.04	544.09	0.00	328.35	0.00	1144.48

21	Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3	11.70	0.00	0.00	0.00	0.00	11.70
22	Replacement of old existing 01(one) no. 220 V Battery bank	11.89	9.09	0.00	0.00	0.00	20.98
23	Replacement of Generator Protection Relays by new Gen Protection Numerical relays in 1 no. BHEL make GTG and 1 no. STG along with associated interfacing computer	15.56	23.18	0.00	0.00	0.00	38.74
24	Up gradation of Programmer/EPROM writer for Procontrol-13 control system of STGs.	27.15	0.00	0.00	0.00	0.00	27.15
25	Replacement of old existing 1(one) no. 125 V battery bank	0.00	54.53	0.00	0.00	10.69	65.22
26	Up gradation of AVR system of Stage-3	0.00	14.62	14.62	0.00	0.00	29.24
27	Up gradation of 7200 series, Bentley Nevada make Vibration Monitoring system of GT 1&2	0.00	17.48	0.00	0.00	8.60	26.08
28	Up gradation of Control system of MHI make Gas Turbine of GTG#1 by GT Controller Megac V with Diasys Netmation system of OEM.	0.00	332.13	332.13	0.00	0.00	664.26
29	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2	0.00	892.13	408.33	408.33	408.33	2117.12
30	Replacement of existing UPS with battery Bank for FT controllers and Online monitoring system	0.00	0.00	39.71	0.00	0.00	39.71
31	Up gradation of 3300 series, Bentley Nevada make Vibration Monitoring system of GT 1&2	0.00	0.00	19.44	0	19.44	38.88
32	Up gradation of Electro hydraulic governor of STG-1	0.00	0.00	0.00	41.77	0.00	41.77
33	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E	0.00	0.00	0.00	175.25	0.00	175.25
	Total De-capitalization (19 to 33)	**863.43**	**2937.42**	**814.23**	**1529.72**	**447.06**	**6591.86**
	Net Additional Capital Expenditure (A-B)	**2112.41**	**5539.58**	**1552.26**	**2784.02**	**820.04**	**12808.31**

63. The petitioner has claimed projected additional capital expenditure of ₹19400.17 lakh during the period 2014-19. Out of this, total expenditure of ₹19400.17 lakh during 2014-19 an amount of ₹15482.61 lakh pertains to the Replacement of Gas engines, Revamping/ modification of Gas compressor and Rotor inspection and refurbishment. The nature of work envisaged to be done in the Gas booster station and Gas turbine units are in the nature of R&M work. Though there is a need for R&M of Gas booster stations and GT units as these have completed more than 15 years of operation since their COD, it is noticed that the petitioner has claimed additional capital expenditure for Gas booster engines and Gas turbines in a piece meal manner, instead of undertaking an extensive R&M of the generating station. Considering the fact that the petitioner has claimed the expenditures as additional capital expenditure, the same is examined in terms of the provision of Regulation 14 (3) of the 2014 Tariff Regulations in the subsequent paragraphs. It is however made clear that the benefit of the improvement if any, in the performance of Gas booster stations and the generating station after completion of these R&M works, as allowed after prudence check, shall be passed on to the respondent beneficiaries.

Replacement of Gas engine along with associated Auxiliaries

64. The petitioner has claimed total projected additional capital expenditure of ₹6153.36 lakh (₹1501.92 lakh in 2014-15, ₹3003.84 lakh in 2015-16 and ₹1647.6 lakh in 2017-18) along with the corresponding de-capitalization of ₹2151.28 lakh (₹525.09 lakh in 2014-15, ₹1050.17 lakh in 2015-16 and ₹576.02 lakh in 2017-18) towards Replacement of Gas engine along with associated auxiliaries under Regulation 14 (3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the Gas engines have become old and obsolete and to get the desired output replacement of engines is essential. It has also submitted that the capacities of the engines are also enhanced to meet the requirement.

65. The respondent, APDCL vide its reply dated 30.3.2015 has submitted that during the tariff period 2009-14, the Commission, based on the proposal of R&M of Gas Booster station got the issue examined by CEA and accordingly decided not to go for higher rating or additional unit. Accordingly, the respondent has submitted that the Commission may examine

the earlier order. In its rejoinder dated 2.7.2015, the petitioner has submitted that the additional capital expenditure being incurred on the Gas booster station is not with the intention of achieving enhanced generation, but for maintaining the maximum generation possible with the present availability of fuel gas which entails handling of higher volume of gas as compared to the original requirement at the time of project completion. The petitioner has further stated that the need to cater to higher volume of gas arose out of (i) drop in calorific value of fuel over the years as compared to the value obtainable at the time of conception of the project; and (ii) the necessity of maintaining NAPAF of 72% after implementation of ABT, whereas the plant and its auxiliary systems, including the GBS were originally designed for PLF of 69%.

66. The matter has been examined. It is noticed that the Commission vide order dated 6.9.2011 in Petition No. 295/2009 had allowed additional capital expenditure of ₹3700.00 lakh (₹1200.00 lakh in 2012-13 and ₹2500.00 lakh in 2013-14) towards Replacement of Gas engines of GBS Phase wise considering the fact that the existing gas engines have become old and obsolete. However, the petitioner has submitted that the works could not be completed within March, 2014 due to the delay in supply of one vital item i.e Air cooled heat exchangers due to failure of the sub-vendor to deliver the materials on account of financial constraint and that the sub-vendor has been changed. Considering the fact that there has been change in the scope of work and that the additional capital expenditure has increased to ₹6153.36 lakh during the period 2014-19 on account of the replacement of Gas engines which have become old and obsolete, we are inclined to allow the additional capital expenditure of ₹6153.36 lakh with the corresponding de-capitalization of ₹2151.28 lakh for Gas engine along with associated auxiliaries under Regulation 14(3)(vii) of the 2014 Tariff Regulations for successful and efficient operation of the generating station.

Revamping/Modification of Gas Compressor of GBS Unit-4

67. The petitioner has claimed total projected additional capital expenditure of ₹3273.58 lakh (₹778.13 lakh in 2014-15, ₹1556.27 lakh in 2015-16 and ₹939.18 lakh in 2017-18) with the corresponding de-capitalization of ₹1144.48 lakh (₹272.04 lakh in 2014-15, ₹544.09 lakh in

2015-16 and ₹328.35 lakh in 2017-18) for Revamping/Modification of Gas Compressor of Gas Booster Station Unit-4. The petitioner has submitted that originally as per design parameters, three Gas Booster Station units should be capable of running 6 gas turbine units. However, practically it could not be achieved and accordingly for better performance and capacity enhancement, revamping of Gas Engines along with Gas compressors have been proposed. It has also submitted that the capacity of Gas engine shall be increased after replacing with new up graded and high capacity Gas Engine for better performance of GBS.

68. The respondent, APDCL has submitted that the Commission had thoroughly examined the requirement of additional compressor in its order dated 6.9.2011 and found the same unjustified. In response, the petitioner has submitted that the proposal is for revamping of existing gas compressors and not for installation of additional units as misconstrued by the respondent. The petitioner has further stated that commensurate with the capacity enhancement of Gas Engine, it is proposed to revamp the Gas compressor from 27000 Nm3/hr to 28000 Nm3/hr also with the replacement of two second stage compressor cylinders with new one. It has added that the capacity enhancement of Gas compressors will benefit in terms of capacity of the GBS running 6 Gas Turbine units with 3 Gas compressors.

69. We have examined the matter. Considering the fact that the capacity enhancement of Gas compressors will benefit in terms of capacity of the GBS running 6 Gas Turbine units with 3 Gas compressors, the total projected additional capital expenditure of ₹3273.58 lakh is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations towards the efficient operation of the generating station.

Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end

70. The petitioner has claimed additional capital expenditure of ₹500.00 lakh in 2014-15 for Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end. In justification of the same, the petitioner has submitted that to overcome the overvoltage problem and to ensure Grid security, installation of the reactor was decided in NER Power Committee. Considering the fact that the expenditure is towards grid security, the same is allowed in 2014-

15 under Regulation 14(3)(vii) of the 2014 Tariff Regulations towards the efficient operation of the generating station.

Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3

71. The petitioner has claimed projected additional capital expenditure of ₹28.00 lakh in 2014-15 with corresponding de-capitalization of ₹11.70 lakh for Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3. The petitioner has submitted that the battery bank have been in service since the commissioning of STG-2 and STG-3 in 1998. The petitioner has also submitted that the existing battery banks are very old and to ensure reliable DC supply to the control system replacement is necessary. Considering the fact that the battery bank has limited life of about 15 years and the generating station has completed more than 15 years of operation, the expenditure of ₹28.00 lakh is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulation with corresponding de-capitalization of ₹11.70 lakh for efficient operation of plant.

Replacement of old existing 01(one) no. 220 kV/125 V/220 V battery bank

72. The petitioner has claimed total projected additional capital expenditure of ₹244.00 lakh (₹34.00 lakh in 2014-15, ₹182.00 lakh in 2015-16 and ₹28.00 lakh in 2018-19) along with corresponding de-capitalization of ₹20.98 lakh (₹11.89 lakh in 2014-15 and ₹9.09 lakh in 2015-16) for Replacement of old existing 1(one) no. 220 kV/125 V/220 V battery bank.The petitioner has submitted that the battery bank have been in service since commissioning of the 220 kV Switchyard in 1995. It has also submitted that the existing battery banks are very old and to ensure reliable operation replacement is necessary. Considering the fact that the battery bank has limited life of about 15 years and the generating station has completed more than 15 years of operation, the expenditure of ₹244.00 lakh is allowed under Regulation 14(3)(vii) of the 2014 Tariff with corresponding de-capitalization of ₹20.98 lakh for efficient operation of plant.

Replacement of Generator Protection Relays by new Gen Protection Numerical relays in 1 no. BHEL make GTG and 1 no. STG along with associated interfacing computer

73. The petitioner has claimed total projected additional capital expenditure of ₹98.00 lakh (₹40.00 lakh in 2014-15, ₹58.00 lakh in 2015-16) along with corresponding de-capitalization of ₹38.74 lakh (₹15.56 lakh in 2014-15 and ₹23.18 lakh in 2015-16) for Replacement of Generator Protection Relays by new gen Protection Numerical relays in 1 no. BHEL make GTG and 1 no STG along with associated interfacing computer. In justification of the same, the petitioner has submitted that the existing relays are old and obsolete and to ensure the safety of the generators replacement of old relays is essential. It has further submitted that the existing old/obsolete electromagnetic relays are proposed to be replaced by numerical relays to obtain increased sensitivity, reliability and speed. Though the Commission vide ROP of hearing dated 7.4.2015 directed the petitioner to submit the obsolescence certificate from the OEM, the petitioner has not submitted any obsolescence certificate from the OEM. In view of this, the claim of petitioner has not been considered in this order. However, the petitioner is granted liberty to submit the obsolescence certificate from the OEM along with details of corresponding de-capitalization at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

Up gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs

74. The petitioner has claimed projected additional capital expenditure of ₹65.00 lakh with corresponding de-capitalization of ₹27.15 lakh in 2014-15 for Up-gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the existing old programmer SK-06 is faulty and beyond repairable condition and declared as obsolete by the OEM M/s BHEL. The Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM and in response, the petitioner vide affidavit 6.8.2015 have furnished the said certificate. On perusal of the same it is evident that SK-06 hardware had mostly been phased out and spare parts are very expensive and most of them not available. In view of the above, the claim of

petitioner is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the corresponding de-capitalisation of ₹27.15 lakh in 2014-15 due to obsolescence of equipment.

<u>Construction of approach road to out fall drain and newly acquired land from BDT through BahoniGaon</u>

75. The petitioner has claimed projected additional capital expenditure of ₹28.79 lakh in 2014-15 for Construction of approach road to outfall drain and newly acquired land from BDT (Water Supply scheme) through Bahonigaon. In justification of the same, the petitioner has submitted that this is the only approach to the outfall drain and to the newly acquired land for accommodation of the CRPF personnel and is required to be developed. Considering the strategic location of the power plant and its safety and since the approach road is for the benefit of the movement of the security personnel from their accommodation to power plant, the additional capital expenditure claimed is allowed under Regulation 14(3) (iii) of the 2014 Tariff Regulations.

<u>Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI gas Turbine Unit-2</u>

76. The petitioner has claimed projected additional capital expenditure of ₹6055.67 lakh (₹2551.79 lakh in 2015-16, ₹1167.96 lakh in 2016-17, ₹1167.96 lakh in 2017-18, ₹1167.96 lakh in 2018-19) with corresponding de-capitalization of ₹2117.12 lakh (₹892.13 lakh in 2015-16, ₹408.33 lakh in 2016-17, ₹408.33 lakh in 2017-18, ₹408.33 lakh in 2018-19) for Comprehensive Rotor Inspection (CRI) and Compressor Rotor Refurbishment (CRR) of MHI Gas Turbine Unit-II under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that as per recommendations of the OEM, M/s MHI, Japan comprehensive inspection of turbine rotor and refurbishment of compressor rotor of Gas Turbine is necessary to obtain the desired output of the turbine. It has also submitted that for CRI and CRR, the rotor is to be sent to Japan leading to prolonged shutdown of a GT and thereby generation loss. The petitioner has stated that as informed by the OEM, it is impossible to conduct CRR and CRI at site since to carry out the same, special equipment such as big lathe machine along with balancing tunnel are required. Accordingly, the petitioner

has submitted that it is necessary to procure one new GT rotor to minimise the downtime of a GTG and this will enhance the life of the GT.

77. The respondent, APDCL in its reply has submitted that unless output enhancement is not assured, such huge expenditure should be well thought at the fag end of life of the project. In response, the petitioner in its rejoinder has clarified that as per recommendations of the OEM, the CRI & CRR are essential on expiry of the life of the rotors i.e 100000 Equivalent Operating Hours (EOH) to prevent catastrophic damage of the rotor and consequently, the turbine as a whole due to disc migration and failure of wielded joints, which result from prolonged operation at high temperatures and high speed. It has also submitted that significant disc migration has been observed in the rotors of all four MHI make turbines of the generating station. It has stated that CRI & CRR will extend the life of the rotors by another 80000 to 100000 EOH. The petitioner has further submitted that it is not possible to carry out these works as site because of the absence of the required infrastructure and hence the works have to be done at NHI facilities in Japan, for which about six months will be required for each rotor. Accordingly, the petitioner has submitted that a spare rotor has become essential and has pointed out that the Commission had allowed similar works in its order dated 23.5.2012 in Petition No.270/2009.

78. We have examined the matter. It is noticed that the contracted capacity of gas is 1.4 MMSCMD which can generate from 200-210 MW considering the fact that GT can be loaded only up to 70-72% with the present availability of contracted gas. For all the gas turbine under operation, the gas requirement is 1.7 MMSCMD. The petitioner is receiving gas at more than 1.7 MMSCD on some occasions under fall back basis from the gas company. However, the additional gas on fall back basis is a temporary and irregular phenomenon and not a firm supply from the gas company. Under these circumstances, we are of the considered view that there is no justification for procurement of one additional rotor by the petitioner considering the fact that one GT remains under shut down almost on all times due to inadequate gas supply. In view of the above, the additional capital expenditure of ₹2551.79 lakh in 2015-16 towards procurement of new rotor is not allowed.

79. As regards Refurbishment of GT rotors, it is noticed that the Commission in its order dated 23.5.2012 in Petition No. 270/2009 (tariff of Auraiya Gas Power station of NTPC for 2009-14) had allowed the refurbishment of rotor on the ground that it has become necessary after 100000 EOH and that the expenditure on the said asset do not form part of O&M expenses. In this background and since the refurbishment of rotor in this case will extend the life of rotors, we allow the capitalization of the expenditure of ₹1167.96 lakh in 2016-17, ₹1167.96 lakh in 2017-18, ₹1167.96 lakh in 2018-19 towards Revamping and Refurbishment of rotors under Regulation 14 (3)(vii) of the 2014 Tariff Regulations, along with the corresponding de-capitalization for efficient plant operation.

Up-gradation of Control system of MHI make Gas Turbine of GTG-1 by GT Controller Megac V with DiasysNetmation system of OEM

80. The petitioner has claimed total projected additional capital expenditure of ₹1900.00 lakh (₹950.00 lakh in 2015-16 and ₹950.00 lakh in 2016-17) with total de-capitalization of ₹664.26 lakh (₹332.13 lakh in 2015-16 and ₹332.13 lakh in 2016-17) towards Up gradation of control system of MHI make gas turbine of gtg-1 by GT controller megac v with diasys Netmation system of OEM. In justification of the same, the petitioner has submitted that the existing control system becomes obsolete and no spares and services are available. It has also submitted that new system has been installed in Unit-3 and Unit-4 and the Commission had allowed the same. The petitioner has added that it has been proposed to replace the same this time in Units-1 and 2.

81. The respondent, APDCL has pointed out that there have been no such approvals for Units-3 and 4 and the Commission may accordingly examine and decide the same. In response, the petitioner has pointed out that the Commission vide its order dated 6.9.2011 in Petition No.295/2009 had allowed an expenditure of ₹800 lakh each during the years 2012-13 and 2013-14 respectively for up-gradation of controllers of two GTs.

82. We have considered the matter. It is noticed that the Commission in its order dated 6.9.2011 had allowed the expenditure of ₹800.00 lakh each in 2011-12 and 2013-14 on the ground that the control systems of Gas Turbines have become obsolete and the support of

spares and service is also not available. Moreover, with the evolvement of new technology in the control system, the gas turbine control system has undergone significant changes in the last decade. The Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from the OEM and in response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In this background, the capitalization of the said expenditure is allowed for obsolescence of equipment under Regulation 14(3)(vii) of the 2014 Tariff Regulations, along with the corresponding de-capitalization.

Up gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GT 1 & 2

83. The petitioner has claimed total projected additional capital expenditure of ₹167.67 lakh (₹50.00 lakh in 2015-16, ₹46.53 lakh in 2016-17 and ₹71.14.00 lakh in 2018-19) with total de-capitalization of ₹64.96 lakh (₹17.48 lakh in 2015-16, ₹19.44 lakh in 2016-17and ₹28.04 lakh in 2018-19) for Up-gradation of 7200/3300 series Bentley Nevada make Vibration Monitoring system of GT 1&2. In justification of the same, the petitioner has submitted that the existing control system has become old and obsolete and spare support is not available and declared as obsolete by the OEM. The respondent, APDCL has submitted that the Commission may decide the same in terms of the provisions of the 2014 Tariff Regulations.

84. The matter has been examined. In terms of the submission of the petitioner that the existing control system has become old and obsolete, the Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM. In response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In consideration of the same, we allow the claim of petitioner for additional capitalisation under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the corresponding de-capitalization for obsolescence of equipment

Up gradation of AVR system of Stage-3

85. The petitioner has claimed total projected additional capital expenditure of ₹70.00 lakh (₹35.00 lakh in 2015-16and ₹35.17 lakh in 2016-17) with corresponding total de-capitalization

of ₹29.24 lakh (₹14.62 lakh in 2014-15 and ₹14.62 lakh in 2015-16) for Up gradation of AVR system of stage-3. In justification of the same, the petitioner has submitted that the existing control system has become old and obsolete and spare support is not available and declared as obsolete by the OEM. The respondent, APDCL has submitted that the Commission may decide the same in terms of the provisions of the 2014 Tariff Regulations. In terms of the submission of the petitioner that the existing control system has become old and obsolete, the Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM. In response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In consideration of the same, we allow the claim of petitioner for additional capitalisation under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the corresponding de-capitalization for obsolescence of equipment.

Procurement of (IR) Thermographic camera

86. The petitioner has claimed projected additional capital expenditure of ₹7.10 lakh in 2015-16 for Procurement of (IR) Thermographic camera. In justification of the same, the petitioner has submitted that IR camera has become the core of utility predictive maintenance programmes and will help in better plant performance. The respondent, APDCL has submitted that replacement due to wear & tear/obsolete come under O&M and for replacement of such items, the already recovered depreciation be considered. In response, the petitioner has clarified that the said asset is essential for predictive maintenance and condition monitoring in order to prevent avoidable outages. We have examined the matter. In terms of the proviso under Regulation 14(3)(x) of the 2014 Tariff Regulations, expenditure on minor assets brought after the cut-off date shall not be considered for capitalisation for determination of tariff from 1.4.2014. In view of this, the additional capital expenditure of ₹7.10 lakh claimed in 2015-16 on minor assets such as tools & tackles is not allowed to be capitalised.

Procurement of Tan delta testing kit

87. The petitioner has claimed additional capital expenditure of₹50.00 lakh in 2015-16 for Procurement of Tan delta testing kit. In justification of the same, the petitioner has submitted that since major HV equipment of the generating station have been in service for a long period

of 19 years to 20 years approx, it is very essential that the condition of their electrical insulation is regularly assessed and timely measures taken to avoid any damage of the major HV equipment. Accordingly, it has submitted that procuring one tan delta test kit will enable conducting the tests at any convenient time and shall be beneficial for the performance of the generating station. The respondent, APDCL has submitted that replacement due to wear & tear/obsolete come under O&M and for replacement of such items, the already recovered depreciation be considered. In response, the petitioner has clarified that the said asset is essential for predictive maintenance and condition monitoring in order to prevent avoidable outages. We have examined the matter. In terms of the proviso under Regulation 14(3)(x) of the 2014 Tariff Regulations, expenditure on minor assets brought after the cut-off date shall not be considered for capitalisation for determination of tariff from 1.4.2014. In view of this, the additional capital expenditure of ₹50.00 lakh claimed in 2015-16 on minor assets such as tools & tackles is not allowed to be capitalised.

Carpeting and seal coat for approach road

88. The petitioner has claimed additional capital expenditure of ₹96.00 lakh (₹33.00 lakh in 2015-16and ₹63.00 lakh in 2016-17) for Carpeting and seal coat for approach road under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that this is the only approach to the outfall drain and to the newly acquired land for accommodation of the CRPF personnel and is required to be developed. Considering the fact that this is a maintenance work, the same may be considered under O&M expenses allowed to the generating station. Hence, the capitalisation of the expenditure claimed has not been allowed.

Replacement of existing UPS with battery Bank for GT controllers and Online monitoring system:

89. The petitioner has claimed projected additional capital expenditure of ₹104.00 lakh with de-capitalization of ₹39.71 lakh in 2016-17 for Replacement of existing UPS with battery Bank for FT controllers and online monitoring system. In its justification, the petitioner has submitted that the existing UPS system has been in service since commissioning of the power plant in

1995 and declared as obsolete by OEM. The respondent, APDCL has submitted that replacement due to wear & tear/obsolete come under O&M and for replacement of such items, the already recovered depreciation be considered. In response, the petitioner has reiterated that replacement of the existing UPS with battery bank is essential as the existing UPS has become absolute. The matter has been considered. In terms of the submission of the petitioner that the existing UPS system has become old and obsolete, the Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM. In response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In consideration of the same, we allow the claim of petitioner for additional capitalisation under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the corresponding de-capitalization for obsolescence of equipment.

Up-gradation of Electro-hydraulic governor of STG-I

90. The petitioner has claimed projected additional capital expenditure of ₹100.00 lakh with de-capitalization of ₹41.77 lakh in 2017-18 for Up-gradation of electro-hydraulic governor of STG-1. In justification of the same, the petitioner has submitted that OEM is unable to supply the plunger-coil required for electro hydraulic governor and some of the other spares for governor and declared as obsolete by the OEM. The Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM. In response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In consideration of the same, we allow the claim of petitioner for additional capitalisation under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the corresponding de-capitalization for obsolescence of equipment.

Up-gradation of Mark-IV Control System of GT#VI to Mark-VIe control system of G.E

91. The petitioner has claimed projected additional capital expenditure of ₹459.00 lakh with de-capitalization of ₹175.25 lakh in 2017-18 for Up gradation of Mark-IV Control System of GT-6 to Mark-VI e control system of G.E. In justification of the same, the petitioner has submitted that spare support is not available and declared as obsolete by OEM. The petitioner vide ROP of hearing dated 16.7.2015 was directed to furnish the obsolescence certificate from

the OEM. The Commission vide ROP of the hearing dated 16.7.2015 directed the petitioner to furnish the obsolescence certificate from OEM. In response, the petitioner vide affidavit 6.8.2015 has furnished the obsolescence certificate from OEM. In consideration of the same, the claim of petitioner is allowed under Regulation 14(3)(vii)of the 2014 Tariff Regulations along with the corresponding de-capitalization for obsolescence of equipment.

92. Based on the above discussions, the projected additional capital expenditure allowed along with corresponding de-capitalization during the period 2014-19 is summarised as under:

(₹in lakh)

Sl. No.	Head of Work/Equipment	Additional capital expenditure (Actual/Projected)					Total
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	
Additional Capital Expenditure							
1	Replacement of Gas engine along with associated Auxiliaries	1501.92	3003.84	0.00	1647.60	0.00	6153.36
2	Revamping/Modification of Gas Compressor of GBS Unit#4	778.13	1556.27	0.00	939.18	0.00	3273.58
3	Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end	500.00	0.00	0.00	0.00	0.00	500.00
4	Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3	28.00	0.00	0.00	0.00	0.00	28.00
5	Replacement of old existing 01(one) no. 220 kV/125 V/220v battery bank	34.00	182.00	0.00	0.00	28.00	244.00
6	Up gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs.	65.00	0.00	0.00	0.00	0.00	65.00
7	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit#2	0.00	0.00	1167.96	1167.96	1167.96	6055.67
8	Up gradation of Control system of MHI make Gas Turbine of GTG#1 by GT Controller Megac V with Diasys Netmation system of OEM.	0.00	950.00	950.00	0.00	0.00	1900.00

9	Construction of approach road to outfall drain and newly acquired land from BDT through Bahonigaon	28.79	0.00	0.00	0.00	0.00	28.79
10	Up gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GT 1 & 2	0.00	50.00	46.53	0.00	71.14	167.67
11	Up gradation of AVR system of stage-3	0.00	35.00	35.00	0.00	0.00	70.00
12	Replacement of existing UPS with battery Bank for FT controllers and Online monitoring system	0.00	0.00	104.00	0.00	0.00	104.00
13	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E	0.00	0.00	0.00	459.00	0.00	459.00
14	Up gradation of Electro hydraulic governor of STG-1	0.00	0.00	0.00	100.00	0.00	100.00
	Total Additional Capital expenditure (1 to 18)	**2935.84**	**5777.11**	**2303.49**	**4313.74**	**1267.10**	**19149.07**
(B) De-capitalization							
15	Replacement of Gas engine along with associated Auxiliaries	525.09	1050.17	0.00	576.02	0.00	2151.28
16	Revamping/Modification of Gas Compressor of GBS Unit#4	272.04	544.09	0.00	328.35	0.00	1144.48
17	Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3	11.70	0.00	0.00	0.00	0.00	11.70
18	Replacement of old existing 01(one) no. 220 V battery bank	11.89	9.09	0.00	0.00	0.00	20.98
19	Up gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs.	27.15	0.00	0.00	0.00	0.00	27.15
20	Replacement of old existing 01(one) no. 125 v battery bank	0.00	54.53	0.00	0.00	10.69	65.22
21	Up gradation of AVR system of stage#3	0.00	14.62	14.62	0.00	0.00	29.24
22	Up gradation of 7200 series, Bentley Nevada make Vibration Monitoring system	0.00	17.48	19.44	0.00	28.04	64.96

	of GT 1&2						
23	Up gradation of Control system of MHI make Gas Turbine of GTG#1 by GT Controller Megac V with Diasys Netmation system of OEM.	0.00	332.13	332.13	0.00	0.00	664.26
24	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2	0.00	0.0	408.33	408.33	408.33	2117.12
25	Replacement of existing UPS with battery Bank for FT controllers and Online monitoring system	0.00	0.00	39.71	0.00	0.00	39.71
26	Up gradation of Electro hydraulic governor of STG-1	0.00	0.00	0.00	41.77	0.00	41.77
27	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E	0.00	0.00	0.00	175.25	0.00	175.25
	Total De-capitalisation (19 to 33)	**847.87**	**2022.11**	**814.23**	**1529.72**	**447.06**	**6553.12**
	Net additional capital expenditure allowed (A-B)	**2087.97**	**3755.00**	**1489.26**	**2784.02**	**820.04**	**10936.29**

93. Accordingly, the capital cost for the period 2014-19 in respect of the generating station is worked out and allowed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening capital cost	149746.94	151834.91	155589.91	157079.17	159863.19
Projected additional capital expenditure admitted	2087.97	3755.00	1489.26	2784.02	820.04
Closing capital cost	**151834.91**	**155589.91**	**157079.17**	**159863.19**	**160683.23**

Return on Equity

94. Regulation 24 of the 2014 Tariff Regulations provides as under:

*"**24. Return on Equity**: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.*

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that:

i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii). the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii). additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

95. Regulation 25 of the 2014 Tariff Regulations provides as under:

"Tax on Return on Equity

(1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non-generation or non-transmission business, as the case may be) shall not be considered for the calculation of "effective tax rate".

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

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

Where "t" is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), "t" shall be considered as MAT rate including surcharge and cess.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis."

96. The petitioner has considered the Rate of Return on Equity as under:

	2014-15	2015-16	2016-17	2017-18	2018-19
Base Rate	15.500%	15.500%	15.500%	15.500%	15.500%
Tax Rate (MAT)	20.9605%	30.7949%	33.9900%	33.9900%	33.9900%
Rate of ROE (pre-tax)	19.610%	22.397%	23.481%	23.481%	23.481%

97. The Commission vide ROP of the hearing dated 7.4.2015 directed the petitioner to clarify the tax rate claimed for the purpose of grossing up of RoE, and the petitioner vide affidavit dated 15.6.2015 has submitted the following:

(i) For the financial year 2014-15, the petitioner has submitted that "*After availing available MAT credit during the financial year 2014-15, it is estimated that the effective tax rate applicable for NEEPCO for the FY 2014-15 is expected to be the MAT rate only and accordingly the same has been considered.*

(ii) For the financial year 2015-16, the petitioner has submitted that "*It is estimated that the during the FY 2015-16, the balance of the MAT credit available will be exhausted resulting in the expected effective tax rate for NEEPCO considered, which is more than MAT rate but lower than corporate tax rate*

(iii) For the financial year 2016-17 to 2018-19, the petitioner has submitted that "*It is expected that total MAT credit available will be exhausted during the FY 2015-16. Accordingly, NEEPCO will continue to paying normal Corporate tax since the FY 2016-17 and accordingly, the same has been considered".*

98. However for the purpose of tariff determination on projected basis for the period 2014-19, MAT rate have been considered for grossing up of Rate of Return on Equity. However, the petitioner shall furnish the detailed calculation of effective tax rate duly certified by the auditor, supported by the tax audit report for the respective years at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations. Accordingly, Return on Equity has been computed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	73912.76	74539.16	75665.66	76112.43	76947.64
Addition due to Additional capital expenditure	626.39	1126.50	446.78	835.21	246.01
Closing Equity	74539.16	75665.66	76112.43	76947.64	77193.65
Average Equity	74225.96	75102.41	75889.04	76530.04	77070.65
Rate of Return on Equity	19.610%	19.610%	19.610%	19.610%	19.610%
Return on Equity	**14555.71**	**14727.58**	**14881.84**	**15007.54**	**15113.55**

Interest on Loan

99. Regulation 26 of the 2014 Tariff Regulations provides as under:

*“**26. Interest on loan capital:** (1)The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*

(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.

(4) Notwithstanding any moratorium period availed by the generating company orthe 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 depreciation allowed for the year or part of the year.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:

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 beneficiaries or the long term transmission customers /DICs 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.”

100. The actual loans pertaining to the generating station has already been repaid. The weighted rate of interest of 9.783% as considered in 2012-13 has been considered for working of the interest on loan. Accordingly, Interest on loan is worked out as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Loan	75834.18	77295.75	79924.25	80966.74	82915.55
Cumulative Repayment of	75662.17	77295.75	79402.84	80966.74	82915.55

Loan up to previous year					
Net Opening Loan	172.00	0.00	521.41	0.00	0.00
Addition due to Additional Capitalisation	1461.58	2628.50	1042.48	1948.81	574.03
Repayment of Loan during the period	1633.58	2107.09	1563.90	1948.81	574.03
Net Closing Loan	0.00	521.41	0.00	0.00	0.00
Average Loan	86.00	260.71	260.71	0.00	0.00
Weighted Average Rate of Interest on Loan	9.783%	9.783%	9.783%	9.783%	9.783%
Interest on Loan	8.41	25.51	25.51	0.00	0.00

Depreciation

101. Regulation 27of the 2014 Tariff Regulations provides as under:

"27. Depreciation: *(1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.*

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. 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.

(3) 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 station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) 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.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in ***Appendix-II*** *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 the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project(five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services."

102. The COD of the generating station is 1.4.1999. Since the generating station has completed 12 years of operation in the year 2010-11, the remaining depreciable value has been spread over the balance useful life of the assets.

Balance Useful Life of the Gas station for the purpose of recovery of depreciation

103. The Commission vide its order dated 26.11.2015 in Petition No. 8/RP/2015 and in Petition No 459/GT/2014 (truing-up of tariff for the period 2009-14) had considered the life of the generating station as 25 years for the purpose of depreciation. As stated, the petitioner, instead of undertaking extensive R&M of the generating station for the period 2014-19 has claimed projected additional capital expenditure in a piece meal manner, under Regulation of 14(3) (vii) of the 2014 Tariff Regulations which has been considered in this order. Since the petitioner has claimed projected additional capital expenditure and has not undertaken R&M during the period 2014-19, the life of the generating station has been considered as 25 years for the purpose of depreciation. As such depreciation has been computed as follows:

(₹in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Opening Gross Block	149746.94	151834.91	155589.91	157079.17	159863.19
Additional capital expenditure during 2014-19	2087.97	3755.00	1489.26	2784.02	820.04
Closing gross block (1+2)	151834.91	155589.91	157079.17	159863.19	160683.23
Average gross block (1+3)/2	150790.93	153712.41	156334.54	158471.18	160273.21
Value of Freehold Land included in Gross Block	150.17	150.17	150.17	150.17	150.17
Value of Gross Block excluding Land (4-5)	150640.76	153562.24	156184.37	158321.01	160123.04
Depreciation Value	135576.68	138206.02	140565.93	142488.91	144110.74

excluding freehold land (6)*90%					
Balance Useful life of the asset	9.92	8.92	7.92	6.92	5.92
Remaining Depreciable Value	17225.25	18788.18	20620.40	20573.94	20416.28
Depreciation	**1737.00**	**2107.09**	**2604.68**	**2974.55**	**3450.64**

O&M Expenses

104. The generating station is in operation for three or more years as on 1.4.2014. Accordingly, in terms of sub-section (a) of clause (3) of Regulation 29 of the 2014 Tariff Regulations, the year-wise O&M expense norms considered for the generating station of the petitioner for the period 2014-19 is as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
9728.13	10388.70	11095.83	11852.43	12658.50

Operational Norms

105. The operational norms in respect of the generating station claimed by the petitioner are as under:

Normative Plant Availability Factor for recovery of fixed charges (%)	72%
Gross Station Heat Rate-Combined cycle (kcal/kwh)	2500
Gross Station Heat Rate-Open cycle (kcal/kwh)	3440
Auxiliary Energy Consumption -Combined cycle (%)	3.0%

106. The operational norms of Normative Plant Availability Factor and Station Heat Rate claimed by the petitioner are in accordance with the provisions of Regulation 36 of the 2014 Tariff Regulations, and hence are an in order and allowed. The petitioner has however considered the Auxiliary Energy Consumption (AEC) (Combined cycle) as 3% instead of 2.5% specified under the Regulation 36 of the 2014 Tariff Regulations. Hence, the AEC of 2.5% has only been allowed for this generating station. Accordingly, the operational norms allowed for this generating station for the period 2014-19 is summarized as under:

Target Availability for recovery of Fixed Charges	72%
Gross Station Heat Rate-Combined cycle (kcal/kwh)	2500
Gross Station Heat Rate-Open cycle (kcal/kwh)	3440
Auxiliary Energy Consumption -Combined cycle (%)	2.5%

Interest on working capital

107. Sub-section (c) of Clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

"28. Interest on Working Capital:

(1) The working capital shall cover

(b) Open-cycle Gas Turbine/Combined Cycle thermal generating stations shall cover:

(i) Fuel cost for 30 days corresponding to the normative annual plant availabilityfactor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;;

(ii)Maintenance spares @ 30% of operation and maintenance expenses specified in regulation 29;

(iii) 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;

(iv) Operation and maintenance expenses for one month.

Fuel Component in working capital

108. The petitioner has claimed fuel cost based on fuel for 30 days corresponding to the normative annual plant availability factor, duly taking into account mode of operation of generating station on gas fuel. Accordingly, the fuel cost for 30 days corresponding to NAPAF for each year of the tariff period claimed by the petitioner as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2962.15	2970.71	2962.15	2962.15	2962.15

109. The petitioner has considered the fuel cost based on landed cost of fuel on GCV basis for January, 2014 to March, 2014 in terms of provision under Regulation 28 (b) (i) and Regulation 28(2) of 2014 Tariff Regulations, with fuel price escalation as nil. The fuel cost has been computed based on the weighted average price and GCV of fuel (gas procured during the preceding three months of January, 2014, February, 2014 and March, 2014 as submitted by the petitioner. Accordingly, fuel component has been worked out and allowed in the working capital as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2962.59	2970.71	2962.59	2962.59	2962.59

110. Maintenance spares @ *30% of operation and maintenance expenses specified in regulation 29* have been worked out and allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2918.44	3116.61	3328.75	3555.73	3797.55

111. Receivables equivalent to two months of capacity charge and energy charge has been worked out and allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
10653.67	10884.24	11105.40	11321.22	11565.02

112. O&M expenses for one month are allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
810.68	865.73	924.65	987.70	1054.88

Rate of interest on working capital

113. Clause (3) of Regulation 28of the 2014 Tariff Regulations provides as under:

> *"Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later."*

114. In terms of the above regulations, the Bank Rate of 13.50% (Base Rate + 350 Basis Points) as on 1.4.2014 has been considered by the petitioner. This has been considered in the calculations for the purpose of tariff.

Interest on Working Capital

115. Necessary computations in support of interest on working capital are appended below:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Fuel Cost	2962.59	2970.71	2962.59	2962.59	2962.59
O & M expenses	810.68	865.73	924.65	987.70	1054.88
Maintenance Spares	2918.44	3116.61	3328.75	3555.73	3797.55
Receivables- 2 months	10653.67	10884.24	11105.40	11321.22	11565.02
Total Working Capital	17345.38	17837.29	18321.39	18827.25	19380.04
Interest Rate-SBI PLR	13.50%	13.50%	13.50%	13.50%	13.50%
Total Interest on Working Capital	**2341.63**	**2408.03**	**2473.39**	**2541.68**	**2616.31**

116. Accordingly, the Annual Fixed Charges approved for the generating station for the period from 1.4.2014 to 31.3.2019 is summarized as under**:**

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	14555.71	14727.58	14881.84	15007.54	15113.55
Interest on Loan	8.41	25.51	25.51	-	-
Depreciation	1737.00	2107.09	2604.68	2974.55	3450.64
Interest on Working Capital	2341.63	2408.03	2473.39	2541.68	2616.31
O & M Expenses	9728.13	10388.70	11095.83	11852.43	12658.50
Annual Fixed Charges	**28370.88**	**29656.91**	**31081.25**	**32376.19**	**33839.00**

ENERGY/VARIABLE CHARGES

117. Based on the operational norms, the GCV & price of domestic gas for the preceding three months i.e. January, 2014, February, 2014 and March, 2014, the Energy Charge Rate (ECR) on ex-power plant basis has been computed as shown below and considered for the purpose of tariff:

	Unit	2014-15, 2016-17, 2017-18 and 2018-19	2015-16
Capacity	MW	291	291
Fuel		GAS	
Normative Heat-Rate	kCal/kWh	2500	2500
Auxiliary Energy Consumption	%	2.5	2.5
Weighted average rate of fuel	/1000SCM	7303.68	7303.68
Weighted average GCV of fuel	Kcal/SCM	9426.66	9426.66
Rate of energy charge ex-bus	**Paisa/kWh**	**198.664**	**198.664**

118. Energy Charge Rate (ECR) in ₹/kWh on ex-power plant on month to month basis shall be calculated up to three decimal places in accordance with the formulae given in Regulation 30(6)(b) of 2014 Tariff Regulations.

Enhancement of O&M expenses

119. The petitioner in the petition has submitted that the salary & wages of the employees of the petitioner will be due from 1.1.2017. It has further submitted that the petition has been submitted considering the O&M expenses in terms of Regulation 29(3)(a) of the 2014 Tariff Regulations and the yearly escalation provided in the O&M expenses may not cover the enhanced employee cost due to the aforesaid pay revision. Accordingly, the petitioner has sought liberty to approach the Commission for seeking enhancement in the O&M expenses with effect from 1.1.2017 due to pay revision, if any, under Regulation 54 and 55 of the 2014 Tariff Regulations. The matter has been examined. Similar prayer of the petitioner was

considered by the Commission in Petition No.43/GT/2015 (tariff of Doyang HEP for 2014-19) and the Commission vide its order dated 13.1.2016 has observed as under:

> *"42. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision may be examined by the Commission, on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the petitioner in this regard."*

The prayer of the petitioner in the present case is disposed of in terms of the above.

Application Fee and Publication Expenses

120. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees of ₹1280400/- for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct that the petitioner shall be entitled to recover the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

121. The annual fixed charges approved for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

122. Petition Nos. 459/GT/2014 and 41/GT/2015 is disposed of in terms of the above.

Sd/-	*Sd/-*	*Sd/-*
(A.S. Bakshi)	**(A.K.Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Chairperson**