CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 26/GT/2013

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

Date of Hearing: 15.4.2014
Date of Order: 24.3.2015

In the matter of

Approval of generation tariff of Chamera Hydro Electric Project–III (3 x 77 MW) of NHPC for the period 1.9.2011 to 31.3.2014

And

In the matter of

NHPC Ltd
NHPC Office Complex,
Sector-33
Faridabad-121003
Haryana **...Petitioner**

Vs

1. Punjab State Power Corporation Ltd
The Mall, Near Kali Badi Mandir,
Patiala – 147 001

2. Haryana Power Utilities,
(UHBVNL & DHBVNL), Shakti Bhawan, Sector 6,
Panchkula – 134 109

3. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan,
14, Ashok Marg,
Lucknow – 226 001

4. Engineering Department, Union Territory of Chandigarh,
1st Floor, UT Secretariat, Sector 9D,
Chandigarh – 160 009

5. North Delhi Power Ltd
33 KV Sub-station, Hudson Lane, Kingsway Camp, Delhi – 110 009

6. BSES Yamuna Power Ltd
Shakti Kiran Building, Karkardooma,
New Delhi – 110 032

7. Rajasthan Rajya Vidyut Prasaran Nigam Ltd,
Vidyut Bhawan, Janpath, Jyoti Nagar,
Jaipur – 302 205

8. BSES Rajdhani Power Ltd
BSES Bhawan, Nehru Place,
New Delhi – 110 019

9. Uttarakhand Power Corporation Ltd,
Urja Bhawan, Kanwali Road,
Dehradun – 248001

10. Jaipur Vidyut Vitran Nigam Ltd
Vidyut Bhawan, Janpath
Jaipur – 302 005

11. Ajmer Vidyut Vitran Nigam Ltd
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer – 305 001

12. Jodhpur Vidyut Vitran Nigam Ltd,
New Power House, Industrial Area,
Jodhpur – 342 003

13. Power Development Department,
New Secretariat,
Jammu.

14. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House
Shimla – 171 004 **…Respondents**

Parties present:

For Petitioner: Shri J.K. Jha, NHPC
Shri S.K Meena, NHPC

For Respondents: Shri R.B Sharma, Advocate, BRPL

ORDER

Initially the petition was filed by NHPC Ltd, a generating company owned and controlled by the Central Government for determination of tariff in respect of Chamera Hydro Electric Project–III (3 x 77 MW) located in Chamba District, State of Himachal Pradesh (the generating station) from 1.9.2011 (the anticipated date of commercial operation) to 31.3.2014 in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (the 2009 Tariff Regulations). The petitioner subsequently revised the tariff computations considering the date of commercial operation of the generating station as 1.7.2012. The generating station has been declared under commercial operation on 4.7.2012, with dates of commercial operation of individual units given below:

Unit-II	30.6.2012
Unit-III	30.6.2012
Unit-I	4.7.2012

2. Administrative approval and expenditure sanction for the generating station was accorded by Ministry of Power, GOI vide its letter dated 1.9.2005 at an estimated cost of ₹140563 lakh, including IDC & FC of ₹11966 lakh, based on February, 2005 Price Level. As per the administrative approval, the generating station was scheduled to be commissioned within 5 years from the date of its issue, that is, by 31.8.2010.

3. The generating station is a run-of-river scheme with pondage designed to operate as peaking plant to generate 1108 MU in a 90% dependable year.

4. Tit is noticed that the petitioner by affidavit dated 13.8.2014 has filed amended petition for determination of tariff of the generating station from 30.6.2012 to 31.3.2014

after serving copy on the respondents. Considering the fact that the amended petition (affidavit dated 13.8.2014) has been filed after orders were reserved in the petition, the same has not been considered in this order. However, the said affidavit would be taken into consideration at the time of truing-up of tariff of the generating station for the period 2012-14 in terms of Regulation 6 of the 2009 Tariff Regulations. The annual fixed charges claimed by the petitioner are as follows:

(₹ In lakh)

	2012-13 (1.7.2012 to 31.3.2013)	**2013-14**
Depreciation	7862.93	10765.51
Interest on Loan	7501.68	12707.67
Return on Equity	8106.79	11099.39
Interest on Working Capital	715.85	1043.07
O & M Expenses	3178.42	4476.22
Total	**27365.66**	**40091.86**

5. The Commission vide order dated 13.8.2012 had approved the provisional tariff of the generating station for the period from 1.7.2012 to 31.3.2014, as under:

(₹In lakh)

	2012-13 (1.7.2012 to 31.3.2013)	2013-14
Annual fixed charges	23062.70	33375.42

6. No comments or suggestions have been received in response to the public notices published by the petitioner in the newspapers under sub-section (2) of Section 64 of the Electricity Act.

Respondent's Reply

7. The respondents, Tata Power Delhi Distribution Ltd (TPDDL), Uttar Pradesh Power Corporation Ltd (UPPCL), Jaipur Vidyut Vitran Nigam Ltd (JVVNL), BSES Rajdhani Power Ltd (BRPL) and Punjab State Power Corporation Ltd have filed replies. The petitioner has filed rejoinders to these replies. The objections and suggestions of the respondents mainly

pertain to capital cost and relaxation of NAPAF sought by the petitioner. These have been duly taken note of.

Capital Cost

8. Clause (1) of Regulation 7 of the 2009 Tariff Regulations, so far as relevant for the present purpose, provides as under:-

"(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 fund deployed, - up to the date of commercial operation of the project, as admitted by the Commission, after prudence check.

(b) capitalised initial spares subject to the ceiling rates specified in regulation 8; and

(c) additional capital expenditure determined under regulation 9:

Provided that the assets forming part of the project, but not in use shall be taken out of the capital cost.

(2) The capital cost admitted by the Commission after prudence check shall form the basis for determination of tariff:

………………………………………………………………………………………..

Provided also that the Commission may issue guidelines for vetting of capital cost of hydro-electric projects by independent agency or expert and in that event the capital cost as vetted by such agency or expert may be considered by the Commission while determining the tariff for the hydro generating station:

Provided also that the Commission may issue guidelines for scrutiny and commissioning schedule of the hydro-electric projects in accordance with the tariff policy issued by the Central Government under section 3 of the Act from time to time.

Provided also that in case the site of a hydro generating station is awarded to a developer (not being a State controlled or owned company), by a State Government by following a two stage transparent process of bidding, any expenditure incurred or committed to be incurred by the project developer for getting the project site allotted shall not be included in the capital cost:

Provided also that the capital cost in case of such hydro generating station shall include:

(a) cost of approved rehabilitation and resettlement (R&R) plan of the project in conformity with National R&R Policy and R&R package as approved; and

(b) cost of the developer's 10% contribution towards Rajiv Gandhi Grameen VidyutikaranYojana (RGGVY) project in the affected area:

Provided also that the capital cost of the generating station shall include the cost for creating infrastructure for supply of power to the rural households located 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.

Provided also that where the power purchase agreement entered into between the generating company and the beneficiaries or the implementation agreement and the transmission service agreement entered into between the transmission licensee and the long-term transmission customer, as the case may be, provide for ceiling of actual expenditure, the capital expenditure admitted by the Commission shall take into consideration such ceiling for determination of tariff."

9. The petitioner has claimed tariff based on capital expenditure of ₹201772.38 lakh as on 1.7.2012 which includes normative IDC of ₹8461 lakh till 31.3.2012 and ₹517 lakh for 1.4.2012 to 30.6.2012 but excludes un-discharged liabilities of ₹4904.97 lakh on the date of commercial operation. The expenditure claimed as on 1.7.2012 comprises the expenditure incurred upto 31.3.2012 as per audited balance sheet and anticipated capital expenditure from 1.4.2012 to 30.6.2012. The petitioner has further claimed the projected capital expenditure of ₹8310.62 lakh for the period 4.7.2012 to 31.3.2013, inclusive of amount of ₹4904.97 lakh on account of discharge of un-discharged liabilities and ₹3138.50 lakh for the year 2013-14. Thus, the tariff has been claimed based on capital cost of ₹213221.50 lakh.

10. The petitioner took up the matter with the Ministry of Power, GOI for approval of the Revised Cost Estimates (RCE) amounting to ₹208401 lakh. However, CEA vide letter dated 24.9.2012 advised the petitioner to resubmit the proposal for vetting of capital cost on completion of the generating station. The petitioner has resubmitted the proposal for

approval of the RCE vide letter dated 5.5.2014 indicating the completion cost of ₹204944 lakh.

Vetting of Capital Cost by Independent Agency

11. As already noted, Regulation 7 of the 2009 Tariff Regulations provides for vetting of capital cost of hydro power projects by an independent agency or expert, designated by the Commission. The Commission has from time to time empanelled independent agencies for vetting of capital cost of new hydro projects. The Commission vide its order dated 2.8.2010 has also issued guidelines for vetting of the capital cost by designated independent agencies or experts. The petitioner engaged M/s Aquagreen Engineering Management Pvt. Ltd., the designated independent agency empanelled by the Commission, (DIA) for vetting of capital cost of the generating station. The petitioner has submitted to the Commission a copy of the appraisal report of DIA, which has also been sent to the beneficiary-respondents. The petitioner has submitted its comments on the appraisal report but none of the respondents has done so.

Time Overrun

12. In accordance with the administrative approval and expenditure sanction the generating station was to be commissioned by 31.8.2010. However, it was declared under commercial operation on 4.7.2012, with time overrun of about 22 months. The factors responsible for time overrun as considered by DIA and reflected in the appraisal report are summarized as under:

(a) **Consent to Establish - 7 Months:** The contract for Civil works was awarded on 21.9.2005 immediately after issue of the administrative approval by Ministry of Power. However, HP Govt. insisted on the petitioner to obtain ‘Consent to Establish’ from HP Pollution Control Board before start of work. 'Consent to Establish' was accorded by the State Pollution Control Board on 18.4.2006.

(b) **Law and Order – 3 Months**: Work at site came to a complete halt from 11.6.2006 to 24.8.2006 because of incidents of violence/riots involving killing of three labourers and setting the dam site on fire by unionized labour of the contractor, M/s HCC. Execution of work was resumed in single shift on 25.8.2006 and so continued till 19.9.2006.

(c) **Dam Works – 7 Months**: Extra time was taken in completion of construction of dam for reasons of (i) increase in quantity of excavation from 170000 cum, reinforcement from 5000 MT and RCC work from 85000 cum (50000 cum in piers and 35000 cum in raft and dam body) to 217351 cum, 10247 MT and 111947 cum respectively, (ii) collapse of Tower Crane on different locations due to massive and intermittent rock falls, causing excessive damage and hindrances in execution of civil and hydro-mechanical works, (iii) washing away of U/S & D/S Coffer dam on 8.7.2007 and (iv) toppling of water from U/S coffer dam on 13.8.2008 resulting in accumulation of water in the working area and submergence of contractor's machinery. As a consequence of above unforeseen occurrences, dam originally scheduled to be completed by 8.3.2010 was actually completed on 14.10.2010.

(d) **Head Race Tunnel (HRT) – 9 Months**: The crushing plant installed by contractor at Adit III to serve aggregate requirement for HRT works through Adit II, III, IV and V was stopped on 28.2.2009 on agitation by the villagers alleging illegalities in grant of NOC for operation of the crushing plant. After an enquiry, DC, Chamba in his order of 1.10.2009 upheld the validity of NOC. Consequently, on 6.10.2009 the State Geologist ordered to restart the crushing plant. Because of this, lining work of HRT was delayed. Extra time of 40 days was taken on pouring of concrete in the approved Geological over Break since quantity poured was more than that envisaged. Another extra time of 26 days was taken on account of damage/blockage of the road leading to the site location of Adit IV and V. Yet another reason for delay in completion of HRT is stated to be the increase in quantum of consolidation grouting from 660 M to 4120 M.

(e) **Lower Expansion Gallery (LEG) – 6 Months:** In general, rock mass was in poor category with closely foliated/jointed and quartzite Phyllite. During the benching excavation from RD 380 to 370 m, some ribs collapsed and loose rock started falling after blast on 20.4.2010. The fallen loose rock mass filled LEG from RD 340 to RD 380 m. As per geological report, rock was in class IV between RD 260 to 406 M. The highly shattered strata of Phyllite dipping towards LEG from right side frequently gave trouble during execution because of rock mass slide, cavity/chimney formation causing distortion and displacement of ribs and concrete backfill behind ribs. Remaining work of LEG was carried out cautiously by adopting for poling with grouting which slowed the progress. As such, LEG work suffered due to unforeseen formation of cavity for which various methodologies were adopted from time to time based on prevailing site conditions for early completion of the work. Due to these reasons the work of lining was completed on 28.12.2011 instead of 2.7.2009, as originally scheduled.

(f) **Surge Shaft:** Due to the unforeseen incident of cavity formation in Surge Shaft in December 2008, the work of Surge Shaft excavation came to a halt. Additional rock support measures were adopted for safety purposes. The additional time of nearly 9 months was taken on cavity treatment and installation of additional rock support measures**.** Other reasons for the delay in excavation of surge shaft were such as delay in shifting the school situated in vicinity of surge shaft locations, overlapping of PWD road alignment with surge shaft road, additional work in surge shaft, frequent breakdown of machinery at site, change of location portal of Adit 6 because of geological conditions of rock which caused collapse of the portal, delay in lining of vertical portion of pressure shaft, shortage of adequate manpower, machinery and material, etc.

(g) **Power House:** The main reasons of time overrun indicated in the appraisal report are on account of delay of about 6 months (November 2007 to April 2008) in start of interface work by the contractor, M/s Alstom and of about 14 months (October 2007 to December 2008) in start of erection work of penstock by HM contractor, shortage of adequate labor and material for all the working fronts of the power house, shortage of equipment such as concrete pumps, millers, excavators and aggregates etc.

(h) **Fire Fighting Tank – 7 Months: T**he location of the fire fighting tank was changed from EL 1210 M to EL 1281 M along hill slope adjoining GIS and DG building. As the revised location was not accessible for transportation of material and machinery, the work was considered as additional work in the context of the contract agreement. The excavation at the new location was carried out through traditional methods of drilling blasting using jack hammers, mucking with manual pick axe, spades, crowbars, etc. and placing concrete and transportation of reinforcement to the new location took additional time.

(i) **Diversion Tunnel Plug:** The diversion tunnel remained in operation for more than 6 years. After lowering of diversion tunnel inlet gates there was large quantum of leakage due to erosions that occurred at the diversion tunnel inlet. There were extreme problems in execution of the diversion tunnel plug. The plug was finally completed on 16.3.2012 as a last major civil activity.

(j) **Hill Slope Leakages – 3 Months:** With the plugging of Diversion Tunnel, the next step of project testing and commissioning activity was to commence which was to be followed by commercial operation of the generating station. However, there was leakage from the hill slopes adjoining surge shaft area, because of which the local villagers down the hill slopes resorted to agitation. This caused delay in commissioning of the generating station which was finally declared under commercial operation on 4.7.2012.

13. Based on the above facts, DIA has observed that the generating station could have been commissioned in the month of March 2012 itself, but was actually commissioned in July 2012. According to DIA, the delay of about 3 months after the DT plugging in March,

2012 is to the account of the petitioner. DIA has, therefore, recommended that IDC of ₹2644 lakh for this period may not be considered towards the capital cost of the generating station.

14. The cumulative item-wise delay far exceeds the actual delay of 22 months. This is for the reason that many activities were carried out in parallel. Out of the net delay of 22 months, DIA has attributed the delay of 3 months, after plugging of Diversion Tunnel to the petitioner and has recommended deduction of IDC for this part of the delay. No part of the delay of the remaining 19 months prior to 16.3.2012 has been attributable to the petitioner. Accordingly, we conclude that the delay was beyond the control of the petitioner. As regards reduction in IDC amounting to ₹2644 lakh for the time overrun of 3 months, we are of the view that the delay in commissioning of the plant after plugging of diversion tunnel, due to agitation by local villagers cannot said to be within the control of the petitioner. As such, there shall not be reduction in capital cost on account of IDC of ₹2644 lakh for this three months period of delay.

Cost Overrun

15. The administrative approval for the generating station was granted by Ministry of Power at the estimated cost of ₹140563 lakh. Against this, the completion cost is stated to be ₹204944 lakh.

16. The head-wise details of the sanctioned cost, completed /balance expenditure and cost recommended by DIA for the purpose of tariff are as follows-

(₹ in lakh)

	Original Approved Cost	Actual Cost as on 4.7.2012	Works in Progress (5.7.2012 to 31.3.2013)	Balance works to be executed	Total	DIA Recommended Cost
Civil						
A-Preliminary	555.00	463.86	0.00	0.00	463.86	463.86
B- Land	3688.00	2114.07	0.00	5236.13	7350.20	2114.07
C-Works	21828.06	25074.99	573.63	894.90	26543.52	25648.63
J-Power plant civil works	54220.10	50144.43	176.04	813.76	51134.23	50320.47
K-Buildings	2412.00	2154.08	84.21	1481.33	3719.62	2238.29
O-Misc.	3190.00	4246.42	121.75	1345.92	5714.09	4368.17
P-Maintenance during construction	825.00	683.80	0.00	0.00	683.80	683.80
Q-Special Tools & Plants	203.00	206.13	55.72	465.80	727.65	200.00
R-Communication	3980.00	6344.71	0.00	328.03	6672.74	6344.71
X-Environment & Ecology	5362	5304.54	0.00	3114.49	8419.03	5304.54
Y-Losses on Stock	206.89	26.15	0.00	0.00	26.15	26.15
Total Cost (Works)	96470.00	96763.19	1011.34	13680.35	111454.88	**97712.69**
II-Establishment	4602.00	30114.42	0.00	0.00	30114.42	16791.13
III-Tools & Plants	483.00	5.02	0.08	0.00	5.10	5.02
IV-Suspense	0.00	0.00	0.00	0.00	0.00	0.00
V-Receipt & Recoveries	(-) 527	(-) 3937.07	0.00	0.00	(-) 3937.07	(-) 4098.47
TOTAL DIRECT CHARGES	101028	122945.56	1011.42	13680.35	137637.33	**110410.37**
INDIRECT CHARGES						
Capitalized Value of abatement of Land	-	-	-	-	0.00	**-**
Audit & Account Charges	965.00	1695.84	0.00	0.00	1695.84	977.13
Total Indirect charges	965.00	1695.84	0.00	0.00	1695.84	**977.13**
Total Civil works	101993.00	124641.40	1011.42	13680.35	139333.17	111387.50
Electrical Works	26604.01	38931.20	1726.38	759.88	41417.46	**36012.50**

Total Cost (Civil+ Electrical)	128597.01	163572.60	2737.80	14440.23	180750.63	**147400.00**
Interest During Construction	11376.00	23852.33	0.00	0.00	23852.33	21208.34
Financing Charges (0.6%)	590.00	341.10	0.00	0.00	341.10	341.10
Total Cost Including IDC & financing charges	**140563.01**	**187766.03**	**2737.80**	**14440.23**	**204944.1**	**168949.44**

17. DIA has excluded cost of "balance works" after the date of commercial operation from the capital cost of the generating station on the ground that the expenditure is yet to be incurred. DIA has stated that the expenditure on "balance works" can be considered in the capital cost as and when incurred. We have considered the recommendation of DIA. Clause (1) of Regulation 9 of the 2009 Tariff Regulations provides that the capital cost for the purpose of tariff is to include the expenditure incurred or projected to be incurred. As such, expenditure towards works to be carried out up to 31.3.2014 is being allowed as part of the capital cost as the expenditure projected to be incurred, subject to truing up in accordance with Regulation 6.

18. Apart from the expenditure on balance works, the main heads under which the reduction has been recommended by DIA are as follows:-

(i) Special Tools & Plants

(ii) Receipt & Recoveries

(iii) Establishment

(iv) Miscellaneous

(v) Audit & Account Charges

(vi) Electrical Works

Special Tools & Plants

19. Against the expenditure of ₹727.65 lakh on "Special Tools & Plants", DIA has recommended an expenditure of ₹200 lakh only. The reason for such restriction as provided by the DIA reads as follows-

> ***"****A provision of ₹203 lakh for tools and plants was kept in CCEA to bear the expenses for essential equipments not covered under contract packages. As the total cost under this head was attributable to contractor so as per CEA guidelines, the cost incurred under this head should be ₹200 lakh which has been considered for capital cost vetting."*

20. The general submission of the petitioner with regard to cost reduction recommended by DIA under various heads based on CEA guidelines, is as follows-

> *"Consultant has relied upon CEA 'Guidelines for Formulation of Detailed Project Reports for Hydro-Electric Schemes, their acceptance and examination for concurrence', April 2012 (Revision 3.0). It is to mention here that these guidelines are for preparation of DPR and not for appraisal of completion cost or RCE.* ***In RCE actual details of expenditures incurred during the course of execution of the Project are to be represented against the sanctioned costs and variations are bound to happen from sanctioned cost due to fiscal and other reasons. Same needs to be considered by consultant / appropriate authority"***

21. With regard to restriction of expenditure on "Special Tools & Plants", the petitioner has submitted that, it appears that clause 16.4.9 of CEA guidelines has been applied. However, the restricted cost is even lower than the sanctioned cost at February, 2005 PL over which price escalation etc. shall be allowable. Also, the Expenditure incurred is as per actual for infrastructural equipment corresponding to the sanctioned requirement of the Project.

22. In this regard the CEA guidelines read as follows-

> ***"16.4.9 Special T&P***
> *The provisions under this head covers the Drilling & Grounding equipments, Transport, Compaction, Electrical equipments, Construction Plant & Earth Moving equipments and other miscellaneous equipments. Since the projects are presently being executed through limited contracts packages and is the responsibility of the*

contractors to arrange for such equipments. A token provision of Rs. 1-2 crores under this head may be adequate to provide for essential equipment not covered under contract package"

23. The requirement of "Special Tools and Plants" is specific to plant location. As such, restriction of the cost as suggested by DIA does not seem to be appropriate without considering the details of the "Special Tools and Plants" needed for each project and expenditure incurred thereon. The petitioner has not submitted any such details. As such, for the purpose of tariff of the generating station, the cost of "Special Tools and Plants" included in the sanctioned cost with escalation of 5.72% per annum has been considered for the purpose of arriving at the completion cost. Accordingly, an amount of ₹307 lakh has been allowed as expenditure on "Special Tools and Plants".

Receipts & Recoveries

24. While recommending the reduction of cost claimed under the head "Receipts & Recoveries", DIA has observed as follows:

"*This head is meant to account for estimated recoveries by way of resale or transfer of temporary buildings and special T&P, Miscellaneous receipts like rent charges of buildings, electricity charges etc., may also be accounted for under this head.*

The recoveries on account of temporary buildings may generally be taken at 15% of the cost unless a higher recovery is anticipated due to some special reason such as tubular construction, vicinity to city/village/town industrial undertaking etc. An amount of ₹39.37 crores have been reported by the generating company. However, as per CEA guidelines, 15% of cost of temporary buildings should be considered for receipt & recoveries which works out to ₹1.614 crores (15% of ₹10.76 Crores). Total cost which has been considered by the consultant for Receipt and recoveries is ₹(-)40.99 Crores. Cost breakup for the same is as below:

(₹in lakh)

Details of Receipts & Recoveries		
	GL Code	**Amount**
Income from generation of electricity pre-commissioning period	437570	2754.23
Interest on loans and advances employees	437571	234.79
Miscellaneous receipts and recoveries	437572	550.12

Profit on sale of asset	737573	0.54
Rent/hire charges	437575	394.14
Prior period income	437579	3.24
15% of Temporary buildings	**-**	161.40
Total	**-**	**4098.47**

25. In response to the recommendations of DIA, the petitioner has submitted that the based on CEA guidelines, the DIA has considered 15% of cost of temporary buildings amounting to ₹1.614 crore (15% of ₹10.76 crore) for receipt & recoveries and increased the actual receipt & recoveries, which is incorrect and hence not acceptable. The petitioner has submitted that whenever temporary buildings will be disposed off, the benefit of same will be reduced from capital cost.

26. We notice that the petitioner has accepted that the recoveries on account of disposal of temporary structures are to be adjusted against the capital cost. The temporary structures are expected to be disposed of by the cut-off date. We have already allowed the capitalization of the projected capital expenditure. On the same basis, the amount of ₹1.614 crore as suggested by DIA is allowed under the head “Receipts and Recoveries”. This is however, subject to truing up.

27. The revenue earned by the petitioner through sale from infirm power to the tune of ₹2754.23 lakh has been adjusted in capital cost by DIA under the head “Receipts and Recoveries”. However, the revenue from infirm power as on 3.7.2012 has been reported by the petitioner as ₹3059 lakh. Accordingly, the additional amount of ₹304.77 lakh has been adjusted for arriving at the completion cost. As such, the amount adjusted under the head "Receipt & Recoveries" is arrived at ₹4403.24 lakh.

Establishment cost for Civil Works

28. Based on the CEA guidelines, the DIA has recommended capitalization of an amount of ₹16791.13 lakh under the head "Establishment" against the amount of ₹30114.42 lakh considered in the Revised Cost Estimates (May, 2014). The observations of DIA in this regard are as under:

> *"As per CEA guidelines, establishment cost during construction of Chamera-III hydroelectric projects having scattered works and gestation period of more than 6 years, is found out to be ₹167.91 crores against ₹301.15 crores as mentioned in RCE. The same has been updated in capital cost as per consultant".*

29. In response, the petitioner has submitted that-

"(a) As all other expenses have been considered on actual basis, the establishment expenditure should also have been considered on actual basis by the consultant as per practice in RCE.

(b) The establishment expenditure is corresponding to the actual deployed manpower for the work and based on govt. approved wage structures for the organization. Even CEA Guidelines for DPR has a provision for actual manpower deployed for the execution / implementation of the Project including any increase at the time of RCE (clause 16.5.6).

(c)The proportionate expenditure of CO and ED Office have been booked as per approved accounting policy of the corporation. It is brought out that all works of Design and Engineering are done indigenously in NHPC and thus the expenditures are justified inter-alia with above CEA provisions (clause 16.5.6).

(d) CEA Guidelines for DPR also states that "The likely increase in Establishment cost during the period of construction on account of revision of pay scale, increase in DA, increment etc. shall be allowed at the time of RCE / completion stage as per actual" (clause 16.5.7) and the pro-rated reduction made on actual expenditure on account of DA increase and wage revision etc by the consultant is not justified. Accordingly, full amount corresponding to this head needs to be considered for capitalization.

(e) Being central PSU, NHPC has to comply all statutory norms and meet social obligation. Such expenditure are also a part of overheads and accordingly, full establishment expenditure needs to be allowed as per actual.

(f) Actual expenditures are worked out after thorough auditing by various Govt authorities and are on actual basis hence needs to be allowed.

(g) More-over, in other Projects like TLDP-III, which has also been vetted by independent agency, complete establishment expenditure has been allowed as per actual.

(h) Further, the components of Chamera-III are widely scattered. The road distance between Dam site to Powerhouse / project head-quarter (HQ) is approximately 24 kms. Due to topographical consideration, remoteness of project components and non-availability of land for project establishment at one location, project had to establish & operate from 3 different locations by establishing small operational establishments i.e. 1st near village Garola located approximately 6 kms. Upstream of Dam site, 2nd at Dharwala near the powerhouse location and 3rd at Karian approximately 23 kms. from powerhouse location. Thus due to remotely located components of the project, topographical constraints and non-availability of sufficient land at one location for establishment at project HQ / township, project had to incur additional expenses during the course of project execution for reason cited above. Since every project and its infrastructural requirements are site specific hence the expenses by the project on its establishment and developments of infrastructural works etc. is very much in order.

(i) In this regard details of the establishment expenditure for the FY 2002-03 onward under various subheads e.g. expenses at project unit & that of support division / offices at regional office & corporate office is also enclosed for reference."

30. The restriction imposed by DIA on "Establishment Cost for Civil works" based on CEA norms used for DPR purposes, does not in our view, seem appropriate. The variations from norms may happen based on actual site conditions, actual manpower deployed, wage

revision during construction period, as happened in the instant case, the actual annual cost indices being different from those considered, change in scope of work, etc. In this regard, we find that even the CEA guidelines indicate that any likely increase in the "Establishment" cost during the construction period on account of wage revision, increase in DA, etc. shall be allowed at the competition stage as per actual. As such, having concluded that no part of the time overrun can be attributable to the petitioner (*para 14 above*), the actual "Establishment Cost for Civil works" incurred by the petitioner i.e. ₹30114.42 lakh has been allowed to be the part of completion cost.

Miscellaneous

31. The DIA has recommended capitalization of an expenditure of ₹3000 lakh under the head "Miscellaneous" based on CEA guidelines (2% of I-Works) as against the total expenditure of ₹5714.09 lakh claimed by the petitioner. However, in the summary table of the final recommendation at page 87, the recommended amount has been shown as ₹4368.17 lakh**.** In this regard, petitioner has submitted that DIA has reduced cost based on CEA guidelines (2% of I-works) without going into merit of the actual expenditure and has prayed for consideration of the actual expenditure.

32. In this regard, the guidelines of CEA guidelines read as follows:

> ***"16.4.7 O-Miscellaneous***
>
> *The provisions under this head covers the capital cost & maintenance of Electrification, Water supply, Sewage disposal and drainage works, Recreation, Medical, Fire fighting equipments, Inspection vehicles, School bus, Pay van, Visit of Dignitaries, welfare works etc.*
>
> *The provision, however, should not exceed.*
>
> *i.* *@3% of the cost of I-Works upto ₹1000 crore limited to ₹20 crore*
> *ii.* *@2% of the cost of I-Works upto₹2000 crore limited to ₹30 crore*
> iii. *@1.5% of the cost of I-Works greater than ₹2000 crore limited to ₹40 crore*"

33. We are of the opinion that expenditure on miscellaneous activities/works/assets as listed in CEA guidelines may vary from plant to plant based on site location. As such, the cost restriction suggested by DIA without going into the details of the expenditure, does not appear to be appropriate. It is observed that the petitioner has not submitted such details in the petition. As such, for the purpose of completion cost/ tariff, the Government sanctioned cost with escalation of 5.72% per annum has been considered for the purpose of arriving at the completion cost. Accordingly, an amount of ₹4709 lakh has been allowed as against the Central Government sanctioned cost of ₹3190 lakh.

Audit and Accounts

34. In so far as the expenditure under the "Audit and Accounts" head is concerned, the DIA has recommended ₹977.13 lakh based on CEA guidelines, as against the total expenditure of ₹1695.84 lakh. In this regard, the petitioner has submitted that functions of its Finance wing, compliance with financial guidelines and accounting policy requirements are increasing. It has also submitted that the petitioner is a company listed on stock exchanges and as such its audit requirement has increased. In view of this explanation, the petitioner has submitted that the expenditures incurred on Audit and Accounts is justified and should be allowed in full.

35. In view of the submissions/justification provided by the petitioner and the fact that statutory audit requirements corresponding to the additional time period of 22 months taken in the commissioning of the generating station have increased the actual expenditure on Audit and Accounts, we allow the actual expenditure incurred under the head "Audit and Accounts", to be part of completion cost.

Electrical Charges

36. As regards the expenditure under the head "Electrical", DIA has recommended ₹36012.50lakh based on CEA guidelines as against the total expenditure of ₹41417.46 lakh. The reduction suggested by the DIA is under the sub-head of "Establishment Cost for Civil works" under the head of "Electrical & Mechanical" on the analogy of the expenditure under the main head “Establishment”. However, we have already allowed the actual expenditure under the head “Establishment Cost for Civil works” without any reduction. For parity of reasoning, the actual expenditure under the head "Electrical" is allowed in the completion cost of the generating station.

37. In consideration of the above discussions, the following completion cost of the generating station has been allowed subject to truing-up:

(₹ in lakh)

	Government Approved Cost	**Completion Cost**
<u>I-Works</u>		
A-Preliminary	555.00	463.86
B- Land	3688	7350.20
C-Works	21828.06	26543.52
J-Power plant civil works	54220.10	51134.23
K-Buildings	2412.00	3719.62
O-Misc.	3190.00	4709.00
P-Maintenance during construction	825.00	683.80
Q-Special Tools & Plants	203.00	307.00
R-Communication	3980.00	6672.74
X-Environment & Ecology	5362.00	8419.03
Y-Losses on Stock	206.89.00	26.15
Total of I-Works	96470.00	110029.15
II-Establishment	4602.00	30114.42
III-Tools & Plants	483.00	5.02
IV-Suspense	0.00	0.00
V-Receipt & Recoveries	(-) 527.00	(-) 4403.24
Total Direct Charges	101028.00	135745.35
Indirect Charges		
Capitalized value of abatement of Land		
Audit & Account Charges	965.00	1695.84

Total Indirect charges	965.00	1695.84
Total Civil works	101993.00	137441.19
Electrical Works	26604.01	41417.46
Total Cost (Civil+ Electrical)	128597.01	178858.65
Interest During Construction	11376.00	23852.33
Financing Charges	590.00	341.10
Total net cost with IDC & financing charges	**140563.01**	**203052.08**

38. Against the estimated completion cost of ₹203052.08 lakh we consider the following capital cost, including normative IDC of ₹8978 lakh as on COD of station as claimed by the petitioner. Accordingly, for the purpose of tariff, the following capital cost has been considered based on the latest balance sheet as on 31.3.2012. The petitioner is directed to submit on affidavit, at the time of truing-up, the actual treatment of normative IDC as carried out in the books of accounts duly authorized by the auditor.

(₹in lakh)

Capital cost for the purpose of tariff as on 30.6.2012 (COD of 2 Units)	128351.09
Capital cost for the purpose of tariff as on 4.7.2012 (COD of 3 Units)	192526.64

Initial spares

39. Regulation 8 of the 2009 Tariff Regulations provides for ceiling norms for capitalization of initial spares. These norms in respect of hydro generating stations are as under:

> *"8 Initial spares: Initial spares shall be capitalized as a percentage of the original project cost subject to following ceiling norms:*
>
> *(iii) Hydro generating stations- 1.5%*
>
> *Provided that where the benchmark norms for initial spares have been published as part of the benchmark norms for capital cost under first proviso to clause (2) of regulation 7, such shall apply to the exclusion of the norms specified herein."*

40. The petitioner has claimed initial spares amounting to ₹1880 lakh as part of capital expenditure up to the date of commercial operation of the generating station. The claim of

the petitioner works out to 0.93% of the original project cost and is within the permissible ceiling limit. Accordingly, the claim is allowed.

Projected Additional Capital Expenditure

41. Clause (1) of Regulation 9 of the 2009 Tariff Regulations provides as under:-

> *"Additional Capitalization: (1) The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*
>
> *(i) Undischarged 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 application for determination of tariff."*

42. The break-up of the projected additional capital expenditure claimed by the petitioner from 4.7.2012 to 31.3.2014 under Regulation 9(1)(ii) of the 2009 Tariff Regulations is as under:

(₹in lakh)

Projected Additional Capital Expenditure from 4.7.2012 to 31.3.2013 pertaining to original scope of works (Including ₹4904.97 lakh on account of discharge of un-discharged liabilities)	8310.62
Projected Additional Capital Expenditure for 2013-14 pertaining to original scope of works	3138.50
Total Projected Additional Capital Expenditure	**11449.12**

43. We have in para 37 of this order approved the completion cost of the project as ₹203052.08 lakh, which includes the abovesaid projected additional capital expenditure. As such, the projected additional capital expenditure is allowed for the purpose of tariff.

44. Based on the above, the capital expenditure arrived at for the purpose of tariff on various applicable dates is as under:

(₹in lakh)

Capital cost for the purpose of tariff as on 30.6.2012 (2 Units) (a)	128351.09
Capital cost for the purpose of tariff as on 4.7.2012 (3 Units/ Station) (b)	192526.64
Allowed Projected Additional Capital expenditure for the period from 4.7.2012 to 31.3.2013 (c)	8310.62
Opening capital cost as on 1.4.2013 (d) = (b) + (c)	200837.26
Allowed Projected Additional Capital expenditure for the period for 2013-14 (e)	3138.50
Closing Capital cost as on 31.3.2014 (f) = (d) + (e)	**203975.76**

45. It is pertinent to mention that the approved completion cost of ₹203052.08 lakh based on DIA report does not include the normative IDC of ₹8978 lakh which has been allowed based on deployment of equity in excess of 30% treating the same as normative loan. Accordingly, after including the normative IDC of ₹8978 lakh, the completion cost of the project works out to ₹212030.08 lakh. As such, the closing capital cost of ₹203975.76 lakh as on 31.3.2014 is less than the completion cost including normative IDC.

Debt- Equity Ratio

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

> *"12. Debt-Equity Ratio (1) For a project declared under commercial operation on or after 1.4.2009, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*
>
> *Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff:*
>
> *Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.*

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

(2) In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 shall be considered.

(3) Any expenditure incurred or projected to be incurred on or after 1.4.2009 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation."

47. Based on the gross block arrived at, the debt and equity on the dates of commercial operation and 31.3.2014 have been considered in the normative ratio of 70:30 as follows:

(₹in lakh)

	Capital Structure as on			
	30.6.2012	**4.7.2012**	**31.3.2013**	**31.3.2014**
	(2 Units)	(3 Units)	(3 Units)	(3 Units)
Debt	89845.76	134768.65	140586.08	142783.03
Equity	38505.33	57757.99	60251.18	61192.73
Total	**128351.09**	**192526.64**	**200837.26**	**203975.76**

Return on Equity

48. Regulation 15 of the 2009 Tariff Regulations provides as under:-

"15. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% for thermal generating stations, transmission system and run of the river generating station, and 16.5% for the storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage and shall be grossed up as per clause (3) of this regulation:

*Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in **Appendix-II**:*

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

(3) The rate of return on equity shall be computed by grossing up the base rate with the Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be:

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

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

Where t is the applicable tax rate in accordance with clause (3) of this regulation.

(5) The generating company or the transmission licensee as the case may be, shall recover the shortfall or refund the excess Annual Fixed charge on account of Return on Equity due to change in applicable Minimum Alternate/ Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission;

Provided further that Annual Fixed charge with respect to the tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective financial year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations".

49. Accordingly, Return on Equity has been computed as follows:

(₹In lakh)

	30.6.2012 to 3.7.2012	**4.7.2012 to 31.3.2013**	**1.4.2013 to 31.3.2014**
	(2 Units)	**(3 Units)**	**(3 Units)**
Gross Notional Equity	38505.33	57757.99	60251.18
Addition due to Additional Capital Expenditure	0.00	2493.19	941.55
Closing Equity	38505.33	60251.18	61192.73
Average Equity	38505.33	59004.59	60721.95
Rate of ROE (pre-tax)	15.500%	15.832%	16.500%
Tax rate for the year 2008-09 (MAT)	11.330%	11.330%	11.330%
Rate of Return on Equity	17.481%	17.855%	18.608%
Return on Equity	**73.76**	**7,822.11**	**11299.34**

Interest on Loan

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

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

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

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

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

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

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

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

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

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

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

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

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

51. In accordance with the above provisions, interest on loan has been calculated as under:

(₹ in lakh)

	30.6.2012 to 3.7.2012	**4.7.2012 to 31.3.2013**	**1.4.2013 to 31.3.2014**
	(2 Units)	(3 Units)	(3 Units)
Gross Normative Loan	89845.77	134768.65	140586.08
Cumulative Repayment	0.00	71.55	7499.27

Net Loan-Opening	89845.77	134697.10	133086.81
Repayment during the year	71.55	7427.72	10295.31
Addition due to Additional Capitalization	0.00	5817.43	2196.95
Net Loan-Closing	89774.22	133086.81	124988.46
Average Loan	89809.99	133891.96	129037.64
Weighted Average Rate of Interest	7.13%	7.13%	9.42%
Interest on Loan	**70.14**	**7084.81**	**12154.45**

Depreciation

52. Regulation 17 of the 2009 Tariff Regulations provides as under:-

*"17. **Depreciation** (1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.*
(2) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.

Provided that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site;

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

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

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

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

(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2009 from the gross depreciable value of the assets.

(6) Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis."

53. The weighted average rate of depreciation of 5.015**%**, calculated as above, has been considered for the calculation of depreciation. Depreciation allowed is as under:

(₹ in lakh)

	30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013	1.4.2013 to 31.3.2014
	(2 Units)	**(3 Units)**	**(3 Units)**
Opening Gross Block	128351.09	192526.64	200837.26
Additional capital expenditure during the period	0.00	8310.62	3138.50
Closing gross block	128351.09	200837.26	203975.76
Average gross block	128351.09	196681.95	202406.51
Rate of Depreciation	5.09%	5.09%	5.09%
Depreciable Value	115515.98	177013.76	182165.86
Remaining Depreciable Value	115515.98	176942.21	174666.59
Depreciation	**71.55**	**7427.72**	**10295.31**

O&M expenses

54. O&M expenses of new hydro generating station are governed by Regulation 19 (f) (v) of the 2009 Tariff Regulations, which provides as under:

> *"In case of hydro generating station declared under commercial operation on or after 1.4.2009, operation and maintenance expenses shall be fixed at 2% of the original project cost (excluding rehabilitation & resettlement works) and shall be subject to annual escalation of 5.72% per annum for subsequent years."*

55. As per Regulation 3 (29) of the 2009 Tariff Regulation, the original project cost is defined as under:

> "*original project cost' means the capital expenditure incurred by the generating company or the transmission licensee, as the case may be, within the original scope of the project up to the cut-off date as admitted by the Commission"*

56. Accordingly, the following O&M expenses have been worked out, after deducting R&R cost of ₹1520.00 lakh submitted by the petitioner:

(₹ in lakh)

	30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013
Allowed project cost for the purpose of tariff	128351.09	203975.76
Less: R&R cost	1013.33 (*pro-rata for two units i.e. 1520 X 2/ 3)*	1520
Capital cost for the purpose of O & M	127337.76	202455.76
Annualized O & M expenses @ 2% of capital cost	2546.76	4049.12
O&M expenses (Pro rata)	**27.91**	**3006.33**

57. After escalation of annualized O&M expense of ₹4049.12 lakh at the rate of 5.72%, the O&M expenses for the period 2013-14 works out to ₹4280.72 lakh.

Interest on Working Capital

58. The petitioner is entitled to claim interest on working capital as per the 2009 Tariff Regulations. The components of the working capital and the petitioner's entitlement to interest thereon are discussed hereunder:

(i) **Receivables:** As per Regulation 18(1) (c) (i) of the 2009 Tariff Regulations, receivables as a component of working capital will be equivalent to two months' of fixed cost. The petitioner has claimed the receivables on the basis of 2 months' Annual Fixed Charges claimed in the petition. In the tariff being allowed, receivables have been worked out on the basis of 2 months' Annual Fixed Charges as under:

(₹ in lakh)

30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013	1.4.2013 to 31.3.2014
(2 Units)	**(3 Units)**	**(3 Units)**
41.64	4336.86	6507.19

(ii) **Maintenance Spares:** Regulation 18 (1) (c) (ii) of the 2009 Tariff Regulations provides for maintenance spares @ 15% per annum of the O & M expenses as part of the working capital. The value of maintenance spares has accordingly been worked out as detailed below:

(₹ in lakh)

30.6.2012 to 3.7.2012	4.7.2012to 31.3.2013	1.4.2013 to 31.3.2014
(2 Units)	**(3 Units)**	**(3 Units)**
4.19	450.95	642.11

(iii) **O&M Expenses :** Regulation 18(1) (c) (iii) of the 2009 Tariff Regulations provides for operation and maintenance expenses for one month to be included in the working capital. The petitioner has claimed O&M expenses for 1 month for the year 2013-14. This has been considered in the working capital as follows:

(₹ in lakh)

30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013	1.4.2013 to 31.3.2014
(2 Units)	**(3 Units)**	**(3 Units)**
2.33	250.53	356.73

(iv) **Rate of interest on working capital :** Regulation 18(3)(ii) of the 2009 Regulations provides that SBI Base Rate plus 350 basis points as on 1.7.2010 or as on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the units or station whose date of commercial operation lies between the period 1.7.2010 to 31.3.2014 is to be considered for the purpose of Interest in Working Capital. SBI Base Rate as on 1.4.2012 was 10%. Thus the rate of interest on working capital of13.50%has been considered in tariff.

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

(₹ in lakh)

	30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013	1.4.2013 to 31.3.2014
	(2 Units)	**(3 Units)**	**(3 Units)**
Maintenance Spares	4.19	450.95	642.11
O & M expenses	2.33	250.53	356.73
Receivables	41.64	4336.86	6507.19
Total	**48.16**	**5038.34**	**7506.02**
Interest on Working Capital @ 13.50%	6.50	680.18	1,013.31

60. The Fixed Charges worked out for the generating station is summarized as under:

(₹ in lakh)

	30.6.2012 to 3.7.2012	4.7.2012 to 31.3.2013	1.4.2013 to 31.3.2014
	(2 Units)	**(3 Units)**	**(3 Units)**
Return on Equity	73.76	7822.11	11299.34

Interest on Loan	70.14	7084.81	12154.45
Depreciation	71.55	7427.72	10295.31
Interest on Working Capital	6.50	680.18	1013.31
O & M Expenses	27.91	3006.33	4280.72
Total	**249.86**	**26021.15**	**39043.13**

61. The audited capital cost on the date of commissioning of each unit will be considered by the Commission at the time of truing up of tariff of the generating station for the said period, in terms of Regulation 6 of the Tariff Regulations 2009.

Normative Annual Plant Availability Factor

62. Clause (1) of Regulation 27 of the 2009 Tariff Regulations specifies the Normative Annual Plant Availability Factor (NAPAF) for hydro generating stations as under:

> *"(i) Storage and Pondage type plants with head variation between Full Reservoir Level (FRL) and Minimum Draw Down Level (MDDL) of up to 8%, and where plant availability is not affected by silt: 90%*
>
> *(ii) Storage and Pondage type plants with head variation between FRL and MDDL of more than 8%, where plant availability is not affected by silt : Plant-specific allowance to be provided in NAPAF for reduction in MW output capability as reservoir level falls over the months. As a general guideline the allowance on this account in terms of a multiplying factor may be worked out from the projection of annual average of net head, applying the formula:*
>
> *(Average head / Rated head) + 0.02*
>
> *Alternatively in case of a difficulty in making such projection, the multiplying factor may be determined as:*
> *(Head at MDDL/Rated head) x 0.5 + 0.52*
>
> *(iii) Pondage type plants where plant availability is significantly affected by silt: 85%.*
>
> *(iv)Run-of-river type plants: NAPAF to be determined plant-wise, based on 10-day design energy data, moderated by past experience where available/relevant.*
>
> *(2) A further allowance may be made by the Commission in NAPAF determination under special circumstances, e.g. abnormal silt problem or other operating conditions, and known plant limitations."*

63. The petitioner has sought relaxation of NAPAF to 80% (after relaxation of 5%) on the anticipation that the plant operation is likely to be affected by higher silt content. The petitioner has submitted that based on the sedimentation study, silt data collected during

the period from May, 2003 to December 2010, Petrographic analysis of the water sample, recommendation of M/s ALSTOM regarding operation of the turbine in silt conditions and the past performance of adjoining hydro power stations, namely Chamera-II and Bairasiul, it is reasonably anticipated that the generating station is likely to be significantly affected by silt and therefore, prayed that NAPAF may be fixed after allowing 5% allowance in NAPAF for high silt operating conditions. Thus, it has prayed that NAPAF for the generating station may be considered as 80%.

64. We have considered the submissions of the petitioner. On scrutiny, it is noticed that the petitioner has not submitted any justification to establish through empirical data, the details of the number of days/hours in a year during which the operation of the generating station is likely to be affected due to the high silt conditions. We have analyzed the actual PAF data of Chamera –II and Bairasiul hydro power stations of the petitioner, on which reliance has been placed, for the past 3 years and the actual PAF (%) is as given hereunder:

	BairaSiul HEP	**Chamera-II HEP**
2011-12	97	98
2012-13	99	95
2013-14	96	93

65. It emerges from the above data that the actual PAF achieved for Bairasiul and Chamera-II hydro power stations is more than 90%. This belies the petitioner's plea for relaxation of NAPAF based on the past performance of adjoining power stations, namely Chamera-II and Bairasiul hydro power stations. Under these circumstances, we do not allow the prayer of the petitioner for relaxation in NAPAF of the generating station. However, the petitioner is at liberty to approach the Commission for relaxation in NAPAF at

the time of truing-up on the basis of the actual performance data of the generating station for years 2012-13 and 2013-14.

Free power to Home State

66. The Ministry of Power, GOI has allocated power amongst the beneficiaries vide Notification no. 10/3/2003-NHPC (volume-II) dated 27.3.2012. The respondent, Himachal Pradesh has been allocated a share of 16.356% which includes 13% free power, out of which 12% free power is for the Home State and the additional 1% is for Local Area Development Fund (LADF). The home state is to provide matching 1% from its 12% free power towards LADF corpus.

Annual Design Energy

67. The Month-wise Design Energy approved by CEA corresponding to 90% dependable year is given in the following table:

Month	Unit	Design Energy (Million Units)
April	I	19.41
	II	28.12
	III	33.01
May	I	44.71
	II	52.67
	III	57.93
June	I	52.67
	II	52.67
	III	49.13
July	I	51.29
	II	52.67
	III	57.93
August	I	52.67
	II	52.67
	III	57.93
September	I	46.57
	II	39.12
	III	34.09
October	I	29.63
	II	24.95

	III	24.21
November	I	19.67
	II	17.89
	III	15.29
December	I	13.73
	II	12.69
	III	11.63
January	I	11.09
	II	9.83
	III	9.77
February	I	9.14
	II	9.23
	III	6.38
March	I	9.70
	II	15.68
	III	22.40
Total		**1108.17**

68. The petitioner has submitted that considering 2.85 cumecs release of water (15% of average lean months inflows) to sustain aquatic life in the downstream for environmental consideration as per notification issued by the Govt. of Himachal Pradesh, Department of Pollution Control vide No. PC-F (2)-1/2005 dated 9.9.2005, the annual design energy of the generating station works out to 1086.37 MUs. Since the design energy of 1108.17 MUs has been approved by CEA after proper vetting, any modifications in design energy for any reason whatever would require the approval of CEA. Accordingly, we are not inclined to allow the modification in the design energy approved by CEA. However, the petitioner may approach CEA seeking approval of the modified design energy of 1086.37 MUs and thereafter approach the Commission for consideration.

Energy Charge

69. The monthly energy charge shall be computed in accordance with Regulation 22 of the 2009 Tariff Regulations.

Application Fee and Publication Expenses

70. The petitioner has sought reimbursement of filing fee of and also the publication expenses. The petitioner shall be entitled for reimbursement of fee directly from the respondent in accordance with Regulation 42A of the 2009 Tariff Regulations. Similarly, the petitioner shall also be entitled to recover the publication expenses incurred in connection with the present petition and any other statutory charges paid by it. The petitioner shall also be entitled to recover other statutory expenses in accordance with the 2009 Tariff Regulations.

71. The fixed charges approved as above shall be recovered by the petitioner after adjustment of the provisional tariff recovered in terms of the Commission's order dated 13.8.2012 as per Regulation 5(3) of the 2009 Tariff Regulations.

73. Petition No. 26/GT/2013 is disposed of in terms of the above.

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