

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 228/GT/2014**

**Coram:**

**Shri Gireesh B. Pradhan, Chairperson**

**Shri A.K. Singhal, Member**

**Shri A.S. Bakshi, Member**

**Date of Hearing: 16.04.2015**

**Date of Order: 18.09.2015**

**In the matter of**

Revision of Annual Fixed Charges for the period 2009-14 after truing-up exercise and Determination of annual fixed charges for the period 2014-19 in respect of Loktak Hydroelectric Power Station

**And**

**In the matter of**

NHPC Limited  
NHPC Office Complex,  
Sector-33, Faridabad,  
Haryana-121003

**...Petitioner**

**Vs**

1. Assam State Electricity Board,  
BijuliBhawan, Paltan Bazar  
Guwahati – 781 001
2. Department Of Power,  
Governmentof Arunachal Pradesh,  
C–Sector, Itanagar – 799 111,
3. Electricity Department,  
Govt. Of Mizoram,  
Aizawal – 796 001
4. Tripura State Electricity Corporation Ltd.,  
Vidyut Bhawan, North Banamalipur,  
Agartala – 799 001
5. Meghalaya State Electricity Board,  
Meter Factory Area,  
Short Round Road,Shillong – 793 001
6. Electricity Department,  
Govt. Of Manipur,





matter. Accordingly, based on the documents available on record, we proceed to revise the tariff for the period 2012-14 based on truing-up exercise and also for determination of tariff for the period 2014-19 in respect of the generating station as stated in the subsequent paragraphs:

#### **Revision of annual fixed charges for 2009-14**

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

*"6. Truing up of Capital Expenditure and Tariff*

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

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

5. Petition No. 108/2010 was filed by the petitioner for determination of tariff of the generating station for the period from 1.4.2009 to 31.3.2014 and the Commission by its order dated 14.6.2011 had determined the annual fixed charges for the generating station for the said period. Subsequently, the annual fixed charges determined by order dated 14.6.2011 were revised by Commission's order dated 22.10.2012 in Review Petition No.24/2011. Thereafter, the petitioner filed Petition No. 155/GT/2013 and claimed revision of tariff for 2009-14 based on the actual additional capital expenditure incurred during the period 2009-12 and projections for additional capital expenditure for the period 2012-14. The Commission by order dated 13.2.2014 in Petition No.155/GT/2013 revised the annual fixed charges for 2009-12 based on the capital cost of ₹14240.52 lakh as on 1.4.2009 and ₹16205.80 lakh as on 31.3.2012. The annual fixed charges approved for the generating station by order dated 13.2.2014 is as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	1588.27	1611.76	1641.11	1297.44	1366.28
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Depreciation	541.32	611.77	707.46	789.32	817.61
Interest on Working Capital	367.23	387.65	409.78	424.97	448.81



O & M Expenses	6454.12	6823.30	7213.59	7626.21	8062.43
<b>Total</b>	<b>8950.94</b>	<b>9434.48</b>	<b>9971.94</b>	<b>10137.94</b>	<b>10695.13</b>

6. The annual fixed charges claimed by the petitioner for 2012-14 is as under:

	(₹ in lakh)	
	2012-13	2013-14
Return on Equity	1438.18	1546.67
Interest on Loan	0.00	0.00
Depreciation	789.39	850.75
Interest on Working Capital	427.90	453.26
O & M Expenses	7626.21	8062.42
<b>Total</b>	<b>10281.67</b>	<b>10913.11</b>

### Capital cost

7. Regulation 7 (1) (a) of the 2009 Tariff Regulations provides as under:

*“7. Capital Cost. (1) Capital cost for a project shall include: (a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan - (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;”*

8. The Commission had considered the capital cost of ₹14240.52 lakh as on 31.3.2009 in order dated 22.10.2012 in Review Petition No.24/2011 (against order dated 14.6.2011 in Petition No.108/2010) as the opening capital cost as on 1.4.2009 for the purpose of approval of tariff for the period 2009-14. Accordingly, this capital cost was considered as on 1.4.2009 for the purpose of revision of tariff in order dated 13.2.2014 in Petition No.155/GT/2013. Further, the closing capital cost considered as on 31.3.2012 in aforesaid order dated 13.2.2014 was ₹16205.80 lakh. Accordingly, this closing capital cost of ₹16205.80 lakh has been considered as the opening capital cost as on 1.4.2012 for the purpose of revision of tariff for 2012-14.

### Actual Additional Capital Expenditure (2012-13 and 2013-14)

9. Regulation 9 of the 2009 Tariff Regulations, as amended on 21.6.2011 provides as under:



**“9. Additional Capitalisation.**(1) *The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

*(i) Un-discharged liabilities;*

*(ii) Works deferred for execution;*

*(iii) Procurement of initial capital spares within the original scope of work, subject to the provisions of regulation 8;*

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

*(v) Change in law: Provided that the details of works included in the original scope of work along with estimates of expenditure, un-discharged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.*

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

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

*(ii) Change in law;*

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

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

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

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

*(vi) In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations. Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.*

*(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialization of full coal*



linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

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

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

10. The projected additional capital expenditure allowed for the period 2012-14 in order dated 13.2.2014 in Petition No.155/GT/2013 and the actual additional capital expenditure claimed in this petition are as under:

	(₹ in lakh)	
	2012-13	2013-14
Projected additional capital expenditure allowed in order dated 13.2.2014	248.66	3.72
Actual additional capital expenditure claimed in this petition	247.90	448.02

11. The re-conciliation of actual additional capital expenditure claimed in this petition with respect to additional capital expenditure as per books of accounts duly certified by auditor for the period 2012-13 and 2013-14 is as under:

Sl. No.		(₹ in lakh)	
		2012-13	2013-14
<b>1</b>	<b>Additional Capital Expenditure claimed</b>		
<b>(a)</b>	<b>Additions</b>		
i	Capitalisation against works projected and allowed during the period 2009-10 to 2013-14	143.43	190.01
ii	Additional Capital Expenditure not projected but incurred as per actual site requirements	110.47	329.48
iii	Addition on account of inter-unit transfer	0.00	0.00
	<b>1(a) Sub total</b>	<b>253.90</b>	<b>519.49</b>
<b>(b)</b>	<b>Deletion/deduction</b>		
i	Deduction of assets in books.	0.00	0.00
	<b>1(b) Sub total</b>	<b>0.00</b>	<b>0.00</b>
<b>(c)</b>	<b>Net addition claimed 1(c)=1(a)+1(b)</b>	<b>253.90</b>	<b>519.50</b>
<b>2.</b>	<b>Additional Capital Expenditure not claimed</b>		
<b>(a)</b>	<b>Addition</b>		
i	Other than Inter-unit additions	37.88	60.53
ii	Addition on account of inter-unit transfer	2.21	0.00
	<b>2(a) Sub total</b>	<b>40.09</b>	<b>60.53</b>
<b>(b)</b>	<b>Deletions</b>		
i	Deletion	0.00	0.00
ii	Deletion on account of Inter-unit transfer	(-) 0.22	0.00



	<b>2(b)Sub total</b>	<b>(-) 0.22</b>	<b>0.00</b>
<b>(c)</b>	<b>Net addition under exclusion category 2(c) = 2 (a) + 2(b)</b>	<b>39.87</b>	<b>60.53</b>
<b>3</b>	<b>Net additional capital expenditure (including IUT) as per Books of accounts 3= 1(c)+2(c)</b>	<b>293.77</b>	<b>580.021</b>
<b>4</b>	<b>Net additional capital expenditure claimed for tariff purpose</b>		
i	Net additional capital expenditureas above	253.90	519.50
ii	Un-discharged liabilities for the add cap 2009-14	0.00	0.00
<b>(a)</b>	<b>Assumed Deletions</b>		
i	Assets deducted on replacement of New Assets covered under Category 1.a (i)	(-) 4.90	(-) 9.00
ii	Assets deducted on replacement of New Assets covered under Category 1.a (ii)	(-) 1.11	(-) 62.47
	<b>Net amount of additional capital expenditure claimed=(1(a)-4a(i+ii))</b>	<b>247.90</b>	<b>448.02</b>

12. Based on the above reconciliation, the year-wise admissibility of the additional capital expenditure under various heads is discussed in the subsequent paragraphs.

### **2012-13**

13. No additional capital expenditure against the works approved by Commission has been undertaken by the petitioner during the year 2012-13.

### **Works allowed in previous years but capitalized in 2012-13**

14. The details of works/assets, the additional capital expenditure allowed for these works / actual additional capital expenditure against these works along with reasons for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under:

(₹ in lakh)				
<b>Sl. No</b>	<b>Assets/works</b>	<b>Amount allowed on projected basis</b>	<b>Actual expenditure incurred/ claimed</b>	<b>Justification for admissibility of expenditure</b>
1	Modernization / Renovation of power house	16.93 [₹1855.77 (total amount allowed) minus ₹1838.84 (amount claimed)]	32.21	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011. The gross value of the replaced component has been considered as 10% of actual additional capital expenditure incurred (i.e ₹3.22 lakh). The old asset has been de-





				capitalized under "Assumed Deletions.
2	Construction of RBT Concertina coil fencing along both sides of penstock	82.00	48.44	<b>Allowed</b> as the asset/work was approved by Commission order dated 14.6.2011 in Petition No.108/2010 under Regulation 9(2) (iv) of the 2009 Tariff Regulations
3	Fixing and fitting of 04 rows of 60 cm dia. Concertina coil including 8 rows of RBT horizontal strength along penstock	8.50	6.45	
4	Construction of 4 Nos. CRPF security Morchas at zero, new and old colony	20.00	12.17	
5	Emergency Resuscitation Kit ARC-100-(2 Nos.)	2.00	1.35	Against the projected expenditure of ₹2.00 lakh approved by Commission by order dated 13.2.2014 in Petition No. 155/GT/2013, the petitioner has been allowed ₹3.80 lakh during the years 2010-11 and 2011-12 respectively. However, the expenditure claimed has been <b>allowed</b> under Regulation 9(2)(iv) as the same is for the benefit of employees working in remote areas of the generating station and in turn will ensure the efficient and successful operation of the plant.
6	Medical equipment's such as Oxygen Flow Meter With Humidifier & Rotameter - 03 Nos & Blood Cell Counter - 01 No.		0.06	
7	Door frame metal detector - (5Nos.) & Deep Search Mine Detector - (2 Nos.) for CRPF at power house on Main Gate of Loktak Colony and main Administrative Building.	5.00	1.78	Against the projected expenditure of ₹2.00 lakh approved by Commission by order dated 13.2.2014 in Petition No. 155/GT/2014, the petitioner has been allowed ₹3.80 lakh during the years 2010-11 and 2011-12 respectively. However, the expenditure claimed has been <b>allowed</b> under Regulation 9(2)(iv) as the same is necessary for the safety of the plant and in turn will ensure the efficient and successful operation of the plant
8	MVA Transformer	50.00	4.30	<b>Allowed</b> as the asset/work has already been approved vide Commission Order dated
9	Control Panel Of		1.34	





	Feeders With VCB (11kv), Various Meters And With E/F & O/C Protections			14.6.2011 in Petition No.108/2010, under Regulation 9(2) (iv). The present expenditure pertains to the installation of Transformers & Control panel which had been allowed during 2010-11.
10	Control Panel for Station Transformer (132/11kv) with various meters and protection relays		0.66	
11	Alternative water supply system at Loktak from Power Channel	40.00	19.34	<b>Allowed</b> as the asset/work was approved by Commission order dated 14.6.2011 in Petition No.108/2010 under Regulation 9(2) (iv) of the 2009 Tariff Regulations
12	Replacement of Present Electromechanical type protection relays by Numerical relays Lot	28.32	15.33	<b>Allowed</b> as the asset/work was approved by Commission order dated 14.6.2011 in Petition No.108/2010 under Regulation 9(2) (iv) of the 2009 Tariff Regulations. The amount for ₹1.68 lakh is considered as deletion value of the old asset under "Assumed Deletions".
<b>Total amount allowed</b>			<b>143.43</b>	

### 2013-14

15. The details of works/assets, the additional capital expenditure allowed for these works / actual additional capital expenditure against these works along with reasons for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under:

(₹ in lakh)				
Sl. No	Assets/works	Amount allowed on projected basis	Actual expenditure incurred/ claimed	Remarks for admissibility
1	Purchase of Mini Truck	5.50	12.90	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011. The gross value of the replaced asset has been considered as ₹1.78 lakh under "Assumed Deletions"
<b>Total amount allowed</b>			<b>12.90</b>	



## Works allowed in previous years but capitalized in 2013-14

16. The details of works, the additional capital expenditure allowed for these works, the actual additional capital expenditure incurred against these works along with justification for admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under:

(₹ in lakh)				
Sl. No	Assets/works	Amount allowed on projected basis	Actual expenditure incurred/ claimed	Remarks for admissibility
1	Construction of 4 Nos. CRPF security Morchas at zero, new and old colony	20.00	9.45	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011 in Petition No.108/2010.
2	Medical Equipment's such as Fortal monitor, D&C Kit, Sterilizer with lifting handle, S.S, Littman Stethoscope etc.	2.00	3.26	
3	12 Ton capacity Centralized Air Conditioner plant for power house control room-Lot	20.00	34.85	<b>Allowed</b> under Regulation 9(2) (iv) as the work has been approved vide order dated 14.6.2011 in Petition No.108/2010. The amount of ₹1.68 lakh is considered as deletion value of the old asset.
4	Storage tank for water supply of Liematak colony	40.00	18.90	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011 in Petition No.108/2010.
5	Pump with motor 45 KW/60 HP		4.10	
6	Alstom make Micom P642 Transformer Differential Protection Relay	30.00	3.43	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011 in Petition No.108/2010.
7	Alstom Make Micom P343 Numerical Relay		6.69	



8	500 KVA DG Set for Loktak Colony	70.00	32.83	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011 in Petition No.108/2010.
9	CRPF Barrack Bath room and W/C for security purposes	20.00	56.84	<b>Allowed</b> under Regulation 9(2) (iv) for works approved vide order dated 14.6.2011 in Petition No.108/2010.
10	Ambulance	8.50	6.76	<b>Allowed</b> under Regulation 9(2) (iv) as the work has been approved vide order dated 14.6.2011 in Petition No.108/2010.The amount of ₹6.50 lakh is considered as deletion value of the old asset
<b>Total amount allowed</b>			<b>177.11</b>	

17. The petitioner has clarified that the additional capital expenditure allowed was on projection basis and whereas the actual expenditure incurred is less/in excess due to the competitive rates quoted by the bidders and/or due to inflationary trend in material and labour cost.

**Capital expenditure not projected/allowed by the Commission, but incurred and claimed**

18. The details of the actual additional capital expenditure incurred against new works/assets along with admissibility of the actual additional capital expenditure in terms of 2009 Tariff Regulations is as under:

**2012-13**

Sl. No.	Assets/works	Actual expenditure incurred/claimed	Justification of the petitioner	Remarks for admissibility
1.	Storeshed in Limatak colony	16.18	There was lack of space in the existing stores at Powerhouse colony. In view of the Renovation and Modernisation already carried out from 2008-2011 and Renovation and modernisation for Life extension to be carried out before	Since the expenditure is required for safe storage of the Spares and other materials, the expenditure claimed has been <b>allowed</b> under Regulation 9(2)(iv).



			2016, extra space was required for storage of spares and other materials hence a store shed has been constructed at Power House colony.	
2.	OIP Bushing (2 nos)	6.10	The Generator Transformers are functioning right from the commissioning of Power House and are more than 30 years old. The test report of CPRI indicated high dielectric losses and Capacitance change beyond limits on the Oil Immersed HV bushings of these GTs. The high tan delta values of these equipment's indicated that the insulation of windings of CVTs had weakened considerably which might lead to breakdown of whole Transformer and also jeopardise the safety of equipment's installed and personnel posted for monitoring the healthiness of these equipment's. The HV bushings of the transformers were therefore replaced as per recommendation of condition monitoring report of CPRI. Copy of report has been provided (page no 52 to 71 of the Petition 155/GT/2013)	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i. e ₹0.61 lakh). The old asset is de-capitalized under "Assumed Deletions"
3.	18 Meter High Telescopic Tilting Type Tower with Motor Operating Winches 8nos and Flood Lights of 400W (3 nos.)	29.38	Installed for area lighting due to security concerns.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the



				generating station.
4.	82.5 KVA DG Set Kirloskar Engine Model-6KSWATC105	6.46	The electricity provided by the State Government at Ithai barrage is very erratic in view of the remoteness of the location. During the monsoon seasons the HM gates are required to be operated frequently to avoid flooding in low lying areas. The DG sets presently installed were not able to cater to the increased demand in view of the aging of DG sets as well as HM equipment's installed at Ithai barrage. Hence one no. additional 82.5 kVA DG set was purchased and installed for smooth day to day operation of gates etc.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station
5.	Induction Motor 30HP	0.92	06 motors are installed for turbine OPU for control of guide vanes. 01 motor has been purchased for emergency preparedness and avoid loss of generation due to breakdown of the motors of the Turbine OPU system.	<b>Not Allowed</b> as the asset is in the nature of 'spare'.
6	3 Phase 10 HP Induction Motor (03 Nos.)	1.21	Three nos Air blowers are installed in the ventilation system of Power House for circulation of fresh air to the different levels of Powerhouse. The motors of the air blowers had gone faulty due to aging and as such were replaced by the new motors for maintaining the fresh air supply and ambient temperatures in the Powerhouse.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional



				expenditure incurred(i.e ₹0.12 lakh). The old asset is de-capitalized under "Assumed Deletions"
7	Induction Motor 60 HP	1.53	06 motors are installed for Valve OPU system for control of Main Inlet Valve of the units. 01 motor has been purchased for emergency preparedness and avoid loss of generation due to breakdown of the motors of the Valve OPU system.	<b>Not Allowed</b> as the asset is in the nature of 'spare'.
8	Induction Motor. 3phase, 50HP, 6 Pole, 980 RPM (02 Nos.)	3.75	02 Nos. induction motors have been purchased for replacement of the existing motors of cooling water system of the Powerhouse. The same has been recommended in the energy audit carried out by CPRI.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.37 lakh). The old asset is de-capitalized under "Assumed Deletions"
9	Infrared Thermal Imaging Camera With Accessories.	11.99	Due to aging of the equipment's the losses have increased considerably in the power house. Further, the transmission system from Powerhouse to switchyard also	<b>Not Allowed</b> as the asset is in the nature of Tools & Tackles.



			requires daily monitoring. Since Loktak Power Station is located under high rainfall area the contacts of the conductors often get rusted and also carbon gets deposited due to local heating. For taking preventive action Infrared thermal imaging camera was purchased for diagnosing the condition of the equipments and contacts etc. to prevent any breakdown losses and therefore contributing to the increase in efficiency.	
10	Community Hall At Loktak Power Station	24.38	There was no community hall at Loktak Power Station since its inception. In the absence of any community hall, the power station was facing lots of problems in organising official meeting / conferences, official fete and social gathering etc. whenever required. In order to avoid such inconvenience the construction of new community hall at Loktak was taken up.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for the benefit of the employees of the generating station working in remote areas and in turn will ensure the efficient and successful operation of the generating station
11	Construction Office Rooms At Transport Yard Loktak	8.58	The old office rooms with CGI roofing at fuel section were constructed some 30 years back. The building was in shabby and dilapidated condition and was beyond economical repair. The roof was leaking heavily during rainy season. The wooden batten, frames of doors and windows and other steel structure were rusted	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional





			due to aging and wear and tear. Therefore construction of new office rooms was taken up at transport yard, Loktak.	expenditure incurred (i.e ₹0.86 lakh). The old asset is de-capitalized under "Assumed Deletions"
	<b>Total amount claimed</b>	<b>110.47</b>		
	<b>Total amount allowed</b>	<b>96.04</b>		

**2013-14**

(₹ in lakh)				
Sl. No.	Assets/works	Actual expenditure incurred/ claimed	Justification submitted by the petitioner	Remarks for admissibility
1.	CRPF Office near PH at Leimatak	9.65	CRPF is entrusted with the task of security of Powerhouse and construction of CRPF office near Powerhouse was done as per the requirements of CRPF in view of the security considerations.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.
2.	Park at Leimatak Colony	17.53	Efficient operation of machines requires healthy mental makeup of the employees / executives engaged on operation and maintenance of machines. The stringent rules regarding scheduling, deviation mechanism, grid code etc. require quick decisions since all the activities are to be done on real time basis. The decisions also require safety of men and materials involved. It is seen that the job of Operation and maintenance is stressful. Powerhouse of Loktak Power station is located in hilly and remote location with no or limited contact with the outside world and limited sources of entertainment. For maintaining high morale of the employees and for keeping the personnel stress free construction of park at Powerhouse colony was taken up to provide avenues to	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for the benefit of the employees of the generating station working in remote areas and in turn will ensure the efficient and successful operation of the generating station



			employees for entertainment and distressing to achieve overall increase in productivity.	
3.	Electromagnetic flow meter MM80MRSMP11215	1.84	Due to aging and other factors the reliability and effectiveness of cooling system of machines had decreased resulting in overall increase in temperature of bearings & generator windings which was adversely affecting the generation. Flow meters have been installed for monitoring the discharges and controlling the circulation of cooling water by optimizing the operation of pumps of the main header etc. 03 Nos. of different sizes of flow meters for various header pipes were necessitated for proper operation of pumps for improving the overall efficiency of machines and energy conservation.	<b>Not Allowed</b> as the asset is in the nature of Tools & Tackles.
4.	Electromagnetic Flow Meter-Remote MM200MRSMP11215, DN80.	2.33		
5.	Electromagnetic Flow Meter Remote Flow Sensor Meter Size: DN250	2.80		
6.	LT Air Circuit Breaker (ACB) 800A, 3 Poles (02 Nos.)	4.97	The existing Air Circuit Breakers installed in the various Panels for control of auxiliary equipment's had outlived their useful life and had started to give troubles. Hence, ACBs were purchased and replaced in the respective UABs of individual units for improving the reliability of functioning of auxiliaries for smooth operation of machines. Gross value of the old assets is indeterminable and not available in the records of power station individually as it has been capitalized with the whole Power House asset.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.65 lakh). The old asset is de-capitalized under "Assumed Deletions"
7.	Air Circuit Breaker 630 Amp, 440Volt (02 Nos.)	1.46		
8.	Electrostatic Liquid Cleaner (03 Nos.)	9.04	Centralized Oil filtration plant was initially installed for filtration of turbine oil being used in Turbine OPU, Valve OPU and for heat exchange in cooling system. The said plant had	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is
9.	Ferrocare Low Vacuum Dehydration Unit - Chiller along with	2.87		



	checking kit LVDH 50 AD CUS EL		gone faulty due to aging, obsolescence etc. Further, leakage of oil was also observed in the embedded piping system of the said system. It is essential to clean/filter the oil periodically to maintain the required properties of oil. Due to this portable oil filtration system was proposed for filtration of oil of sumps of turbine OPU, valve OPU & cooling system in a phased manner to keep various properties of oil within limits for safe operation. As such 03 Nos. ELC machines & 01 No. LVDH machine was purchased and installed. Since Turbine oil is being used in Oil Pressure Units of machines for operation and control of units through governors and operation of Main Inlet Valve therefore portable oil filtration machines are being used for improving the overall efficiency and reliability.	considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.90 lakh and ₹0.29 lakh). The old asset is de-capitalized under "Assumed Deletions"
10.	Turbine Bearing Cooler, Guide (TGB)	1.97	Turbine guide bearing oil cooler are being used for cooling the oil being circulated in turbine guide bearing of machine. The TGB oil cooler are being used since commissioning of the project. Due to aging and erosion the cupro nickel pipes of the coolers have started leakage. Therefore the TGB coolers were replaced to improve overall efficiency.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.20 lakh). The old asset is de-capitalized under "Assumed Deletions"
11.	Generator Bearing Oil Cooler (GBOC)	28.71	Generator bearing oil cooler are being used for cooling the oil	<b>Allowed</b> under Regulation



			being circulated in the thrust bearing, upper guide bearing and lower guide bearing of machine. The generator bearing oil cooler are being used since commissioning of the project. Due to aging and erosion the cupro nickel pipes of the coolers have started leakage and mixed with turbine oil resulting heavy losses of turbine oil. In the same time, The tubes with leakages are plugged which decreases the efficiency of heat exchange and leads to overall high bearing temperatures and efficiency loss of the machines. As per record available, thrust bearing temperature is getting increased upto 84 degree in summer. This leads to increased cooling requirements and other detrimental effects. Therefore the Generator bearing oil coolers (01 Set) were replaced for improving the overall efficiency and reduce the generation losses.	9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e 2.90 lakh). The old asset is de-capitalized under "Assumed Deletions"
12.	Control Panel of Feeders with VCB (11KV), various Meters and with E/F & O/C protections (04 Nos.)	12.66	11kV incoming panel of Loktak colony had become defective due to prolonged use. The breakers previously installed were in shambles and more than 20 years old. During fault condition the breaker did not trip as they have become defective and as such the safety of all the equipment's and personnel in offices & homes was at risk. Keeping in view of the above replacement of breakers was carried out by Control panel with VCB, consisting of all the protections, meters and indications etc.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹1.30 lakh). The old asset is de-capitalized under "Assumed Deletions"
13.	LT Distribution Panel 440V,	5.20	LT distribution of switchyard and colony of Liematak had	<b>Allowed</b> under Regulation



	incoming ACB 630A, outgoing MCCB - 3 X 250A, 2 X 63 A		become defective due to prolonged use. The OCB and fuse unit previously installed was in shambles and more than 20 years old. During fault condition the OCB did not trip and the fuse does not breaks as they have become defective and as such the safety of all the equipments and personnel working on them is seriously affected. Keeping in view of the above replacement of OCB and associated bus bars was carried out by an LT panel consisting of all the protections and indications etc.	9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.52 lakh). The old asset is de-capitalized under "Assumed Deletions"
14.	18 MTR.High Telescopic Tilting type Tower with Motor Operating Winches & 8nosFlood Lights of 400W. (02 Nos.)	21.32	Installed for area lighting due to security concerns.	<b>Allowed</b> under Regulation 9(2)(iv) as the same is necessary for the safety of the plant and in turn will ensure the efficient and successful operation of the plant
15.	Tipper, TATA,LPK 909	9.78	Various types of vehicles and equipment's are required for O&M of Power Station. These equipment's are finalized at the corporate level and are to be kept in ready conditions for day to day maintenance activities. The original equipment's were purchased during the construction stage of the Power Station during 1980's. All the equipment's had outlived their useful life and therefore were replaced. All the equipment's besides being uneconomical had become unsafe for use due to aging. Some of the equipment's such as Dozer & fire tender have a greater role in Disaster	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure



			Management. As such as per recommendations of committee regarding vehicles & equipment's to be kept for O&M of power station during the ensuing five years these equipment's were replaced.	incurred (i.e ₹2.21 lakh).The old asset is de-capitalized under "Assumed Deletions"
16.	BEML BD14W Wheel Dozer	124.41		<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹48.43lakh).The old asset is de-capitalized under "Assumed
17.	TATA LPT Fire Tender Chassis.	28.10		<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.eRs. 4.19lakh).The old asset is de-capitalized under "Assumed



18.	TATA LPT Water Tanker, 9KL.	13.51	<p>Various types of vehicles and equipment's are required for O&amp;M of Power Station. These equipment's are finalized at the corporate level and are to be kept in ready conditions for day to day maintenance activities. The original equipment's were purchased during the construction stage of the Power Station during 1980's. All the equipment's had outlived their useful life and therefore were replaced. All the equipment's besides being uneconomical had become unsafe for use due to aging. Some of the equipment's such as Dozer &amp; fire tender have a greater role in Disaster Management. As such as per recommendations of committee regarding vehicles &amp; equipment's to be kept for O&amp;M of power station during the ensuing five years these equipment's were replaced.</p>	<p><b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of the replaced asset is considered as 10% of the actual additional expenditure incurred (i.e ₹0.55 lakh).The old asset is de-capitalized under "Assumed deletions".</p>
19.	Optical Fiber Cable for Communication System Loktak to Leimatak – Nidhi.	17.85	<p>For proper coordination between various agencies for generation and safety, fool proof communication systems is required. Power House is situated 26 Km's from headquarters at Loktak and the terrain is hilly. To meet out any emergency situations due to bad law and order prevailing in Manipur, disaster management and other security considerations reliable communications is essential. Arrangements were made through radio bridges for reliable point to point communications. The microwave link used for voice communication is an outdoor device and very often goes out of order due to bad weather conditions and lightening thundering etc. As communication is an important tool for day to day working of powerhouse it is necessary to have reliable communication link between the two stations.</p>	<p><b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.</p>





			Therefore laying of OFC cable for communication purposes from Loktak to Powerhouse at Liematek was carried out by stringing on the existing 11kV feeder.	
20.	Online UPS System 2 x10 KVA.	8.59	Generation at powerhouse involves proper functioning of various auxiliaries. Some of the auxiliaries such as Static Excitation Equipment (Thyristor based) and Vibration Monitoring system (VMS) requires uninterruptible power supply for there smooth functioning. Presently the uninterruptible power supply to these auxiliaries is being given through portable UPS for various units. There is no UPS supply for Vibration Monitoring system. Besides these equipments there are three servers, switches, computers, KU band VSATs and other communication / IT equipment's which require reliable UPS supply. Previously, all these equipment's had either portable UPS or no UPS. Hence, for increasing the reliability of various critical equipment's 2 X 10 kVA Online UPS system was purchased and installed.	<b>Allowed</b> under Regulation 9(2)(iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.
21.	Remote Operated 4 Point Synchronized Hydraulic Lifting System of 5 Ton capacity	4.89	After the renovation and modernization of the Power staion during 2008-2011 governor system was replaced also static excitation system was installed in place of rotary excitation system. The work was done by installation of some extra panels, excitation transformer etc due to which the overall space in powerhouse has now become a constraint. Due to this space constrains lot of works requires portable lifting system. Hence hydraulic lifting system of 5 ton capacity was purchased for use within the powerhouse and outside as per requirements.	<b>Allowed</b> under Regulation 9 (2) (iv) of the 2009 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.
	<b>Total amount claimed</b>		<b>329.48</b>	



<b>Total amount allowed</b>	<b>322.51</b>
-----------------------------	---------------

**Deletions**

19. The petitioner has not indicated any amount towards the de-capitalization on account of replacement of assets or on becoming obsolete/unserviceable etc. for the years 2012-13 and 2013-14.

**Exclusions**

**Exclusions in additions (incurred, capitalized in books but not to be claimed for tariff purpose)**

20. The following year-wise expenditure has been incurred by the petitioner on replacement of minor assets, purchase of capital spares, purchase of miscellaneous assets, additions on inter-unit transfers etc.,

	<i>(₹ in lakh)</i>	
	<b>2012-13</b>	<b>2013-14</b>
Exclusions in additions (incurred, capitalized in books but not to be claimed for tariff purpose)	37.88	60.53
Inter- unit transfers of minor assets.	2.21	0.00
<b>Total exclusion in additions</b>	<b>40.09</b>	<b>60.53</b>

21. The expenditure incurred towards procurement/replacement of minor assets after the cut-off date is not permissible for the purpose of tariff in terms of the 2009 Tariff Regulations. Accordingly, the petitioner has considered these additions under exclusion category i.e., positive entries are to be ignored for the purpose of tariff. As such, the exclusion of the positive entries under the head is in order and hence allowed.

**Exclusions in deletions (de-capitalized in books but not to be considered for tariff purpose)**

22. The petitioner has de-capitalized amounts in books of accounts pertaining to minor assets deleted through inter unit transfer during 2012-13, is as under:



	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Minor assets de-capitalized	0.00	0.00
Capital spares de-capitalized on consumption	0.00	0.00
Deletion on account of Inter-Unit Transfer	(-) 0.22	0.00
<b>Total Exclusions in deletions (de-capitalized in books but not to be considered for tariff purpose)</b>	<b>(-) 0.22</b>	<b>0.00</b>

23. The petitioner has prayed that the negative entries may be ignored/ excluded for the purpose of tariff as the corresponding positive entries for purchase of such assets are not being allowed for the purpose of tariff in terms of the provisions of the 2009 Tariff Regulations. In support of this, the petitioner has referred to the observations of the Commission in order dated 7.9.2010 in Petition No.190/2009 as under:

*“20. After careful consideration, we are of the view that the cost of minor assets originally included in the capital cost of the projects and replaced by new assets should not be reduced from the gross block, if the cost of the new assets is not considered on account of implication of the regulations. In other words, the value of the old assets would continue to form part of the gross block and at the same time the cost of new assets would not be taken into account. The generating station should not be debarred from servicing the capital originally deployed on account of procurement of minor assets, if the services of those assets are being rendered by similar assets which do not form part of the gross block.”*

24. Accordingly, in line with the above decision of the Commission, the negative entries corresponding to the deletion of minor assets are allowed to be excluded/ ignored for the purpose of tariff. Based on the above discussions, the following amounts have been allowed to be excluded/ ignored for the purpose of tariff as under:

	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Minor assets de-capitalized	0.00	0.00
Capital spares de-capitalized on consumption	0.00	0.00
Deletion on account of Inter-Unit Transfer	(-) 0.22	0.00
<b>Total Exclusions in deletions (de-capitalized in books but not to be considered for tariff purpose)</b>	<b>(-) 0.22</b>	<b>0.00</b>

### **Assumed Deletions**

25. As per consistent methodology adopted by the Commission, 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 the de-capitalization of the value of the



old asset. However, in certain cases where de-capitalization is proposed to be affected during the future years to the year of capitalization of 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”. The amounts considered by the petitioner under this head are as under:

(₹ in lakh)		
	2012-13	2013-14
Assumed deletions	(-)6.01	(-)71.47

26. Assumed deletions based on the 10% value of the actual expenditure on 'new additions' as claimed by the petitioner is acceptable as the generating station is 32 years old (approx.). Accordingly, the Assumed deletions as claimed by the petitioner above have been considered for the purpose of tariff.

#### **Un-discharged liabilities and discharge of liabilities**

27. The petitioner in the petition has submitted that there are no un-discharged liabilities/discharged liabilities for the years 2012-13 and 2013-14.

28. Based on above discussions, the actual additional capital expenditure allowed for the period 2012-14 for the purpose of tariff is as under:

(₹ in lakh)		
	2012-13	2013-14
Addition against work already approved by Commission	143.43	190.01
Additions not projected earlier but incurred and claimed	96.04	322.51
<b>Total</b>	<b>239.47</b>	<b>512.52</b>
Assumed Deletion	(-) 6.01	(-) 71.47
<b>Total Deletions</b>	<b>(-) 6.01</b>	<b>(-) 71.47</b>
Total additional capital expenditure allowed before adjustment of discharge/un-discharge of liabilities	233.46	441.05
<b>Additional Capital Expenditure allowed</b>	<b>233.46</b>	<b>441.05</b>

#### **Capital cost for 2009-14**

29. Accordingly, the capital cost considered for the purpose of the tariff is as under:



	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Opening Capital Cost	16205.80	16439.26
Additional Capital Expenditure allowed	233.46	441.05
<b>Capital Cost as on 31<sup>st</sup> March of the financial year</b>	<b>16439.26</b>	<b>16880.31</b>

### Return on Equity

30. The petitioner has considered the rate of Return on Equity after grossing up with effective tax rate as under:

Year	<b>2012-13</b>	<b>2013-14</b>
Base Rate	* 15.75%	16.5%
Applicable Tax Rate	20.008%	20.961%
Rate of ROE (pre-tax)	19.689%	20.876%

*Base rate for April- December 2012 @ 15.5% and for January-March @16.5%*

31. The Base Rate has been changed from 15.5% to 16.5% for storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage vide the 2009 Tariff Regulations, amended on 31.12.2012. Therefore, the base rate of 15.75% has been considered for 2012-13. Considering the above rates after accounting for the admitted additional capital expenditure, the Return on Equity has been worked out as under:

	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Opening Gross Notional Equity	7267.29	7337.32
Addition due to Additional Capital Expenditure	70.04	132.32
Closing Equity	7337.32	7469.64
Average Equity	7302.30	7403.48
Return on Equity (Base Rate )	15.750%	16.500%
Tax rate for the year	20.008%	20.961%
Rate of Return on Equity	19.689%	20.876%
<b>Return on Equity</b>	<b>1437.75</b>	<b>1545.55</b>

### Interest on Loan

32. The normative loan in respect of the project has already been repaid. The normative loan on account of the admitted additional capital expenditure during the respective years of the tariff period 2009-14 have been considered as fully paid, as the admitted



depreciation is more than the amount of normative loan in these years. As such, the Interest on loan during the period 2012-14 is 'Nil'.

### Depreciation

33. The date of commercial operation of the generating station is 1.6.1983. Since the station has completed 12 years of operation as on 31.5.1995, the remaining depreciable value has been spread over the balance useful life of the assets. Assets amounting to ₹6.01 lakh, ₹71.47 lakh have been de-capitalized during the years 2012-13 and 2013-14 respectively. As per the consistent methodology adopted by the Commission, the amount of cumulative depreciation allowed in tariff against those de-capitalized assets has been calculated on pro-rata basis. The same has been adjusted from the cumulative depreciation of the year of de-capitalization. Accordingly, the depreciation has been computed as under:

	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Opening Gross Block	16205.80	16439.26
Additional capital expenditure during the year	233.46	441.05
Closing gross block	16439.26	16880.31
Average gross block	16322.53	16659.79
Depreciable Value	14654.38	14957.91
Balance Useful life of the asset	6.17	5.17
Remaining Depreciable Value	4860.63	4379.81
<b>Depreciation</b>	788.21	847.71

### Operation & Maintenance Expenses

34. O&M expenses as allowed in order dated 13.2.2014 in Petition No. 155/GT/2013 has been considered as under:

(₹ in lakh)	
<b>2012-13</b>	<b>2013-14</b>
7626.21	8062.43

### Interest on working capital

35. **Receivables:** In terms of Regulation 18(1)(c)(i) of 2009 Tariff Regulations, receivables equivalent to two months of fixed cost has been considered as under:



(₹ in lakh)	
2012-13	2013-14
1713.34	1818.14

36. **Maintenance Spares:** Regulation 18(1) (c) (ii) of 2009 Tariff Regulations, provides Maintenance spares @ 15% of operation and maintenance expenses as specified in Regulation 19, the same has been considered as under:

(₹ in lakh)	
2012-13	2013-14
1143.93	1209.36

37. **O&M Expenses:** Regulation 18(1) (c) (ii) of 2009 Tariff Regulations provides, operation and maintenance expenses for one month is permissible and has been considered in tariff.

(₹ in lakh)	
2012-13	2013-14
635.52	671.87

#### **Rate of interest on working capital**

38. Regulation 18(3) of 2009 Tariff Regulations provides that the Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2009 or on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later.

39. In accordance with Regulation 18(3) of the 2009 Tariff Regulations, rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1.4.2009 or on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later. The SBI PLR as on 1.4.2009 was 12.25% has been considered for computation of the interest on working capital.





40. Accordingly, Interest on Working Capital has been calculated as under:

	(₹inlakh)	
	<b>2012-13</b>	<b>2013-14</b>
Maintenance Spares	1143.93	1209.36
O & M expenses	635.52	671.87
Receivables	1713.34	1818.14
<b>Total</b>	<b>3492.79</b>	<b>3699.38</b>
<b>Interest on Working Capital @ 12.25%</b>	<b>427.87</b>	<b>453.17</b>

#### **Annual Fixed charges for 2012-14**

41. The annual fixed charges for the period 2012-14 allowed for generating station are summarized as under:

	(₹ in lakh)	
	<b>2012-13</b>	<b>2013-14</b>
Return on Equity	1437.75	1545.55
Interest on Loan	0.00	0.00
Depreciation	788.21	847.71
Interest on Working Capital	427.87	453.17
O & M Expenses	7626.21	8062.43
<b>Annual Fixed Charges</b>	<b>10280.04</b>	<b>10908.86</b>

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

#### **Determination of Annual Fixed Charges for the period 2014-19**

43. As stated, the petitioner in this petition has also prayed for the determination of annual fixed charges of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

	(₹inlakh)				
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Depreciation	919.91	946.13	961.71	981.40	213.83
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	1582.76	1612.36	1626.47	1633.03	1633.03
Interest on Working Capital	592.01	628.80	667.35	708.33	733.73
O & M Expenses	9673.64	10316.36	11001.78	11732.74	12512.26
<b>Annual Fixed Charges</b>	<b>12768.31</b>	<b>13503.65</b>	<b>14257.30</b>	<b>15055.50</b>	<b>15092.85</b>



44. In response to the directions of the Commission the petitioner has submitted additional information and has served copies of the same on the respondents. None of the respondents have filed reply in the matter. Based on the submissions and the documents available on record, we proceed to determine the tariff of the generating station for the period 2014-19 as stated in the subsequent paragraphs.

### **Capital Cost**

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

Clause (3) of Regulation 9 provides as under:

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

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

*(b) xxxx*

*(c) xxxx*

46. The closing capital cost considered by the Commission as on 31.3.2014 in this order is ₹16880.31 lakh. This has been considered as the opening capital cost as on 1.4.2014 for computation of tariff for the period 2014-19.

### **Actual/ Projected Additional Capital Expenditure during 2014-19**

47. The petitioner has submitted that it has not been able to incur some additional capital expenditure allowed by the Commission against the works/ assets allowed in order dated 14.6.2011 in Petition No.108/2010. Accordingly, the petitioner has prayed that Commission may allow the capitalization of these approved works/ assets during the period 2014-19. This prayer of the petitioner is accepted. However, the capitalization of



the expenditure on this count is subject to the admissibility of the expenditure in terms of the provisions of the 2014 Tariff Regulations.

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

49. 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 tem 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 obsolescence of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

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

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

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

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

50. The year-wise breakup of the projected additional capital expenditure claimed by the petitioner is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Projected additional capital expenditure on gross basis	760.00	285.00	245.00	0.00	0.00
De-capitalization	55.66	44.01	35.47	0.00	0.00
<b>Net projected additional capital expenditure</b>	<b>704.34</b>	<b>240.99</b>	<b>209.53</b>	<b>0.00</b>	<b>0.00</b>

51. Based on the submissions and the documents available on record, the claims of the petitioner for the period 2014-19 are considered and allowed on prudence check, after reduction of the gross value of old assets, wherever necessary, as detailed in the subsequent paragraphs.



**2014-15**

					(₹ in lakh)
Sl. No.	Assets/ Works	Amount Claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Lift for Power House	31.00	Item was allowed by CERC for 2009-14 in the year 2010. Purchase order already placed and same shall be installed shortly. The existing lift which was commissioned in 1983 is damaged and requires replacement. Items are replacement in nature.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the assets/ works are already approved. The gross value of old asset is considered as ₹1.59 lakh	<b>29.41</b> (31.00-1.59)
2	Construction of one Semi permanent type-I Building having 04 Nos. of quarters at Surge Shaft	60.00	Item was allowed by CERC in order dated 22.10.2012 in Review Petition and accordingly the work was awarded in 2013-14 which is presently on the verge of completion. Surge shaft and Valve house is located at Jeewan Nagar. The valve house is an important location as butterfly valves are installed. For security of penstocks as well as for operation of valve during any emergency situations, personnel are to be housed round the clock at this location. The older quarter was constructed in 1979-80 which is temporary in nature with GI sheet roofing and has already outlived its fair life.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the assets/ works are already approved. The gross value of old asset is considered as ₹3.35 lakh	<b>56.65</b> (60.00-3.35)
3	Construction of Permanent type-II double storied building 04 blocks having 04 quarters in each block at Loktak.	325.00	Item was allowed by CERC in its order dated 22.10.2012 against Review Petition and accordingly the work was awarded in 2012-13 / 2013-14 which is presently on the verge of completion. The older residential buildings presently in use in the project were constructed in 1978-80. The buildings constructed had no RCC foundation. The super structure was supported on wooden pillars. The walls are made up of bamboo net (ekra walling) having plaster on both sides. The roofing is of GI sheets supported on wooden	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the assets / works are already approved. The gross value of old asset is considered as ₹3.90 lakh	<b>321.10</b> (325.00-3.90)



			structure with false ceiling. As per the CPWD norms these type of buildings are considered under temporary structures having fair life of 5 years. The present buildings have already surpassed the fair life and are more than 35 years old. The repair maintenance is too costly. Some of the quarters which are in very dilapidated condition and are not safe to live in were proposed for replacement in tariff period 2009-14.		
4	Disaster management pumps (2 nos.)	67.00	Disaster management pumps with motors, control panel, fittings are required for preventive measure in case of emergency / flooding of power house. After flooding of Dhauliganga Power Station, it has been decided to enhance the emergency preparedness to tackle unforeseen situation if any in the power house	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.	67.00
5	Three Phase relay kit	27.00	Numerical relays for generators, transformers and feeders have been installed recently in Power house. The existing relay test kits which were used to test electromechanical relays is not suitable for testing recently installed numerical relays. Therefore, new three phase relay test kit is required to be purchased. The old kit will be used for testing the other electromechanical relays installed in power house	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.	27.00
6	Replacement of LT distribution lines by underground LT Cabling at Loktak Colony	35.00	The existing overhead lines for supply of Loktak colony had been used for more than 30 years and the pole structures have become weak. During rainy & windy season, frequent short circuit / earth fault occurs which becomes a danger to the people residing in the colony. So it is essential to renovate the old overhead line system	Allowed, under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is considered necessary for the benefit of employees (families) working in remote areas of the generating station	<b>28.91</b> (35.00-6.09)



			by underground cabling. Underground cabling is proposed to be done to eliminate frequent tripping and minimize occupational health hazards. Being old asset the same is not appearing in FAR of power station. The Engineering estimate of old asset on the basis of de-escalation @ 6% per annum works out to Rs 6.09 lakhs.	and in turn will ensure the efficient and successful operation of the plant. The gross value of old asset is indicated as ₹6.09 lakh	
7	Replacement of 11kv line from Leimatak to Loktak	75.00	The existing two nos. 11 KV lines were erected during construction period of the project. Power supply system at Loktak head quarter and BTS of BSNL at Lamdan (which is the only source of mobile network for leimatak power house) is fully dependent on above two feeders. Due to aging, wear and tear owing to long use all the fixtures like, poles, Insulators, conductors etc. have outlived their useful life and hence remain out of service most of the time particularly during rainy season thereby causing disruption of power supply to Loktak HQ and communication breakdown from power house. In view of above, replacement of the existing feeders is highly essential for smooth power supply and communication to Loktak HQ.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is indicated as ₹38.61 lakh	<b>36.39</b> (75.00-38.61)
8	Construction of Boundary Wall for CRPF Camp at Valve House	35.00	Replacement of existing barbed wire fencing with temporary wooden gate is required for security reasons as per requirement of CRPF.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is necessary for the safety of employees working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross	<b>34.56</b> (35.00-0.44)





				value of old asset is indicated as ₹0.44 lakh	
9	Providing and laying of water supply lines and construction of toilets for CRPF Watch Towers at Penstock area.	23.00	Four (04 Nos) watch towers have been constructed for security of surface penstock lines. However, CRPF have raised the requirement of water supply and toilet near each watch tower for the duty personals for round the clock duty.	<b>Allowed</b> under Regulation 14 (3) (viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station.	23.00
10	Construction of Watch Tower at Power House, Loktak complex gate, CRPF camp at Valve House	24.00	Due to bad law and order situations prevailing in Manipur, requirement of some watch towers has been raised by CRPF.		24.00
11	Construction of five nos. new morcha at Ithai Barrage	12.00	Total five nos. morcha at Ithai barrage are made of sand bags where security personnel of CRPF are facing problem in discharging their duty effectively. The temporary morcha made by sand bags are required to be replaced by permanent morcha.	<b>Allowed</b> under Regulation 14 (3) (viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹1.03 lakh	<b>10.97</b> (12.00-1.03)
12	Construction of cook house cum Kitchen for CRPF.	24.00	The condition of existing cook house cum kitchens of CRPF personnel deployed for security at Ithai barrage and Lamden CRPF camp is dilapidated as these temporary type cook house cum kitchens are very old. CRPF has raised the requirement for construction of new cook house cum kitchens at above locations.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset/work is necessary for the benefit of employees working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross value of old asset is considered as ₹0.65 lakh	<b>23.35</b> (24.00-0.65)



13	Purchase of high mast Light tower for area illumination	22.00	Required for illumination of larger area at various locations in view of security threats due to bad law and order situations in Manipur.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for the safety of the generating station.	22.00
<b>Total amount claimed after de-capitalization</b>		<b>704.34</b>		<b>Net amount allowed</b>	<b>704.34</b>

**2015-16**

(₹ in lakh)

Sl. No.	Assets/ Works	Amount Claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Purchase of 02 Nos. Minibus against replacement.	30.00	On replacement basis. The available Buses for School duty are beyond economical repair and covered their life in year. The available 52 seater buses were purchased during the year 2000-01. Buses are required for School duty from Loktak Leimatak. Already allowed by CERC in 2013-14.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the assets are already approved. The gross value of old asset is considered as ₹19.35 lakh	<b>10.65</b> (30.00-19.35)
2	Replacement of LT distribution lines by underground LT Cabling at Power House Colony.	35.00	The existing overhead lines for supply of power house colony had been used for more than 30 years and the pole structures have become weak. During rainy & windy season, frequent short circuit / earth fault occurs which becomes a danger to the people residing in the colony. So it is essential to renovate the old overhead line system by underground cabling. Underground cabling is proposed to be done to eliminate frequent tripping and minimize occupational health hazards. Being old asset the same is not appearing in FAR of power station. The Engineering estimate of old asset on the basis of de-escalation @ 6% per	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is necessary for the benefit of employees (families) working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross value of old asset is considered as ₹6.09 lakh	<b>28.91</b> (35.00-6.09)



			annum works out to Rs 6.09 lakhs.		
3	Construction of 06 Barracks for CRPF.	90.00	The condition of existing barracks of CRPF is dilapidated as these temporary type barracks are very old. These barracks are being replaced in phased manner for better living conditions of CRPF deployed for improvement of law and order of the area around Loktak Power Station. New semi permanent type barracks are to be constructed as per the requirements of CRPF.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is necessary for the benefit of employees (families) working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross value of old asset is indicated as ₹5.04 lakh.	<b>84.96</b> (90.00-5.04)
4	Replacement of EPABX System.	30.00	The existing EPABX system is very old and obsolete. Two numbers of EPABX systems were procured in 2006 for voice communication at Loktak Administrative Complex and Leimatak Power House. Running and maintenance of these systems are no longer economical. Additional telephone extensions are needed but expansion is not possible in the present system because of hardware limitation, obsolescence and compatibility issues. For robust communication between various floors of power house and departments, new EPABX systems are needed to be procured and installed to minimize the downtime of intercom system which is the backbone of voice communication needed for conveying information of water level at tunnel gates to Power House to assist in planning and scheduling of Power generation.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is necessary for the benefit of employees (families) working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross value of old asset is indicated as ₹6.85 lakh	<b>23.15</b> (30-6.85)



5	Purchase of 1 No. 12.5 MT Hydraulic Slew Crane against replacement.	80.00	On replacement basis. The available 12.5 MT Hydraulic Slew Crane is beyond economical repair and covered their life in year.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹4.73 lakh.	<b>75.27</b> (80.00-4.73)
6	Purchase of one no.10 seater boat with self starter motor and accessories etc	20.00	On replacement basis. One no. boat with engine and accessories is required for inspection of bamboo trash rack rows in Loktak Lake and its intake area of Power Channel. Against replacement of two nos. fiber boats.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹1.95 lakh	<b>18.05</b> (20.00-1.95)
<b>Total amount claimed after de-capitalization</b>		<b>240.99</b>		<b>Net amount allowed</b>	<b>240.99</b>

### 2016-17

					(₹ in lakh)
Sl. No.	Assets/ Works	Amount Claimed	Justification submitted by the petitioner	Remarks on admissibility	Amount Allowed
1	Diagnostic Test Equipments	40.00	Tan Delta and Capacitance Test Kit, Transformer Oil BDV test kit etc. diagnostic equipments are required for testing and checking healthiness of the insulation system of various electrical equipment of power station. Loktak power station being a very old power station which is situated in a remote location requires frequent insulation check and monitoring of switchyard and power house equipments. Although condition monitoring of	<b>Not allowed</b> as the asset are in the nature of Tools & Tackles.	0.00



			electrical equipments are done every 2-3 yrs by outside agencies like CPRI, ABB, etc. it is also required to check the healthiness of insulation system during annual maintenance / shutdown and as and when required. These diagnostic test equipment shall help in planning and avoiding breakdown, resulting in increase of overall plant efficiency.		
2	Measuring Instrument, Water level & Discharge measuring instruments, etc	30.00	Online water level measurement system of reservoir and tail race are required for monitoring water levels by control room for declaring precise scheduling and ensuring to run the machine in discipline manner.	<b>Not allowed</b> as the asset are in the nature of Tools & Tackles.	0.00
3	Purchase of Gypsies against replacement (2 Nos)	15.00	<b>On replacement basis.</b> The available Gypsies for Escort duty are beyond economical repair and covered their life in year as per NHPC disposal manual.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹8.63 lakh	<b>6.37</b> (15.00-8.63)
4	Bullet Proof Scorpio (1 no.)	50.00	The available bullet proof Ambassador car is beyond economical repair and covered their life in year as per NHPC disposal policy. The available bullet proof Ambassador car is purchased during the year 1998. Bullet proof vehicle is required for secured movement of Head of Power Station / VIP due to bad law & order situation of Manipur State. Purchase of 1 no. bullet proof Scorpio against 1	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹8.38 lakh	<b>41.62</b> (50.00-8.38)



			no. bullet proof Ambassador car is proposed as scorpio has been found more suitable in hilly terrain in comparison with Ambassador car.		
5	Construction of 05 barracks for CRPF	75.00	The condition of existing barracks of CRPF is dilapidated as these temporary type barracks are very old. These barracks are being replaced in phased manner for better living conditions of CRPF deployed for improvement of law and order of the area around Loktak Power Station. New semi permanent type barracks are to be constructed as per the requirements of CRPF.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations as the asset is necessary for the benefit of employees (families) working in remote areas of the generating station and in turn will ensure the successful and efficient operation of the plant. The gross value of old asset is indicated as ₹6.46 lakh.	<b>68.54</b> (75.00-6.46)
6	500 KVA DG Set for Power House	35.00	Two nos. 312.5 KVA DG sets were installed during commissioning of the Project. Against these, 01 No. DG set of 500 KVA capacity has been replaced during tariff period 2009-14. The other existing 312.5 KVA DG set is being used since commissioning of project (more than 30 years) and being so old it is not reliable anymore. Loktak Power Station being the only power station in Manipur and nearby vicinity is crucial for black starting and early restoration of grid. In addition higher capacity is required for emergency and black start.	<b>Allowed</b> under Regulation 14(3)(viii) of the 2014 Tariff Regulations since the asset is considered necessary for efficient and successful operation of the generating station. The gross value of old asset is considered as ₹12.00 lakh	<b>23.00</b> (35.00-12)
<b>Total amount claimed after de-capitalization</b>		<b>209.53</b>		<b>Net amount allowed</b>	<b>139.53</b>



52. No additional capital expenditure has been claimed by the petitioner for the years 2017-18 and 2018-09 respectively.

53. Based on the above, the additional capital expenditure allowed for the period 2014-19 is summarized as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
<b>Additional Capital Expenditure allowed</b>	<b>704.34</b>	<b>240.99</b>	<b>139.53</b>	<b>0.00</b>	<b>0.00</b>

### Capital Cost for 2014-19

54. As stated, the closing capital cost as on 31.3.2014 is ₹16880.31 lakh. The same has been considered as the opening capital cost 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	16880.31	17584.65	17825.64	17965.17	17965.17
Additional Capital Expenditure allowed	704.34	240.99	139.53	0.00	0.00
<b>Capital Cost as on 31<sup>st</sup> March of the year</b>	<b>17584.65</b>	<b>17825.64</b>	<b>17965.17</b>	<b>17965.17</b>	<b>17965.17</b>

### Debt-Equity

55. 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 utilized 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 utilization 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 the 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 modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation."*

56. The petitioner has submitted that the additional capital expenditure has been proposed to be financed through internal resources and others. Accordingly, in terms of the clause (5) of Regulation 19 above, the debt-equity ratio of 70:30 has been considered on the admitted additional capital expenditure, for the purpose of tariff.

## **Return on Equity**

57. 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.

58. 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:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

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

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



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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Base Rate	16.5%	16.5%	16.5%	16.5%	16.5%
Tax Rate (MAT)	20.9605%	20.9605%	20.9605%	20.9605%	20.9605%
<b>Rate of ROE (pre-tax)</b>	<b>20.876%</b>	<b>20.876%</b>	<b>20.876%</b>	<b>20.876%</b>	<b>20.876%</b>

60. Based on the above, Return on Equity has been computed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Equity	7469.64	7680.94	7753.24	7795.10	7795.10
Addition due to additional capital expenditure	211.30	72.30	41.86	0.00	0.00
Closing Equity	7680.94	7753.24	7795.10	7795.10	7795.10
Average Equity	7575.29	7717.09	7774.17	7795.10	7795.10
<b>Return on Equity (Base Rate)</b>	<b>16.500%</b>	<b>16.500%</b>	<b>16.500%</b>	<b>16.500%</b>	<b>16.500%</b>
Tax rate for the year	20.961%	20.961%	20.961%	20.961%	20.961%
Rate of Return on Equity	20.876%	20.876%	20.876%	20.876%	20.876%
<b>Return on Equity</b>	<b>1581.42</b>	<b>1611.02</b>	<b>1622.94</b>	<b>1627.30</b>	<b>1627.30</b>

### Interest on Loan

61. 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-capitalisation 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."*

62. The normative loan of the project has already been repaid. The normative loan on account of admitted additional capital expenditure during the respective year of the tariff period have also been considered as paid fully, as the admitted depreciation is more than the amount of normative loan in these years. As such, the interest on loan for the period 2014-19 has been considered as "Nil".

## **Depreciation**

63. 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 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 licensee, 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) alongwith 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.”*

64. The COD of the generating station is 1.6.1983. As such, the generating station has completed 12 years of operation as on 31.5.1995. Moreover, the generating station is in the fag end of its life and shall complete its useful life during the year 2018-19. The petitioner has calculated depreciation in two parts. In the first part, the remaining depreciation of the generating station (as on 31.3.2014) has been claimed within its useful life as per the provisions of the 2014 Tariff Regulations. In second part, the depreciation on the additional capitalization has been calculated by claiming maximum



depreciation in 12 years as allowed by the Commission in case of normal projects, and the remaining depreciation on the additional capitalization after 12 years to be spread over the balance useful life under R&M.

65. Similar issue has been considered by the Commission in respect of Baira Siul Hydroelectric Power Station wherein the Commission by order dated 17.6.2015 in Petition No. 235/2014 (NHPC-V-PSPCL & ors) revised the annual fixed charges for the period 2009-14 after truing-up exercise and the annual fixed charges was determined for the period 2014-19. The relevant extract of the order is as below:

*“51. ....in the case of Singrauli TPS of NTPC the depreciation of the assets capitalized during the terminal year was allowed as per the rate specified in Appendix-III of the 2009 Tariff Regulations also taking into account the absence of any information on the actual funding details corresponding to the projected additional capital expenditure and the period for which the life of the generating station is to be extended beyond its useful life. However, in the present case of the petitioner NHPC, the entire additional capitalization in respect of the generating station is projected to be funded from internal resources and the useful life of the generating station is proposed to be extended by 25 years. As such, no loan repayment is linked with the additional capital expenditure. In this background, it would not be prudent to allow the recovery of the depreciation within the span of initial 12 years, as claimed by the petitioner. Hence, depreciation on the additional capitalization allowed during 2014-19 is calculated by spreading over the depreciable asset value over the extended life of the generating station, i.e. 25 years. However, for the depreciable value as on 1.4.2014, depreciation has been allowed till the completion of 35 years...”*

66. In the present case of the petitioner NHPC, the entire additional capitalization in respect of the generating station is projected to be funded from internal resources and the useful life of the generating station is proposed to be extended by 25 years. As such, no loan repayment is linked with the additional capital expenditure. In this background, it would not be prudent to allow the recovery of the depreciation within the span of initial 12 years, as claimed by the petitioner. Hence, depreciation on the additional capitalization allowed during 2014-19 is calculated by spreading over the depreciable asset value over the extended life of the generating station, i.e. 25 years. However, for the depreciable value as on 1.4.2014, depreciation has been allowed till the completion of 35 years, i.e. till 2018-19. Accordingly, the depreciation has been computed as follows:



(₹ in lakh)

<b>A- Without the impact of additional capitalisation during 2014-19</b>					
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Gross Block as on 31.3.2014	16880.31	16880.31	16880.31	16880.31	16880.31
Additional capital expenditure during 2014-19	0.00	0.00	0.00	0.00	0.00
Closing gross block	16880.31	16880.31	16880.31	16880.31	16880.31
Average gross block	16880.31	16880.31	16880.31	16880.31	16880.31
Depreciable value	15156.38	15156.38	15156.38	15156.38	15156.38
Balance useful life of the asset (in years)	4.17	3.17	2.17	1.17	0.17
Remaining depreciable value	3778.75	2900.31	1988.78	1062.19	109.95
<b>Depreciation (a)</b>	<b>906.17</b>	<b>914.92</b>	<b>916.49</b>	<b>907.85</b>	<b>109.95</b>

(₹ in lakh)

<b>B:- Depreciation on additional capitalisation during 2014-19</b>					
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Gross Block as on 31.3.2014	0.00	704.34	945.33	1084.86	1084.86
Additional capital expenditure during 2014-19	704.34	240.99	139.53	0.00	0.00
Closing gross block	704.34	945.33	1084.86	1084.86	1084.86
Average gross block	352.17	824.84	1015.10	1084.86	1084.86
Depreciable value	316.95	742.35	913.59	976.37	976.37
Balance useful life	25.00	24.00	23.00	22.00	21.00
<b>Depreciation (b)</b>	<b>12.68</b>	<b>30.93</b>	<b>39.72</b>	<b>44.38</b>	<b>46.49</b>

(₹ in lakh)

<b>Total Depreciation allowed</b>					
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
<b>A:-</b> Without considering the impact of additional capitalisation during 2014-19	906.17	914.92	916.49	907.85	109.95
<b>B:</b> Depreciation on additional capitalisation during 2014-19	12.68	30.93	39.72	44.38	46.49
<b>Total depreciation allowed (A+B)</b>	<b>918.85</b>	<b>945.86</b>	<b>956.21</b>	<b>952.23</b>	<b>156.45</b>

## O&M Expenses

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

(₹ in lakh)

<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
9673.64	10316.36	11001.78	11732.74	12512.26





## Interest on working capital

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

**“28. Interest on Working Capital:**

(1) *The working capital shall cover*

(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 expense specified in regulation 29; and*

(iii) *Operation and maintenance expenses for one month.”*

69. Accordingly, the receivables are allowed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Two months of annual fixed cost	2127.64	2250.33	2374.68	2503.30	2504.71

70. Accordingly, the following maintenance spares are allowed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of maintenance spares (15% of O & M)	1451.05	1547.45	1650.27	1759.91	1876.84

71. Accordingly, the O&M Expenses for one month are allowed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
O & M for one month	806.14	859.70	916.82	977.73	1042.69

## Rate of interest on working capital

72. 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.”*



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

### Interest on Working Capital

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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Maintenance Spares	1451.05	1547.45	1650.27	1759.91	1876.84
O & M expenses	806.14	859.70	916.82	977.73	1042.69
Receivables	2127.64	2250.33	2374.68	2503.30	2504.71
Total	4384.83	4657.48	4941.76	5240.94	5424.24
<b>Interest on Working Capital</b>	<b>591.95</b>	<b>628.76</b>	<b>667.14</b>	<b>707.53</b>	<b>732.27</b>

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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Return on Equity	1581.42	1611.02	1622.94	1627.30	1627.30
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Depreciation	918.85	945.86	956.21	952.23	156.45
Interest on Working Capital	591.95	628.76	667.14	707.53	732.27
O & M Expenses	9673.64	10316.36	11001.78	11732.74	12512.26
<b>Annual Fixed Charges</b>	<b>12765.86</b>	<b>13502.00</b>	<b>14248.06</b>	<b>15019.81</b>	<b>15028.29</b>

### Normative Annual Plant Availability Factor

76. 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 85% has been considered for this generating station.

### Design Energy

77. The Commission in its order dated 14.6.2011 in Petition No.108/2010 had approved the annual Design Energy (DE) of 448 Million Units for the period 2009-14 in respect of





this generating station. This DE has been considered for this generating station for the period 2014-19 as per month wise details hereunder:

<b>Month</b>	<b>Design Energy (MUs)</b>
April	30
May	31
June	30
July	52
August	52
September	50
October	52
November	30
December	31
January	31
February	28
March	31
<b>Total</b>	<b>448</b>

#### **Application Fee and Publication Expenses**

78. 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 2014-19 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. The petitioner has incurred charges towards publication of the said tariff petition in the newspapers. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations, we direct that the petitioner shall be entitled to recover the filing fees and the expenses incurred on publication of notices for the period 2014-19 directly from the respondents.

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

80. Petition No. 228/GT/2014 is disposed of in terms of the above.

**-Sd/-**  
**(A.S. Bakshi)**  
**Member**

**-Sd/-**  
**(A.K.Singhal)**  
**Member**

**-Sd/-**  
**(Gireesh B. Pradhan)**  
**Chairperson**

