CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 298/GT/2019

Coram:

Shri P. K. Pujari, Chairperson
Shri I. S. Jha, Member
Shri Arun Goyal, Member
Shri Pravas Kumar Singh, Member

Date of Order: **21st December, 2021**

In the matter of:

Petition for revision of tariff of Assam Gas Based Power Plant (291 MW) of North Eastern Electric Power Corporation Ltd for the period from 1.4.2014 to 31.3.2019

And

In the matter of:

North Eastern Electric Power Corporation Limited,
Corporate Office, Brookland Compound, Lower New Colony,
Shillong 793 003 **...Petitioner**

Vs

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

2. Meghalaya Power Distribution Corporation Limited,
Lumjinshai, Short Round Road,
Shillong -799001

3. Tripura State Electricity Corporation Limited,
Bidyut Bhavan, North Banamalipur,
Agartala -799 001

4. Power & Electricity Department,
Government of Mizoram,
New Secretariat Complex, Kawlpetha,
Aizawal- 796001

5. Manipur State Power Distribution Company Limited,
3rd Floor, New Directorate Building, Near 2nd M.R Gate,
Imphal- Dimapur Road,
Imphal- 795001

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

7. Department of Power, Government of Nagaland,
Electricity House, A. G. Colony,
Kohima- 797001

8. North Eastern Regional Power Committee,
NERPC Complex, Dong Parmaw, Lapalang,
Shillong-793006

9. North Eastern Regional Load Despatch Centre,
Dongtieh, Lower Nongrah, Lapalang,
Shillong -793006 **...Respondents**

For Petitioner: Shri Devapriya Choudhury, NEEPCO
Shri Prabal Mukhopadhyaya, NEEPCO
Shri Elizabeth Pyrbot, NEEPCO

For Respondents: Shri Indrajit Tahbildar, APDCL

ORDER

This petition has been filed by the Petitioner, NEEPCO for truing-up of tariff of Assam Gas Based Power Plant (291 MW) (in short 'the generating station') for the 2014-19 tariff period, in terms of Regulation 8(1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations").

2. 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 sourced 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 21 kg/cm^2 before being fed to the gas stations. The date of commercial operation of the units of the generation station with corresponding capacities are as follows:

Details of COD	**Date of Commercial Operation**	**Capacity (MW)**
GT-I	1.5.1995	33.5
GT-II	1.5.1995	33.5
GT-III	1.7.1995	33.5
GT-IV	1.8.1995	33.5
GT-V	1.4.1997	33.5
GT-VI	1.4.1997	33.5
ST-I	1.4.1999	30
ST-II	1.4.1999	30
ST-III	1.4.1999	30
Generating Station	**1.4.1999**	**291**

3. The tariff of the generating station for the 2014-19 tariff period was determined by the Commission vide order dated 15.2.2016 in Petition No.41/GT/2015, based on the capital cost of Rs.149746.94 lakh as on 1.4.2014. The capital cost and annual fixed charges allowed by the Commission vide order dated 15.2.2016 are as follows:

Capital Cost allowed

(Rs. 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
Add: Additional Capital Expenditure allowed	2087.97	3755.00	1489.26	2784.02	820.04
Closing Capital Cost	151834.91	155589.91	157079.17	159863.19	160683.23

Annual Fixed Charges allowed

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Depreciation	1737.00	2107.09	2604.68	2974.55	**3450.64**
Interest on Loan	8.41	25.51	25.51	0.00	**0.00**
Return on Equity	14555.71	14727.58	14881.84	15007.54	**15113.55**
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**

4. Clause (1) of Regulation 8 of the 2014 Tariff Regulations provides as under:

"8. Truing up
(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 31.3.2019, 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, shall make an application for interim truing up of capital expenditure including additional capital expenditure in FY 2016-17."

5. The annual fixed charges claimed by the Petitioner for the 2014-19 tariff period are as under:

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Depreciation	1634.38	1993.12	2900.86	3976.48	4670.25
Interest on Loan	8.91	61.94	122.67	40.05	0.00
Return on Equity	14488.30	15533.78	19170.23	17641.46	16142.51
Interest on Working Capital	2337.54	2421.26	2444.22	2447.28	2405.64
O&M Expenses	9728.13	10388.70	11095.83	11852.43	12658.50
Annual Fixed Charges	**28197.26**	**30398.80**	**35733.81**	**35957.71**	**35876.89**

6. The matter was heard on 27.7.2020. The Commission vide Record of the Proceedings (ROP) of the hearing dated 27.7.2020, directed the Petitioner to submit certain additional information. In response, the Petitioner has filed the additional information vide affidavit dated 18.8.2020 after serving copies on the Respondents. The Respondent, Assam Power Distribution Company Ltd, has filed its reply vide affidavit dated 5.9.2020 and the Petitioner vide affidavit dated 15.9.2020, has filed its rejoinder to the said reply. The Commission, after hearing the parties on 13.4.2021, directed the Petitioner vide Record of Proceedings, to file certain additional information and reserved its order in the petition. In response, the Petitioner has filed the additional information vide affidavit dated 13.5.2021, after serving copies on the Respondents. Taking into consideration the submissions of the parties and the documents available on record, we proceed to examine the claims of the Petitioner, on prudence check, as stated in the subsequent paragraphs.

Capital Cost

7. Regulation 9(3) of the 2014 Tariff Regulations provides as under:

> ***"****9. Capital Cost:*
> *xxx*
> *(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) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and*
>
> *(a) expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15."*

8. The Commission vide its order dated 15.2.2016 in Petition No. 459/GT/2014 had allowed the closing capital cost of Rs.149746.94 lakh, as on 31.3.2014, while revising (based on truing-up exercise) the tariff for the 2009-14 period. Same capital cost was considered by the Commission as the opening capital cost as on 1.4.2014 vide order dated 15.2.2016 in Petition No. 41/GT/2015 wherein tariff for the generating station for the 2014-19 period was determined. Therefore, the capital cost of Rs.149746.94 lakh has been considered as the opening capital cost as on 1.4.2014 in accordance with Regulation 9(3) of the 2014 Tariff Regulations.

Additional Capital Expenditure

9. 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 undischarged 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;

xxx"

10. The projected additional capital expenditure allowed by order dated 15.2.2016 in Petition No. 41/GT/2015 for the 2014-19 tariff period, is summarized as under:

(Rs. in lakh)

Sl. No.	Head of Work/Equipment	Projected additional capital expenditure allowed					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) numbers 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) numbers 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	3503.88
8	Up gradation of Control system of MHI make Gas Turbine of GTG #1	0.00	950.00	950.00	0.00	0.00	1900.00

Sl. No.	Head of Work/Equipment	Projected additional capital expenditure allowed					Total
		2014-15	2015-16	2016-17	2017-18	2018-19	
	by GT Controller Megac V with Diasys Net mation system of OEM						
9	Construction of approach road to outfall drain and newly acquired land from BDT	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 14)	**2935.84**	**5777.11**	**2303.49**	**4313.74**	**1267.10**	**16597.28**
(**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) numbers 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) numbers 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) numbers 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

Sl. No.	Head of Work/Equipment	Projected additional capital expenditure allowed					Total
		2014-15	2015-16	2016-17	2017-18	2018-19	
22	Up gradation of 7200 series, Bentley Nevada make Vibration Monitoring system of GT 1& 2	0.00	17.48	19.44	0.00	28.04	64.96
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	0.00	408.33	408.33	408.33	1224.99
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-capitalization (15 to 27)	847.87	2022.11	814.23	1529.72	447.06	5660.99
	Net additional capital expenditure allowed (A-B)	**2087.97**	**3755.00**	**1489.26**	**2784.02**	**820.04**	**10936.29**

11. The Petitioner in Form-9A of affidavit dated 4.9.2019, has submitted the actual additional capital expenditure incurred for the 2014-19 tariff period. Thereafter, the Petitioner vide its affidavit dated 18.8.2020 has revised Form-9A and has claimed actual additional capital expenditure for the 2014-19 tariff period in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations. The Petitioner has also submitted that the additional capital expenditure claimed is on accrual basis, as well as on cash basis, and there are no un-discharged liabilities. Accordingly, the revised additional capital expenditure claimed by the Petitioner for the 2014-19 tariff period is summarised as follows:

(Rs. in lakh)

Sl. No.	Head of Work/Equipment	Additional capital expenditure claimed (on cash basis)					Total
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	
(A) Additional Capital Expenditure allowed in order dated 15.2.2016 in Petition No. 41/GT/2015							
1	Replacement of Gas engine along with associated Auxiliaries	0.00	0.00	5097.00	0.00	0.00	5097
2	Revamping/Modification of Gas Compressor of GBS Unit #1,#2 and #3	0.00	2735.21	0.00	0.00	0.00	2735.21
3	Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end	0.00	0.00	0.00	447.15	0.00	447.15
4	Replacement of old existing 02(two) nos. 24V battery banks meant for STG control system 2 & 3	0.00	14.08	0.00	0.00	0.00	14.08
5	Replacement of old existing 01(one) number 220 kV/125 V/220v battery bank	0.00	35.46	64.53	97.16	28.65	225.79
6	Up gradation of Programmer/ EPROM writer for Procontrol-13 Control System of STGs	0.00	0.00	0.00	58.04	0.00	58.04
7	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2	0.00	0.00	0.00	1553.23	358.80	1912.02
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	0.00	0.00	1566.64	0.00	1566.64
9	Construction of approach road to outfall drain and newly acquired land from BDT through Bahonigaon	0.00	20.77	0.00	0.00	0.00	20.77
10	Up gradation of 7200/ 3300 series, Bentley Nevada make Vibration Monitoring system of GT 1 & 2	0.00	0.00	27.13	0.00	0.00	27.13
11	Up gradation of 7200/ 3300 series, Bentley	0.00	0.00	0.00	0.00	31.19	31.19

Sl. No.	Head of Work/Equipment	Additional capital expenditure claimed (on cash basis)					Total
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	
	Nevada make Vibration Monitoring system of GT 3 & 4						
12	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E	0.00	0.00	0.00	469.64	0.00	469.64
	Sub-Total (A)	**0.00**	**2805.52**	**5188.66**	**4191.86**	**418.64**	**12604.67**
	(B) New Items						
13	Individual Gas Engine Fuel Filter assembly complete with accessories	35.65	0.00	0.00	0.00	0.00	35.65
14	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-3	0.00	2886.74	0.00	0.00	0.00	2,886.74
15	Replacement/ Renovation of RTU system as per Grid requirement	0.00	0.00	22.02	0.00	0.00	22.02
16	Up-gradation/ Replacement of Halon Firefighting system with CO_2 flooded system for GTG unit 5 and 6	0.00	0.00	44.60	0.00	0.00	44.60
17	Continuous Emission Monitoring system	0.00	0.00	176.08	0.00	0.00	176.08
18	ABT Management system	0.00	0.00	0.00	40.38	0.00	40.38
19	Up-gradation of AVR system of STG-2	0.00	0.00	0.00	0.00	42.83	42.83
	Sub-Total (B)	**35.65**	**2886.74**	**242.70**	**40.38**	**42.83**	**3248.30**
C	Major Spares Capitalization (C)	0.00	0.00	3251.93	1444.12	770.56	5466.61
	Total Claim (A+B+C))	**35.65**	**5692.27**	**8683.29**	**5676.36**	**1232.03**	**21319.59**
(D) De-capitalization during the year/period		196.42	1012.04	1900.31	927.27	521.96	4558.00
(E) Reversal during the year/period		0.51	23.94	13.62	579.56	227.04	844.67
(F) Discharges during the year/period		0.00	0.00	0.00	18.17	0.00	18.17
Net additional capital expenditure claimed (C-D-E+F)		**(-) 161.28**	**4656.28**	**6769.35**	**4187.70**	**483.03**	**15935.09**

12. Apart from the additional capital expenditure allowed by order dated 15.2.2016 in Petition No. 41/GT/2015, it is observed that certain additional capital expenditure

which were not claimed by the Petitioner earlier, have been actually incurred by the Petitioner and has been claimed in the present petition. Also, most of the additional capital expenditure claimed by the Petitioner are in nature of either replacement or up-gradation of the existing assets. The Petitioner has furnished the de-capitalized amount in lieu of some of assets which have been replaced or upgraded. However, for those assets, where no de-capitalized value has been furnished by the Petitioner, the same has been considered under 'Assumed deletions'. We now discuss the actual additional capital expenditure claimed by the Petitioner along with the corresponding de-capitalization and assumed deletions, in the subsequent paragraphs.

Additional capital expenditure items allowed by order dated 15.2.2016 in Petition No. 41/GT/2015

a) Replacement of Gas engine along with associated auxiliaries

13. Against the total additional capitalisation of Rs.6153.36 lakh (Rs.1501.92 lakh in 2014-15, Rs.3003.84 lakh in 2015-16 and Rs.1647.60 lakh in 2017-18) allowed by order dated 15.2.2016 in Petition No.41/GT/2015, the Petitioner has claimed actual additional capital expenditure of Rs.5097 lakh in 2016-17 for Replacement of Gas engine along with associated auxiliaries under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

14. The Respondent, APDCL has submitted that the enhancement of cost due to the delay in execution of works by the Petitioner should not be passed on to the beneficiaries. It has also submitted that a comparative statement regarding the increase in efficiency may be furnished by the Petitioner. The Petitioner has submitted the comparative statement and has clarified that the projected figures were based on past experience/ budgetary estimates, and therefore, the final execution costs may vary.

15. We have considered the submissions. It is observed that the additional capital expenditure claimed by the Petitioner in respect of the said work was allowed by order dated 15.2.2016 in Petition No.41/GT/2015. Considering the fact that the actual additional capital expenditure of Rs.5097.00 lakh for this asset/ work is claimed towards efficient operation of the generating station and does not exceed the total additional capital expenditure of Rs.6153.36 lakh allowed vide order dated 15.2.2016, the actual additional capital expenditure of Rs.5097.00 lakh claimed by the Petitioner is allowed in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, as the de-capitalisation amount could not be traced from Form 9Bi furnished by the Petitioner, the de-capitalisation amount of Rs.2151.28 lakh, as considered for said work in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered.

b) Revamping/ Modification of Gas Compressor of GBS Unit Nos.1, 2 and 3

16. Against the total additional capital expenditure of Rs.3273.58 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the Petitioner has claimed total actual additional capital expenditure of Rs.2735.21 lakh in 2015-16, under Regulation 14(3)(vii) of the 2014 Tariff Regulations for Revamping/ Modification of Gas compressor of GBS units 1, 2 and 3. In justification of the claim, the Petitioner has submitted that the R&M of Gas compressors was allowed due to their obsolescence and being old. It has stated that to get the desired output, the Renovation of Gas compressors are essential and the capacity of the Compressors has also been enhanced to meet the requirement. The Petitioner has stated that the enhancement of cost as against the admitted cost is due to escalation from the date of admission till actual execution.

17. We have considered the submissions in the matter. Considering the fact that the actual additional capital expenditure amounting to Rs.2735.21 lakh for this asset/ work is claimed towards efficient operation of the generating station is on account of obsolescence of existing asset and does not exceed the total additional capital expenditure of Rs.3273.58 lakh as allowed by order dated 15.2.2016 in Petition No. 41/GT/2015 for the 2014-19 tariff period, the actual additional capital expenditure of Rs.2735.21 lakh claimed by the Petitioner is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, as the de-capitalisation amount could not be traced from Form 9Bi furnished by the Petitioner, the de-capitalisation amount of Rs.1144.48 lakh, as considered for said work in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered.

c) Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at the generating station end

18. As against the projected additional capital expenditure of Rs.500 lakh allowed in 2014-15 towards Installation of three phase 20 MVA line reactor in 220 kV Misa Feeder at the generating station end vide order dated 15.2.2016 in Petition No. 41/GT/2015, the Petitioner has claimed actual additional capital expenditure of Rs.447.15 lakh in 2017-18 towards the said asset under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the claim, the Petitioner has submitted that in order to overcome the over-voltage problem and to ensure Grid security, the installation of reactor was decided in the 9th NER Power Committee meeting and M/s PGCIL had executed the works, on deposit work basis.

19. The Respondent, APDCL has submitted that the expenditure incurred may be examined on prudence check. The Petitioner has clarified that the projected figures

were based on experience/ budgetary estimates and, therefore, the final executed costs may vary.

20. We have considered the submissions of the parties. It is noticed that the additional capital expenditure claimed by the Petitioner for the said work was allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure of Rs.447.15 lakh for the asset/ work is claimed towards efficient operation of the generating station, is based on decision of NER Power Committee and does not exceed the total additional capital expenditure of Rs.500 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015 for the 2014-19 tariff period for this work/ asset, the actual additional capital expenditure of Rs.447.15 lakh claimed by the Petitioner for the said work/ asset, is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

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

21. As against the projected additional capital expenditure of Rs.28 lakh allowed for replacement of old existing 2 (two) numbers 24V battery banks meant for STG control system 2 & 3 in 2014-15 vide order dated 15.2.2016 in Petition No. 41/GT/2015, the Petitioner has claimed actual additional capital expenditure of Rs.14.08 lakh in 2015-16 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the claim, the Petitioner has submitted that the existing battery banks have been in service since the commissioning of STG-2 & STG-3 in 1998. It has stated that the existing battery banks have outlived their standard life and in order to ensure reliable DC supply to the load-side, their replacement was necessary, and the execution of the works was carried out through OEM.

22. It is noticed that the additional capital expenditure claimed by the Petitioner for replacement of old existing 2 (two) numbers 24V battery banks meant for STG control system 2 & 3 was allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure for Rs.14.08 lakh is claimed towards efficient operation of the generating station, is on account of obsolescence of existing batteries and does not exceed the additional capital expenditure of Rs.28.00 lakh allowed in 2014-19 by order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.14.08 lakh is allowed in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, it was difficult to trace the de-capitalisation amount from Form 9Bi furnished by the Petitioner for replacement of old existing 2 (two) nos. 24V battery banks meant for STG control system 2 & 3. It is observed that the Petitioner has submitted the total de-capitalisation of Battery bank for Rs.115.97 lakh (Rs.6.20 lakh in 2015-16, Rs.27.25 lakh in 2016-17, Rs.56.48 lakh in 2017-18, Rs.26.03 lakh in 2018-19) with the heading "ACE (Battery bank)" in Form 9Bi for the 2014-19 tariff period. By order dated 15.2.2016 in Petition No. 41/GT/2015, the total de-capitalisation of Rs.97.90 lakh (Rs.11.70 lakh was allowed for 24V Battery banks and Rs.86.20 lakh [Rs.20.98 lakh for 220V battery bank + Rs.65.22 lakh for 125V battery bank] for 220V/125V battery bank. As the total actual de-capitalisation for Battery bank, in Form 9Bi, is higher than the de-capitalisation allowed in order dated 15.2.2016 in Petition No. 41/GT/2015, the total actual de-capitalisation amount of Rs.115.97 lakh during 2014-19 period (Rs.6.20 lakh in 2015-16, Rs.27.25 lakh in 2016-17, Rs.56.48 lakh in 2017-18, Rs.26.03 lakh in 2018-19) has been considered for 24V/ 125V/ 220V Battery banks.

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

23. As against the total additional capital expenditure of Rs.34 lakh allowed for Replacement of old existing 01 (one) number 220 kV/ 125 V/ 220V battery bank in 2014-15 and Rs.182 lakh for 2015-16 in its order dated 15.2.2016 in Petition No. 41/GT/2015, the Petitioner has claimed total actual additional capital expenditure of Rs.225.79 lakh during 2014-19 period (Rs.35.46 lakh in 2015-16, Rs.64.53 lakh in 2016-17, Rs.97.16 lakh in 2017-18 and Rs.28.65 lakh in 2018-19) under Regulation 14(3)(vii) of the 2014 Tariff Regulations for the said asset/ work. In justification of the claim, the Petitioner has submitted that the existing battery bank is in service since the commissioning of the 220 kV Switchyard in 1995 and as the same has outlived its standard life, their replacement was necessary.

24. It is noticed that the additional capital expenditure claimed by the Petitioner has been allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure for Rs.225.79 lakh is claimed toward efficient operation of the generating station, is on account of obsolescence of existing batteries and does not exceed the additional capital expenditure of Rs.244.00 lakh allowed order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.225.79 lakh claimed towards the Replacement of old existing 01 (one) no. 220 kV/ 125V/ 220V battery bank is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, the de-capitalisation amount towards the Replacement of existing 01 (one) No. 220 kV/ 125V/ 220V old battery, could not be traced from the information furnished in Form 9Bi of the petition. It is observed that the Petitioner has submitted the total de-capitalisation of battery bank for Rs.115.97 lakh (Rs.6.20 lakh in 2015-16, Rs.27.25 lakh in 2016-17, Rs.56.48 lakh in 2017-18, Rs.26.03 lakh in 2018-19) with the heading “ACE (Battery bank)” in Form 9Bi for the 2014-19 tariff period. It is noticed that by order dated 15.2.2016 in Petition No.

41/GT/2015, the total de-capitalisation of Rs.97.90 lakh (Rs.11.70 lakh for 24V battery banks and Rs.86.20 lakh [Rs.20.98 lakh for 220V battery bank + Rs.65.22 lakh for 125V battery bank] has been considered for 220V/125V Battery bank. Thus, the total actual de-capitalisation for battery bank, as submitted in Form 9Bi of the petition, is higher than the de-capitalisation amount allowed in order dated 15.2.2016 in Petition No. 41/GT/2015. Accordingly, the total actual de-capitalisation of Rs.115.97 lakh (Rs.6.20 lakh in 2015-16, Rs.27.25 lakh in 2016-17, Rs.56.48 lakh in 2017-18, Rs.26.03 lakh in 2018-19) has been considered for 24V/ 125V/ 220V battery banks.

f) Up-gradation of Programmer/ EPROM writer for Procontrol-13 Control System of STG

25. As against the projected additional capital expenditure of Rs.65 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015 for Up-gradation of Programmer/ EPROM writer for Procontrol-13 Control System of STGs in 2014-15, the Petitioner has claimed actual additional capital expenditure of Rs.58.04 lakh for the said asset/ work in 2017-18 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 has been declared obsolete by the OEM M/S BHEL, EDN, Bangalore.

26. It is noticed that the additional capital expenditure claimed by the Petitioner has been allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure for Rs.58.04 lakh is claimed towards efficient operation of the generating station, is on account of obsolescence of existing asset and does not exceed the additional capital expenditure of Rs.65 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.58.04 lakh claimed towards the Up-gradation of

Programmer/EPROM writer for Procontrol-13 Control System of STG is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, the de-capitalisation amount towards up-gradation of Programmer/EPROM writer for Procontrol-13 Control System of STG could not be traced from the information furnished in Form 9Bi of the petition. In view of this, the de-capitalisation amount of Rs.27.15 lakh for said work, as considered in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered for de-capitalisation in this order.

g) Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2

27. The Petitioner has claimed actual additional capital expenditure of Rs.1912.02 lakh (Rs.1553.23 lakh in 2017-18 and Rs.358.80 lakh in 2018-19) in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations for the Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2. The Commission in its order dated 15.2.2016 in Petition No. 41/GT/2015 had allowed additional capital expenditure of Rs.3503.88 lakh for 2014-19 tariff period. The Petitioner has submitted that works are under progress and will be completed in 2019-20.

28. It is noticed that the additional capital expenditure claimed by the Petitioner was allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure of Rs.1912.02 lakh is claimed towards efficient operation of the generating station and does not exceed the additional capital expenditure of Rs.3503.88 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.1912.02 lakh incurred by the Petitioner for comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2 is allowed in terms of Regulation 14(3)(vii)

of the 2014 Tariff Regulations. However, the de-capitalisation amount towards comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2 could not be traced from the information furnished in Form 9Bi of the petition. In view of this, the de-capitalisation amount of Rs.2117.12 lakh for said work, as considered in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered for de-capitalisation in this order.

h) Up-gradation of Control system of MHI make Gas Turbine of GTG-1 (by GT Controller Megac V with Diasys Netmation system of OEM)

29. Against the total additional capital expenditure of Rs.1900 lakh (Rs.950 in 2015-16 and Rs.950 in 2016-17) allowed by order dated 15.2.2016 in Petition No. 41/GT/2015 for Up-gradation of Control system of MHI make Gas Turbine of GTG-1, the Petitioner has claimed actual additional capital expenditure of Rs.1566.64 lakh for this asset/ work in 2017-18 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the Petitioner has submitted that the existing control system has become obsolete, as certified by the OEM, and no spares and services are available and the cost of execution is as per offer submitted by the OEM.

30. It is noticed that the additional capital expenditure claimed by the Petitioner was allowed by order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure of Rs.1566.64 lakh is claimed towards efficient operation of the generating station, the existing asset has become obsolete and does not exceed the additional capital expenditure of Rs.1900.00 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.1566.64 lakh incurred by the Petitioner for Up-gradation of Control system of MHI make Gas Turbine of GTG-1, is allowed in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, the de-capitalisation amount

towards up-gradation of control system of MHI make gas turbine of GTG-1, could not be traced from the information furnished in Form 9Bi of the petition. In view of this, the de-capitalisation amount of Rs.664.26 lakh for said work, as considered in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered for de-capitalisation in this order.

i) Construction of approach road to outfall drains and newly acquired land from BDT through Bahonigaon

31. As against the additional capital expenditure of Rs.28.79 lakh allowed, by order dated 15.2.2016 in Petition No. 41/GT/2015, towards the construction of approach road to outfall drain and newly acquired land from BDT through Bahonigaon in 2014-15, the Petitioner has claimed actual additional capital expenditure of Rs.20.77 lakh for this asset/ work in 2015-16 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification for the said claim, the Petitioner has submitted that this is the only approach road to the out-fall drain and the same is required to be developed by the Petitioner.

32. It is noticed that the additional capital expenditure claimed by the Petitioner was allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the actual additional capital expenditure of Rs.20.77 lakh is claimed towards efficient operation of the generating station and does not exceed the additional capital expenditure of Rs.28.79 lakh allowed vide by order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.20.77 lakh incurred by the Petitioner for construction of approach road to outfall drain and newly acquired land

from BDT through Bahonigaon, is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

j) Up-gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GTs 1 to 4

33. Against the total additional capital expenditure of Rs.167.67 lakh (i.e. Rs.50.00 lakh in 2015-16, Rs.46.53 lakh in 2016-17 and Rs.71.14 lakh in 2018-19) allowed for Up-gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system by order dated 15.2.2016 in Petition No. 41/GT/2015, the Petitioner has claimed total actual additional capital expenditure of Rs.58.32 lakh (i.e. Rs.27.13 lakh in 2016-17 and Rs.31.19 lakh in 2018-19) for this asset/ work, under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the Petitioner has submitted that the existing system has become obsolete, as certified by the OEM, and no spares and services are available and the cost of execution is as per the offer submitted by OEM.

34. It is noticed that the additional capital expenditure claimed by the Petitioner was allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015. Considering the fact that the total actual additional capital expenditure of Rs.58.32 lakh (i.e. Rs.27.13 lakh in 2016-17 for Unit 4 and Rs.31.19 lakh in 2018-19 for Unit 3) claimed in Form 9A, is claimed towards efficient operation of the generating station, in on account of existing asset having become obsolete and does not exceed the total additional capital expenditure of Rs.167.67 lakh allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the actual additional capital expenditure of Rs.58.32 lakh (Rs.27.13 lakh for Unit 4 in 2016-17 and Rs.31.19 lakh for Unit 3 in 2018-19) incurred by the Petitioner for up-gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, the de-capitalisation amount towards up-gradation of

7200/3300 series, Bentley Nevada make Vibration Monitoring system, could not be traced from the information furnished in Form 9Bi of the petition. In view of this, the de-capitalisation amount of Rs.17.48 lakh in 2015-16 and Rs.19.44 lakh in 2016-17 as considered for the said asset/works, in order dated 15.2.2016 in Petition No. 41/GT/2015 has been considered for de-capitalisation in this order.

k) Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E

35. Against the total additional capital expenditure of Rs.459.00 lakh allowed for up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E, in 2017-18 by order dated 15.2.2016 in Petition No.41/GT/2015, the Petitioner has claimed actual additional capital expenditure of Rs.469.64 lakh for this asset/ work in 2017-18 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. The Petitioner has submitted that the existing control systems have become obsolete as certified by the OEM and no spares and services were available. The Respondent, APDCL has submitted that the claim of the Petitioner may be examined on prudence check.

36. It is noticed that the actual additional capital expenditure of Rs.469.64 lakh incurred by the Petitioner for up-gradation of Mark-IV Control system of GT-6 to Mark-VIe control system of G.E is higher than the additional capital expenditure of Rs.459.00 lakh allowed by order dated 15.2.2016 in Petition No. 41/GT/2015 in 2017-18. While the projected additional capital expenditure allowed was on projected basis, the actual additional expenditure of Rs.469.64 lakh incurred by the Petitioner is as per offer of OEM. In view of this, we allow the actual additional capital expenditure claimed by the Petitioner under Regulation 14(3)(vii) of the 2014 Tariff Regulations. The de-capitalisation amount towards up-gradation of Mark-IV Control System of GT-6

to Mark-VIe control system of G.E, in Form 9Bi referred as ACE (Mark VI Upgradation), is Rs.273.21 lakh (as per Form 9Bi) for 2017-18. The same de-capitalisation of Rs.273.21 lakh is allowed for the up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E.

l) Up-gradation of Electro-hydraulic governor of STG-1

37. The Petitioner had claimed projected additional capital expenditure of Rs.100.00 lakh with de-capitalization of Rs.41.77 lakh in 2017-18 for Up-gradation of electro-hydraulic governor of STG-1 and the same was allowed vide order dated 15.2.2016 in Petition No.41/GT/2015. The Petitioner, in this petition, has submitted that though the additional capitalisation was allowed for the said asset/ work, the same could not be executed due to technical problems. Considering the fact that the work has not been executed by the Petitioner, the claim of the Petitioner has not been considered in this order. The capitalisation of this asset/work, if any, in future, will be considered in accordance with the relevant regulations.

New Items claimed

a) Individual Gas Engine Fuel Filter assembly with accessories

38. The Petitioner has claimed additional capital expenditure of Rs.35.65 lakh in 2014-15 for installation of individual Gas Engine Fuel Filter assembly with accessories under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the Petitioner has submitted that individual fuel filter of gas engines was not incorporated in the original scheme. The Petitioner has also submitted that it has experienced a lot of trouble in running the gas engines due to poor quality of the supplied gas (fuel). The Petitioner has further stated that in order to achieve round the clock trouble-free operation of the gas engines, and to avoid unwarranted outage of

the Gas Turbine units, individual fuel filter of gas engines have been installed in all 4 (four) gas engines for better efficiency and output. Accordingly, the Petitioner has prayed that the Commission may allow the said additional capital expenditure, as the same will improve the efficiency of the gas engines and will provide better efficiency of Gas Turbine units.

39. The Respondent, APDCL has submitted that the Petitioner has not furnished the technical justification duly supported by documentary evidence. It has also submitted that the Petitioner may be directed to submit a report showing the decrease in unwarranted outage of the gas engine units. In response, the Petitioner has clarified that numerous letters were written to M/s Oil India Limited (OIL), the supplier of fuel, for carry over condensate along with natural gas, leading to malfunctioning of gas engines of Gas Booster Station. It has also stated that individual fuel filter of gas engines, which was not incorporated in the original scheme, have been installed, keeping in view the supplied fuel quality thereby to avoid unwarranted outage of gas engine units and to provide better efficiency and output. The Petitioner has further submitted that though these filters were installed earlier, they could be put to service only after R&M of gas engines. The Petitioner has also annexed the statement showing details of unwarranted outage of the Gas engine units.

40. Keeping in view that the additional capital expenditure incurred by the Petitioner is for improvement of efficiency of gas engines by reducing unwarranted outages, we allow the actual additional capital expenditure of Rs.35.65 lakh in 2014-15 claimed by the Petitioner under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

b) Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-3

41. The Petitioner has claimed actual additional capital expenditure of Rs.2886.74 lakh in 2015-16 under Regulation 14(3)(vii) of the 2014 Tariff Regulations for Procurement of one new GT rotor (out of the four GTG to start with) for minimising the down time of GTG for Comprehensive Rotor Inspection (CRI) and Compressor Rotor Refurbishment (CRR) (19.5 months for one CRR/CRI as per OEM schedule). The Petitioner has submitted that the work was executed through OEM and will enhance the life of the Gas Turbines. Accordingly, the Petitioner has prayed that the additional capital expenditure claimed may be allowed.

42. The Respondent, APDCL has submitted that the Commission may examine the necessity for the said work, considering the fact that the generating station, is at the fag end of its useful life. The Petitioner has clarified that the Commission had earlier allowed the additional expenditure for CRR/CRI of only 3 (three) GT Rotor against the 4 (four) units for which expenditure was claimed. Therefore, either the CRR/CRI or a new Rotor was necessary for the 4th (fourth) Gas Turbine unit. Accordingly, the Petitioner has prayed for capitalisation of the said expenditure.

43. The submissions of the parties have been considered. It is evident from the submissions of the Petitioner that the claim for additional capitalisation is for the procurement of one new GT rotor. It is, however, noticed that the Petitioner's claim for additional capitalisation towards the procurement of a new rotor was disallowed by order dated 15.2.2016 in Petition No.41/GT/2015. The relevant portion of the order is extracted below:

> *"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 Rs.*2551.79 lakh in 2015-16 towards procurement of new rotor is not allowed."*

44. In view of the above decision, the claim of the Petitioner for additional capitalisation of Rs.2886.74 lakh for procurement of one new GT rotor is not allowed.

c) Replacement/ Renovation of Remote Terminal Unit system as per Grid requirement

45. The Petitioner has claimed additional capital expenditure of Rs.22.02 lakh in 2016-17 for Replacement/ Renovation of Remote Terminal Unit (RTU) system as per Grid requirement under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the Petitioner has submitted that RTU is a statutory requirement as per provisions of the Grid Code. It has also submitted that the existing RTU at the generating station is very old and was supplied and maintained by PGCIL. However, as per the Grid Code, it is the responsibility of all ISGS (inter-State generating stations) to ensure connectivity of RTU with NERLDC (or to nearest WAN). The Petitioner has further stated that the existing RTU being very old was not compatible for data transfer through OFC and, accordingly, as per demand of NERPC, for efficient Grid management, the new upgraded RTU was procured and installed at the generating station. The Petitioner has submitted that the additional capitalisation of this asset, being a statutory requirement, may be allowed.

46. The Respondent, APDCL has submitted that the gross value of the old asset should be adjusted from the accrued cost. The Petitioner has submitted that the existing S900 range of RTU that was installed in almost all ISGS and ISTS were discontinued by the OEM in 2010-11. The Petitioner has also submitted the OEM certificate for obsolescence.

47. Keeping in view that the installation of RTU, being a statutory requirement, is in compliance with the existing law and contributes to the efficient operation of the generating station, we allow the actual additional capital expenditure incurred under Regulation 14(3)(ii) read with Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, as the Petitioner has not furnished the de-capitalised value of the old asset, the same has been considered under "Assumed Deletion" in later part of this order.

d) Upgradation/ Replacement of Halon Fire-fighting system with CO2 flooded system for GTG unit 5 and unit 6

48. The Petitioner has claimed additional capital expenditure of Rs.44.60 lakh in 2016-17 for Up-gradation/ Replacement of Halon Fire-fighting system with CO_2 flooded system for GTG unit 5 and 6 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the Petitioner has submitted that the OEM has certified that the existing system has become obsolete and no spares and services are available. It has also stated that the works were executed due to urgency and the cost of execution is as per open tender and after prudent check.

49. The Respondent, APDCL has submitted that the replacement of an old item should not be in the nature of additional capital expenditure. It has further submitted that in terms of Regulation 14(3)(vii) of the 2014 Tariff Regulations, the Petitioner has not submitted the obsolescence certificate of the OEM and/or the test results by independent agency including other supporting documents. It has also stated that the gross value of the old asset should be adjusted from the accrued cost. The Petitioner has clarified that the Gingle Halon 1301 fire extinguishing system for Frame VI GTG Unit 5&6, was commissioned in 1994-95, as part of the original package of the plant. It has also stated that when the Montreal Protocol determined that halon depleted the

ozone layer, the environmental protection agency, globally banned its manufacture in 1994 and due to above, there has been no spares and service support available. The Petitioner has contended that considering the fact that the fire fighting system is mandatory for running of units, the old system was replaced with Automatic CO_2 fire suspension system for both units of GTG.

50. As regards additional capitalisation of Halon fire fighting system, it is noticed that the claim of NTPC in Petition No. 16/GT/2013 (truing up of tariff of Dadri GPS for 2009-14) was allowed by order dated 16.7.2013 under Regulation 9(2)(ii) of the 2009 Tariff Regulations, as under:

> *"Phasing out of Halon system Fire Fighting System*
>
> *43. The petitioner has submitted that out of the projected expenditure of `329.00 lakh claimed during 2010-11, the Commission by its order dated 14.6.2012 in Petition No. 224/2009 had allowed expenditure of `241.26 lakh towards the replacement of Halon system for protection of ozone layer considering the de-capitalization value of `87.74 lakh under Regulation 9(2)(ii) of the 2009 Tariff Regulations. The petitioner vide its affidavit 20.11.2012 has now submitted that the scheme of phasing out of Halon Fire Fighting has now been awarded for `247.00 lakh and based on actual wad, the projected expenditure has now been shifted to 2012.13 and accordingly projected capitalization has been revised. As the asset is required as statutory compliance under National Fire Protection Association Standard on Clean Agent Fire Extinguishing system (NFPA-2001), the claim of the petitioner for `247.00 is allowed along with the corresponding de-capitalization. It is noticed that the petitioner has not submitted the de-capitalization value of Halon system. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of Halon system works out to `65.87 lakh (247.00 x 0.2667). In view of this, the capitalization of `181.13 lakh (247.00-65.87) is allowed under Regulation 9(2)(ii) of the 2009 Tariff Regulations."*

51. In line with the above decision and since the actual additional capital expenditure of Rs.44.60 lakh incurred is in compliance with the existing law, we allow the same under Regulation 14(3)(ii) of the 2014 Tariff Regulations. However, as the Petitioner has not furnished the de-capitalised value of the old asset, the same has been considered under "Assumed Deletion" in later part of this order.

e) Continuous Emission Monitoring System

52. The Petitioner has claimed additional capital expenditure of Rs.176.08 lakh in 2016-17 for Continuous Emission Monitoring System (CEMS) under Regulation 14(3)(vii) of the 2014 Tariff Regulation. In justification of the same, the Petitioner has submitted that CEMS on stack and online effluent monitoring system was installed at the generating station, with necessary up-linking of real time data to Central Pollution Control Board (CPCB) and Assam State Pollution Control Board (ASPCB) server, as per gadget notification/ guidelines of the CPCB. It has also submitted that the installation of CEMS is mandatory for 17 categories of industry, including power generation industry. Considering the above submissions and being an expenditure towards statutory compliance, the actual additional capital expenditure for Rs.176.08 lakh is allowed under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

f) ABT Management System

53. The Petitioner has claimed additional capital expenditure of Rs.40.38 lakh in 2017-18 for ABT Management system. In justification of the same, the Petitioner has submitted that Availability-Based Tariff Energy Management System helps power plants to optimise power generation, through efficient operation and Grid management. The Petitioner has further submitted that the generating station which was commissioned prior to the ABT regime, did not have any software for Energy Management system, is very essential due to strict rules and regulations, prevalent for Grid Operations and, hence, the same was installed in the generating station.

54. Though the Petitioner has claimed actual additional capital expenditure of Rs.40.38 lakh in 2017-18 for installation of ABT management system on the ground that it is a statutory requirement, the Petitioner has not furnished any documentary

evidence, in support of the same. In our view, the benefits of installation of ABT management system accrue only to the Petitioner in order to avoid any penalties being imposed under the DSM Regulations and earning additional UI income based on the prevailing grid frequency. In view of this, the actual additional capital expenditure of Rs.40.38 lakh claimed by the Petitioner is not allowed.

g) Up-gradation of AVR system of STG-2

55. The Petitioner has claimed additional capital expenditure of Rs.42.83 lakh in 2018-19 for up-gradation of AVR system of STG-2. In justification of the same, the Petitioner has submitted that the existing system has become obsolete as certified by the OEM and no spares and services are available. It has also submitted that the up-gradation of AVR system of STG-2 is necessary for the operation of the generating station and the Commission had already admitted the cost for up-gradation of AVR for STG Units 1 & 3. The Petitioner has further stated that the execution of the work has been done for STG Unit-2 through tendering and after prudent check.

56. The Respondent, APDCL has submitted that the replacement of an old item should not be considered as additional capital expenditure under Regulation 14(3)(vii) of the 2014 Tariff Regulations. It has also submitted that the Petitioner has not submitted the obsolescence certificate of OEM, the test results of the independent agency including other supporting documents. It has also stated that the gross value of the old asset should be adjusted from the accrued cost.

57. We have considered the submission of the parties. The Petitioner has furnished the copy of obsolescence certificate from OEM. In view of the above submissions, the actual additional capital expenditure of Rs.42.83 lakh claimed by the Petitioner is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. As the Petitioner

has not furnished the de-capitalised value of the old asset, the same has been considered under “Assumed Deletion” in later part of this order.

Capital Spares

58. The Petitioner has claimed additional capital expenditure of Rs.3251.93 lakh in 2016-17, Rs.1444.12 lakh in 2017-18 and Rs.770.56 lakh in 2018-19 towards capital spares in Form 9A of the petition. The Petitioner has also furnished Form-17 indicating the details of the major spares, capitalised during the years 2016-17, 2017-18 and 2019-20. Since the last proviso to Regulation 29(2) of the 2014 Tariff Regulations provides for the consideration of the year-wise actual capital spares consumed, at the time of truing-up of tariff, as part of the O&M expenses, the claim of the Petitioner for capitalisation of spares during the years 2016-17 and 2017-18 has been discussed under the head ‘O&M expenses’. However, for the year 2019-20, the claim for capitalisation of spares will be considered in terms of the 2019 Tariff Regulations.

De-capitalization, Assumed Deletions, Reversals and Discharge of liabilities

59. The following amounts have been claimed by the Petitioner towards de-capitalization, reversals and discharge of liabilities:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
De-capitalization	196.42	1012.04	1900.31	927.27	521.96
Reversals	0.51	23.94	13.62	579.56	227.04
Discharge of liabilities	0.00	0.00	0.00	18.17	0.00

60. It is evident from Form 9Bi furnished by the Petitioner that the Petitioner has not furnished the corresponding de-capitalisation amounts with the same nomenclature of the items as considered in Form 9A. For this reason, it has not been possible to trace the de-capitalisation amount from Form 9Bi. Therefore, the corresponding de-capitalisation in respect of the assets/ items allowed for actual additional capitalisation

has been considered as per order dated 15.2.2016 in Petition No. 41/GT/2015. It is also observed that the Petitioner has claimed de-capitalisation for some miscellaneous items in Form 9Bi, for items other than those items for which additional capitalisation expenditure was claimed in Form 9A. Accordingly, we have considered the de-capitalisation of these miscellaneous items as claimed by the Petitioner, under the head "De-capitalization of other miscellaneous items not claimed above".

61. Further, in some of the cases, the Petitioner has neither provided the de-capitalization value of old replaced assets with the corresponding capitalization of new assets nor such de-capitalization value is available in order dated 15.2.2016 in Petition No. 41/GT/2015. Hence, as per consistent methodology adopted by the Commission in its various orders, the expenditure on replacement of assets, if found justified, is allowed for the purpose of tariff, provided that the capitalization of the said asset, is followed by de-capitalization of the gross value of the old asset. Though the Petitioner, in most of the additional capital expenditure claims has submitted the de-capitalization value, except in some cases. Accordingly, where the de-capitalization is proposed to be effected during the future years to the year of capitalization of the new asset, the de-capitalization of the old asset for the purpose of tariff, is shifted to the very same year in which the capitalization of the new asset is allowed. Such de-capitalization which is not a book entry in the year of capitalization is termed as "Assumed Deletion". Therefore, the methodology of arriving at the fair value of the de-capitalized asset, i.e. escalation rate of 5% per annum from the COD has been considered in order to arrive at the gross value of old asset in comparison to the cost of new asset where the de-capitalization value is not furnished by the Petitioner. In the instant petition, year of COD of the generating station is 1999-2000. We have considered the notional value of asset under consideration as on COD as 100 and

escalated it @5% per annum to arrive at the notional value for the year during which additional capital expenditure is claimed against replacement of the same. To arrive at the assumed deletion (gross value of the asset being de-capitalized), the amount claimed for additional capital expenditure against the new asset is multiplied by the derived ratio from above two notional values i.e., value in year of COD (100) divided by value in the year of capitalization (105 for first year after COD, 105x1.05 for second year and so on).

62. Though the Petitioner, in this petition, has claimed the Replacement/ Renovation of RTU system as per Grid requirement, the Up-gradation/ Replacement of Halon Firefighting system with CO_2 flooded system for GTG unit 5 & unit 6 and Up-gradation of AVR system of STG-2, it has not furnished the de-capitalized value of the old assets. Accordingly, the de-capitalized value of the assets/ works has been calculated in terms of the aforesaid methodology. Accordingly, the 'assumed deletions' allowed for the purpose of tariff are detailed as under:

(Rs. in lakh)

Head	Year of claim	Additional capital expenditure claimed	Assumed deletion
Replacement/ Renovation of RTU system as per Grid requirement	2016-17	22.02	9.61
Up-gradation/ Replacement of Halon Firefighting system with CO_2 flooded system for GTG unit 5 and 6	2016-17	44.60	19.46
Up-gradation of AVR system of STG-2	2018-19	42.83	16.95

63. The Petitioner has claimed the de-capitalization of spares of Rs.51.49 lakh in 2018-19. We have considered the same towards de-capitalization of spares in 2018-19. The summary of total de-capitalization allowed are as follows:

(Rs. in lakh)

Sr. No.	Item Name	De-capitalization				
		2014-15	2015-16	2016-17	2017-18	2018-19
1	Replacement of Gas engine along with associated auxiliaries	0.00	0.00	2151.28	0.00	0.00

Sr. No.	Item Name	De-capitalization				
		2014-15	2015-16	2016-17	2017-18	2018-19
2	Revamping/modification of Gas compressor of GBS Unit-1, Unit-2 and Unit-3	0.00	1144.48	0.00	0.00	0.00
3	Replacement of old existing 02 (two) numbers 24V battery banks meant for STG control system 2 & 3 and 01(one) number 220 kV/125 V/220v battery bank	0.00	6.20	27.25	56.48	26.03
4	Up gradation of Programmer/ EPROM writer for Procontrol-13 Control System of STGs.	0.00	0.00	0.00	27.15	0.00
5	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-2	0.00	0.00	0.00	2117.12	0.00
6	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	0.00	0.00	664.26	0.00
7	Up gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GT 1 & 2 and GT 3 & 4	0.00	0.00	17.48	0.00	19.44
8	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E	0.00	0.00	0.00	273.21	0.00
9	Up-gradation of AVR system of STG-2 (Assume Deletion)	0.00	0.00	0.00	0.00	16.95
10	Replacement/ Renovation of RTU system as per Grid requirement (Assume Deletion)	0.00	0.00	9.61	0.00	0.00
11	Up-gradation/ Replacement of Halon Firefighting system with CO2 flooded system for GTG unit 5 and 6(Assume Deletion)	0.00	0.00	19.46	0.00	0.00
12	De-capitalization of Spares	0.00	0.00	0.00	0.00	51.49
13	De-capitalization of other miscellaneous items not claimed above	196.42	16.45	0.00	17.37	417.24
14	**Total allowed**	**196.42**	**1167.13**	**2225.08**	**3155.59**	**531.15**

64. As regards the reversal of liabilities claimed by the Petitioner (refer table under paragraph 59 above), the details furnished in Form 9Bi has been considered and found to be in order. Hence, the same is allowed.

65. Also, the discharge of liabilities of Rs.18.17 lakh in 2017-18 as claimed by the Petitioner is allowed after considering the liability flow statement in Form 18 of the petition.

66. Accordingly, the total de-capitalization, assumed deletions, reversal of liability and discharge of liabilities allowed are as follows:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Total De-capitalization	196.42	1167.13	2225.08	3155.59	531.15
Reversals	0.51	23.94	13.62	579.56	227.04
Discharge of Liabilities	0.00	0.00	0.00	18.17	0.00

Reconciliation of the actual Additional Capital Expenditure

67. The Petitioner has furnished the reconciliation statement of the actual additional capital expenditure for the 2014-19 tariff period, with books of accounts as under:

(Rs. in lakh)

	Ref	2014-15	2015-16	2016-17	2017-18	2018-19
Closing Gross Block	A	153377.40	157153.38	165163.68	170170.15	171294.63
Less: Opening Gross Block	B	153298.65	153377.40	157153.38	165163.68	170170.15
Total Additions as per books	C=A-B	78.75	3775.98	8010.3	5006.47	1124.48
Less: Additions pertaining to other Stages (Stage wise breakup)	E	0.00	0.00	0.00	0.00	0.00
Net Additions pertaining to instant project/Unit/Stage	F=C-E	78.75	3775.98	8010.3	5006.47	1124.48
Less: Exclusions (items not allowable / not claimed)	G	252.33	115.97	194.24	256.97	414.41
Additional Capital Expenditure as per books	H=F-G	(-)173.58	3660.01	7816.06	4749.5	710.07
De-capitalization wrongly made, rectified in subsequent year	I	12.82	1020.22	0.00	0.00	0.00
Rectification of wrong de-capitalization of 2014-15 & 2015-16	J	0.00	0.00	1033.04	0.00	0.00
Additional Capital Expenditure	K=H+I-J	(-)160.76	4680.23	6783.02	4749.5	710.07
Less: Reversal during the year / period	L	0.51	23.94	13.62	579.56	227.04
Add: Discharges during the year /period	M	0.00	0.00	0.00	18.17	0.00
Net Additional Capital Expenditure claimed	**N=K-L+ M**	**(-) 161.27**	**4656.29**	**6769.40**	**4188.11**	**483.03**

Exclusions

68. The summary of exclusions from books of accounts, as claimed for the 2014-19 tariff period, under different heads are as under:

(Rs. in lakh)

Sl. No.	Head of Work / Equipment	Additional capital expenditure claimed under Exclusion on accrual basis				
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
1	Gas Steam Turbine	169.09	0.00	65.14	0.00	0.00
2	Gas Turbine	0.00	0.00	0.00	22.81	39.00
3	Gas Booster Station	0.00	0.00	0.00	0.00	107.43
4	Switch Gear	0.00	0.00	0.00	0.00	51.35
5	Permanent Non-Residential Building	53.61	34.67	4.87	0.00	25.34
6	Residential Building Township	0.00	0.00	0.00	34.04	142.83
7	Main Plant Building	0.00	0.00	0.00	114.63	0.00
8	Permanent Roads - Plant Area	0.00	0.00	10.31	0.00	18.89
9	15 Kw Solar Plant	0.00	0.00	13.62	17.56	0.00
10	Fire-fighting Engines & Tender	0.00	0.00	0.00	28.18	0.00
11	Ordinary Tools of Plants	0.52	49.63	1.43	0.00	0.00
12	Furniture & Fixture - Others	11.57	0.15	2.49	5.03	0.00
13	Other EDP machines	8.13	16.45	22.86	18.35	8.49
14	Office Equipment	0.12	0.00	7.51	3.51	0.00
15	Hospital Equipment	2.57	0.00	0.26	2.76	0.00
16	Miscellaneous equipment	4.21	5.47	1.39	8.95	15.52
17	Outdoor Electrification	0.00	8.21	56.70	0.00	0.00
18	Fixed assets of Minor Value>750 and <5000	1.04	1.23	7.67	0.12	0.00
19	Refrigerator, Air-Cooler, Water-Cooler, Air- Conditioner-Town	0.00	0.00	0.00	1.03	5.56
20	Cellular Phone	1.46	0.15	0.00	0.00	0.00
	Total	**252.33**	**115.97**	**194.24**	**256.97**	**414.41**

69. The Petitioner has incurred actual additional capital expenditure of Rs.252.33 lakh in 2014-15, Rs.115.97 lakh in 2015-16, Rs.194.24 lakh in 2016-17, Rs.256.97 lakh in 2017-18 and Rs.414.41 lakh in 2018-19. However, the Petitioner, in Form-9D, has claimed the said amounts under 'Exclusion', but has not furnished any justification

in respect of these claims. Considering the fact that the Petitioner has considered this additional capital expenditure under 'exclusion category' and has not claimed tariff for the same, the exclusion of positive entries, as considered by the Petitioner is allowed.

70. Based on the above discussion, the additional capital expenditure allowed for the 2014-19 tariff period is summarised as follows:

(Rs. in lakh)

Sl. No.	**Head of Work/Equipment**	**Additional capital expenditure (On cash basis)**					**Total**
		2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	
(A) Additional Capital Expenditure allowed earlier							
1	Replacement of Gas engine along with associated Auxiliaries						
	Claimed	0.00	0.00	5097.00	0.00	0.00	5097.00
	Allowed	**0.00**	**0.00**	**5097.00**	**0.00**	**0.00**	**5097.00**
2	Revamping/Modification of Gas Compressor of GBS Unit #1, Unit #2 and Unit #3						
	Claimed	0.00	2735.21	0.00	0.00	0.00	2735.21
	Allowed	**0.00**	**2735.21**	**0.00**	**0.00**	**0.00**	**2735.21**
3	Installation of 3 phase 20 MVA line reactor in 220kV Misa Feeder at AGBP end						
	Claimed	0.00	0.00	0.00	447.15	0.00	447.15
	Allowed	**0.00**	**0.00**	**0.00**	**447.15**	**0.00**	**447.15**
4	Replacement of old existing 02(two) number 24V battery banks meant for STG control system 2 & 3						
	Claimed	0.00	14.08	0.00	0.00	0.00	14.08
	Allowed	**0.00**	**14.08**	**0.00**	**0.00**	**0.00**	**14.08**
5	Replacement of old existing 01(one) number 220 kV/125 V/220v battery bank						
	Claimed	0.00	35.46	64.53	97.16	28.65	225.79
	Allowed	**0.00**	**35.46**	**64.53**	**97.16**	**28.65**	**225.79**
6	Up gradation of Programmer/EPROM writer for Procontrol-13 Control System of STGs						
	Claimed	0.00	0.00	0.00	58.04	0.00	58.04
	Allowed	**0.00**	**0.00**	**0.00**	**58.04**	**0.00**	**58.04**

Sl. No.	Head of Work/Equipment	Additional capital expenditure (On cash basis)					Total
		2014-15	2015-16	2016-17	2017-18	2018-19	
7	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit #2						
	Claimed	0.00	0.00	0.00	1553.23	358.80	1912.02
	Allowed	**0.00**	**0.00**	**0.00**	**1553.23**	**358.80**	**1912.02**
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						
	Claimed	0.00	0.00	0.00	1566.64	0.00	1566.64
	Allowed	**0.00**	**0.00**	**0.00**	**1566.64**	**0.00**	**1566.64**
9	Construction of approach road to outfall drain and newly acquired land from BDT through Bahonigaon						
	Claimed	0.00	20.77	0.00	0.00	0.00	20.77
	Allowed	**0.00**	**20.77**	**0.00**	**0.00**	**0.00**	**20.77**
10	Up gradation of 7200/3300 series, Bentley Nevada make Vibration Monitoring system of GT 1&2 and GT 3&4						
	Claimed	0.00	0.00	27.13	0.00	31.19	58.32
	Allowed	**0.00**	**0.00**	**27.13**	**0.00**	**31.19**	**58.32**
11	Up-gradation of Mark-IV Control System of GT-6 to Mark-VIe control system of G.E						
	Claimed	0.00	0.00	0.00	469.64	0.00	469.64
	Allowed	**0.00**	**0.00**	**0.00**	**469.64**	**0.00**	**469.64**
	Sub-Total (A)						
	Claimed	0.00	2805.52	5188.66	4191.86	418.64	12604.67
	Allowed	**0.00**	**2805.52**	**5188.66**	**4191.86**	**418.64**	**12604.67**
(B) New additional capital expenditure items claimed							
12	Individual Gas Engine Fuel Filter assembly complete with accessories						
	Claimed	35.65	0.00	0.00	0.00	0.00	35.65
	Allowed	35.65	0.00	0.00	0.00	0.00	35.65
13	Comprehensive Rotor Inspection and Compressor Rotor Refurbishment of MHI Gas Turbine Unit-3						
	Claimed	0.00	2886.74	0.00	0.00	0.00	2886.74
	Allowed	0.00	0.00	0.00	0.00	0.00	0.00

Sl. No.	Head of Work/Equipment	Additional capital expenditure (On cash basis)					Total
		2014-15	2015-16	2016-17	2017-18	2018-19	
14	Replacement/ Renovation of RTU system as per Grid requirement						
	Claimed	0.00	0.00	22.02	0.00	0.00	22.02
	Allowed	0.00	0.00	22.02	0.00	0.00	22.02
15	Upgradation/ Replacement of Halon Firefighting system with CO2 flooded system for GTG unit 5 and unit 6						
	Claimed	0.00	0.00	44.60	0.00	0.00	44.60
	Allowed	0.00	0.00	44.60	0.00	0.00	44.60
16	Continuous Emission Monitoring system						
	Claimed	0.00	0.00	176.08	0.00	0.00	176.08
	Allowed	**0.00**	**0.00**	**176.08**	**0.00**	**0.00**	**176.08**
17	ABT Management system						
	Claimed	0.00	0.00	0.00	40.38	0.00	40.38
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
18	Up-gradation of AVR system of STG-2						
	Claimed	0.00	0.00	0.00	0.00	42.83	42.83
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**42.83**	**42.83**
	Sub-Total (B)						
	Claimed	35.65	2886.74	242.70	40.38	42.83	3248.30
	Allowed	**35.65**	**0.00**	**242.70**	**0.00**	**42.83**	**321.18**
	Total Claim (A+B)						
	Claimed	35.65	5692.27	5431.36	4232.24	461.47	15852.98
	Allowed	35.65	2805.52	5431.36	4191.86	461.47	12925.86
(C) Major Spares Capitalization							
	Claimed	0.00	0.00	3251.93	1444.12	770.56	5466.61
	Allowed	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
(D) De-capitalization during the year/period							
	Claimed	196.42	1012.04	1900.31	927.27	521.96	4558.00
	Allowed	196.42	1167.13	2225.08	3155.59	531.15	7275.37
(E) Reversal during the year/ period							
	Claimed	0.51	23.94	13.62	579.56	227.04	844.67
	Allowed	0.51	23.94	13.62	579.56	227.04	844.67
(F) Discharges during the year/ period							
	Claimed	0.00	0.00	0.00	18.17	0.00	18.17
	Allowed	0.00	0.00	0.00	18.17	0.00	18.17

Sl. No.	Head of Work/Equipment	Additional capital expenditure (On cash basis)					Total
		2014-15	2015-16	2016-17	2017-18	2018-19	
Net additional capital expenditure (A+B+C-D-E+F)							
	Claimed	**(-)161.28**	**4656.28**	**6769.35**	**4187.70**	**483.03**	**15935.09**
	Allowed	**(-)161.28**	**1614.46**	**3192.66**	**474.88**	**(-)296.73**	**4823.99**

Capital cost allowed

71. Accordingly, the capital cost allowed for the purpose of tariff is as follows:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	149746.94	149585.66	151200.12	154392.78	154867.66
Add: Additional Capital Expenditure allowed	(-)161.28	1614.46	3192.66	474.88	(-) 296.73
Closing Capital Cost	149585.66	151200.12	154392.78	154867.66	154570.93
Average Capital Cost	149666.30	150392.89	152796.45	154630.22	154719.29

Debt-Equity Ratio

72. Regulation 19 of the 2014 Tariff Regulations provides as under:

"19. Debt-Equity Ratio:
(1) For a project declared under commercial operation on or after 1.4.2014 the debt equity ratio would be considered as 70:30 as on COD. 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:
(i) where equity actually deployed is less than 30% of the capital cost actual equity shall be considered for determination of tariff:
(ii) the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
(iii) any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt-equity ratio.
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 only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.
(2) The generating Company or the transmission licensee shall submit the resolution of the Board of the company or approval from Cabinet Committee on Economic Affairs (CCEA) regarding infusion of fund from internal resources in support of the utilisation made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system as the case may be.
(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014 debt equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2014 shall be considered.

(4) In case of generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014 but where debt: equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2014 the Commission shall approve the debt: equity ratio based on actual information provided by the generating company or the transmission licensee as the case may be.
(5) Any expenditure incurred or projected to be incurred on or after 1.4.2014 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."

73. The gross equity and loan of Rs.73912.76 lakh and Rs.75834.18 lakh respectively, as allowed in order dated 15.2.2016 in Petition No. 41/GT/2015, has been considered as on 1.4.2014. The Petitioner has claimed debt-equity ratio of 70:30 for additional capital expenditure during 2014-19 tariff period. Accordingly, in terms of Regulation 19(3) of the 2014 Tariff Regulations, the debt-equity ratio for additional capital expenditure has been considered as 70:30. The details of debt-equity ratio in respect of the generating station as on 1.4.2014 and 31.3.2019 are as follows:

	Capital cost as on 1.4.2014 *(Rs. in lakh)*	**(%)**	**Additional capital expenditure *(Rs. in lakh)***	**(%)**	**Total cost as on 31.3.2019 *(Rs. in lakh)***	**(%)**
Debt	75834.18	50.64%	3376.79	70.00%	79210.97	51.25%
Equity	73912.76	49.36%	1447.20	30.00%	75359.96	48.75%
Total	**149746.94**	**100.00%**	**4823.99**	**100.00%**	**154570.93**	**100.00%**

Return on Equity

74. 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 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 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 requirement 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 kilometres."

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

"25. 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.

Illustration.

(i) In case of the generating company or the transmission licensee paying Minimum Alternate Tax (MAT) @ 20.96% including surcharge and cess: Rate of return on equity = 15.50/(1-0.2096) = 19.610%
(ii) In case of generating company or the transmission licensee paying normal corporate tax including surcharge and cess:
(a)Estimated Gross Income from generation or transmission business for FY 2014-15 is Rs.1000 crore.
(b)Estimated Advance Tax for the year on above is Rs.240 crore.
(c) Effective Tax Rate for the year 2014-15 = Rs.240 Crore/Rs.1000 Crore = 24%
(d)Rate of return on equity = 15.50/ (1-0.24) = 20.395%

(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."

76. The base rate of return on equity as allowed in terms of Regulation 24 of the 2014 Tariff Regulations is required to be grossed up with the effective tax rate of the respective financial years. Also, in term of Regulation 25(3) of the 2014 Tariff Regulations, 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 period from 2014-15 to 2018-19, on actual gross income of any financial year. For the purpose of tax rate, for grossing up of rate of RoE, the Commission vide ROP for the hearing dated 27.7.2020, had specified a format and directed the Petitioner to submit details with tax audit report for each year of the tariff period. The Petitioner vide affidavit dated 18.8.2020 has submitted the format, duly certified by Chartered Accountant. In order dated 7.6.2021 in Petition No. 273/GT/2019 (truing-up of tariff of Ranganadi HEP of the Petitioner for the 2014-19 tariff period) the tax rate considered was as under:

Year	Effective Tax rate
2014-15	20.2521%
2015-16	25.9099%
2016-17	34.6080%
2017-18	27.3764%
2018-19	21.5488%

77. Since effective tax rate is 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, the tax rate as worked out and allowed in order dated 7.6.2021 in Petition No. 273/GT/2019, has been considered for the computation of ROE for this generating station, as under:

(Rs. in lakh)

		2014-15	2015-16	2016-17	2017-18	2018-19
Normative Equity-Opening	A	73912.76	73864.38	74348.71	75306.51	75448.98
Addition of Equity due to additional capital expenditure	B	(-)48.38	484.34	957.80	142.46	(-)89.02
Normative Equity-Closing	C=A+B	73864.38	74348.71	75306.51	75448.98	75359.96
Average Normative Equity	D=Average (A,C)	73888.57	74106.55	74827.61	75377.74	75404.47
Return on Equity (Base Rate)	E	15.500%	15.500%	15.500%	15.500%	15.500%
Tax Rate for the year	F	20.252%	25.910%	34.608%	27.376%	21.549%
Rate of Return on Equity (Pre-Tax)	G=E/(1-F)	19.436%	20.920%	23.703%	21.343%	19.758%
Return on Equity (Pre-Tax) annualized	**H=D*G**	**14360.98**	**15503.09**	**17736.39**	**16087.87**	**14898.41**

Interest on loan

78. 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 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 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."

79. Interest on loan has been computed as under:

a. Gross normative loan amounting to Rs.75834.18 lakh as considered in order dated 15.2.2016 in Petition No.41/GT/2015 has been considered as on 1.4.2014.

b. Cumulative repayment amounting to Rs.75662.17 lakh, as considered in order dated 15.2.2016 in Petition No.41/GT/2015 has been considered as on 1.4.2014.

c. Accordingly, the net normative opening loan as on 1.4.2014 is Rs.172.01 lakh.

d. The actual loan has already been repaid. Therefore, the weighted rate of interest of 9.783% has been considered as per order dated 15.2.2016 in Petition No. 41/GT/2015 for approval of tariff of the generating station for the period 1.4.2014 to 31.3.2019.

e. The repayment for the respective years of the 2014-19 tariff period, has been considered equal to the depreciation allowed for that year.

f. Interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest.

80. Interest on loan has been worked out as under:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	75834.18	75721.29	76851.41	79086.27	79418.68
Cumulative repayment of loan up to previous year	75662.17	75721.29	76629.51	77188.11	77588.05
Net Loan Opening	172.01	0.00	221.89	1898.16	1830.63
Addition due to additional capital expenditure	(-)112.89	1130.12	2234.86	332.42	(-)207.71
Repayment of loan during the year	196.61	1725.22	2116.15	2608.86	1994.73
Repayment adjustment due to de-capitalization	137.49	816.99	1557.56	2208.91	371.81
Net Repayment	59.12	908.23	558.59	399.95	1622.92
Net Loan Closing	0.00	221.89	1898.16	1830.63	0.00
Average Loan	86.01	110.95	1060.03	1864.39	915.31
Weighted Average Rate of Interest of loan	9.7830%	9.7830%	9.7830%	9.7830%	9.7830%
Interest on Loan	**8.41**	**10.85**	**103.70**	**182.39**	**89.55**

Depreciation

81. Regulation 27 of the 2014 Tariff Regulations provides as follows:

> *"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 on 1.4.2014 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 decapitalized asset during its useful services."

82. The weighted average rate of depreciation calculated in terms of Regulation 27 of the 2014 Tariff Regulations, has been considered for the calculation of depreciation. Accordingly, depreciation has been worked out and allowed as under:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Average Capital Cost	149666.30	150392.89	152796.45	154630.22	154719.29
Value of freehold land	150.17	150.17	150.17	150.17	150.17
Aggregated Depreciable value	134564.52	135218.45	137381.65	139032.04	139112.21
Remaining aggregate depreciable value at the beginning of the year	16213.09	15388.92	16759.92	18053.30	17994.88

	2014-15	2015-16	2016-17	2017-18	2018-19
Number of completed years at the beginning of the year	15.08	16.08	17.08	18.08	19.08
Balance useful life at the beginning of the year	9.92	8.92	7.92	6.92	5.92
Rate of depreciation	1.09%	1.15%	1.38%	1.69%	1.96%
Depreciation (annualized)	1634.38	1725.22	2116.15	2608.86	3039.68
Less: Cumulative depreciation adjustment on account of de-capitalization	156.29	933.01	1759.14	2470.27	420.29
Cumulative depreciation (at the end of the period)	119829.52	120621.72	120978.74	121117.33	123736.71

**Cumulative depreciation as on 31.3.2014 is Rs.118351.43 lakh.*

Operation & Maintenance Expenses

83. The O&M expenses claimed by the Petitioner are as under:

(Rs. in lakh)

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

84. The normative O&M expenses claimed by Petitioner are the same as allowed by order dated 15.2.2016 in Petition No. 41/GT/2015 in terms of Regulation 29(1) of the 2014 Tariff Regulations. Hence, the claim of the Petitioner for normative O&M expenses has been allowed.

Water Charges

85. As regards water charges, Regulation 29(2) of the 2014 Tariff Regulations provides as under:

> *"29(2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:*
>
> *Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:*
>
> *xxxxx."*

86. The Petitioner has not claimed water charges in this petition. However, the Petitioner, in compliance to the directions vide ROP of the hearing dated 13.4.2021, has furnished only the details of the payments made to the Central Pollution Control Board from 2014-15 to 2018-19. The documents furnished by the Petitioner and payments made relate only to the consent to operate granted to the generating station under the respective Acts (Air and Water Act), which is mandatory for all power plants. Since no water charges have been claimed by the Petitioner in terms of the first proviso to Regulation 29(2) of the 2014 Tariff Regulations, the same has not been considered for the 2014-19 tariff period.

Capital Spares

87. As regards capital spares, the last proviso to Regulation 29(2) of the 2014 Tariff Regulations provides as under:

> *"29(2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:*
>
> *xxxxx*
>
> *Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalization or consumption of stores and spares and renovation and modernization."*

88. As stated in paragraph 58 above, the details furnished by the Petitioner with regard to capital spares in Form-17, has also been claimed by the Petitioner as additional capital expenditure in Form-9A. Accordingly, the same has been considered in terms of Regulation 29(2) of 2014 Tariff Regulations. The capital spares claimed by the Petitioner in Form-17 is as under:

(Rs. in lakh)

2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
0.00	0.00	3251.93	1444.12	770.56

89. The Petitioner has claimed actual capital spares of Rs.3251.93 lakh in 2016-17, Rs.1444.12 lakh in 2017-18 and Rs.770.56 lakh in 2018-19 and has submitted that the capital spares claimed exceeds the individual value of Rs.5 lakh as per section 16(8) of IND AS. In response to the directions of the Commission vide RoP of the hearing dated 13.4.2021, the Petitioner has furnished revised Form 17 and has submitted the following:

> *"1. To increase the efficiency of life of the gas turbines the hot parts components are being replaced as per the OEM recommended schedule.*
>
> *2. As the running hours of all gas turbines are more than 1.5 lakh EOH, comprehensive rotors refurbishment is being carried out in line with OEM recommendation.*
>
> *3. Maintaining of critical spares for gas turbines, gas compressors, control system etc., are necessary for replacement of old components which have completed their serviceable life span for reliable and efficient operation as well as extension of equipment life"*

90. We have considered the matter. Regulation 29(2) of the 2014 Tariff Regulations stipulates that the generating station shall submit the year-wise actual consumption of capital spares at the time of truing up of tariff, with appropriate justification for incurring the same. However, from the submissions of the Petitioner, it could not be established as to whether the capital spares claimed (as additional capital expenditure) were actually consumed or not, during the respective years. The Petitioner has also not filed the Auditor certificate, certifying the actual consumption of capital spares, as claimed in Form 17. In fact, the Petitioner in its reply to ROP has clarified that it is maintaining critical spares for gas turbines, gas compressors, control system etc. Since the Petitioner has not submitted any justification/ compliance in terms of Regulation 29(2) of the 2014 Tariff Regulations, the capital spares claimed have not been allowed as part of O&M expenses.

91. Based on the above, the total O&M expenses allowed is summarised as under:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Installed Capacity (MW)	291.00	291.00	291.00	291.00	291.00
O&M Norms as per Regulation 29(1) (in Rs. lakh/MW)	33.43	35.70	38.13	40.73	43.50
Total O&M Expenses (A)	9728.13	10388.70	11095.83	11852.43	12658.50
Water Charges	0.00	0.00	0.00	0.00	0.00
Capital spares consumed	0.00	0.00	0.00	0.00	0.00
Total O&M Expenses as allowed	**9728.13**	**10388.70**	**11095.83**	**11852.43**	**12658.50**

Additional O&M expenses

Impact of wage revision

92. The Petitioner has submitted that wage revision of employees was due from 1.1.2017 and it had incurred additional O&M expenses due to increase in employee cost, on account of wage revision of its employees and for Meghalaya Home Guards from 1.1.2017 to 31.3.2019. The Petitioner has submitted that the total impact due to wage revision is Rs.1485.24 lakh and, therefore, it may be allowed to recover the impact of wage revision, as additional O&M expenses, from the Respondents as one-time payment, in exercise of the power under provisions of Regulations 54 and 55 of the 2014 Tariff Regulations.

93. The Commission vide ROP of the hearing dated 27.7.2020 had directed the Petitioner to furnish, amongst others, the following:

(a) PRP/Incentive included in the wage revision impact claimed (year wise details duly certified by the Auditor);

(b) Comparative statement of the normative O&M expenses allowed to the station versus actual audited O&M for 2014-19 tariff period.

94. In compliance to the above directions, the Petitioner vide affidavit dated 18.8.2020 has furnished the audited details of additional cost of employees due to wage revision and has submitted that the same is inclusive of the impact of PRP/ incentive of wage revision. The audited statement of additional costs in respect of the employees of the generating station is as under:

(Rs. in lakh)

Year	Employee Levels	Additional employee costs due to pay revision w.e.f. 1.1.2017 to 31.3.2019.			Total
		Salary & Wages	Leave Encashment	Others	
2016-17	Executive	90.94	0.00	21.29	112.22
	Supervisor	26.07	0.00	0.00	26.07
	Workman	60.91	0.00	0.00	60.91
	Total of 2016-17	**177.91**	**0.00**	**21.29**	**199.19**
2017-18	Executive	382.83	35.38	0.00	418.21
	Supervisor	108.86	3.14	0.00	112.00
	Workman	254.37	6.90	0.00	261.27
	Total of 2017-18	**746.07**	**45.42**	**0.00**	**791.49**
2018-19	Executive	67.73	3.35	0.00	71.08
	Supervisor	120.65	6.54	0.00	127.18
	Workman	281.90	14.39	0.00	296.29
	Total of 2018-19	**470.28**	**24.27**	**0.00**	**494.56**
Grand Total		**1394.26**	**69.69**	**21.29**	**1485.24**

95. A comparative statement of the normative O&M expenses allowed to the generating station for the 2014-19 tariff period versus the actual O&M expenses incurred during the said period, as furnished by the Petitioner vide affidavit dated 31.8.2020, is as under:

(Rs. in lakh)

Year	Normative O&M expenses	Actual audited O&M expenses
2014-15	9728.13	9180.24
2015-16	10388.7	7532.1
2016-17	11095.83	7752.68
2017-18	11852.43	10454.2
2018-19	12658.5	9451.86
Total	**55723.59**	**44371.08**

96. The Commission, while specifying the O&M expense norms under the 2014 Tariff Regulations, had considered the actual O&M expense data for the period from 2008-09 to 2012-13. However, considering the submissions of the stakeholders, the Commission in the Statement of Object and Reasons (SOR) to the 2014 Tariff Regulations had observed that the increase in employees cost due to impact of pay

revision impact will be examined on a case to case basis balancing the interest of generating stations and the consumers. The relevant extract of SOR is extracted under:

> *"29.26 Some of the generating stations have suggested that the impact of pay revision should be allowed on the basis of actual share of pay revision instead of normative 40% and one generating company suggested that the same should be considered as 60%. In the draft Regulations the Commission had provided for a normative percentage of employee cost to total O&M expenses for different type of generating stations with an intention to provide a ceiling limit so that it does not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission would however like to review the same considering the macro-economics involved as these norms are also applicable for private generating stations. In order to ensure that such increase in employee expenses on account of pay revision in case of central generating stations and private generating stations are considered appropriately the Commission is of the view that it shall be examined on case to case basis balancing the interest of generating stations and consumers.*
>
> *Xxxx*
>
> *33.2 The draft Regulations provided for a normative percentage of employee cost to total O&M expenses for generating stations and transmission system with an intention to provide a ceiling limit so that the same should not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission shall examine the increase in employee expenses on case to case basis and shall consider the same if found appropriate to ensure that overall impact at the macro level is sustainable and thoroughly justified. Accordingly clause 29(4) proposed in the draft Regulations has been deleted. The impact of wage revision shall only be given after seeing impact of one full year and if it is found that O&M norms provided under Regulations are inadequate/insufficient to cover all justifiable O&M expenses for the particular year including employee expenses then balance amount may be considered for reimbursement."*

97. The methodology indicated in SOR quoted above suggests a comparison of normative O&M expenses with actual O&M expenses on year-to-year basis. However, in this respect, the following facts need consideration:

a) The norms are framed based on the averaging of the actual O&M expenses of past five years to capture the year-on-year variations in sub-heads of O&M.

b) Certain cyclic expenditure may occur with a gap of one year or two years and as such adopting a longer duration i.e., five years for framing of norms also captures such expenditure which is not incurred on year-to-year basis.

c) When generating companies find that their actual expenditure has gone beyond the normative O&M expenses in a particular year put departmental restrictions and try to bring the expenditure for the next year below the norms.

98. In consideration of above facts, the Commission finds it appropriate to compare the normative O&M expenses with the actual O&M expenses for a longer duration so as to capture the variation in sub-heads. Accordingly, it is decided that for ascertaining whether O&M norms provided under the 2014 Tariff Regulations are inadequate/ insufficient to cover all justifiable O&M expenses including employee expenses after wage revision, the comparison of normative O&M expenses and actual O&M expenses shall be made for 2016-19 on combined basis, which is commensurate with the wage revision claim being spread over these three years.

99. In view of the above, the following is the comparison of the normative O&M expenses allowed to the generating station for the period 2016-19 versus the actual O&M expenses incurred after considering the impact of wage revision:

(Rs. in lakh)

Year	Normative O&M expenses as per Regulations	Actual audited O&M expenses	Difference between the normative and actual O&M expenses	Wage revision impact claimed
2016-17	11095.83	7752.68	3343.15	199.19
2017-18	11852.43	10454.20	1398.23	791.49
2018-19	12658.50	9451.86	3206.64	494.56
Total	**35606.76**	**27658.74**	**7948.02**	**1485.24**

100. It is observed form the table above that for the years under consideration for wage revision impact i.e., 2016-17 to 2018-19, the normative O&M expenses already allowed to the generating station, on combined basis for three years, are in excess of the actual O&M expenses incurred by the Petitioner. As such, the Commission is not inclined to allow the recovery of wage revision through additional O&M expenses, since the normative O&M expenses allowed to the generating station are sufficient to cater to the requirement of wage revision.

Normative Annual Plant Availability Factor

101. The Normative Annual Plant Availability Factor of 72%, as allowed by the Commission in order dated 15.2.2016 in Petition No. 41/GT/2015 in accordance with the provisions of Regulation 36 of the 2014 Tariff Regulations, has been allowed.

Gross Station Heat Rate

102. The Gross Station Heat Rate of 3440 kCal/kWh for Open cycle and 2500 kCal/kWh for Combined Cycle, as allowed by order dated 15.2.2016 in Petition No.41/GT/2015 in terms of Regulation 36 of the 2014 Tariff Regulations, has been allowed.

Auxiliary Power Consumption

103. In accordance with the provisions of Regulation 36 of the 2014 Tariff Regulations, the norm for Auxiliary Energy Consumption for Combined Cycle Gas based Projects is 2.5%. As the Auxiliary Energy Consumption of 2.5% was allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015, the same has been considered in this order.

Interest on Working Capital

104. 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
(i) Fuel cost for 30 days corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;
(ii) Maintenance spares @ 30% of operation and maintenance expense specified in regulation 29; and
(iii) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor and in case of use of more than one liquid fuel, cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel";
(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."

a) **Fuel Cost and Energy Charges for computation of working capital**

105. The fuel cost for 30 days and Energy Charges for two months towards receivables, for computation of working capital, has been calculated based on the Gross Calorific Value (GCV) and price of the gas, as adopted in the order dated 15.2.2016 in Petition No. 41/GT/2015. Since the Petitioner has not used any liquid fuel in generation of electricity, the same has not been considered. Accordingly, the fuel cost and Energy Charges, for computation of working capital, are allowed as under:

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Fuel cost - for 30 days	2962.59	2970.71	2962.59	2962.59	2962.59
Energy charges for two months	5925.19	5941.42	5925.19	5925.19	5925.19

b) **Working Capital for Maintenance Spares**

106. Regulation 28(1)(b)(ii) of the 2014 Tariff Regulations provides for Maintenance spares @30% of the O&M expenses. Accordingly, maintenance spares for computation of working capital is allowed as follows:

(Rs. in lakh)

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

c) **Working Capital for Receivables**

107. Regulation 28(1)(b)(iv) of the 2014 Tariff Regulations provides for receivables for two months. Accordingly, the receivables component for computation of working capital is allowed as follows:

(Rs. in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Energy charges	5925.19	5941.42	5925.19	5925.19	5925.19
Fixed Charges	4677.78	5007.44	5596.95	5548.98	5548.35
Total	10602.97	10948.86	11522.15	11474.17	11473.53

d) Working Capital for O & M expenses (1 month)

108. Regulation 28(1)(b)(v) of the 2014 Tariff Regulations provides for O&M Expenses for one month towards Working Capital. Accordingly, the O&M expenses (1 month) of working capital are allowed as follows:

(Rs. in lakh)

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

e) Rate of interest on working capital

109. In terms of clause (3) of Regulation 28 of the 2014 Tariff Regulations, the Bank rate of 13.50% as on 1.4.2014 for 2014-19 tariff period for the purpose of tariff, has been considered. Accordingly, Interest on working capital has been computed as under:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Working Capital for Fuel Cost	2962.59	2970.71	2962.59	2962.59	2962.59
Working Capital for O & M Expenses	810.68	865.73	924.65	987.70	1054.88
Working Capital for Maintenance Spares	2918.44	3116.61	3328.75	3555.73	3797.55
Working Capital for Receivables	10602.97	10948.86	11522.15	11474.17	11473.53
Total Working Capital	**17294.68**	**17901.90**	**18738.14**	**18980.19**	**19288.55**
Rate of Interest	13.50%	13.50%	13.50%	13.50%	13.50%
Total Interest on Working Capital	**2334.78**	**2416.76**	**2529.65**	**2562.33**	**2603.95**

Annual Fixed Charges

110. The annual fixed charges allowed for the generating station after truing-up for the 2014-19 tariff period is summarised below:

(Rs. in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	1634.38	1725.22	2116.15	2608.86	3039.68
Interest on Loan	8.41	10.85	103.70	182.39	89.55
Return on Equity	14360.98	15503.09	17736.39	16087.87	14898.41
Interest on Working Capital	2334.78	2416.76	2529.65	2562.33	2603.95

	2014-15	2015-16	2016-17	2017-18	2018-19
O&M Expenses including Capital Spares	9728.13	10388.70	11095.83	11852.43	12658.50
Annual Fixed Charges allowed	**28066.69**	**30044.62**	**33581.72**	**33293.88**	**33290.09**
Annual Fixed Charges allowed vide order dated 15.2.2016 in Petition No. 41/GT/2015	28370.88	29656.91	31081.25	32376.19	33839.00

111. 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 Regulation 8 of the 2014 Tariff Regulations.

112. Petition No. 298/GT/2019 is disposed of in terms of the above.

Sd/-	Sd/-	Sd/-	Sd/-
(Pravas Kumar Singh)	**(Arun Goyal)**	**(I. S. Jha)**	**(P. K. Pujari)**
Member	**Member**	**Member**	**Chairperson**