CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 115/GT/2013

Coram:

Shri Gireesh B. Pradhan, Chairperson
Shri M. Deena Dayalan, Member
Shri A.K.Singhal, Member

Date of Hearing: 15.04.2014
Date of Order: 22.1.2015

In the matter of

Approval of generation tariff of Teesta Low Dam Project Stage –III Hydroelectric Station 132 MW (4 x 33 MW) of NHPC for the period 1.4.2013 to 31.3.2014 under Section 62(1) (a) of the Electricity Act, 2003

And in the matter of

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

Vs

West Bengal State Electricity Distribution Company Ltd,
Vidyut Bhawan,
8th Floor, Block DJ,
Sector II,
Salt Lake, Kolkata – 700091 ….**Respondent**

Parties Present

1. Shri A.K.Pandey, NHPC
2. Shri J.K. Jha, NHPC
3. Shri S.K. Meena, NHPC
4. Shri Sakya S Chaudhuri, Advocate, WBSEDCL
5. Shri Anand K Shrivastava, Advocate, WBSEDCL

ORDER

This petition has been filed by NHPC Ltd, a generating company owned and controlled by the Central Government for determination of tariff in respect of Teesta Low Dam Project Stage–III (4 x 33 MW) (the generating station) for the period

1.4.2013 to 31.3.2014 in accordance with the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (the 2009 Tariff Regulations).

2. Ministry of Power, Govt. of India, vide letter dated 30.10.2003 had accorded Investment Approval (IA) for setting up of the generating station at the total estimated cost of ₹76892.00 lakh, including IDC of ₹6041 lakh, based on December 2002 price level. As per the administrative approval, the generating station was scheduled to be commissioned within 4 years and five months from the date of its IA, that is, by 31.3.2007. All the units of the generating station were commissioned during the month of March, 2013. As such, the delay in commissioning of the generating station is 72 months. The generating station has been declared under commercial operation with the dates of commercial operation of each unit given below:

Unit-1	19.5.2013
Unit-2	1.4.2013
Unit-3	1.4.2013
Unit-4	1.5.2013

3. The annual fixed charges claimed by the petitioner is as follows:

(₹in lakh)

	1.4.2013 to 31.3.2014
Return on Equity	10253.41
Interest on Loan	12953.84
Depreciation	9805.92
Interest on Working Capital	980.78
O & M Expenses	3998.47
Total	**37992.42**

4. Reply has been filed by the respondent and the petitioner has filed its rejoinder to the same.

Time overrun

5. The project construction started in June, 2002 and was scheduled to be commissioned in March, 2007. However, all the units were actually commissioned by March 2013, resulting in time overrun of 72 months. The COD of the generating station is 19.5.2013. Thus, the delay upto the COD of the generating station is 74 months. The petitioner has attributed the delay in completion of the generating station to the following factors:

(a) **Delay in transfer of forest land**: Initially, as per petition, the delay in acquisition of forest land was stated to be as 9 months. Subsequently, petitioner vide its rejoinder dated 6.9.2013 clarified that as per DPR, the acquisition of land for construction was to be completed by January, 2003, however, the same was completed in April, 2004. This delay of 15 months has direct impact on completion of the project as all the construction activities/award of packages were directly linked with the availability of forest land.

(b) **Delay due to slope failures in the right bank area**: The major right bank slope failures occurred during the monsoon of 2005 and 2006 resulting in a delay of 9.5 months.

(c) **Delay due to flash floods**: Unprecedented flash floods occurred during the years 2007, 2008, 2009 and 2010. In the year 2007 the whole barrage and power house area were submerged and restoration of same took one year; in the year 2008, closure of dyke could not be achieved because of flash rains resulting in delay in start of work of barrage way S1 and S2, in the year 2009, the work at the project area was stalled from June 2009 to October 2009 clearing of which took additional five months; and in 2010 left bank barrage area got filled up with muck and debris. In all, the above activities resulted in a total delay of more than 24 months.

(d) **Execution for additional Works**: The damage due to flash floods and occurrence of slides caused the petitioner to undertake additional work which required additional funds of ₹17600 lakh and additional time of approximately 16 months.

(e) **Strike call by Local Political Party GJMM and GNLF**: Initially, as per petition, the delay due to strike was stated to be as 14 months. Subsequently, petitioner vide its rejoinder dated 6.9.2013 clarified that the actual delay in this respect was 7.5 months**.**

Respondent's Reply

6. The respondent in its reply has refuted the reasons explained by the petitioner in support of Time and Cost overrun.

7. The respondent has submitted that the responsibility for obtaining clearances was of the petitioner, as project developer and therefore, the petitioner cannot pass on the burden to the consumers. Accordingly, according to the respondent, delay in granting forest clearances by the appropriate authorities cannot be considered as the reason for time overrun. The respondent has pointed out that the petitioner has not put on record any documents to support the assertion of delay in obtaining forest land and the steps taken by it to expedite the process of approval. The respondent has further pointed out that the petition itself states that the delay in getting forest land was from May 2004 to September 2004, which does not add up to delay of 9 months claimed by the petitioner. The respondent has submitted that in the Himalayan Region where the generating station is located, slope failures are common occurrences and it was expected of the petitioner to have carried out all the requisite technical studies for development of the project as part of prudent project designing and planning. Therefore, according to the respondent, the consequences of delay on account of slope failures claimed by the petitioner show lack of prudence by the petitioner in taking necessary preventive steps and therefore the additional cost on account of time overrun for the alleged slope failures must be held to be on the petitioner's count and the consumers cannot be burdened. The respondent has alleged that the petitioner failed to learn lessons from slope failure phenomenon that occurred during June, 2005 to November, 2005 and did not take any preventive steps to avoid recurrence of such phenomenon during June, 2006 to October, 2006.

8. The respondent has submitted that the contention of the petitioner that a part of the delay occurred on account of flash floods too shows inefficient management, as the submission taken on its face value suggests that the project area was flood prone and the petitioner as the project developer failed to put in place requisite preventive measures in advance to overcome the issues and plan the execution of the project accordingly. The respondent has submitted that the petitioner has not put on record any documentary evidence of the occurrence of any flash floods. The respondent has pointed out that no meteorological data has been filed to establish the damage caused on account of flash floods. The respondent has further stated that no documentary evidence in support of delay of 14 months stated to be on account of strikes has been placed on record. The respondent has contended that delay was due to inefficient management of resources, such as material management or labour management, the consequences of which must be borne by the petitioner.

Cost Overrun

9. The petitioner has claimed that the cost overrun occurred on account of various reasons, such as price escalation, exchange rate variation, increase in statutory levies and increase in IDC and FC. The petitioner has specifically submitted that although the cost overrun was to the extent of ₹118966 lakh, the cost increase within the originally approved time cycle was just ₹3519 lakh and additional increase of ₹115447 lakh (which is 150.14% higher than the CCEA approved cost) is on account of time overrun.

10. In response to above, the respondent has urged that no part of the cost overrun beyond the original commissioning date can be allowed unless the project developer is able to establish that delay was not attributable to it and that delay could not be

avoided through prudent planning. The respondent has submitted that the exorbitant increase in cost in the present case is on account of inefficiencies of the petitioner which cannot be passed on to the consumers. The respondent has urged that additional cost, over and above the sanctioned project cost, must be borne by the petitioner itself. The respondent has also stated that the petitioner has not furnished the details regarding proceeds from insurance claim against the damages.

Petitioner's Rejoinder

11. The petitioner vide affidavit dated 6.9.2013 has submitted details of the reasons resulting in the time overrun of 74 months along with documents showing meteorological data on floods, correspondence made with various authorities for forest clearance and stoppage of works due to strike/ bandhs.

12. On the issue of insurance proceeds the petitioner in its rejoinder has clarified that as per contract agreement the contractors were required to indemnify the work by obtaining necessary insurance coverage and loss or damages were to be reinstated by the agencies. It has been further stated that the claim from insurance agencies except in Civil Works package for accepted risks were to be lodged by the concerned agencies. In case of excepted risk losses in Civil Works package, the cost of making good the losses is to be borne by the Owner over and above the settlement receivable from the insurance company by the contractor. The petitioner has clarified that insurance claims for slope failures and flash flood damages were lodged by the agencies executing the works. Apart from excepted risk losses, various claims not on account of excepted risk also remain lodged with the insurance companies which have been partly settled/ repudiated or are in the process of settlement. Claims which have been repudiated/partly settled have been challenged in consumer forum. However, reinstatement/redo of such losses pertains to the

contractor and if redo is not executed by the contractor, the petitioner is to make recovery for which necessary reconciliation is under process. Thus accounting of CWIP shall be duly adjusted based on the reconciliation of insurance claims.

Vetting of Capital Cost by Designated Independent Agency (DIA)

13. 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 six independent agencies for vetting the capital cost of new hydro projects. The Commission vide order dated 2.8.2010 has also issued guidelines for vetting of the capital cost of the hydro projects by designated independent agencies or experts.

14. The petitioner had engaged M/s Tata Consulting Engineers Ltd. Bangalore, an independent agency empanelled by the Commission for vetting of capital cost of the generating station. M/s Tata Consulting Engineers has submitted its report in October, 2013. A copy of the report of M/s Tata Consulting Engineers has been served on the respondent.

15. M/s Tata Consulting Engineers have analyzed the different heads of cost escalation and the reasons therefore as under:

Sl. No.	Description	Cost Overrun *(₹ in lakh)*	Reasons
1	IDC, FC & Audit	31626	Increase in IDC is on account of delay of 72 months in the commissioning of the generating station.
2	Price Escalation	26304	Differential purchase and supply costs of materials like cement and steel to the contractor and escalation as per contract clauses. These factors have arisen because of time overrun.
3	Establishment	20008	Mainly attributed to delay of 72 months in commissioning and also revision of pay of the employees based on the recommendations of 6th Pay Commission.

4	Inadequate Provisions	11316	Transportation cost of material, works executed for protection of slope, variation due to tendered rate & CCEA rate of reinforcement and HM components, etc.
6.	Addition/Deletion	10570	Increase of ₹2554 lakh on account of Mix design to suit site conditions, extra reinforcement and additional HM works like one set of spillway stop log, downstream stop log and three sets of modified sill beams etc. Increase of ₹399 lakh due to mix design to suit site conditions and additional draft tube gantry crane. Increase of ₹1127 lakh to meet requirement of additional spares parts under electrical works. Increase of ₹2745 lakh towards Net Present Value (NPV) of forest land as assessed by the Forest Department for diversion of forest land and also protection for National Highway NH-31A. Additional/new items amounting to ₹1697 lakh on account of staff welfare expenditure, hired inspection vehicles and equipment, travelling and conveyance, audit expenditure, insurance premiums, hospitality expenditure etc. and Increase of ₹2048 lakh on account of additional/new items such as compensation for families residing along reservoir rim periphery, Railway siding at Rangapani for storage of cement/steel, topography of township which necessitated longer road network and land development cost.
6	Change in Scope/Design	6143	Increase of ₹652 lakhs under civil works of barrage & allied works and HM works. ₹2327 lakh due to additional reinforcement and excavation requirements in comparison to DPR requirements, removal of debris and revised design of GIS building and pot head yard.

			₹2318 lakh on account of reservoir rim treatment works required to be executed at various new locations. ₹1357 lakh on account of additional safety and security works , increase in cost of water supply scheme, telecommunication, electrification of township and office area, furnishing of school, guest house and related running and maintenance charges. ₹425 lakh due to change in location of pothead yard, fire fighting system, etc. Further, there was an decrease of ₹936 lakh under this head.
7	Other Reasons	14440	(a) ₹3099 lakh on account of unforeseen geological reasons such as flash floods of 2006 to 2010, loss on account of completed works such as breaching of dyke and loss of departmental materials, (b)₹6191 lakh towards arbitration/ litigation cost, (c) ₹3438 lakh - disputed sale tax demand, additional taxes and duties on HM works & other civil works. (d)₹407 lakh on account of Exchange Rate Variation, and (e) ₹1305 lakh on account of cost compensation claim.
Total		**120407**	

16. From the above analysis of M/s Tata Consulting Engineers on Cost overrun, it is seen that major contributory factor for cost overrun is the time overrun. M/s Tata Consulting Engineers have therefore analyzed the reasons for time overrun. A summary of major milestones on Critical Path of project execution along with original scheduled date, actual completion date, time overrun and reasons for time overrun is indicated in the table below. It is seen that critical path shifted from barrage to power house structure and then back to barrage.

Summary of Major Milestones on Critical Path

Sl. No	Major Milestones	Completion Dates		Overrun in Months		Reasons for Delay
		Scheduled	Actual	Additive	Cumulative	
1	Acquisition of Forest land	January, 2003	April, 2004	15	15	Handing over of Forest Land
2	II Phase Diversion	March, 2004	November, 2005	5	20	Flood of 2005-Breach of River Closure Dyke and Failure of Bailey Bridge
3	Powerhouse Substructure Concreting up to EL 178.00 m	May,2005	July,2007	6	26	(i) Right Bank Slope Failure in 2005 (ii) Right Bank Slope Failure in 2006 especially monsoon.
4	III Phase Diversion including Reconstruction of Dyke	February, 2006	November, 2009	19	45	(i) GJMM strike in 2008 (ii) Flood of 2009 - Breaching of Dyke (iii) Flood of 2009-Breach of Main Dyke (iv) Dyke was in place from Nov 2008 to May 2009
5	Barrage Bays S1 & S2 concreting up to EL 194.00 m (During Phase III Diversion)	June, 2006	August, 2011	17	62	(i) Flood of 2009-Restoration Works (ii) GJMM Strike in 2010 (iii) Flood of 2010-Flow over Coffer Wall (iv) GJMM Strike and Labor exodus in 2011 (v) Additional Works i.e.

						Coffer wall & Reinforcement etc.
6	Barrage Bays S1 & S2- concreting up to Bridge Deck EL 210.0 m including left abutment (During III Phase Diversion)	December, 2006	May, 2012	3	65	(i) GJMM Strike in 2011 and continued Labor exodus (ii)Additional works i.e. Concreting & Reinforcement, Filling behind retaining wall
7	Erection of Gates	March, 2007	October, 2012	2	67	(i) GJMM Strike in 2011 and continued Labor exodus (ii) Monsoon of 2012 was Hindrance for erection
8	Pre-commissioning activities and reservoir filling	December, 2006	December, 2012.	5	72	Monsoon of 2012- deferred dismantling activities of concrete coffer wall, dyke etc.
9	Wet Testing & Commissioning	March, 2007	March, 2013	**-**	**72**	**-**
10	COD of generating station		May, 2013	**-**	**74**	

17. M/s Tata Consulting Engineers, after analyzing the available data on cost and time overrun, have opined that the capital cost of ₹197299 lakh as on the date of commercial operation of the generating station is reasonable, keeping in view that the time overrun which has resulted in cost overrun, is mainly attributable to causes beyond the control of project authorities.

Commission's View

18. M/s Tata Consulting Engineers have studied the construction schedule as per DPR, actual time line for completion of various activities, reasons for delays such as

acquisition of land, slope failures, floods, strikes, additional works etc. to work out total time overrun. Also, detailed analysis of the cost data under various heads has been made, to work out the overall completion cost and cost overrun. The cost appraised by M/s Tata Consulting Engineers appears to be the completion cost of the generating station and not cost on the date of commercial operation because the revised cost of ₹197299 lakh includes the cost of all additional works occurring under various heads, after accounting for change in scope, inadequate provisions, enhanced IDC & FC , etc. It is also noted that nearly 26% of the total cost overrun (₹31355 lakh) is accounted for IDC & FC, which shows the direct impact of time overrun of 74 months.

19. The respondent in its various affidavits filed before the Commission from time to time has raised a number of issues, scattered into different documents, objecting to cost and time overrun. In our view, these issues have been deliberated by the petitioner in its various rejoinders filed vide affidavits dated 9.1.2013, 6.9.2013, 3.2.2014, 29.5.2014 and 7.10.2014. These issues have also been considered by M/s Tata Consulting Engineers in their appraisal report and they have given categorical findings on each issue. In view of this, we accept the appraisal report of the DIA, M/s Tata Consulting Engineers. Accordingly, we hold that the delay in completion of the project resulting in time overrun and the consequent Cost overrun is for reasons beyond the control of the petitioner and the petitioner cannot be made responsible for the same.

Capital Cost

20. Regulation 7 of the 2009 Tariff Regulations 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) capitalized 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 Vidyutikaran Yojana (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:

21. The petitioner has claimed the capital cost of ₹192580 lakh as on 1.4.2013 (expected COD of station as considered in petition), which represents the actually incurred expenditure of ₹169158 lakh up to 30.6.2012 as per audited balance sheet and projected expenditure of ₹26692 lakh from 1.7.2012 to 1.4.2013, less un-discharged liabilities of ₹3270 lakh. The petitioner has not yet submitted the unit-wise actual capital cost duly audited, after commissioning of the generating station on 19.5.2013. The petitioner has claimed IDC, FC & ERV of ₹41854 lakh, including IDC of ₹4708 lakh on normative loan on projected basis upto 1.4.2013. The petitioner while working out the interest on normative loan has considered the rate of interest on annualized basis. However, the Commission has worked out IDC on normative loan on the basis of actual rate of interest. In this manner, IDC on normative loan works out to ₹4645 lakh. Thus, the petitioner has considered excess IDC of ₹63 lakh. This excess IDC has been adjusted against total IDC, FC & ERV of ₹41854 lakh while determining the capital cost. The adjusted IDC works out to ₹41791 lakh. Further, the petitioner in its petition has submitted the un-discharged liabilities of ₹3270 lakh as on 1.4.2013 on projected basis, whereas on examination of the Balance Sheet of the generating station as on 31.3.2013, it has been observed that there are un-discharged liabilities amounting to ₹5908 lakh and provisions of ₹9106 lakh. Therefore, ₹15014 lakh (₹5908 lakh + ₹9106 lakh) (instead of ₹3270 lakh), has been deducted from the capital cost claimed to arrive at the admissible capital cost.

22. Accordingly, in the background of the above discussions, the capital cost considered for the purpose of tariff as on 1.4.2013 shall be as under:

		Capital Cost *(₹ in lakh)*
1	Capital expenditure actually incurred up to 30.6.2012 as per Audited Balance Sheet	169158
2	Projected expenditure from 1.7.2012 till anticipated COD i.e 1.4.2013	266.92

3	Total Capital cost as on anticipated COD	195850.00
4	Less: Projected un-discharged liabilities	3270.00
5	Capital cost on cash basis claimed	192580.00
6	Add: Un-discharged liabilities claimed	3270.00
7	Capital cost on accrual basis	195850.00
8	Less: Difference in calculation of IDC as stated above	63.00
9	Less: Un-discharged Liabilities and Provisions as per Balance Sheet as on 31.3.2013	15013.84
	Total Capital Cost as on 1.4.2013 allowed	**180773.16**

23. Two units i.e Unit II and III, were declared under commercial operation on 1.4.2013 and Units IV and I on 1.5.2013 and 19.5.2013 respectively. Since capital cost as on 1.4.2013 only is available and the petitioner has not furnished the actual expenditure as on the dates of commercial operation of the other two units, capital cost of ₹180773.16 lakh has been considered for the purpose of tariff for all the four units. The petitioner is at liberty to claim tariff based on the actual expenditure incurred on the dates of commercial operation of the remaining two units while filing the petition for truing-up of tariff in accordance with Regulation 6 of the 2009 Tariff Regulations. The Unit-wise capital cost as on the dates of commercial operation of the units has been considered as follows:

(₹ in lakh)

	1.4.2013 to 30.4.2013	**1.5.2013 to 18.5.2013**	**19.5.2013 to 31.3.2014**
	(2 Units)	**(3 Units)**	**(4 Units)**
Capital Cost	90386.58	135579.87	180773.16

24. The RCE approved by the Govt. of India is not yet available. Pending approval of RCE, we proceed to determine tariff of the generating station based on the appraisal of capital cost vetted by DIA. However, the petitioner is directed to place on record the approval of Board of Directors of the petitioner Company for the RCE within 3 months. The petitioner is also directed to ensure the submission of RCE approved by the MOP, Govt. of India at the time of truing-up of tariff of the generating station in terms of Regulation 6 of the 2009 Tariff Regulations.

Initial spares

25. 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."*

26. The petitioner has claimed initial spares amounting to ₹1351.00 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 0.7% of the original project cost and is within the permissible ceiling limit. Accordingly, the claim is allowed.

Projected Additional Capital Expenditure

27. 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) 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 application for determination of tariff."

28. The break-up of the projected additional capital expenditure claimed by the petitioner from 20.5.2013 to 31.3.2014 is as under:

	Amount ***(₹in lakh)***
Discharge of liabilities as on the date of commercial operation–Regulation 9(1)(i)	3270.00
Works deferred for execution –Regulation 9(1)(ii)	2600.00
Total additional capitalization claimed	**5870.00**

29. The petitioner has claimed capitalization of an amount of ₹3270.00 lakh during 2013-14 from the date of commercial operation of the generating station for discharge of liabilities under Regulation 9(1) (i). The petitioner has further claimed an amount of ₹2600.00 lakh during 2013-14 from the date of commercial operation of the generating station in respect of the assets like extension of TRC retaining wall, protection of slope above 197 m, landscaping of PH, environment and ecology, water treatment plant, furnishing of Guest house, welfare centre, repairing of roads by providing WBM and pre-mix carpeting, R&M of water supply, roof treatment of residential buildings, repairing of RRM protection wall in project colony, wheel dozer, crane mobile, motor boat, water tanker, dewatering pumps, etc in the category of works deferred for execution–Regulation 9(1) (ii). These claims for projected additional capital expenditure are in order and are allowed.

30. Based on above, the capital expenditure arrived at as on 31.3.2014 for the purpose of tariff after allowing additional capitalization during the year 2013-14 is as under:

	Amount ***(₹in lakh)***
Opening capital cost as on 1.4.2013	180773.16
Additional capitalization allowed on projected basis from COD of the generating station to 31.3.2014	5870.00
Capital cost as on 31.3.2014	**186643.16**

31. Accordingly, the Unit-wise capital cost considered for tariff for 2013-14 is as under:

(₹ in lakh)

	1.4.2013 to 30.4.2013 (2 Units)	1.5.2013 to 18.5.2013 (3 Units)	19.5.2013 to 31.3.2014 (4 Units)
Opening Capital Cost	90386.58	135579.87	180773.16
Additional Capital Expenditure	0.00	0.00	5870.00
Closing Capital Cost	**90386.58**	**135579.87**	**186643.16**

DEBT- EQUITY RATIO

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

"12. (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."

33. Based on the gross block arrived at, the debt and equity on 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 1.4.2013	**As on 1.5.2013**	**As on 19.5.2013**	**As on 31.3.2014**
	(2 Units)	**(3 Units)**	**(4 Units)**	**(4 Units)**
Debt	63270.61	94905.91	126541.21	130650.25
Equity	27115.97	40673.96	54231.95	55992.91
Total	**90386.58**	**135579.87**	**180773.16**	**186643.16**

RETURN ON EQUITY

34. 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".

35. Since there is time overrun of 74 months in the completion of the project, the generating station is not entitled to an additional return of 0.5% as envisaged under Regulation 15(2) of the 2009 Tariff Regulations. MAT rate for the year 2008-09 has been applied for grossing up while calculating the Rate of Return on Equity, as follows:

Year	**2013-14**
Base Rate(ROR with Pondage)	16.5%
Applicable Tax Rate	11.330%
MAT Rate	10.000%
Surcharge	10.000%
Education Cess	3.000%
Rate of ROE (pre-tax)	**18.608%**

36. Accordingly, the above rates have been considered in the tariff and the Return on Equity has been computed as follows:

(₹In lakh)

	1.4.2013 to 30.4.2013	**1.5.2013 to 18.5.2013**	**19.5.2013 to 31.3.2014**
	(2 Units)	**(3 Units)**	**(4 Units)**
Gross Notional Equity	27115.97	40673.96	54231.95
Addition due to Additional Capital Expenditure	0.00	0.00	1761.00
Closing Equity	27115.97	40673.96	55992.95
Average Equity	27115.97	40673.96	55112.45
Rate of ROE (pre-tax)	18.608%	18.608%	18.608%
Return on Equity (*annualized*)	**5045.83**	**7568.74**	**10255.50**

INTEREST ON LOAN

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

"16. (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."

38. In terms of the provisions of Regulation 16, the petitioner's entitlement to interest on loan has been calculated on the following basis:-

(a) The opening gross normative loan as on 1.4.2013 has been arrived at in accordance with Regulation 16 of the 2009 Tariff Regulations.

(b) The weighted average rate of interest has been worked out on the basis of the actual loan portfolio for the year 2013-14.

(c) The repayment for the year 2013-14 has been considered equal to the depreciation allowed for that year.

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

39. Based on the weighted average rate of interest considered, interest on loan has been calculated as given below:

(₹ *in lakh*)

	1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
	(2 Units)	**(3 Units)**	**(4 Units)**
Gross Normative Loan	63270.61	94905.91	126541.21
Cumulative Repayment	0.00	4533.27	11333.17
Net Loan-Opening	63270.61	90372.64	115208.04
Repayment during the year	4533.27	6799.90	9213.74
Addition due to Additional Capitalization	0.00	0.00	4109.00
Net Loan-Closing	58737.34	83572.74	110103.30
Average Loan	61003.97	86972.69	112655.67
Weighted Average Rate of Interest	9.509%	9.509%	9.509%
Interest on Loan (Annualized)	**5800.61**	**8269.87**	**10711.95**

DEPRECIATION

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

"17. (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."

41. The weighted average rate of depreciation of 5.015**%** calculated as above, has been considered for the calculation of depreciation. The depreciation, allowed is as given below:

(₹in lakh)

	1.4.2013 to 30.4.2013	**1.5.2013 to 18.5.2013**	**19.5.2013 to 31.3.2014**
	(2 Units)	**(3 Units)**	**(4 Units)**
Opening Gross Block	90386.58	135579.87	180773.16
Additional capital expenditure during the period	0.00	0.00	5870.00
Closing gross block	90386.58	135579.87	186643.16
Average gross block	90386.58	135579.87	183708.16
Rate of Depreciation	5.015%	5.015%	5.015%
Depreciable Value	81347.92	122021.88	165337.35
Remaining Depreciable Value	81347.92	117488.62	154004.17
Depreciation (Annualized)	**4533.27**	**6799.90**	**9213.74**

O&M expenses

42**.** 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."*

43. The petitioner has claimed O&M expenses amounting to ₹3998 lakh for the year 2013-14. The petitioner vide affidavit dated 21.1.2013 has submitted that R&R cost indicated as ₹177.27 lakh in the calculations of O&M expenses submitted in the petition may be read as ₹77.27 lakh only. It has been explained that the error is on account of Rs. 100 lakh inadvertently taken as R&R cost in Form-9 of the main petition. However, ₹100 lakh is actually to be incurred for Reservoir Rim Treatment

under the head “Environment & Ecology”. Accordingly, annualized O&M expenses allowed are as under:

(₹in lakh)

1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
1806.19	2710.05	3731.32

Interest on Working Capital

44. 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)

1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
(2 Units)	(3 Units)	(4 Units)
2938.23	4334.02	5798.81

(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)

1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
(2 Units)	(3 Units)	(4 Units)
270.93	406.51	559.70

(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)

1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
(2 Units)	**(3 Units)**	**(4 Units)**
150.52	225.84	310.94

(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 1.4.2013 was 9.70%. Thus the rate of interest on working capital of 13.20% (9.70%+3.50%) has been considered in tariff.

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

(₹in lakh)

	1.4.2013 to 30.4.2013	1.5.2013 to 18.5.2013	19.5.2013 to 31.3.2014
	(2 Units)	**(3 Units)**	**(4 Units)**
Maintenance Spares	270.93	406.51	559.70
O & M expenses	150.52	225.84	310.94
Receivables	2938.23	4334.02	5798.81
Total	3359.67	4966.37	669.45
Interest on Working Capital @13.20%	**443.48**	**655.56**	**880.37**

46. Annual Fixed Charges for the generating station is approved as under:

(₹in lakh)

	1.4.2013 to 30.4.2013 (2 Units)	1.5.2013 to 18.5.2013 (3 Units)	19.5.2013 to 31.3.2014 (4 Units)
Return on Equity	5045.83	7568.74	10255.50
Interest on Loan	5800.61	8269.87	10711.95
Depreciation	4533.27	6799.90	9213.74
Interest on Working Capital	443.48	655.56	880.37
O & M Expenses	1806.19	2710.05	3731.32
Total	**17629.37**	**26004.12**	**34792.88**

47. The Annual Fixed Charges allowed above shall be applicable *pro rata* to the number of days to the said units were in operation. The capital cost taking into account the completion cost on the date of commissioning of each unit will be considered by the Commission at the time of truing up of tariff on a petition to be filed by the petitioner in terms of Regulation 6 of the 2009 Tariff Regulations.

Normative Annual Plant Availability Factor

48. 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."

Further Clause 2 of Regulation 27 reads as follows:

(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.*

49. The petitioner has sought relaxation of NAPAF to 80%, by taking NAPAF of 5% under sub-clause (ii) of clause (1) of Regulation 27 and relaxation of 5% on the anticipation that plant operation is likely to be affected by higher silt content. The petitioner has provided the following calculations in support of its claim for relaxation-

Rated head at full reservoir level =	23.01 M
Rated head at MDDL=	18.01M
Rated head=	21.34 M

Head variation between FRL and MDDL= (23.01-18.01)*100/23.01= 22

50. After establishing that head variation of above 8%, the petitioner has calculated the multiplying factor as follows:

Multiplying Factor= *(Head at MDDL/Rated head) x 0.5 + 0.52*
*= (18.01/21.34)*0.5+0.52 =0.942*

51. Therefore, according to the petitioner, the resultant NAPAF works out as under:

90*0.942= 84.78=85% (approx)

52. We have considered the submission of the petitioner. NAPAF in respect of storage and pondage type plants is worked out under sub-clause (i) of clause (1) of Regulation 27 of the 2009 Tariff Regulations whose MW output capability is likely to be affected as reservoir level falls over the months. MW capability of plants with small pondage is not affected between FRL and MDDL, even if corresponding head variation may be more than qualifying requirement of 8%. The petitioner has submitted that the generating station is basically a run-of-river project with limited

storage to meet minimum 3 hours of daily peaking requirement. It has been further observed from Form 3 of the petition, entitled 'Salient Features of H.E Project' that for the generating station MW capability at FRL as well as MDDL is 132 MW. Therefore, NAPAF of the generating station cannot be determined in the manner computed by the petitioner by invoking sub-clause (i) of clause (1) of Regulation 27 of the 2009 Tariff Regulations. For the purpose of present petition, NAPAF of the generating station is taken as 90%.

53. The petitioner has sought relaxation of 5% based on the anticipation that plant operation may be affected by higher silt content. It is pointed out that Teesta-V Hydro Electric Project of the petitioner in operation since 2007, also developed on the Teesta river and located upstream of the generating station, has been allowed the NAPAF of 85%, considering the high silt contents in the Teesta River. The petitioner vide affidavit dated 9.9.2013 has submitted that the two projects cannot be compared due to their specific site locations. It has been stated that Teesta-V is located upstream whereas many other nalas also meet upstream barrage of the generating station after Teesta-V. The nalas meeting upstream the barrage of the generating station are also silt prone and increase the overall silt load. It has been further stated that Teesta-V has a provision of de-silting arrangement, which significantly reduces the silt content of the water. However, in case of the generating station de-silting arrangement has not been installed as there was no such provision in the DPR and silt control has been envisaged through silt flushing in monsoon months. To carry out this operation, the barrage will be emptied for about 8 to 20 hours in monsoon months to remove the silt deposited**.**

54. The petitioner has submitted sediment data from the year 2001 to 2011. From this data it follows that monthly observed suspended sediment concentration at the

project site was as high as 16613 PPM in the year 2002, 14253 PPM in 2003, 13580 PPM in 2009, 12521 PPM in 2006. Also, frequency of suspended sediment concentration above 5000 PPM was as high as 15 times in the year 2010. Thus, based on the available past data, the petitioner has been able to make out a case of the existence of high sediment and silt at the project site. In view of this, relaxation of 5% in NAPAF on account of high silt content is allowed. Accordingly, NAPAF of 85% will be considered for the generating station. However, NAPAF presently allowed shall be reviewed for the next tariff period, based on actual data of PAF for the year 2013-14.

Annual Design Energy

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

Month	**Design Energy (MUs)**
April	30.11
May	41.12
June	76.83
July	93.30
August	93.30
September	74.47
October	70.78
November	26.50
December	23.23
January	23.57
February	16.78
March	24.10
Total	**594.09**

Energy Charge

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

Application Fee and Publication Expenses

57. The petitioner has sought reimbursement of filing fee of ₹580800/-, and also the publication expenses of ₹83,895/-. 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.

58. The annual fixed charges approved as above are subject to truing up in terms of Regulation 6 of the 2009 Tariff Regulations.

59. Petition No. 115/GT/2013 is disposed of in terms of the above.

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