Central Electricity Regulatory Commission
New Delhi

Petition No. 228/GT/2013

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

Date of Hearing: 15.4.2014
Date of Order: 25.6.2014

In the matter of

Approval of generation tariff of Parbati Hydroelectric Project, Stage-III (520 MW) for the period from the anticipated date of commercial operation of Unit-I (16.4.2013) to 31.3.2014.

And in the matter of

Grant of provisional tariff of Parbati Hydroelectric Project, Stage-III (520 MW) for the period from the anticipated date of commercial operation of Unit-I & II (24.3.2014) to 31.3.2014

And

In the matter of

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

Vs

1. Punjab State Power Corporation Ltd,
The Mall, Near Kali Badi Mandir,
Patiala – 147001(Punjab)

2. (a) Dakshin Haryana Bijili Vitaran Nigam Ltd,
(b) Uttar Haryana Bijili Vitaran Nigam Ltd
Shakti Bhawan, Sector – 6
Panchkula – 134 109(Haryana)

3. BSES-Rajdhani Power Ltd.
BSES Bhawan,
Nehru Place, New Delhi - 110019

4. Uttar Pradesh Power Corporation Ltd,
Shakti Bhavan, 14, Ashok Marg,
Lucknow – 226001(Uttar Pradesh)

5. BSES-Yamuna Power Ltd.,
Shakti Kiran Building,
Karkardooma, Delhi- 110072

6. (a)Rajasthan Rajya Vidyut Prasaran Nigam Ltd.,
(b) Jaipur Vidyut Vitaran Nigam Ltd.,
Vidut Bhavan, Janpath, Jyoti Nagar, Jaipur-302005(Rajasthan)

7. Tata Power Delhi Distribution Ltd.,
Hudson Lane, Kingsway Camp, New Delhi-110009

8. Jodhpur Vidyut Vitaran Nigam Ltd.,
New Power House, Industrial Area, Jodhpur-342003

9. Uttaranchal Power Corporation Ltd
Urja Bhawan, Kanwali Road,
Dehradun-248001(Uttarakhand)

10. Ajmer Vidyut Vitaran Nigam Ltd
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer-305001(Rajasthan)

11. Himachal Pradesh State Electricity Board,
Vidyut Bhawan, Kumar House,
Shimla-171004 (Himachal Pradesh)

12. Engineering Department, UT Secretariat
UT Secretariat, Sector 9D
Chandigarh-160009

13. Power Development Department,
Government of J&K
New secretariat,
Jammu-180001 (J&K) …**Respondents**

Parties Present:

Shri A.K.Pandey, NHPC
Shri J.K. Jha, NHPC
Shri S.K. Meena, NHPC
Ms. Shubhalakshmi, NHPC

ORDER

This petition has been filed by the petitioner, NHPC, for approval of generation tariff of Parbati Hydroelectric Project, Stage-III (520 MW) (hereinafter 'the project") for the period from the anticipated date of commercial operation of Unit-I (16.4.2013) to 31.3.2014 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ('the 2009 Tariff Regulations').

2. The generating station situated in the State of Himachal Pradesh, is a pondage type scheme, providing peaking support to the grid when operated in tandem with upstream Parbati HE Project, Stage-II. The project

has been sanctioned by the Government of India in November, 2005 at a cost of ₹2304.56 crore, including IDC & FC of ₹203.42 crore at May, 2005 price level.

3. The petitioner in this petition by its affidavit dated 28.3.2013 has prayed for approval of tariff from the anticipated COD of Unit-I (16.4.2013) to 31.3.2014 in terms of Regulation 5 of the 2009 Tariff Regulations. The petitioner has submitted that the anticipated COD of the units of the project is as under:

Unit I & II: 16.4.2013
Unit-III: 1.7.2013
Unit-IV: 1.1.2014

4. The petitioner has also submitted that Unit I & II were mechanically run on 31.5.2013 and 2.7.2013 respectively. However, due to non-completion of all HV tests and prevailing law and order situation around the project, these units could not be commissioned. It has also submitted that commercial operation of the project has been re-scheduled to 30.3.2014. Considering the fact that commercial operation of the project got delayed beyond 6 months from the date of filing of the petition, the petitioner was directed to amend the petition. Accordingly, the petitioner on 21.3.2014 filed Interlocutory Application (I.A.No.13/2014) indicating the anticipated date of commercial operation of the project as 30.3.2014 (all four units) along with revised tariff filing forms. The I.A has been allowed and the submissions are taken on record.

5. Subsequently, the petitioner vide letter dated 31.3.2014 has submitted that Units I & II were declared under commercial operation on 24.3.2014 and Unit-III on 30.3.2014. During the hearing on 15.4.2014, the petitioner submitted that the commissioning of the Unit-IV has been delayed due to fault in the transformer and the same is expected to be commissioned during August, 2014. Accordingly, the petitioner has sought approval of provisional tariff of the said units in terms of Regulation 5(4) of the 2009 Tariff Regulations.

6. The petitioner has filed the petition in compliance with Clause (1) and (2) of Regulation 5 of the 2009 Tariff Regulations. Also, in compliance with the provisions of Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004 the petitioner has published notice of the tariff petition. Accordingly, we consider

the grant of provisional tariff in respect of the generating station from the date of commercial operation by this order, based on the petition filed in terms of Regulation 5(1) of the 2009 Tariff Regulations and the submissions made therein, as discussed in the subsequent paragraphs.

Capital cost

7. As stated, the project was approved by Ministry of Power, Govt. of India on 9.11.2005, at an estimated cost of ₹2304.56 crore including IDC & FC of ₹203.42 crore at May, 2005 price level, with the completion schedule of 60 months (November, 2010). As per submissions of the petitioner in the I.A, the anticipated capital cost of the project as on 30.3.2014 is ₹2557.50 crore, with anticipated COD of all the four units being on 30.3.2014. However, the petitioner is yet to submit the Revised Cost Estimate (RCE) for approval of the Government of India. During the hearing, the petitioner clarified that M/s Aquagreen Engineering Management Private Ltd has been engaged by the petitioner as the Designated Independent Agency for vetting of capital cost and the report is awaited. The petitioner has therefore prayed for grant of provisional tariff for Units I, II and III of the project which have been declared under commercial operation, in terms of the 2009 Tariff Regulations.

8. Reply to the petition has been filed by the respondents, UPPCL and AVVNL. The respondent UPPCL in its reply has submitted that the cost of R&R to the tune of ₹380.89 lakh cannot be included in the capital cost of the project since the petitioner is executing the project sanctioned by the Govt. of India. It has also submitted that the beneficiaries will have to share the burden of local area development fund and the State Government will provide matching 1% from their share of 12% free power towards local area development fund and hence, if the cost of R&R is included in the capital cost, the beneficiaries will be doubly burdened for R&R and the impact of additional burden over the period of the life of the project will be around ₹6.22 crore. Accordingly, the respondent has prayed that the capital cost may be arrived at after deducting the Cost of R&R and the Cost of Liquidated Damages levied against the venders for time over run of the Parbati-II project. In response to the prayer of the petitioner for grant of provisional tariff, the respondent has submitted that the Commission may allow tariff below 95% of the annual fixed charges claimed taking into consideration that the capital cost has

not been vetted by the designated independent agency and that the beneficiaries would be burdened by low design energy, till completion of Parbati HEP, Stage-II. As regards, Normative Annual Plant Availability Factor, the respondent has submitted that the same may be considered as 31.629% (say 32%) since the project is an underground power station having Auxiliary Consumption of 1.2% with static excitation. In response, the petitioner has submitted that capital cost of the project may be considered by the Commission in terms of Regulation 7 of the 2009 Tariff Regulations, which includes cost of R&R. It is also submitted that the liquidated damages levied against the vendor for time overrun in respect of Parbati HEP, Stage-II cannot be considered for calculating the capital cost of this project.

9. We have considered the submissions of the parties. The sanction letter dated 9.11.2005 by the Govt. of India pertains to the approval of the project cost and its source of funding and does not provide that the R&R cost will be funded by the Govt. of India. All capital expenditure including the R&R cost will be governed by the 2009 Tariff Regulations as the petitioner is a company owned and controlled by the Central Government. Moreover, Regulation 7 of the 2009 Tariff Regulations provides for inclusion of R&R in the capital cost in respect of hydro generating companies. In view of this, we do not find merit in the submission of the respondent and accordingly the cost of R&R has been considered in the capital cost.

Time over-run

9. As stated, the project was scheduled to be commissioned during November, 2010. However, only three units of the generating station have been commissioned by March, 2014, thereby resulting in the time overrun of 40 months upto 31.3.2014. With the fourth unit expected to be declared under commercial operation during August, 2014, the time overrun, in that event, would be 45 months.

Cost over-run

10. As stated, the project was approved by Govt. of India, Ministry of Power at an estimated cost of ₹2304.56 crore, during November, 2005. The capital cost, based on the anticipated COD of all the four units as on 30.3.2014 as submitted by the petitioner is ₹2485.10 crore (excluding liabilities of ₹72.40 crore), thereby involving a cost overrun of ₹253 crore (approx).

11. The justifications submitted by the prayer of the petitioner as regards time and cost overrun would be considered by the Commission after hearing the parties on merits, at the time of determination of final tariff of the generating station.

12. The petitioner in its interlocutory application has claimed tariff based on the anticipated capital cost of ₹248509.86 lakh (excluding liabilities of ₹7240.70 lakh) with the expected date of commercial operation of all the four units as 30.3.2014. However, since only three units have been declared under commercial operation during the period 2009-14, grant of provisional tariff for these units have been considered in terms of the provisions of the 2009 Tariff Regulations. We proceed accordingly.

13. The actual expenditure incurred as on 31.12.2013, as per audited balance sheet, is ₹226390.91 lakh, excluding liabilities, short term provisions and trade payables. As stated, the petitioner is yet to submit the RCE as on COD/completion as approved by the Central Government and the report of the capital cost vetted by the designated independent agency engaged by the petitioner in terms of the guidelines specified by the Commission. It is observed that the Commission, in similar cases where time and cost overrun was involved, had allowed provisional tariff considering 85% of the capital cost incurred based on the audited balance sheet, in respect of the generating stations of the petitioner namely, Chutak HEP and Nimoo Bazgo HEP by orders dated 1.4.2013 and 7.10.2013 respectively. We are inclined to adopt the same in respect of this generating station also. Accordingly, 85% of the actual capital cost incurred based on audited balance sheet as on 31.12.2013 has been considered for the purpose of grant of provisional tariff of the units of the generating station as under:

(₹in lakh)

Capital expenditure as per balance sheet as on 31.12.2013 (for four units)	**226390.91**
Capital cost allowed for provisional tariff for four units (**85% of total capital cost**)	**192432.27**

14. It is observed that the petitioner has not provided the unit-wise break up for the capital cost of ₹226390.91 lakh as on the COD of the different units of the generating station. Hence, in terms of the proviso

to Regulation 4(2) of the 2009 Tariff Regulations, the capital cost has been apportioned to the units (Units I to III) of the generating station which has been declared under commercial operation and allowed as under:

(₹ in lakh)

	COD	Apportioned Capital cost
Unit I & II	24.3.2014	96216.13
Unit-I to III	30.3.2014	144324.20

O&M Expenses

15. In terms of Regulation 19 (f) (v) of the 2009 Tariff Regulations, the capital cost considered for calculation of O&M expenses, after excluding proportionate R&R cost, is as under:

(₹ in lakh)

COD of Units I & II	COD of Unit-III
96025.68	144038.53

16. Accordingly, O&M expenses allowed are as under:

(₹ in lakh)

	O&M expenses	
	Annual	For the period
24.3.2014 to 29.3.2014	1920.51	31.57
30.3.2014 to 31.3.2014	2880.77	15.79

17. The fixed charges allowed for the period 24.3.2014 to 31.3.2014 are as under:

(₹ in lakh)

	24.3.2014 to 29.3.2014 (I & II)	30.3.2014 to 31.3.2014 (I to III)
Return on Equity	93.05	46.52
Interest on Loan	105.34	52.26
Depreciation	78.75	39.38
Interest on Working Capital	7.94	3.96
O & M Expenses	31.57	15.79
Total	**316.65**	**157.91**

18. The provisional fixed charges allowed above are subject to adjustment in terms of clause (4) of Regulation 5 of 2009 Tariff Regulations.

Design Energy

19. The petitioner has submitted that the completion of upstream Parbati-II HEP has been delayed due to various reasons and the said project could not be made operational prior to the commissioning of this generating station. It has also submitted that the tail race water of Parbati-II HEP would not be available for

generation at this project and therefore, this generating station would operate as ROR scheme till the commissioning of upstream Parbati-II HEP, based on the fact that the live storage capacity of this project is only 1.28 MCM which is not sufficient to provide minimum three hours peaking with four units. It has further submitted that the post-sedimentation live storage capacity is only 0.87 MCM which is just sufficient to meet 1.36 hours of peaking. The petitioner has also submitted that the annual design energy of this project, on stand-alone basis, till the commissioning of upstream Parbati-II HEP, with downstream discharge as 1.15 cumecs and updated discharge series (1973-74 to 2010-11) approved by CEA, in a 90% dependable year would be 701.40 Million Units. It has stated that the design energy of this project would be reviewed by CEA on the commissioning of upstream Parbati-II HEP. Considering the above, we allow the design energy of 701.40 Million Units as approved by CEA till the commissioning of the upstream Parbati-II HEP. Accordingly, the month-wise design energy corresponding to 90% dependable year is given as under:

Month	Period	Design Energy (MU)
April	I	10.91
	II	18.51
	III	15.34
May	I	16.92
	II	24.09
	III	25.48
June	I	40.58
	II	36.50
	III	37.63
July	I	43.47
	II	44.88
	III	58.74
August	I	39.58
	II	33.98
	III	43.25
September	I	31.56
	II	22.83
	III	19.78
October	I	13.67
	II	12.07
	III	11.63
November	I	9.08
	II	8.23
	III	7.60
December	I	6.80
	II	6.44
	III	6.50
January	I	5.73

	II	5.68
	III	5.77
February	I	4.82
	II	4.38
	III	4.51
March	I	5.55
	II	8.66
	III	10.25
Total		**701.40**

Normative annual plant availability factor (NAPAF)

20. The petitioner has claimed NAPAF of 31% for this project, while operating it as ROR scheme, prior to the commissioning of the upstream Parbati-II HEP. The petitioner vide its affidavit dated 22.10.2013 has submitted justification for its claim as under:

(a) It is mentioned in the DPR of the project, as cleared by CEA that Parbati-III HEP will operate as ROR scheme till commissioning of upstream Parbati-II HEP. This is based on the fact that the live storage capacity of Parbati-III HEP is only 1.28 MCM which is not sufficient to provide minimum three hours peaking with four units.

(b) Similarly, the post-sedimentation live storage capacity is only 0.87 MCM which is just sufficient to meet 1.36 hours of peaking. The NAPAF for Parbati-III HEP which has been claimed at 31% is actually based on the operation of the power station as ROR scheme. The same will be reviewed after commissioning of Parbati-II HEP.

Peaking operation of the plant

21. The petitioner has proposed to operate the project as 'Run of River' project till the upstream Parbati-II HEP is commissioned. However, the live storage capacity of 1.28 MCM is available which can be utilized to provide peaking power. On perusal of the design energy data and corresponding inflows, it is observed that the generating station can provide 3 hours of daily peaking depending on the inflows. However, due to reduced inflows on account of the non-commissioning of upstream Parbati-II HEP, this generating station would be able to provide maximum available peaking support for three hours in two slots of 1.5 hours each (morning & evening peak). In view of the fact that the generating station has been designed to operate in peaking mode and for that purpose a dam has been constructed whose cost has been embedded in the cost of the project, we find it prudent that the generating station should be operated to provide peaking support to the grid. Accordingly, we direct the petitioner to provide 1.5 hours of peaking in two slots of morning & evening

each, till the upstream Pārbati-II HEP is commissioned. Also, in order to facilitate peaking power from this generating station in the scenario discussed above, we direct the NRLDC to provide schedule to this generating station accordingly. Based on the '10-daily Design Energy' approved by CEA along with the provision of providing 3 hours of daily peaking (in two slots of morning & evening each for 1.5 hours), the NAPAF of 68% has been worked out and allowed till the commissioning of upstream Parbati-II HEP as against the claim of 31% by the petitioner based on ROR operation. The computation of NAPAF is enclosed as Annexure-I to this order.

22. We make it clear that no incentive on account of higher PAF and secondary energy (excess of design energy) has been allowed to this generating station, till the commercial operation of all the units of the upstream Parbati–II HEP. Moreover, the annual design energy and NAPAF of the generating station as allowed above is subject to review after the commercial operation of upstream Parbati-II HEP.

23. The petitioner is directed to take necessary steps to obtain approval of RCE by the Central Government and for the submission of the report on the vetted capital cost by the designated independent agency, prior to the determination of final tariff of the units of this generating station, in this petition.

24. Since tariff in respect of Unit-IV of the generating station would be governed by the provisions of the 2014 Tariff Regulations, the petitioner is directed to file a separate application for the same which would be considered in accordance with law.

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

NAPAF Calculation for Parbati-III (ROR with Pondage)

ANNEXURE-I

Month	10 daily	Design Energy	Inflow for power generation Cumsec	Total inflow for day (21 hrs) (MCM)	Total Cumsec required per machine @130MW	Inflow for For 520MW	Live storage MCM (1.28)	Cumsec from live storage	Total inflow available for plant for peaking	MW corresponding to Total inflow	no. of days	DC for the period
		MU							8=2+7			
		1	2	3	4	5	6	7	8	9	10	11
April	I	10.91	15.45	1.17	44.25	177	1.17	108.15	123.60	363.13	10	3631.27
	II	18.51	26.21	1.98	44.25	177	1.28	118.52	144.73	425.20	10	4252.01
	III	15.34	21.72	1.64	44.25	177	1.28	118.52	140.24	412.01	10	4120.12
May	I	16.92	23.96	1.81	44.25	177	1.28	118.52	142.48	418.59	10	4185.85
	II	24.09	34.12	2.58	44.25	177	1.28	118.52	152.63	448.42	10	4484.16
	III	25.48	32.80	2.48	44.25	177	1.28	118.52	151.32	444.56	11	4890.18
June	I	40.58	57.47	4.34	44.25	177	1.28	118.52	175.99	517.02	10	5170.23
	II	36.5	51.69	3.91	44.25	177	1.28	118.52	170.21	500.05	10	5000.48
	III	37.63	53.29	4.03	44.25	177	1.28	118.52	171.81	504.75	10	5047.49
July	I	43.47	61.56	4.65	44.25	177	1.28	118.52	180.08	529.05	10	5290.46
	II	44.88	63.56	4.80	44.25	177	1.28	118.52	182.08	534.91	10	5349.13
	III	58.74	75.62	5.72	44.25	177	1.28	118.52	194.14	570.36	11	6273.96
August	I	39.58	56.05	4.24	44.25	177	1.28	118.52	174.57	512.86	10	5128.62
	II	33.98	48.12	3.64	44.25	177	1.28	118.52	166.64	489.56	10	4895.63
	III	43.25	55.68	4.21	44.25	177	1.28	118.52	174.20	511.77	11	5629.50
September	I	31.56	44.69	3.38	44.25	177	1.28	118.52	163.21	479.50	10	4794.95
	II	22.83	32.33	2.44	44.25	177	1.28	118.52	150.85	443.17	10	4431.74
	III	19.78	28.01	2.12	44.25	177	1.28	118.52	146.53	430.48	10	4304.84
October	I	13.67	19.36	1.46	44.25	177	1.28	118.52	137.88	405.06	10	4050.64
	II	12.07	17.09	1.29	44.25	177	1.28	118.52	135.61	398.41	10	3984.07
	III	11.63	14.97	1.13	44.25	177	1.13	104.81	119.78	351.90	11	3870.92
November*	I	9.08	12.86	0.97	44.25	177	0.97	90.01	102.87	302.22	10	3022.18
	II	8.23	11.66	0.88	44.25	177	0.88	81.59	93.24	273.93	10	2739.27
	III	7.6	10.76	0.81	44.25	177	0.81	75.34	86.10	252.96	10	2529.58
December*	I	6.8	9.63	0.73	44.25	177	0.73	67.41	77.04	226.33	10	2263.31
	II	6.44	9.12	0.69	44.25	177	0.69	63.84	72.96	214.35	10	2143.48
	III	6.5	8.37	0.63	44.25	177	0.63	58.58	66.95	196.68	11	2163.45
January*	I	5.73	8.11	0.61	44.25	177	0.61	56.80	64.92	190.72	10	1907.17
	II	5.68	8.04	0.61	44.25	177	0.61	56.31	64.35	189.05	10	1890.53
	III	5.77	7.43	0.56	44.25	177	0.56	52.00	59.43	174.59	11	1920.48
February*	I	4.82	6.83	0.52	44.25	177	0.52	47.78	54.61	160.43	10	1604.28
	II	4.38	6.20	0.47	44.25	177	0.47	43.42	49.62	145.78	10	1457.84
	III	4.51	7.98	0.60	44.25	177	0.60	55.89	63.87	187.64	8	1501.10
March	I	5.55	7.86	0.59	44.25	177	0.59	55.02	62.88	184.73	10	1847.26
	II	8.66	12.26	0.93	44.25	177	0.93	85.85	98.11	288.24	10	2882.39
	III	10.25	13.20	1.00	44.25	177	1.00	92.37	105.57	310.15	11	3411.60
		701.40										**132070.19**

Napaf	70%
forced outage	2%
NAPAF allowed	68%