CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Petition No. 353/GT/2014

Coram:
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member

Date of Hearing : 6.9.2016
Date of Order : 20.9.2016

In the matter of:

Approval of tariff for Panchet Hydel Power Station,Unit-I &II (2x40 MW) for the period from 1.4.2014 to 31.3.2019.

And in the matter of

Damodar Valley Corporation,
DVC Towers, VIP Road
Kolkata **………Petitioner**

Versus

1. West Bengal State Electricity Distribution Company Limited
Block 'DJ' Sector-11, Salt Lake City,
Kolkata-700 091

2. Jharkhand Bijli Vitran Nigam Limited
Engineering Building, HEC, Dhurwa,
Ranchi- 834 004 **……….Respondents**

Parties present:

For Petitioner: Shri M.G Ramachandran, Advocate, DVC
Ms. Anushree Bardhan, Advocate, DVC
Shri P.Bhattacharya, DVC
Shri Subrata Ghosal, DVC
Shri A.Biswas, DVC
Shri D.K Aich, DVC
Shri S.Ganguly, DVC

For Respondents: None

ORDER

This petition has been filed by the petitioner, Damodar Valley Corporation (DVC), for approval of tariff of Panchet Hydel Power Station, Unit-I &II (2x40 MW) (hereinafter referred to as "the generating station") for the period 2014-19 in accordance with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff Regulations").

2. The petitioner is a statutory body established by the Central Government under the Damodar Valley Corporation Act, 1948 (hereinafter referred to as the 'DVC Act') for the development of the Damodar Valley, with three participating Governments, namely, the Central Government, the Government of West Bengal and the Government of Jharkhand. The dates of commercial operation of the different Units of the generating station is as under:-

Unit - I :	December, 1959
Unit - II :	March, 1991

3. In Petition No. 272/GT/2012 filed by the petitioner for determination of tariff of the generating station for the period 2009-14 and the Commission vide order dated 7.8.2013 had determined the annual fixed charges based on actual additional capital expenditure for the years 2009-10 and 2010-11 and projected additional capital expenditure for the years 2011-12, 2012-13 and 2013-14. Thereafter, the Commission, vide order dated 29.7.2016 in Petition No. 467/GT/2014 had revised the annual fixed charges of the generating station for the period 2009-14 after truing-up exercise in terms of Regulation 6(1) of the 2009 Tariff Regulations, as summarized under.

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	113.13	51.52	18.04	-	-
Interest on Loan	-	-	-	-	-
Return on Equity	465.73	389.11	487.60	487.03	389.06
Interest on Working Capital	70.13	70.57	75.43	78.76	80.64
O&M Expenses	1160.77	1227.16	1297.36	1371.57	1450.02
Sub-Total	**1809.76**	**1738.35**	**1878.43**	**1937.36**	**1919.73**
Pension & Gratuity Contribution	200.69	200.69	200.69	200.69	200.69
Sinking Fund Contribution	112.97	109.17	104.47	103.89	111.16
Common office expenditure	41.28	43.70	25.59	18.05	13.93
Additional O&M Expenses	74.57	78.83	83.34	88.11	93.15
Sub-Total	**429.50**	**432.39**	**414.09**	**410.74**	**418.93**
Total Annual Fixed Charges	**2239.26**	**2170.75**	**2292.51**	**2348.09**	**2338.65**

4. The Civil Appeal No. 4289/2008 filed by Central Commission and few others before the Hon'ble Supreme Court which are pending. The annual fixed charges determined vide orders dated 7.8.2013 and 29.7.2016 are subject to the final outcome of the Civil Appeals pending before the Hon'ble Supreme Court in respect of the determination of tariff of the generating stations and inter-state transmission systems of the petitioner by the Commission for the periods 2006-09 and 2009-14.

5. The petitioner vide affidavit dated 9.9.2014 has sought approval of tariff of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the capital cost and the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

Capital Cost

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	5084.89	5179.25	5768.35	5830.68	6034.81
Additional capital expenditure	123.00	822.00	65.00	250.00	-
De-capitalization during the year/period	28.64	232.90	2.67	45.87	-
Net Additional Capitalization	94.37	589.10	62.33	204.13	-
Closing Capital Cost	**5179.25**	**5768.35**	**5830.68**	**6034.81**	**6034.81**
Average Capital Cost	**5132.07**	**5473.80**	**5799.52**	**5932.75**	**6034.81**

Annual Fixed Charges

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	42.46	329.52	349.13	279.74	133.14
Interest on Loan	1.21	6.73	5.51	-	-
Return on Equity	525.61	547.01	567.41	575.76	582.15
Interest on Working Capital	110.57	135.17	142.45	147.78	151.62
O & M Expenses	1546.42	1549.17	1758.74	1875.59	2000.20
Sub-Total	**2226.27**	**2667.60**	**2823.24**	**2878.87**	**2867.11**
Share of Common Office Expenditure	16.70	15.57	19.84	29.11	32.99
Share of P&G & impact of pay revision	460.85	962.98	962.98	962.98	962.98
Share of Additional O&M due to ash evacuation, Mega insurance CISF expenditure & expenditure for Subsidiary activity	45.42	52.56	63.02	71.05	75.26
Total	**2749.25**	**3698.72**	**3869.09**	**3942.01**	**3938.34**

6. In compliance with the directions of the Commission, the petitioner has filed the additional information and has served copies on the respondents. Taking into consideration the documents available on record, we proceed to consider the claims of the petitioner and determine the tariff in respect of this generating station for the period 2014-19. In response to the directions of the Commission, the petitioner has submitted additional information vide affidavit dated 2.9.2016 with copy to the respondents.

Capital cost as on 1.4.2014

7. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause 3 of Regulation 9 of the 2014 Tariff Regulations provides that the admitted capital cost prior to 1.4.2014 after trued up is to be considered as opening capital cost. The extract of Clause 3 of Regulation 9 of the 2014 Tariff Regulations is as under:

> *"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*
>
> *(c) expenditure on account of renovation and modernization as admitted by this Commission in accordance with Regulation 15."*

8. The annual fixed charges claimed by the petitioner are based on opening capital cost of ₹5084.89 lakh as on 1.4.2014 as against the capital cost of ₹5106.31 lakh as on 31.3.2014 admitted by the Commission vide order dated 29.7.2016 in Petition No. 467/GT/2014. Since the petitioner's claim was prior to the true up order dated 29.7.2016, the petitioner's claim is varying from the admitted capital cost in true up order. The closing capital cost of ₹5106.31 lakh as on 31.3.2014 as approved by the order dated 29.7.2016 has been considered as the opening capital cost as on 1.4.2014 in accordance with the Clause 3 of Regulation 9 of the 2014 Tariff Regulations.

Projected 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 un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

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

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

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

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

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

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

……

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

(₹ in lakh)

Sr. No		Regulation	Additional Capital Expenditure Claimed	Year put to use	De-capitalization Claimed	Depreciation Recovered
	2014-15					
1	220 V Battery bank with charger for Unit 2	14 (3)(vii)	18.00	1959	0.68	0.61
2	Governor Air compressor for Unit 2	14 (3)(vii)	55.00	1991	23.95	21.56
3	11 kV synchronizing breaker for Unit 2	14 (3)(vii)	10.00	1991	2.99	2.69
4	33 kV VCB (2nos)	14 (3)(vii)	15.00	1991	0.45	0.41
5	Refurbishment of 40 T Gantry	14 (3)(vii)	25.00	1991	0.56	0.50
	Total		**123.00**		**28.64**	**25.77**
	2015-16					
6	220V Battery bank with charger	14 (3)(vii)	22.00	1959	0.79	0.71
7	Replacement of actuator panel of Unit-2	14 (3)(vii)	100.00	1991	31.15	28.04
8	Generator transformer Unit#2	14 (3)(vii)	600.00	1991	172.25	155.02
9	Replacement of Unit#2 thrust bearing oil cooler	14 (3)(vii)	100.00	1991	28.71	25.84
	Total		**822.00**		**232.90**	**209.61**
	2016-17					
10	132 kV SF6 CB	14 (3)(vii)	25.00	1959	1.03	0.92

Sr. No		Regulation	Additional Capital Expenditure Claimed	Year put to use	De-capitalization Claimed	Depreciation Recovered
11	500 kVA DG set with AMF Panel-1	14 (3)(vii)	30.00	1959	1.23	1.11
12	33kV CT (3-core) & PT	14 (3)(vii)	10.00	1959	0.41	0.37
	Total		**65.00**		**2.67**	**2.40**
	2017-18					
13	Replacement of Unit control system of Unit#2	14 (3)(vii)	150.00	1991	43.28	38.95
14	Modernization of Unit#1	14 (3)(vii)	100.00	1959	2.59	2.33
	Total		**250.00**		**45.87**	**41.28**
Grand Total			**1260.00**		**310.07**	**949.93**

11. It is observed that the petitioner has claimed projected additional capital expenditure of assets/items for the period 2014-19 under Regulation 14 (3)(vii) of the 2014 Tariff Regulations. We shall examine the year-wise claim of the petitioner in respect of these assets as under:

220 kV Battery Bank with Charger (2014-16)

12. The petitioner has claimed projected additional capital expenditure of ₹18.00 lakh along with the de-capitalization of ₹0.68 lakh in 2014-15, projected additional capital expenditure of ₹22.00 lakh along with de-capitalization of ₹0.79 lakh in 2015-16 for this asset under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the condition of existing battery bank is very poor and it is essential for protection of the whole unit, and hence their replacement is most urgent. It has also submitted that the new battery bank has been capitalized before 31.3.2014 but the commissioning is awaited.

13. In response to the direction of the Commission to submit the technical proof/documentary evidence of the condition of battery bank and also whether the new battery bank is in operation or not, the petitioner vide affidavit dated 2.9.2016, has submitted that since many cells were bye-passed due to damage, replacement was required. The petitioner has also submitted the report of inspection carried out by M/s Exide Industries limited recommending the replacement of battery bank for trouble free service on the ground that the same is completing 15 years of service. The petitioner has also furnished copies of the purchase order and the commissioning reports on the same vide affidavit dated 2.9.2016 and has stated that the asset is claimed for both the units of the generating station. We have examined the matter. In our view, the battery bank is important to ensure continuous DC supply to switchgear protection equipments for healthy operation. Accordingly, in consideration of the submissions of the petitioner and based on the documentary evidence submitted we are inclined to allow the projected additional capital expenditure claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations along with the de-capitalized value of the battery bank.

Governor Air Compressor (2014-15)

14. The petitioner has claimed projected additional capital expenditure of ₹55.00 lakh along with the de-capitalization of ₹23.95 lakh for the said asset in 2014-15 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In response to the direction of the Commission to submit the technical proof and documentary evidence in support of the same, the petitioner submitted that the old governor air compressor was commissioned in 1991. It has further submitted that the existing one gives frequent troubles and the availability of the unit completely depends on it and hence its replacement was necessary. In response to the direction of the Commission to submit documentary

evidence in support of the claim, the petitioner vide affidavit dated 2.9.2016 has furnished the purchase order and the commissioning report of the said asset. The matter has been examined. It is observed that the air compressor is subject to frequent damages due to ageing effect and deterioration of rotating mechanical parts. Moreover, the operation of air compressor is necessary in order to ensure the healthy operation of equipment and protection system, the frequent interruptions and damages of air compressor is not desirable for ensuring efficient operation. We are of the concerned view that the frequent interruptions is due to ageing effect. In the background, we consider that the expenditure is necessary to overcome the frequent interruptions on account of ageing effect and for efficient operation of the plant. Accordingly, the additional capital expenditure is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

11 kV Synchronizing Breaker Unit#2

15. The petitioner has claimed projected additional capital expenditure of ₹10.00 lakh along with the de-capitalization of ₹2.99 lakh for the said asset in 2014-15 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the existing breaker is old, where the operating lever of one pole was broken and no spare is available due to obsolescence. It has also submitted that the drum for holding the moving contact operating levers of all three poles requires frequent adjustment as its fixing arrangement is distorted due to ageing. The petitioner has stated that it is necessary to replace the said asset since the availability of unit is dependent on it. The petitioner vide affidavit dated 2.9.2016 has also submitted that the OEMs M/s Andritz hydro and M/s ABB both were unable to supply the asset due to

obsolescence. The petitioner however, has not submitted any certificate to substantiate the said claim. We are of the considered view that the frequent interruptions are due to ageing effect. Accordingly, the expenditure is considered necessary to overcome the frequent interruptions on account of ageing effect and for efficient operation of the plant. In view of this, we allow the additional capital expenditure is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

33 kV VCB (Vacuum Circuit Breaker) (2014-15)

16. The petitioner has claimed projected additional capital expenditure of ₹15.00 lakh along with the de-capitalization of ₹0.45 lakh for the old asset under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the existing breaker was commissioned in the year 1989 and there were frequent issues with breaker control circuit mainly auxiliary contact and mechanical adjustment of operating lever. It has also submitted that for, short time current rating was very low and hence replacement was necessary.

17. In response to the direction of the Commission, the petitioner submitted the documentary evidence in justification for the said claim. The petitioner vide affidavit dated 2.9.2016 has submitted that, the existing breakers are MOCB (Minimum Oil Circuit Breaker) type and very old and frequent troubles occurred to MOCB has led to replacement by VCBs.

18. It is observed that the efficiency of MOCB type breakers would have deteriorated considering the ageing effect as the equipment is almost 27 years old. Therefore replacement is considered necessary for efficient operation of the plant. Further, the MOCB technology are nowadays not preferred due to additional techno-commercial

advantage offered by VCB such as high braking and making capacity and low maintenance. We are of the view that the additional capital expenditure on account of replacement of MOCB type breakers by VCB is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

Refurbishment of 40T Gantry (2014-15)

19. The petitioner has claimed projected additional capital expenditure of ₹25.00 lakh along with de-capitalization of ₹0.56 lakh for the old asset under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same the petitioner has submitted that the gantry crane is used for lowering the stop log gates and emergency gates for any repairing works of the intake gates and under sluice gates respectively. It has also submitted that without the gantry crane any major work for overhauling intake gates and under sluice gates is not possible, where lowering of stop log gates and emergency gates is required.

20. The petitioner was directed to submit the documentary evidence in justification for the said claim and in response, the petitioner vide affidavit dated 2.9.2016 has submitted that the work has been taken up under the Dam Rehabilitation and Improvement Project (DRIP).

21. It is observed that the petitioner has considered the aforesaid work under DRIP which relates with the safety and performance of dams. However, the petitioner has not submitted any clarification as to how this expenditure is covered under the Regulation 14(3)(vii) of the 2014 Tariff Regulations. In view of this, the additional capital expenditure claimed for the asset is not allowed. However, the petitioner is granted liberty to claim

the said expenditure incurred for this asset at the time of truing-up with proper justification for consideration of the Commission, in accordance with law.

2015-16

Replacement of actuator panel of Unit-2

22. The petitioner has claimed projected additional capital expenditure of ₹100.00 lakh along with the de-capitalization of ₹31.15 lakh under Regulation 14(3)(vii) of the 2014 Tariff Regulations on account of replacement of actuator panel of Unit 2. In justification of the same, the petitioner has submitted that there are lot of oil leakages from different points of actuator panel. The petitioner has also submitted that OEM i.e. M/s Andritz hydro Pvt. Ltd was contacted for overhauling, but the OEM declared that overhauling is not possible due to obsolescence. The petitioner has stated that, due to this generation of Unit-2 was directly affected.

23. The Commission directed the petitioner to submit the obsolescence certificate. The petitioner vide affidavit dated 29.8.2016, has furnished the OEM certificate as regards the obsolescence of the asset which supports for the replacement of actuator panel. The operation of the generating station with obsolete technology will have adverse impact on the efficient operation of the plant.

24. It is observed that the said expenditure is necessary for efficient operation of the plant and the petitioner has submitted the documentary evidence towards replacement of the asset due to obsolescence. Hence, the additional capital expenditure on account of replacement of actuator panel is justifiable. Accordingly, the additional capital expenditure on account of replacement of actuator panel is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

Generator transformer Unit-2

25. The petitioner has claimed projected additional capital expenditure of ₹600.00 lakh along with the de-capitalization of ₹172.25 lakh in 2015-16 for this asset under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner submitted that dissolved key hydrocarbon gases crossed its maximum permissible limit specially acetylene. It has also submitted that the internal repairing works carried out in 2014-15 includes;

a) A damaged hot spotted nut bolt at LV (11 kV) link is replaced.
b) Core bolt insulation was found damaged and re-insulation of the core bolt was done.

26. The petitioner has further submitted that, the DGA (Dissolved Gas Analysis) was carried out and results were found satisfactory, but, as the transformer is very old the same is required to be replaced.

27. The petitioner was directed to submit the documentary evidence in respect of the submission and in response the petitioner vide affidavit dated 2.9.2016 has submitted the furan test report carried out by Central Power Research Institute as documentary evidence and has stated that the existing Generator Transformer is very old and was commissioned in the year 1954.

28. It is observed that the said asset is very old and will be completing almost 62 years approximately during the year 2015-16. Considering the fact that, the efficient operation of the generating station would be adversely affected in the event of failure, due to old equipment. We are of the considered view that the same is required to be replaced. In

this background, we allow the additional capital expenditure claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

Replacement of Unit-2 thrust bearing oil cooler

29. The petitioner has claimed projected additional capital expenditure of ₹100.00 lakh along with the de-capitalization ₹28.71 lakh on account of the replacement of Unit 2 thrust bearing oil cooler under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that both the oil coolers have been cleaned periodically but no tangible results have been observed. It has also submitted that the electrostatic oil filtration has also been carried out periodically depending on test results of oil sample.

30. The petitioner was directed to submit documentary evidence in justification for the said claim and in response the petitioner vide affidavit dated 2.9.2016, has submitted that the existing coolers (tube & shell type) are very old. It has further submitted that many tubes are bye-passed due to leakage and in order to get better cooling effect, the replacement by plate type coolers is required.

31. We have examined the matter. It is noticed that the petitioner has not submitted any detailed justification/ documentary evidence to show that the frequent leakages to the tubes is on account of old assets. In our view, through effective supervision and periodical replacement of tubes is envisaged to prevent leakages. The same cannot be the ground for the replacement of cooler. In view of this, that justification furnished by the petitioner for claim of additional capital expenditure is not adequate to allow capitalization of expenditure. Accordingly, the claim for additional capital expenditure

along with the de-capitalization on account of the replacement of Unit 2 thrust bearing oil cooler is not allowed. However, the petitioner is granted liberty to submit proper justification along with the OEM certificate /technical report /test report necessitating the replacement at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations and the same will be considered in accordance with law.

2016-17

132 kV SF6 circuit breakers- 2nos

32. The petitioner has claimed projected additional capital expenditure of ₹25.00 lakh along with de-capitalization ₹1.03 lakh on account of the SF6 circuit breaker under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that oil seepage was observed in the existing oil circuit breaker since the asset is very old. It has further submitted that no spares are available due to obsolescence and major overhauling is not possible. The petitioner has also stated that this asset corresponds to Unit-2, which would affect the efficiency of the unit.

33. The petitioner was directed to submit the obsolescence certificate in justification for the said claim and in response the petitioner vide affidavit dated 2.9.2016 has submitted that both GT-1&2 132 kV breakers were MOCB type. GT-1, 132 kV breaker was replaced by SF6 breaker due to failure of the same.

34. It appears that the efficiency of MOCB type breakers have deteriorated considering the ageing effect, as the equipment is almost 27 years old. Also the SF6 circuit breaker provides technological advantage over MOCB due to its high braking and making capacity and low maintenance. In this background, we consider that the replacement of

old MOCB by SF6 circuit breaker is necessary for efficient operation of the generating station. Accordingly, the additional capital expenditure is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

500 kVA DG set with AMF Panel (1 no)

35. The petitioner has claimed projected additional capital expenditure of ₹30.00 lakh along with de-capitalization of ₹1.23 lakh under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the existing 100 kVA DG set is only able to cater the lightning load of the power house. It has also submitted that this DG set is not sufficient to cater to the total power house auxiliary load in case of longer period of total power failure, especially to run the de-watering pumps of both turbine pits of Unit-1 & 2 power house, gates operation simultaneously. The petitioner has accordingly submitted that the 500 kVA DG set is very much required after capacity augmentation of the existing 100 kVA. The Commission directed the petitioner to submit the documentary evidence in support of the said claim and the petitioner vide affidavit dated 2.9.2016 has submitted that the work has been taken up under DRIP project.

36. As the petitioner has not submitted any detailed justification for the additional capital expenditure claimed in respect of the said asset, we are not inclined to allow the additional capital expenditure. However, the petitioner is granted liberty to submit proper justification for claiming this asset at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations along with the OEM certificate and the same will be considered in accordance with law.

33 kV Current Transformer (CT) (3-core) & Potential Transformer (PT)

37. The petitioner has claimed projected additional capital expenditure of ₹10.00 lakh along with the de-capitalization of ₹0.37 lakh under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that all of the existing CT and PTs are very old and of 0.5 accuracy class. It has also submitted that for achieving accuracy in energy auditing, it is advisable to replace by metering core of 0.2 accuracy class.

38. In response to the direction of the Commission he petitioner, vide affidavit dated 2.9.2016, has submitted that the additional capital expenditure has been claimed as per the CEA (Installation and Operation of meters) Regulations, 2006. It is stated under Schedule, Part-I of the CEA Regulations, 2006 that the accuracy class of meters in generation and transmission system shall not be inferior to that of 0.2S Accuracy Class. The accuracy class of meters in distribution system shall not be inferior to that of 0.5S Accuracy Class.

39. In view of the above justification, the additional capital expenditure claimed is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

2017-18

Replacement of Unit control system of Unit-2 by modern air of technology

40. The petitioner has claimed projected additional capital expenditure of ₹150.00 lakh along with the de-capitalization of ₹43.28 lakh under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the logic cards used presently for unit control are out dated and no spare card is available. It has also submitted that to make the unit ready for generation on sustainable basis, it is

essential to use modern art technology. In response to the directions of the Commission to submit the obsolescence certificate, the petitioner vide affidavit dated 2.9.2016, has submitted that the existing system is logic multi-connector based since inception i.e. the year 1991. It has further submitted that frequent troubles in the cards were observed and had to be replaced by PLC based on correspondences with OEM, i.e. M/s Andritz Hydro, which is in progress.

41. It is observed tha the petitioner has been making correspondences with OEM and these are still in progress. In this background, the petitioner's claim of additional capital expenditure has not been considered at this stage. We however grant liberty to the petitioner to submit proper justification in respect of the claim for the said asset along with OEM recommendation at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations and the same will be considered in accordance with law.

Modernization of Unit-1 excitation system (AVR) by dual channel

42. The petitioner has claimed projected additional capital expenditure of ₹100.00 lakh along with de-capitalization of ₹2.59 lakh under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has further submitted that only another AVR channel is required to be incorporated so that one channel serves as 'Master' and another will serve as 'Slave'. The petitioner has further submitted that this arrangement will ensure that in case of any trouble in the master channel bumpless switching over to slave channel will automatically take place without any interruption of generation. In response to the direction of the Commission to submit the documentary evidence for the said claim, the petitioner vide affidavit dated 2.9.2016 has submitted that matter has been taken up by the OS&U Section of the Petitioner's company.

43. It is noticed that the petitioner has not submitted any detailed justification for the claim of additional capital expenditure and hence we are not inclined to consider the same. However, the petitioner is granted liberty to submit proper justification along with the OEM certificate for claim of this asset at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations and the same will be considered in accordance with law.

2018-19

44. No additional capital expenditure has been claimed by the petitioner for the period 2018-19.

45. Based on the above discussions, the projected additional capital expenditure allowed for the period 2014-19 in respect of the above assets are summarized as under:

(₹ in lakh)

Sl No	Particulars	Additional Capital Expenditure Claimed	De-capitalization Claimed	Net Additional Capitalization Allowed
	2014-15			
1	220 V Battery bank with charger for Unit 2	18.00	0.68	17.32
2	Governor Air compressor for Unit 2	55.00	23.95	31.05
3	11 kV synchronizing breaker for Unit 2	10.00	2.99	7.01
4	33 kV VCB (2nos)	15.00	0.45	14.55
5	Refurbishment of 40 T Gantry	25.00	0.56	0.00
	Total	**123.00**	**28.63**	**69.93**
	2015-16			
6	220V Battery bank with charger	22.00	0.79	21.21
7	Replacement of actuator panel of Unit-2	100.00	31.15	68.85
8	Generator transformer Unit#2	600.00	172.25	427.75

Sl No	Particulars	Additional Capital Expenditure Claimed	De-capitalization Claimed	Net Additional Capitalization Allowed
9	Replacement of Unit#2 thrust bearing oil cooler	100.00	28.71	0.00
	Total	**822.00**	**232.90**	**517.81**
	2016-17			
10	132 kV SF6 CB	25.00	1.03	23.97
11	500 kVA DG set with AMF Panel-1	30.00	1.23	0.00
12	33kV CT (3-core) & PT	10.00	0.41	9.59
	Total	**65.00**	**2.67**	**33.56**
	2017-18			
13	Replacement of Unit control system of Unit#2	150.00	43.28	0.00
14	Modernization of Unit#1	100.00	2.59	0.00
	Total	**250.00**	**45.87**	**0.00**
2018-19				
No additional capital expenditure claimed				
Grand Total		**1260.00**	**310.07**	**621.30**

Capital cost for 2014-19

46. As stated above, the opening capital cost considered as on 1.4.2014 is ₹5106.31 lakh as on 1.4.2014. Accordingly, the capital cost considered for the purpose of tariff for the period 2014-19 is as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	5106.31	5176.24	5694.05	5727.61	5727.61
Net Additions Allowed	69.93	517.81	33.56	-	-
Closing Capital Cost	5176.24	5694.05	5727.61	5727.61	5727.61
Average Capital Cost	5141.28	5435.15	5710.83	5727.61	5727.61

Debt-Equity Ratio

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

"(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-equtiy 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 f 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 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 modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.

48. Accordingly, the gross normative loan and equity amounting to ₹2596.21 lakh and ₹2510.10 lakh respectively as on 31.3.2014 as considered in order dated 29.7.2016 in Petition No. 467/GT/2014 has been considered as normative loan and equity as on 1.4.2014. The normative debt equity ratio of 70:30 has been considered for admitted additional capital expenditure. This is subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations. The opening and closing debt and equity is as under.

(₹ in lakh)

Asset	As on 1.4.2014		Net Additional capitalization during 2014-19		As on 31.3.2019	
	Amount	(%)	Amount	(%)	Amount	(%)
Debt	2596.21	50.84%	434.91	70.00%	3031.12	53.85%
Equity	2510.10	49.16%	186.39	30.00%	2696.49	46.15%
Total	**5106.31**	**100.00%**	**621.30**	100.00%	**5727.61**	100.00%

Return on Equity

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

> ***"24. Return on Equity**:*
> *(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.*
> *(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:*
> *Provided that:*
> *i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:*
> *ii). the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:*
> *iii). additional RoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:*
> *iv). the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of*

the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

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

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

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

"Tax on Return on Equity

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

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

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

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

51. The petitioner has claimed return on equity considering the base rate of 16.50% and effective tax rate (MAT rate) of 20.961%. However, the actual tax rate of 2013-14 is "NIL" as per annual audited accounts of 2013-14. It is also observed from the Annual Accounts for the years 2014-15 and 2015-16 that the tax liability is 'nil' for the petitioner's company as a whole. Therefore, the Commission in view of the actual tax rate for the years 2013-14 to 2015-16 has considered as 'NIL' tax rate for grossing up of the base

rate. This is however subject to truing-up and shall be considered as per the actual effective tax rate applicable for the said financial year. Accordingly, Return on Equity has been worked out as under:-

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Notional Equity-Opening	2510.10	2531.08	2686.42	2696.49	2696.49
Addition of Equity due to Additional Capitalization	29.40	216.60	10.50	-	-
Adjustment on account of de-capitalization	8.42	61.26	0.43	-	-
Normative Equity- Closing	**2531.08**	**2686.42**	**2696.49**	**2696.49**	**2696.49**
Average Normative Equity	2520.59	2608.75	2691.46	2696.49	2696.49
Return on Equity (Base Rate)	16.500%	16.500%	16.500%	16.500%	16.500%
Tax rate for the year	0.000%	0.000%	0.000%	0.000%	0.000%
Rate of Return on Equity (Pre Tax)	16.500%	16.500%	16.500%	16.500%	16.500%
Return on Equity	**415.90**	**430.44**	**444.09**	**444.92**	**444.92**

Interest on Loan

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

> ***"26. Interest on loan capital:*** *(1) The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*
>
> *(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.*
>
> *(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.*
>
> *(4) Notwithstanding any moratorium period availed by the generating company orthe transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.*
>
> *(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:*

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

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

a. The gross normative loan of ₹2596.21 lakh has been considered on 1.4.2014 in order dated 29.7.2016 in Petition No. 467/GT/2014. In addition to this, loan component towards additional capitalization has been considered as per the approved debt equity ratio.

b. Cumulative repayment of loan as on 31.3.2014 has been considered as cumulative repayment as on 1.4.2014.

c. Addition to normative loan on account of additional capital expenditure approved above has been considered on year to year basis.

d. Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2014-19. Proportionate adjustment has been made to the repayments on account of de-capitalizations considered in the additional capital expenditure approved above.

e. In line with the provisions of the regulations, the weighted average rate of interest has been calculated by applying the actual loan portfolio existing as on 1.4.2014 along with subsequent additions during the period 2014-19, if any, for the generating station. In case of loans carrying floating rate of interest the rate of interest as provided by the petitioner has been considered for the purpose of tariff. The details of calculation of weighted average rate of interest are as included in Annexure-I of this order. The necessary calculation for interest on loan is as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Loan for the purpose of tariff in the instant petition	2596.21	2645.16	3007.63	3031.12	3031.12
Cumulative repayment of loan up to previous year	2596.21	2614.48	2798.74	3031.12	3031.12

	2014-15	2015-16	2016-17	2017-18	2018-19
Net opening loan	-	30.68	208.88	-	-
Addition due to Net Additional Capitalization	48.95	362.47	23.49	-	-
Repayment of Loan during the period	37.92	327.20	233.38	-	-
Add: Repayment adjustment on a/c of de-capitalization	19.65	142.93	1.01	-	-
Less: Repayment on account of adjustment in discharge in liabilities	-	-	-	-	-
Net Closing Loan	30.68	208.88	-	-	-
Average Loan	15.34	119.78	104.44	-	-
Weighted Average Rate of Interest on Loan	10.2433%	10.3499%	10.3547%	11.5453%	11.6025%
Interest on Loan	**1.57**	**12.40**	**10.81**	**-**	**-**

Depreciation

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

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

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

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:
Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long term power purchase agreement at regulated tariff:
Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in ***Appendix-II*** *to these regulations for the assets of the generating station and transmission system:*

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

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

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

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

55. Regulation 53(2)(iii) of the 2014 Tariff Regulations provides as under:

*"**53. Special Provisions relating to Damodar Valley Corporation.** (1) Subject to clause (2), these regulations shall apply to determination of tariff of the projects owned by Damodar Valley Corporation (DVC).*

(2) The following special provisions shall apply for determination of tariff of the projects owned by DVC:
(i)….
(ii)….
(iii) Depreciation: The depreciation rate stipulated by the Comptroller and Auditor General of India in terms of section 40 of the Damodar Valley Corporation Act, 1948 shall be applied for computation of depreciation of projects of DVC.

56. The rate of depreciation has been arrived at by considering the weighted average of depreciation computed on the gross value of asset as on 31.3.2014 and at the rates approved by C&AG which works out to 6.0200%. Further, the proportionate adjustment has been made to the cumulative depreciation corresponding to de-capitalization during the period 2014-19 for the purpose of tariff. The necessary calculations in support of depreciation are as under:-

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	5106.31	5176.24	5694.05	5727.61	5727.61
Net Additional Capitalization	69.93	517.81	33.56	-	-
Closing Capital Cost	5176.24	5694.05	5727.61	5727.61	5727.61
Average capital cost	5141.28	5435.15	5710.83	5727.61	5727.61
Value of freehold land	-	-	-	-	-
Depreciable value	4627.15	4891.63	5139.75	5154.85	5154.85
Balance depreciable value	37.92	327.20	343.79	41.77	-
Depreciation	**37.92**	**327.20**	**343.79**	**41.77**	**-**
Cumulative depreciation at the end of the period (before adjustment)	4627.15	4770.57	5113.08	5154.85	5154.85
Less: Cumulative depreciation adjustment on account of de-capitalization	183.77	1.29	0.00	0.00	0.00
Cumulative depreciation after adjustment (at the end of the period)	4443.38	4769.28	5113.08	5154.85	5154.85

Operation &Maintenance Expenses

57. Regulation 29 (3) (a) of the 2014 Tariff Regulations provides the year-wise O&M expense norms for the generating station of the petitioner as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1546.42	1649.17	1758.74	1875.59	2000.20

58. In addition to above, the petitioner has claimed additional O&M expenses towards Mega insurance and Share of Subsidiary activity.

(₹ in lakh)

Additional O&M	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Ash Evacuation	-	-	-	-	-
Mega Insurance	4.24	4.24	4.67	5.49	6.04
CISF Security	-	-	-	-	-
Share of subsidiary activity	41.18	48.31	58.35	65.56	69.22
Total	**45.42**	**52.56**	**63.02**	**71.05**	**75.26**

59. We have considered the submissions. It is observed that the petitioner has not submitted any details of the actual O&M expenses in the prescribed format, at the time of framing the 2014 Tariff Regulations applicable for the period 2014-19. Accordingly, the Commission based on the available information had specified the station-wise O&M expense norms for hydro-generating stations for the period 2014-19. The relevant portion of the statement of reasons in the support of the 2014 Tariff Regulation is extracted as under:

> *"30.28 As regards O&M expenses for hydro stations of DVC, the Commission has not received the details of the actual O&M expenses in the prescribed format and therefore, the Commission has escalated the approved O&M expenses for FY 2013-14 by 6.64% to derive the O&M expenses to be allowed for 2014-19."*

60. The petitioner has now approached the Commission for grant of additional O&M expense and has submitted that these expenses are in addition to the O&M expenses approved under the 2014 Tariff Regulations. Considering the fact that these norms were specified under the 2014 Tariff Regulations offer extensive stakeholder consultation and no details were furnished by the petitioner at the time of framing these regulations, we are not inclined to allow the relief as prayed for by the petitioner. Accordingly, the additional O&M expenses claimed by the petitioner has not been allowed

Interest on working capital

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

> *"28. Interest on Working Capital:*
> *(c) Hydro generating station including pumped storage hydro-electric generating station and transmission system including communication system:*
> *(i) Receivables equivalent to two months of fixed cost;*
> *(ii) Maintenance spares @ 15% of operation and maintenance expenses specified in regulation 29; and*
> *(iii) Operation and maintenance expenses for one month"*

Maintenance spares

62. The petitioner has claimed maintenance spares in working capital as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
231.96	247.38	263.81	281.34	300.03

63. The maintenance spares claimed is as per the 2014 Tariff Regulations and the same is allowed.

Receivables

64. The petitioner has claimed receivables for two months as shown below:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Fixed Charges - 2 months	458.21	616.45	644.85	657.00	656.39

65. Receivables have been worked out on the basis of two months of approved annual fixed charges as shown below:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Fixed Charges - 2 months	349.62	421.34	445.50	412.85	427.64

O&M expenses for 1 month

66. O & M expenses for 1 month as claimed by the petitioner for the purpose of working capital in this order is allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
128.87	137.43	146.56	156.30	166.68

Rate of interest on working capital

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

> *"Interest on working Capital:*
>
> *(3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later.*
>
> *(4) Interest on working capital shall be payable on normative basis notwithstanding that the generating company or the transmission licensee has not taken loan for working capital from any outside agency."*

68. In terms of the above regulations, SBI PLR of 13.50% (Bank rate 10.00% + 350 bps) has been considered for the purpose of calculating interest on working capital. Interest on working capital has been computed as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
O & M expenses	128.87	137.43	146.56	156.30	166.68
Spares	231.96	247.38	263.81	281.34	300.03
Receivables	349.62	421.34	445.50	412.85	427.64
Total Working Capital	710.45	806.15	855.87	850.49	894.36
Rate of Interest	13.500%	13.500%	13.500%	13.500%	13.500%
Total Interest on Working capital	**95.91**	**108.83**	**115.54**	**114.82**	**120.74**

Other Elements of tariff

69. In addition, the petitioner has claimed expenditure towards Pension & Gratuity contribution and Cost of Common Offices. We now discuss and decide these elements as detailed below:

Pension & Gratuity Contribution

70. The petitioner has claimed pension and gratuity contribution for the period 2014-19 and has submitted that it has considered the actuarial valuation as on 31.3.2014, for liability towards pension and gratuity fund and projected P&G liability for the tariff period 2014-19 including impact of pay revision. It is observed that the liability claimed by the petitioner pertains to the period 2009-14 and does not pertain to the tariff period 2014-19. In this regard it is observed that the Commission in its order dated 29.7.2016 in Petition No. 467/GT/2014, had disallowed the claim of the petitioner and has observed as under:

> *"As stated, the Commission in order dated 7.8.2013 in Petition No. 272/GT/2012 had allowed the recovery of 40% of the difference in liability as per Actuarial valuation 31.3.2009 and 31.3.2006 in five equal installments. The Commission in the said order had allocated the same on petitioners generating stations except Mejia Unit 5 & 6. The Commission has revised the allocation and has also allocated share of P&G liability to Mejia Unit 5 and 6 on the basis of capital cost of ₹205946.66 lakh admitted by it as on 31.3.2009. It is observed that the O&M expenses norms specified by the Commission under the 2009 Tariff Regulations applicable for the period 2009-14 had taken into consideration the P&G liability as part of O&M expenses. The statement of reason of the 2009 Tariff Regulations, at para 20.3 clearly states that O&M cost for purpose of tariff covers expenditure incurred on the employees including gratuity, CPF, medical, education allowances etc. The expenses on account of CPF considered in Public Sector Undertakings take care of pension liability applicable in Government Undertaking."*

71. We have already taken a view that these expenses maybe met through the normative O&M Expenses allowed to the generating station. In view of this the share of pension and gratuity is not allowed.

72. During the hearing, the learned counsel for the petitioner has submitted that the Commission may consider allowing the contribution to P&G fund, keeping in view the addition/deletion of employees and the differential amount on account of pay revision of employees thereby impacting the pension fund. The learned counsel of the petitioner further submitted that out of pension and gratuity fund, the pension fund has not been considered in the normative O&M expenses admissible for all generating stations of the petitioner under the 2014 Tariff Regulations. We have examined the matter. Considering the fact that the issue of contribution to P&G fund is common to all the generating stations/T&D systems of the petitioner and since full details are not available on records, we do not consider the prayer of the petitioner at this stage. However, we are inclined to grant liberty to the petitioner, to claim the said relief through a separate application along with all relevant details, so that a holistic view can be taken in the matter, in accordance with law.

Common Office Expenditure

73. The petitioner has submitted that the expenditure pertaining to common office expenditure such as Direction Office, Central Office, Other Offices, Subsidiary activities, IT centre and R&D caters services to all generating stations as well as composite transmission and distribution systems. It has also submitted that the total cost of common assets computed is based on capital cost as on 31.3.2014 as per Audited Accounts for the year 2013-14 which have been apportioned based on the opening cost of all generation and T&D system as on 1.4.2014 and apportionment thereof to each of the productive generating station in proportion to their installed capacities in MW as per observation of the Commission in its order dated 7.8.2013 in Petition No. 272/GT/2012.

Accordingly, the additional capital expenditure claimed by the petitioner towards various offices is as under.

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Direction office	-	-	-	-	-
Subsidiary activities	-	-	-	-	-
Other offices	-	-	-	-	-
R&D	-	-	-	-	-
IT	698.90	685.00	4508.00	4508.00	300.00
Central Office	-	-	-	-	-
Total expenditure	**698.90**	**685.00**	**4508.00**	**4508.00**	**300.00**

74. The petitioner has computed Return on Equity, Interest on Loan and Depreciation on the Common Assets for the period 2014-19 based on the opening capital cost as on 1.4.2014 and projected additional capitalization during the period 2014-19 towards different offices and has apportioned them to each generating stations and T&D system in proportion to the capital cost approved as on 31.3.2014. Further, the petitioner has allocated the cost of common offices among generating stations on the basis of installed capacity. Accordingly, the annual fixed charges claimed towards Common Assets are as under:-

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Direction office	181.64	83.17	60.36	60.36	60.36
Subsidiary activities	169.44	89.54	58.91	58.91	58.91
Other offices	126.07	122.24	122.24	105.32	48.81
R&D	280.10	270.44	260.17	253.34	241.98
IT	100.99	219.39	667.10	1497.65	1893.35
Central Office	554.87	532.74	509.91	487.66	487.66
Total expenditure	**1413.11**	**1317.51**	**1678.69**	**2463.24**	**2791.07**

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Generating Stations claimed	1327.15	1237.37	1576.58	2313.41	2621.29
T&D claimed	85.96	80.14	102.11	149.83	169.78
Total	**1413.11**	**1317.51**	**1678.69**	**2463.24**	**2791.07**

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Panchet Hydel-Claimed	16.70	15.57	19.84	29.11	32.99

75. In response to the directions of the Commission, it is observed that the petitioner has not submitted any details with regard to additional capitalization claimed under IT offices. In view of this, the additional capitalization claimed under IT office is not allowed. However, the petitioner is granted liberty to submit detailed justification on the said claim at the time of revision of tariff based on truing-up exercise in terms of Regulation 8 of the 2014 Tariff Regulations..

76. It is noticed that the claim of the petitioner for common office expenditure is in line with the Commission's order dated 6.8.2009 in Petition No. 66/2005 and order dated 8.5.2013 in Petition No. 272/2010. Accordingly, the annual fixed charges for Common offices have been worked out by considering as the admitted opening capital cost as on 1.4.2014 in order dated 29.7.2016 in Petition No. 467/GT/2014. The annual fixed charges of Common offices as worked out have been apportioned to the generating stations / T&D systems as considered as on 31.3.2014.

77. Accordingly, the fixed charges have been computed as per the admitted capital cost as on 1.4.2014 (as approved in order dated 29.7.2016 in Petition No. 467/GT/2014) has been allocated to various generating stations as under.

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	438.37	390.47	331.22	331.22	331.22
Interest on loan	130.32	105.00	93.73	92.63	81.03
Return on Equity	573.79	573.79	573.79	573.79	573.79
Total	**1142.48**	**1069.27**	**998.75**	**997.65**	**986.05**

(₹ in lakh)

	Capital cost as on 1.4.2014	2014-15	2015-16	2016-17	2017-18	2018-19
Entire generating station	574165.23	989.45	926.04	864.97	864.01	853.97
T&D	88805.81	153.04	143.23	133.78	133.64	132.08
Total	**662971.04**	**1142.48**	**1069.27**	**998.75**	**997.65**	**986.05**

78.

(₹ in lakh)

Station	Capacity	2014-15	2015-16	2016-17	2017-18	2018-19
Bokaro TPS	630.00	99.64	91.77	85.72	85.62	84.63
Chandrapura TPS	390.00	61.68	56.81	53.06	53.01	52.39
Durgapur TPS	350.00	55.36	50.98	47.62	47.57	47.02
Mejia TPS #1 to 3	630.00	99.64	91.77	85.72	85.62	84.63
Mejia TPS #4	210.00	33.21	30.59	28.57	28.54	28.21
Mejia TPS #5 & 6	500.00	79.08	72.83	68.03	67.96	67.17
Maithon HS	63.20	10.00	9.21	8.60	8.59	8.49
Panchet HS	80.00	12.65	11.65	10.88	10.87	10.75
Tilaiya HS	4.00	0.63	0.58	0.54	0.54	0.54
Total	**2857.20**	**451.91**	**416.20**	**388.75**	**388.32**	**383.81**
Chandrapura TPS #7 & 8	500.00	79.08	72.83	68.03	67.96	67.17
Mejia TPS 7 & 8	1000.00	158.16	145.67	136.06	135.91	134.33
Durgapur Steel TPS # 1 & 2	1000.00	158.16	145.67	136.06	135.91	134.33
Koderma TPS	898.63	142.13	145.67	136.06	135.91	134.33
Total	**3398.63**	**537.54**	**509.84**	**476.21**	**475.69**	**470.16**
Grand Total	**6255.83**	**989.45**	**926.04**	**864.97**	**864.01**	**853.97**
Total T&D		153.04	143.23	133.78	133.64	132.08
Grand total		**1142.48**	**1069.27**	**998.75**	**997.65**	**986.05**

79. Accordingly, annual fixed charges approved for the generating station for the period from 1.4.2014 to 31.3.2019 is summarized as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	37.92	327.20	343.79	41.77	0.00
Interest on Loan	1.57	12.40	10.81	0.00	0.00
Return on Equity	415.90	430.44	444.09	444.92	444.92
Interest on Working Capital	95.91	108.83	115.54	114.82	120.74

O&M Expenses	1546.42	1649.17	1758.74	1875.59	2000.20
Sub-Total	**2097.72**	**2528.04**	**2672.98**	**2477.10**	**2565.86**
Share of Common Office Expenses	12.65	11.65	10.88	10.87	10.75
Additional O&M on account of Ash Evacuation, Mega Insurance, CISF Security and Share of subsidiary activities	-	-	-	-	-
Share of Pension & Gratuity Contribution	-	-	-	-	-
Sub-Total	**12.65**	**11.65**	**10.88**	**10.87**	**10.75**
Total Annual Fixed Charges	**2110.37**	**2539.69**	**2683.86**	**2487.97**	**2576.61**

Normative Annual Plant Availability Factor

80. Clause (4) of Regulation 37 of the 2014 Tariff Regulations provides for the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations already in operation. Accordingly, the NAPAF of 80% has been considered for this generating station as prescribed in the 2014 Tariff Regulations.

Design Energy

81. The Commission in its order dated 8.5.2013 in Petition No. 272/2010, has approved annual design energy of 237 MUs for the generating station. The same is considered in this order for the period 2014-19 i.e. in respect of this generating station.

Application Fee and Publication Expenses

82. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct

that the petitioner shall be entitled to recover pro rata, the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered pro rata after deposit of the same and production of documentary proof.

83. The annual fixed charges determined as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

84. Petition No. 353/GT/2014 is disposed of in terms of the above.

Sd/-	**Sd/-**
(Dr. M. K. Iyer) **Member**	**(A.S. Bakshi)** **Member**

Annexure-I

DETAILS OF LOAN BASED ON ACTUAL LOAN PORTFOLIO (2014-19)

(₹ in lakh)

Particular	Interest Rate					Loan deployed as on 1.4.2014	Additions during the tariff period	Total
	2014-15	2015-16	2016-17	2017-18	2018-19			
Loan- 1 DVC BONDS	8.95	8.95	8.95	8.95	8.95	30000.00	0.00	30000.00
Loan-2 PFC	6.91	6.91	6.91	6.91	0.00	8451.00	0.00	8451.00
Loan-3 GOI RVP	9.00	9.00	9.00	9.00	9.00	500.00	0.00	500.00
Loan 4 US Exim $Loan$	2.00	2.00	2.00	2.00	2.00	6193.00	0.00	6193.00
Loan 5-DVC Bonds- For T&D	8.95	8.95	8.95	8.95	8.95	34000.00	0.00	34000.00
Loan - 6 REC Loan (For T&D)	11.68	11.66	11.66	11.66	11.66	63499.00	15500.00	78999.00
Total						**142643.00**	**15500.00**	**158143.00**

WEIGHTED AVERAGE RATE OF INTEREST ON LOAN DURING 2014-19 TARIFF PERIOD

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Opening Loan	142643.00	158143.00	158143.00	158143.00	158143.00
Cumulative Repayments of Loans upto Previous Year	12659.00	13119.00	20163.00	91207.00	98238.00
Net Loans Opening	129984.00	145024.00	137981.00	66936.00	59905.00
Add: Drawl(s) during the year	15500.00	0.00	0.00	0.00	0.00
Increase/Decrease due to FERV	0.00	0.00	0.00	0.00	0.00
Increase/Decrease due to ACE	0.00	0.00	0.00	0.00	0.00
Less: Repayment(s) of Loan during the year	460.00	7043.00	71044.00	7031.00	7002.00
Net Closing Loan	145024.00	137981.00	66937.00	59905.00	52903.00
Average Net Loan	135059.00	142443.00	129613.00	64355.00	57324.00
Interest on Loan	13834.49	14742.66	13421.00	7430.00	6651.00
Rate of Interest on Loan (%)	10.2433%	10.3499%	10.3547%	11.5453%	11.6025%