Central Electricity Regulatory Commission
New Delhi

Petition No.140/MP/2018

Coram:

Shri P. K. Pujari, Chairperson
Dr. M.K. Iyer, Member
Shri I.S. Jha, Member

Date of Order: 09 .10.2019

In the matter of

Application under Regulation-31(6) of CERC (Terms and Conditions of Tariff) Regulations,2014 for recoupment of under recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station during FY 2015-16 in respect of Chamera-III Power Station.

And

In the matter of

NHPC Limited
(A Govt of India Enterprise)
NHPC Office Complex,
Sector – 33,
Faridabad –121 003

…Petitioner

Vs

1. Punjab State Power Corporation Ltd
The Mall, Patiala – 147001

2. Haryana Power Utilities
(DHBVNL & UHBVNL)
Shakti Bhawan, Sector VI,
Panchkula- 134019

3. BSES Rajdhani Power Ltd
2nd Floor, B Block, Nehru Place,
New Delhi 110019

4. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashoka Road,
Lucknow – 226001

5. BSES Yamuna Power Ltd
Shakti Kiran Building, Karkardooma,
Delhi – 110092

6. Tata Power Delhi Distribution Ltd
33 kV Sub-station, Hudson Lines,
Kingsway Camp, Delhi – 110009

7. Jaipur Vidyut Vitaran Nigam Ltd.,
Vidyut Bhawan, Janpath,
Jaipur – 302005

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

9. Ajmer VidyutVitaran Nigam Ltd
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer-305001(Rajasthan)

10. Uttrakhand Power Corporation Ltd
UrjaBhawan, Kanwali Road,
Dehradun- 248001

11. Himachal Pradesh State Electricity Board Ltd
VidyutBhawan, Kumar House
Shimla – 171004

12. Power Department
Union Territory of Chandigarh,
Engineering Department, UT Secretariat,
Sector 9D, Chandigarh - 160009

13. Power Development Department (J&K)
Government of J&K,
Mini Secretariat, Jammu–180001 **...Respondents**

Parties present:

Shri Prashant Kaul, NHPC
Shri A.K. Pandey, NHPC
Shri V.N. Tripathi, NHPC
Shri Jitender Kumar, NHPC
Shri Piyush Kumar, NHPC
Ms. Seema Mishra, NHPC
Shri Dhanush C.K, NHPC
Shri R.B. Sharma, Advocate, BRPL

Shri Mohit Mudgal, Advocate, BYPL
Ms. Swapna Seshadri, Advocate, PSPCL

ORDER

The Petitioner, NHPC Ltd. (hereinafter referred to as NHPC) has filed this petition seeking the following relief(s):

(a) Hon'ble Commission may kindly allow recovery of energy charges amounting to Rs. 12.46 Cr in FY 2016-17 against the shortfall in generation of 46.83 MU in FY 2015-16 as per regulation 31(6)(a) of CERC Tariff Regulations, 2014 as explained in para- VIII & X of the petition.

(b) *Hon'ble Commission is requested to allow modified design energy for FY 2016-17 so that the recovery of allowable energy charges is assured as explained in para-XI of the petition.*

(c) To allow revision of energy bills for the period 2016-17 which were already raised to beneficiary for recovery of energy charges.

(d) To allow issuance of supplementary bill for recovery of balance shortfall in energy charges directly from the beneficiaries after determination of final tariff by Honb'le Commission as mentioned in para-IX of the petition.

(e) Pass such other and further order/orders as are deemed fit and proper in the facts and circumstances of the case.

Background

2. Chamera-III Power Station (hereinafter referred to as the generating station) is located in the State of Himachal Pradesh having installed capacity of 231 MW which comprises of three units of 77 MW each. The generating station was declared under commercial operation on 4.7.2012. The approved annual Design Energy (DE) of the generating station is 1108.17 MU and keeping in view the provision of auxiliary losses (1.2%), LADF (1%) and Free Power to the home state (12%), the saleable energy works out to be 952.54 MU.

3. The provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as "the 2014 Tariff

Regulations") dealing with the methodology for computation of energy charges and recover of energy charge shortfall in respect of hydro-generating stations are as under:

"31(4) The energy charge shall be payable by every beneficiary for the total energy scheduled to be supplied to the beneficiary, excluding free energy, if any, during the calendar month, on ex power plant basis, at the computed energy charge rate. Total Energy charge payable to the generating company for a month shall be:

(Energy charge rate in Rs. / kWh) x {Scheduled energy (ex-bus) for the month in kWh} x (100 – FEHS) / 100

"31(5) Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis, for a hydro generating station, shall be determined up to three decimal places based on the following formula, subject to the provisions of clause (7):

$$ECR = AFC \times 0.5 \times 10 / \{DE \times (100 - AUX) \times (100 - FEHS)\}$$

Where,

DE = Annual design energy specified for the hydro generating station, in MWh, subject to the provision in clause (6) below.

FEHS = Free energy for home State, in per cent, as defined in Regulation 42.

"31(6) In case the actual total energy generated by a hydro generating station during an year is less than the design energy for reasons beyond the control of the generating station, the following treatment shall be applied on a rolling basis on an application filed by the generating company:

(a) In case the energy shortfall occurs within ten years from the date of commercial operation of a generating station, the ECR for the year following the year of energy shortfall shall be computed based on the formula specified in clause (5) with the modification that the DE for the year shall be considered as equal to the actual energy generated during the year of the shortfall, till the energy charge shortfall of the previous year has been made up, after which normal ECR shall be applicable:

Provided that in case actual generation form a hydro generating station is less than the design energy for a continuous period of 4 years on account of hydrology factor, the generating station shall approach CEA with relevant hydrology data for revision of design energy of the station."

(b) *In case the energy shortfall occurs after ten years from the date of commercial operation of a generating station, the following shall apply.*

Explanation: Suppose the specified annual design energy for the station is DE MWh, and the actual energy generated during the concerned (first) and the following (second) financial years is A1 and A2 MWh respectively, A1 being less than DE. Then, the design energy to be considered in the formula in clause (5) of these regulations for calculating the ECR for the third financial year shall be moderated as (A1 + A2 – DE) MWh, subject to a maximum of DE MWh and a minimum of A1 MWh.

(c) *Actual energy generated (e.g. A1, A2) shall be arrived at by multiplying the net metered energy sent out from the station by 100 / (100 – AUX).*

"31(7) In case the energy charge rate (ECR) for a hydro generating station, computed as per clause (5) of this regulation exceeds ninety paise per kWh, and the actual saleable energy in a year exceeds {DE x (100 – AUX) x (100 – FEHS) / 10000} MWh, the Energy charge for the energy in excess of the above shall be billed at ninety paise per kWh only:

Provided that in a year following a year in which total energy generated was less than the design energy for reasons beyond the control of the generating company, the energy charge rate shall be reduced to ninety paise per kWh after the energy charge shortfall of the previous year has been made up.

Submissions of the Petitioner

4. The Petitioner in this petition has submitted as under:

(a) The present petition has been filed in order to suitably modify the Energy Charge Rate (ECR) in terms of Regulation 31(6)(a) of the 2014 Tariff Regulations for FY 2016-17 for recovery of under-recovered energy charges in FY 2015-16 due to shortfall in generation. The breakup of actual generation vis-à-vis Design Energy is tabulated below:

S.No.	Month	Design Energy (MU)	Actual energy at GT (MU)	Shortfall/ Excess	Actual PAF (%)
1	**2**	**3**	**4**	**5=4-3**	**6**
1	Apr-15	80.54	121.68	41.14	101.42
2	May-15	155.31	172.6	17.29	101.21
3	Jun-15	154.47	160.43	5.96	98.4
4	Jul-15	161.89	167.52	5.63	97.89
5	Aug-15	163.27	135.09	-28.19	82.74
6	Sep-15	119.78	102.7	-17.08	97.84
7	Oct-15	78.79	55.08	-23.71	101.21
8	Nov-15	52.85	31.92	-20.93	101.21
9	Dec-15	38.05	26	-12.05	77.41
10	Jan-16	30.69	19.8	-10.89	70.88
11	Feb-16	24.75	17.29	-7.46	77.45
12	Mar-16	47.78	33.54	-14.24	99.13
Total		**1108.17**	**1043.65**	**-64.53**	

(b) Petitioner has submitted that maximum possible energy generation based on the actual inflows was 1110.88 MU.

(c) The total shortfall in generation during 2015-16 is 64.53 MU (1108.17 MU – 1043.65 MU).

(d) Out of the total shortfall of 64.53 MU, shortfall of 46.83 MU was beyond the control of Petitioner while balance shortfall of 17.70 MU was within the control of the petitioner. Hence, as per Regulation 31(6)(a) of the 2014 Tariff Regulations, the shortfall of 46.83 MU needs to be recovered by the Petitioner during FY 2016-17. The details of the shortfall and reasons for the shortfall are as under:

Sl No	Description	Generation (in MU)
A	**Shortfall due to reasons beyond the control of petitioner**	
i.	Complete shutdown of power station due to landslide causing damage to GIS Building	-35.38
ii.	Silt Flushing	-13.78
iii.	For recovery of fallen truck	-0.40
iv.	Energy shortfall due to less inflow than design inflow	-101.90
v.	Energy generated due to excess inflow than design inflow	104.62
vi.	**Total (A)**	**-46.83**
B	**Shortfall due to reasons within the control of petitioner**	
i.	In order to meet grid requirement (excess generation), the petitioner has to deplete the reservoir level with marginal increase in generation and had to operate the machines at lower head. Subsequently, at appropriate time, the reservoir level has been maintained with less generation. The overall operation has caused generation loss of approximately 11.68 MU, which is detailed as under.	
ii.	Energy generated by depleting reservoir level on some days	6.73
iii.	Less generation for increasing reservoir level on some days	-18.41
iv.	Unit Outage	-0.15
v.	Other constraint (Partial load/ramping up/down during peaking etc.)	-5.87
	Total (B)	**-17.70**
	Grand Total (A+B)	**-64.53**

(e) The present submission for recovery of energy charges for the FY 2015-

16 is based on the energy charge allowed for the FY 2013-14 vide order dated 24.03.2015 in petition no. 26/GT/2013 as under:

Schedule Energy (Ex-Bus) (MU)	Free Energy (MU)	Net Energy Billed (MU)	ECR (Rs/Unit)	Annual Fixed Charges (Rs. Crore)	Energy Charges to be recovered (Rs. Crore)	Energy Charges actually recovered (Rs. Crore)	Under recovery of Energy (Rs. Crore)
1	**2**	**3=1-2**	**4**	**5**	**6=50% of 5**	**7=3*4/10**	**8=7-6**
1006.91	135.06	871.84	2.123	404.52	202.26	185.09	-17.17

(f) As out of the total loss of 64.53 MU, the loss of 17.70 MU was within the control of the petitioner, shortfall of energy charges amounting to Rs.12.46 Crore corresponding to 46.83 MU only may be allowed, which was due to reasons beyond the control of the Petitioner. Details are as under:

Sl No	Description		Generation / Amount
i.	Total Shortfall in generation during FY 2015-16 (MU)	A	64.53
ii.	Total under recovery of energy charges during FY 2015-16 (Rs. Crore)	B	17.17
iii.	Shortfall in generation due to reasons beyond control (MU)	D	46.83
iv.	Shortfall in energy charges to be recovered during FY 2016-17 (Rs. Crore)	E=D*B/A	**12.46**

(g) Under prevailing mechanism of Regulation 31(6) of the 2014 Tariff Regulations, the Petitioner is not in a position to recover the shortfall allowed by CERC. For example, in case of order dated 17.04.2017 in petition no. 251/MP/2015 for Chamera-III Power station for FY 2014-15, the petitioner could only recover Rs. 14.92 Crore against allowed recovery of Rs. 19.04 Crore. The above situation is applicable in the instant case also.

(h) Further, CEA and CWC were requested to certify the actual inflow data but vide letter dated 31.01.2017, they have expressed inability to certify the inflow series on year to year basis as under:

> "*The hydrological uncertainties on year to year basis are part of the planning process which can be assessed from the departure of the annual rainfall from the normal. Further the consistency of inflow series of the project can be carried out using relevant hydro-meteorological data for longer period such as more than 5*

years. In view of the above it may not be possible to certify the inflow series as requested vide above referred letter."

5. The matter was heard on 09.01.2019 and the petitioner was directed to submit the following information by 14.01.2019 with an advance copy to Respondents:

(a) Planned / Forced machine outages data certified by CEA / NRLDC and its correlation with energy generation data vis-avis available average inflows during the period of such outages; and

(b) IMD rain fall data to co-relate low inflows.

6. The matter was again heard on 02.05.2019 and the petitioner was directed to file additional information vide technical validation letter by dated 13.05.2019 and an advance copy to Respondents, as under:

(a) Documents to validate the energy loss due to landslide, fallen truck.

(b) Rainfall data reported by IMD for the district in which plant is located and other adjoining districts.

(c) Any other relevant documents to justify the claims in Petition.

Reply of UPPCL, Respondent No. 4

7. The Respondent No. 4, UPPCL vide its affidavit dated 24.05.2018, has submitted as under:

(a) The petitioner has demanded that the compensation for shortfall in generation has to be on rolling basis i.e. energy charges for 2016-17 = (Energy charges for 2016-17 – Loss in energy charges in 2016-17) + Loss in energy charges in 2015-16. Therefore, loss in energy charges in 2015-16 is proposed to be carried forward in 2017-18.

(b) The recovery of shortfall in energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying forward to the next years.

(c) The Commission may base the instant case on that of Tehri HEP where the prayer of THDC (the Petitioner therein) to reduce NAPAF from 77% to

74.408% on account of conditions beyond control for period 17.12.2010 to 28.01.2011 was dismissed by the Commission vide order dated 11.12.2013 in petition no. 220/MP/2011.

(d) The Petitioner may clarify the method and reasons for classification of controllable and uncontrollable factors and also why silt flushing has been considered as an uncontrollable factor.

Rejoinder of the Petitioner to reply of Respondent No 4 (UPPCL)

8. In response to the reply of Respondent UPPCL, NHPC vide its affidavit dated 14.08.2018 has submitted as under:

(a) The claim of the Respondent that recovery of shortfall in Energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying it forward to the next years is not in accordance to the provisions of Regulation 31(6) of the 2014 Tariff Regulations.

(b) The claim of the Respondent to take into consideration the case of Tehri HEP in this case is irrelevant as the case of Tehri HEP was for relaxation of NAPAF whereas the present petition is for recovery of shortfall of energy charges.

Reply of Respondent No. 5, BSES Rajdhani Power Limited (BRPL)

9. The Respondent BRPL, vide its affidavit dated 07.01.2019 has submitted, as under:

(a) The Petitioner in its petition has submitted that there was shortfall of 46.83 MU during the FY 2015-16 which are claimed to be beyond the control of the Petitioner and this alleged shortfall in monetary terms is stated to be Rs. 12.46 crores. The prayer of the Petitioner is that the Petitioner may be allowed to recover the shortfall after determination of final tariff by the Commission.

(b) However, in the provisions of regulation 31(6) of the 2014 Tariff Regulations, there is absolutely nothing which may allow the Petitioner

recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station. The Petitioner has also not identified any other regulatory provision under which such a claim can be made and sought from the beneficiaries for recoupment of under-recovered energy charges. The perusal of this regulation would show only that the above regulation provides for the treatment in case actual total energy generated by a hydro generating station during a year is less than the design energy. Thus, the contention of the Petitioner for recoupment of under-recovered energy charges due to shortfall in energy generation for reasons beyond the control of generating station is misconceived and the same is without any basis.

(c) Similarly, the other prayer related to revision of energy bills for the period 2016-17 for recovery of full energy charges are also unfounded and these are also liable to be rejected. These claims are only imaginary as there are no express regulatory provisions under which such claims can be sought from the beneficiaries for recoupment of under-recovered energy charges, if any, by way of re-determination or under the truing up exercise. Accordingly, the alleged claim of the Petitioner is liable to be rejected by the Commission.

(d) The information supplied by Petitioner to claim the shortfall of 46.83 MU during the FY 2016-17 is not adequate. The Petitioner has filed the following information for this purpose;

a) *Provisional ABT based REA issued by NREB for all the 12 months during 2015-16;*

b) *Daily inflow data of the Petitioner in respect of Sewa-II power station for FY 2015-16;*

c) *Energy Bill dated 13-Feb.-2018 to the Deputy Chief Engineer, PSPCL Patiala-Punjab;*

d) *Order dated 6th February, 2017 in Petition Nos. 194/GT/2015 & 249/GT/2014 for revision of tariff of Chamera-III.*

(e) The perusal of the letter from the Central Water Commission shows that it is not be possible to certify the inflow series as requested by the NHPC to the

Central Electricity Authority. Thus, the daily inflow series numbering 30 stands as not certified by the Central Water Commission.

(f) Annexure-II of the petition related to the Analysis on daily basis shows that the above data of Petitioner has not been vetted by any independent authority. This data also shows that there were huge inflows which commenced from 24.4.2015 till the end of September-2015 and this huge spillage has not been managed. If this spillage was properly managed it would have resulted in the generation of 5.544x160=887.04 MU as against the actual generation of 777.26 MU achieved by the Petitioner during this period. Thus, it may be noted that the Petitioner has failed to utilize the reservoir capacity optimally by not resorting to extra generation during the period from 24.4.2015 till the end of September-2015 as well as the allowance of 2.85 cumecs towards mandatory downstream release on daily basis throughout the year. Nothing has been explained on all these issues in the petition and even the Maximum Reservoir Level and Minimum draw down level alongwith the daily reservoir levels have not been furnished. All this clearly show that the shortfall in energy generation was for reasons attributable to the Petitioner for which no one else except Petitioner is responsible. Accordingly, the claim for lower actual energy generation compared to designed energy is liable to be rejected by the Commission.

(g) Further, the Petitioner's plant had an excess of 24.22 MU beyond the scheduled Energy (Scheduled energy includes free energy). Petitioner NHPC would have sold this energy in the market resulting in revenue of approximately Rs. 6.68 Cr to the power station. The computation is as given below:

MU generated	A	1043.65
Normative Aux	B	1.20%
MU generated Net of Aux	C=A*(100%B)	1031.13
MU scheduled by station	D	1006.91
Unscheduled MU by the station	E=C-D	24.22
IEX prices of Northern region for FY16-17 (in Rs.)	F	2.76
Amount recovered for Unscheduled energy (Rs. Cr)	G=E*F/10	6.68

Therefore, the Petitioner has already recovered the amount which it is claiming as a loss due to shortfall of energy generation.

(h) Besides the certification of the inflow series, the petitioner is also required to produce certification from NRPC and NRLDC that the shortfall as claimed is not due to factors which are within the control of the petitioner. However, neither NRPC nor NRLDC have even been included as respondents in the petition.

Rejoinder of NHPC to reply of BRPL

10. In response to the respondent BRPL, NHPC vide its affidavit dated 07.02.2019 has submitted as under:

(a) The recovery of AFC in case of hydro power projects are in two parts on 50:50 basis. The recovery of 50% of AFC is entirely dependent upon generation up to the Design Energy and in case of shortfall in generation, the generating company is bound to lose revenue. In case of Chamera-III Power Station in FY 2015-16, the total shortfall in generation was 64.53 MU and loss of energy charges was Rs. 17.17 crore. The Regulation 31(6)(a), 31(6)(b) & 31(6)(c) of the 2014 Tariff Regulations lays down the methodology for recovery of shortfall as applicable to generating stations.

(b) The understanding of the Respondent (BRPL) on recovery mechanism defined in clause 31(6) of the 2014 Tariff Regulations is not correct. There is no case of double benefit under this recovery mechanism. In fact, the Petitioner is recovering loss of energy charges of FY 2015-16 in next financial year i.e. FY 2016-17. The modification in Design Energy of FY 2016-17 for recovery of losses in FY 2015-16 is as per procedure defined in regulation 31(6) of the 2014 Tariff Regulations.

(c) The delay in submission of the Petition is due to time taken in compilation of data and its verification/ certification by external agencies like CEA/ CWC/ RLDC.

(d) As regards statement of BRPL that the data submitted by the Petitioner has not been vetted by any independent agency, it has been already stated that CEA/ CWC have denied certification of daily discharge data due to non-availability of discharge gauge at specific location.

(e) The respondent has commented on operational conditions of the project causing loss in Design Energy. The necessary clarification is as under:

i. In case given discharge is beyond reservoir capacity the spillage of water is bound to occur and Generation Company has no control over it.

ii. Similarly, in case of high siltation during monsoon season, the flushing of silt is necessary to maintain the pondage capacity of reservoir. In this process reservoir level is depleted after silt flushing process and the level is again maintained. In this process generation loss is there which is beyond the control of generating station.

(f) As per allocation letter issue by MoP, full power is allotted to different beneficiaries of Chamera-III Power Station except 13% free power to home state. In view of above, Chamera-III Power Station has no free power to be sold under market/ exchange for recovery of additional revenue. The indicated generation (ex-bus) of 24.22 MU is unscheduled energy generated as per grid requirement under CERC (Deviation Settlement Mechanism and Related Matter) Regulation, 2014.

(g) Northern Regional power Committee (NRPC) and NRLDC are the nodal agencies for regulation of power in the region. They are not supposed to certify the data related with loss of generation. Since the above agencies have no share allocation from the generating station nor are they beneficiaries of power station, they have not been made respondent in the instant petition.

(h) It is also clarified that spillage of water and shortfall in generation may occur in any financial year when the discharge is not in line with hydrology considered in Design Energy.

(i) In case of heavy rain in a short span of time, the spillage of water cannot be stopped due to limited capacity of reservoir, whereas deficient discharge in other time will cause loss of design generation.

Reply of PSPCL, Respondent No. 1

11. The Respondent No. 1, PSPCL vide its affidavit dated 29.03.2019 has submitted as under:

(a) The Petitioner has claimed for recovery on account of shortfall in generation for 46.83 MU while stating that the same is on account of reasons which were beyond the control of the Petitioner. Respondent does not agree with the claim of petitioner regarding shortfall in energy generation due to silt flushing, less inflow from design inflow, without any documentary evidence.

(b) Petitioner has not submitted documents related to claim against fallen truck and the claim that land slide damaged the GIS substation. Petitioner has to submit the detailed report / internal communication held for taking corrective actions.

(c) With respect to the loss of generation on account of silt flushing, it is a foreseeable event which keeps on happening with hydropower projects and it cannot be considered as beyond the control of the Petitioner. The Petitioner being a hydropower generator should know how to make arrangements in such circumstances. Therefore, the Petitioner may not to be given any relief on account of reservoir flushing.

(d) The actual inflow cannot always be the same as the design inflow. On some days the actual inflow will be less and on some days it will be more than the design inflow. The Petitioner cannot possibly ask for recovery of energy charges on account of loss of generation every time the actual inflow is less than the designed inflow. As a hydro power generator, the Petitioner ought to be aware that the quantum of inflow is not constant. This is not an unforeseen event at all or an event beyond the control of the Petitioner. The Petitioner being in the business of generation of hydro power ought to have been aware of this. Therefore, the Petitioner has no basis for claiming relief by citing the loss of generation on account of less inflow.

(e) Regulation 31 (6) of the 2014 Tariff Regulations specifically states that the treatment under Regulation 31 (6) (a) shall be applied only when the total energy generated is less than the design energy due to reasons beyond the control of the hydro generating station. The reasons furnished by the Petitioner cannot be said to be ‘beyond the control’ of the Petitioner. The Petitioner could

have made arrangements to deal with the aspect of silt flushing. In so far as the aspect of less in flow is concerned, it is submitted that this is a common event for a hydro power generator and therefore not something that the Petitioner could not have foreseen at the time of designing the project.

(f) The Petitioner has submitted the reply of Central Water Commission ("CWC") dated 23.01.2017, whereby CWC has expressed its inability to certify the inflow series on year to year basis. Therefore, the CWC has taken the position that "the hydrological uncertainties on year to year basis are part of the planning process which can be assessed from the departure of the annual rainfall from the normal". The above reply clarify that claim of the petitioner as regards shortfall in generation on account of silt flushing and less inflow from Design Inflow are not tenable.

Rejoinder of NHPC to reply of PSPCL, Respondent No 1

12. In response to the respondent PSPCL, NHPC vide its affidavit dated 17.06.2019 has submitted as under:

(a) Documentary evidence for shut down of power station due to landslide causing damages to GIS building and recovery of fallen truck has been submitted vide affidavit dated 17.06.2019.

(b) Slit flushing is a seasonal requirement in hydro power station during monsoon season. Requirement of slit flushing depends on silt content in water and cannot be ascertained. Design Energy (DE) is determined on the basis of discharge in 90% dependable year with 95% machine availability. DE is not directly linked with design of the project structure for spillage or de-silting arrangement.

(c) However, if overall annual discharge is less than the expected discharge, the loss of generation is bound to happen. In present case, the petitioner has lost 101.90 MU in some months, whereas 104.62 MU extra energy has been generated in some other months. Hence, petitioner has not claimed on account of less flow.

Analysis and Decision

13. We note that the Design Energy of the generating station is 1108.17 MU. During the FY 2015-16, there was a shortfall of 64.53 MU in generation from the instant generating station. Of this shortfall, the Petitioner has claimed that shortfall of 46.83 MU was beyond its control, while balance of 17.70 MU was not uncontrollable. The Petitioner has invoked provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations to claim compensation for the shortfall of 46.83 MU.

14. The break-up of within control generation loss (-) [17.70 MU] by the Petitioner is as under:

(a) Additional energy generated by depleting reservoir (grid requirements): 6.73 MU
(b) Shortfall in generation for increasing reservoir (grid requirements): (-) 18.41 MU
(c) Unit Outage: (-) 0.15 MU
(d) Other constraints (partial load/ ramping up, down during peaking): (-) 5.87 MU

15. The break-up of claimed generation loss (-) [46.83 MU] by the Petitioner on account of uncontrollable factors is as under:

(a) Complete shutdown of power plant due to landslide: (-) 35.38 MU
(b) For recovery of fallen truck: (-) 0.40 MU
(c) Energy shortfall due to less inflow: (-) 101.90 MU
(d) Energy gain due to excess inflow: 104.62 MU
(e) Energy shortfall due to silt flushing: (-) 13.78 MU

16. The Respondent, UPPCL has submitted that recovery of shortfall in energy charges must be done in the years when the actual generation is greater than Design Energy rather than carrying it forward to the next years. In our view, this suggestion of the Respondent is against the provisions of the 2014 Tariff Regulations and cannot be

considered. The Respondent, UPPCL has further submitted that the instant petition may be considered on basis of the order dated 11.12.2013 in the Petition no. 220/MP/2011. However, this is not relevant in the present case as that order dated 11.12.2013 related to prayer for reduction in NAPAF, while present petition is for relief on account of shortfall in generation on account of uncontrollable factors and is covered under provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations

17. Respondents have raised the issue that the Petitioner has not been able to utilise the full potential of the inflows, especially during April to September 2015 there was lots of spillage observed from the 365 days data as submitted by the Petitioner. Reservoir capacity is limited and if there are inflows more than Design inflow i.e. 128.1 cumec, spillage is bound to occur. We note from the inflow data submitted by the petitioner, that water spillage occurred only when inflows were more than the Design inflow i.e. 128.1 cumec or machine was under outage / shutdown or reservoir silt flushing was carried out by the generating station. Hence we do not agree with Respondents claim regarding inefficient operation / poor management of the inflows by the petitioner.

18. Low generation in comparison to Design Energy in a hydro generating station can be attributable to the following reasons:

(i) Low inflows in comparison to the design inflows associated with design year.

(ii) Prolonged planned/ forced outage of machines.

(iii) Inefficient operation of the plant which may include low overall efficiency of turbine and generator, high auxiliary power consumption, high losses in water conductor system etc.

(iv) Non-utilization of maximum power potential of actual inflows due to excessive spillage.

We analyse each of the above reasons in respect of the present claim of the Petitioner.

(i) Low inflows in comparison to the design inflows associated with design year.

19. It is noticed from the claim of the petitioner that, energy shortfall due to less inflow from Design Inflow is (-) 101.90 MU and energy generated due to excess inflow from Design Inflow is 104.62 MU, hence there is 2.72 MU excess generation due to inflows from Design Inflow. There is no adverse effect of inflows on energy generation.

(ii) Prolonged planned/ forced outage of machines

20. In order to rule out the prolonged planned/ forced outage of machines, their impact on energy generation and in order to understand whether outage of a machine in anyway affected the energy generation by non-utilization of available water flow, the Commission vide technical validation letter dated 29.11.2018 had directed the Petitioner to furnish the planned and forced outage data for the year 2015-16 along with its correlation with energy generation. In response, the Petitioner vide affidavit dated 4.01.2019 has submitted that there have been 53 instances of machine outages(planned/forced).

21. Out of above 53 instances, it is noticed that there are 42 instances of machine outages when there was energy shortfall and at the same time there was no spillage. The shortfall of energy generation during these instances was other than for the reasons of machine outages, like less inflow and less generation to increase reservoir level. In this regard, it is noted that shortfall due to less inflows has been already accounted for at para 19 above and less generation to increase the reservoir to meet the grid requirement has been put by the petitioner under the list of reasons 'within the control of

the petitioner'. As such, it is concluded that during these instances machine outages was not the reason of energy shortfall.

22. There are 9 instances of complete shutdown due to landslide causing damage to GIS Building. The Petitioner has accounted the shortfall due this reason under head "shortfall in energy generation beyond its control". The same will dealt at para dealing with the reason for non-utilization of maximum power potential of actual inflows due to excessive spillage.

23. There are 2 instances of machine outage, when there was spillage and no shortfall in energy generation as compared to Design Energy. However, out of these two instance of machine outage, in one instance i.e. on 08.05.2015 there was shortfall of (-) 0.15 MU as compared to Maximum possible generation. The Petitioner has accounted this shortfall of (-)0.15 MU under head "shortfall in energy generation within its control".

24. In view of this, it is found that there is shortfall of (-) 0.15 MU due to machine outages and petitioner has accounted this shortfall under its control and the same will be used for further calculations in this Order

(iii) & (iv) Inefficient operation of the plant and non-utilization of maximum power potential of actual inflows due to excessive spillage

25. In order to assess maximum possible annual generation with available actual inflows as submitted by the Petitioner, calculations have been made considering the available actual inflows. As per this calculation, maximum possible generation utilising 100% machine capability should have been 1103.17 MU. For this purpose, the plant capacity of 231 MW, design head of 200 M, overall efficiency of 92% and design flow of 128.1 cumecs have been considered in line with the values used to arrive at the Design

Energy. However, the Petitioner in its calculations has assessed the same to be 1110.88 MU. It is possible that the difference of 7.71 MU is due to petitioner having considered more power generation in favourable conditions. The figure of 1110.88 MU as calculated by the petitioner is being adopted for further analysis.

Possible generation at generator terminal after accounting for the reasons beyond the control of the petitioner.

26. The petitioner has submitted the following reasons for shortfall in energy generation beyond its control:

1.	Complete shutdown of power station due to landslide causing damage to GIS Building (MU)	(-)35.38
2.	Silt Flushing (MU)	(-)13.78
3.	For recovery of fallen truck (MU)	(-)0.40
	Total (MU)	**(-)49.56**

27. With regard to shortfall due to complete shutdown of power station due to landslide causing damage to GIS Building, the petitioner has submitted that, there was heavy rain in the region from 09.08.2015 and on 11.08.2015 big boulders hit the GIS building wall and damage occurred. Plant was taken under shut-down from 11.08.2015 to 19.08.2015. It was the news headlines of the "Business Standard" on 12.08.2015 that NHPC Chamera – III (231 MW) Power Station was under temporary shut down due to landslide after heavy rains in the region. It is evident from the damage report submitted by the petitioner that the landslide was due to heavy rain, and, therefore, the loss of generation from 11.08.2015 to 19.08.2015 was beyond the control of the generating station. Declared Capacity of the generating station for the above period as per NRLDC website also indicates that, the plant was under shut down from 12:00 Hrs of 11.08.2015 and attained full capacity at 16:45 Hrs on 19.08.2015. Detailed status of the claim is tabulated as under:

Description	Design Energy (MU) (a)	Maximum possible generation at GT with available inflows without outages and with use of installed capacity during high inflow period (MU) (b)	Actual Generation (MU) (c)	Shortfall w.r.t to DE (MU) (d)=(c)-(a)	Shortfall w.r.t to maximum possible generation(MU) (e)=(c)-(b)
11.08.2015 to 19.08.2015 due to landslide	47.40	49.90	14.52	(-)32.88	(-)35.38

Hence, from the above table it is clear that loss of generation w.r.t. Design Energy is 32.88 MU and w.r.t. Maximum possible Energy generation is 35.38 MU. Petitioner has claimed the loss of generation 35.38 MU based on maximum possible generation during that period as the inflows were more than design inflows. Hence, we have considered 35.38 MU generation loss under the reasons beyond the control of the petitioner.

28. Petitioner has not submitted adequate document to justify loss of generation due to recovery of fallen truck. Hence we have not considered the loss of generation of 0.40 MU as a reason beyond the control of generating station.

29. To prevent the machine from high silt, machine needs to be stopped till the silt level comes down to permissible limit. Loss of generation during such time is beyond the control of generating station. Design Energy of the plant is based on the hydrological series and does not take into account the energy lost due to stoppage of plant due to high silt levels. We are of the opinion that generator should be compensated for the loss of generation due to silt / reservoir flushing. Hence, loss of generation of 13.78 MU is considered under the reasons beyond the control of the generating station.

30. Based on the above, possible generation at the generator terminal after accounting for the reasons beyond the control of the petitioner:

(In MU)

1.	Energy that could have been generated by utilizing available actual inflows and 100% machine capacity i.e. 231 MW	1110.88
2.	Energy lost due to plant stoppage due to Silt	(-)13.78
3.	Energy lost due to landslide in GIS	(-)35.38
4.	Remaining Energy that could be generated	**1061.72**

Possible energy generation at the generator terminal after accounting for the reasons within the control of the Petitioner as claimed by the Petitioner:

31. Based on the above calculations and after accounting for the reason of shortfalls which were beyond the control of the Petitioner, the following has been worked out to assess the possible generation at generator terminal after accounting for the reasons within the control of the Petitioner:

(In MU)

Sl. No	Description	Based on actual available flow at 100% machine capacity
1.	Remaining Energy that could be generated after taking into account reasons beyond control	1061.72
2.	Energy loss due to Unit Outage & recovery of Fallen Truck	-0.55 (0.15+0.40)
3.	Energy loss due to Grid requirements	-11.68
4.	Other constraints (Partial ramping up/ down during peaking)	-5.87
	Remaining Energy that could be generated (MU)	**1043.62**

32. The above calculations of 1043.62 MU and actual generation of 1043.65 MU are in agreement (difference of 0.03 MU is due to rounding off in calculations). Therefore, it is held that Petitioner has been able to generate according to the actual inflows after accounting for the reasons under its control and reasons beyond its control. Accordingly, the Petitioner cannot be faulted with inefficient operation of the plant and non-utilization of maximum power potential of actual inflows or excessive spillage. In our view, lower generation in comparison to Design Energy was due to reasons not under the control of

the petitioner i.e. energy lost due to plant stoppage during incidence of high silt , due to landslide in GIS and other stated reasons i.e. energy loss due to Unit outages, energy loss due to grid requirements, other constraints (partial ramping up/ down during peaking) for which the Petitioner has taken the responsibility by putting them under the list of reasons within the control.

33. In light of above deliberations, Commission is of the view that the Petitioner is entitled to be compensated to the extent of energy shortfall occurred due to reasons which were not under the control of the Petitioner, which works out to 46.45 MU (1108.17-1061.72) i.e. the difference between Design Energy and Max possible Energy generation after accounting the reason beyond control of Petitioner.

34. Respondent, BRPL has submitted that the generating station had generated an excess of 24.22 MU beyond scheduled energy and would have sold this energy in the market resulting in revenue approximately Rs. 6.68 Cr. As petitioner has submitted that as per the allocation letter issued by MoP, all the power is allocated to different beneficiaries, except 13% free power to Home State. Thus, generating station does not have any free power to sell in open market, hence claim of the Respondent, BRPL is not considered. Energy generated above is the unscheduled energy and shall be treated as per the DSM Regulation, 2014.

35. In view of the above deliberations, energy charge shortfall is worked out as follows:

Schedule Energy (Ex-Bus) (MU)	**Free Energy (MU)**	**Net Energy Billed (MU)**	**ECR (Rs/Unit)**	**Annual Fixed Charges (Rs.Crore)**	**Energy Charges to be recovered (Rs.Crore)**	**Energy Charges actually recovered (Rs.Crore)**	**Under recovery of Energy (Rs.Crore)**
1	2	3=1-2	4	5	6=50% of 5	7=3*4/10	8=7-6
1006.91	135.06	871.84	2.123	404.52	202.56	185.09	-17.17

36. Therefore, the amount to be recovered in the FY 2016-17 due to shortfall in energy generation from the Design Energy during 2015-16 works out as follows:

Total Shortfall in generation during FY 2015-16 (MU)	A	64.53
Total under recovery of energy charges during FY 2015-16 (Rs. Crore)	B	17.17
Shortfall in generation due to reasons beyond control(MU)	C	46.45
Shortfall in energy charges to be recovered during FY 2016-17 (Rs. Crore)	D=C*B/A	**12.36**

37. Accordingly, in terms of Regulation 31(6) (a) and 31(6) (c) of the 2014 Tariff Regulations, we decide that the Design Energy for the year 2016-17 is 1043.64 MU till the energy charge of Rs.12.36 Cr for the period 2015-16 is recovered by the petitioner by revision of energy bills for the period 2016-17. Further, the difference in energy charge shortfall to be recovered for the year 2015-16 which may arise after the true-up of tariff for the period 2014-19 shall be recovered directly by the generating station from beneficiaries through supplementary bills after true-up.

38. Petition No. 140/MP/2018 is disposed of in terms of above.

Sd/-
(I S Jha)
Member

Sd/-
(Dr. M.K. Iyer)
Member

Sd/-
(P. K. Pujari)
Chairperson