

**CENTRAL ELECTRICITY REGULATORY COMMISSION
New Delhi**

Petition No.330/MP/2018

Coram:

**Shri P. K. Pujari, Chairperson
Shri Arun Goyal, Member
Shri I.S. Jha, Member**

Date of Order: 10.02.2021

In the matter of

Application under Regulation-31(6) of CERC (Terms and Conditions of Tariff) Regulations, 2014 for recovery of shortfall in energy charges due to reasons beyond control of Teesta Low Dam-III Power Station and recovery of shortfall in capacity charge under Regulation-54 & 55 due to agitation by GJMM in FY 2017-18.

And

In the matter of

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

...Petitioner

Vs

The Chairman & Managing Director
WBSEDC Ltd.,
Vidyut Bhawan, 8th Floor, Block -DJ, Sector –II,
Salt Lake, Kolkata-700091 (West Bengal).

...Respondents

Parties present:

Shri Rajiv S. Dvivedi, Advocate, NHPC



Shri M. G. Gokhale, NHPC
Ms. Anushree Bardhan, Advocate, WBSEDCL
Ms. Tanya Sareen, Advocate, WBSEDCL

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 shortfall in energy charges amounting to ₹61.93 Crs against the shortfall in generation of 195.53 MU, as explained in para- 9 as per regulation 31(6)(a) of CERC Tariff Regulations, 2014.*
- b) *Hon'ble Commission is requested to kindly allow PAF of 85% against the actual PAF of 79.64% and recovery of shortfall in capacity charge amounting to ₹11.37 crores in FY 2017-18 due to agitation by GJMM.*
- c) *As recovery of capacity charge due to reason beyond control of generating station is not specifically defined in Tariff Regulation 2014, as an exceptional case, the Commission may kindly consider our request made at Para b above under Regulation 54 and 55 i.e. Power to Relax and Power to Remove Difficulty.*
- d) *As the capacity charge and energy charge for the FY 2017-18 have already been raised, the Commission is requested to allow recovery of shortfall in capacity charge and energy charge through supplementary bills.*
- e) *The present claim of capacity charge and energy charge is based on tariff allowed by Hon'ble Commission for the period 2013-14. The Commission is requested to allow recovery of shortfall in capacity charge and energy charge based on determination of final tariff for the FY 2017-18.*

Background

2. The Teesta Low Dam-III Power Station (hereinafter called 'TLDP-III' or 'the Power Station') with four units of 33 MW (4 x 33 MW = 132 MW) located in the State of West Bengal, is under commercial operation w.e.f. 19.05.2013. The approved annual



Design Energy (DE) of the generating station is 594.07 MU and keeping in view the provision of auxiliary losses (1.0%) and LADF (1%), the saleable energy works out to be 582.25 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 billing 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:

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

“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 from 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 $\{DE \times (100 - AUX) \times (100 - FEHS) / 10000\}$ 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 the FY 2018-19 for recovery of under-recovered energy charges of FY 2017-18 due to shortfall in generation. The breakup of actual generation vis-à-vis Design Energy and shortfall/ excess for FY 2017-18 is tabulated below:

| S.No. | Month | Design Energy (MU) | Actual energy at GT (MU) | Shortfall/ Excess (MU) |
|-------|-------|--------------------|--------------------------|------------------------|
| 1 | 2 | 3 | 4 | 5=4-3 |



| | | | | |
|--------------|--------|---------------|---------------|----------------|
| 1 | Apr-17 | 30.10 | 34.17 | 4.07 |
| 2 | May-17 | 41.11 | 44.50 | 3.39 |
| 3 | Jun-17 | 76.83 | 68.57 | -8.26 |
| 4 | Jul-17 | 93.31 | 29.48 | -63.83 |
| 5 | Aug-17 | 93.31 | 0.00 | -93.31 |
| 6 | Sep-17 | 74.47 | 48.68 | -25.79 |
| 7 | Oct-17 | 70.78 | 70.05 | -0.73 |
| 8 | Nov-17 | 26.50 | 30.41 | 3.91 |
| 9 | Dec-17 | 23.22 | 18.99 | -4.24 |
| 10 | Jan-18 | 23.57 | 14.33 | -9.24 |
| 11 | Feb-18 | 16.77 | 11.76 | -5.01 |
| 12 | Mar-18 | 24.10 | 15.84 | -8.27 |
| Total | | 594.07 | 386.78 | -207.29 |

(b) Petitioner has submitted that maximum possible energy generation based on actual inflows for 2017-18 is 618.14 MU.

(c) The total shortfall in generation during 2017-18 is (-)207.29 MU (386.78 MU – 594.07 MU).

(d) Out of the total shortfall of 207.29 MU, shortfall of 195.53 MU was beyond the control of Petitioner while balance shortfall of 11.76 MU was attributable to the Petitioner. Hence, as per Regulation 31(6)(a) of the 2014 Tariff Regulations, the energy charge shortfall due to generation shortfall of 195.53 MU needs to be recovered by the Petitioner during FY 2018-19. 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. | Energy shortfall due to less inflow from design inflow | -41.41 |
| ii. | Energy generated due to excess inflow from design inflow | 49.79 |
| iii. | Energy loss due to partial/ complete shutdown of plant due to GJMM agitation | -185.07 |
| iv. | Energy loss due to reservoir flushing | -10.28 |
| v. | Energy loss due to high trash | -3.28 |
| vi. | Energy loss due to transmission constraint | -5.28 |
| vii. | Total (A) | -195.53 |
| B | Shortfall due to reasons within the control of petitioner | |
| i. | In order to meet grid requirements, sometimes powerhouse is operated at higher load resulting into depletion of reservoir and at suitable time, reservoir is to be filled again causing loss of | |



| | | |
|------|---|----------------|
| | generation. In this process, the figure of gain/loss of energy is as under: | |
| ii. | a) Energy generated by depleting reservoir level on some days | 3.61 |
| iii. | b) Less generation for increasing reservoir level on some days | -9.39 |
| iv. | Unit Outages | -0.25 |
| v. | Other constraint (Partial load/ramping up/down during peaking etc.) | -5.74 |
| | Total (B) | -11.76 |
| | Grand Total (A+B) | -207.29 |

(e) The truing up of AFC for the period 2013-14 and tariff petition for the period 2014-19 in case of TLDP-III have not been allowed by the Commission due to non-submission of approved Revised Cost Estimates (RCE). The tariff petition no. 193/GT/2015 and 248/GT/2014 had been disposed of by the Commission vide order dated 06.02.2017.

(f) In view of above, claim for recovery of energy charge is based on interim tariff allowed by the Commission for FY 2013-14 vide order dated 22.01.2015 in petition no. 115/GT/2013. On the basis of above, relevant data for decision on recovery is mentioned in the table below:

| Schedule Energy (Ex-Bus) (MU) | Free Energy (MU) | Net Energy Billed (MU) | ECR (Rs/Unit) | Annual Fixed Charges (₹ crore) | Energy Charges to be recovered (crore) | Energy Charges actually recovered (₹ crore) | Under recovery of Energy Charges (₹ crore) |
|-------------------------------|------------------|------------------------|---------------|--------------------------------|--|---|--|
| 1 | 2 | 3=1-2 | 4 | 5 | 6=50% of 5 | 7=3*4/10 | 8=7-6 |
| 374.04 | 3.74 | 370.30 | 3.097 | 360.71 | 180.355 | 114.68 | -65.66 |

(g) As out of the total loss of (-)207.29 MU, the loss of (-)195.53 MU was not controllable, shortfall of energy charges amounting to ₹ 61.93 Cr corresponding to (-)195.53 MU only may be allowed, which was due to reasons beyond the control of the Petitioner. Details are as under:

| Sl No | Description | Calculation basis | Generation / Amount |
|-------|---|-------------------|---------------------|
| i. | Total Shortfall in generation during FY 2017-18 | A | (-)207.29 MU |
| ii. | Total under recovery of energy charges during | B | ₹ 65.66 crore |



| | | | |
|------|---|-----------|---------------|
| | FY 2017-18 | | |
| iii. | Shortfall in generation due to reasons beyond control | D | (-)195.53 MU |
| iv. | Shortfall in energy charges to be recovered during FY 2018-19 | $E=D*B/A$ | ₹ 61.93 crore |

(h) CEA (Central Electricity Authority and CWC (Central Water Commission) 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 and stated 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.”

Proceedings during the hearing

5. The matter was heard on 02.05.2019 and the Commission after hearing the parties, directed the Petitioner to submit the following additional information on or before 31.5.2019 with an advance copy to the respondent:

- a. Rainfall data reported by IMD for the district in which plant is located and other adjoining districts to correlate low inflows; and
- b. Planned/forced machine outage data certified by CEA/NRLDC and its correlation with generation data viz a viz available average inflows during the period of such outages.

6. Petitioner vide affidavit dated 19.6.2019 has filed its response to above direction of the Commission and submitted the following information:

- a. *IMD Rainfall data*



- b. *Planned/forced machine outage data certified by CEA/NRLDC*
- c. *Correlation of outage data with energy generation data vis-à-vis available average inflows*

7. The matter was heard again on 30.9.2019. The Commission after hearing the parties, directed the petitioner to file amended Petitions, by 9.10.2019. The Petitioner vide affidavit dated 9.10.2019 has amended the petition and has submitted as follows:

“ 3. That the amendments made in the main petition are detailed as under:-

a. That the entire original petition is hereby renumbered. In place of Roman I, II,..numerical 1, 2, ..are mentioned. The inner para of the main para are also now numbered as a, b, etc. Prayers are renumbered as a, b, c etc.

b. That in Para IX (2)“needs to” is being replaced by “for the year (2018-19) following the year of energy shortfall shall”

c. In para IX (4) end, a chart is given. The item at Sl. No. Q is changed as under:-

| | | |
|---|--|------------------------|
| Q | Modified ECR (₹/Unit) of FY 2018-19 to recover the shortfall in energy charges as per regulation 31(6) | 4.7 6 |
|---|--|------------------------|

d. Para IX (7) has been deleted.

e. In Para X (2) “which has been produced above at para-IX” has been deleted.

f. Prayer 1 of the original Petition is being replaced by the following prayer “a”:-

“a” Hon’ble Commission may kindly allow recovery of shortfall in energy charges amounting to ₹61.93 Crs against the shortfall in generation of 195.53 MU, as explained in para- 9 as per regulation 31(6)(a) of CERC Tariff Regulations, 2014.

.....”

8. Thereafter, the matter was heard on 18.06.2020. The Commission after hearing the parties, directed the petitioner to submit the following information on affidavit, by 15.7.2020 with an advance copy to the Respondent:

- a. Design Energy calculation (in MS Excel) as approved by CEA;
- b. Analysis of Annexure-II of the Petition on daily basis in MS Excel;
- c. Methodology for calculating daily maximum possible generation during the financial year 2017-18 as claimed in the Petition (in MS Excel);



- d. Daily generation report for the days for which energy shortfall has been claimed due to planned/forced outages, reservoir flushing, high trash, plant shutdown due to strike and transmission constraints, etc.
- e. Day-wise details of scheduled energy, actual energy injected in the grid and energy accounted for in DSM along with the revenue earned from DSM for such energy; and
- f. Any other relevant information/document to justify the claims in the Petition.

Reply of the Respondent, (WBSEDCL)

9. WBSEDCL vide its affidavit dated 10.7.2019, has submitted as under:

(a) WBSEDCL requested NHPC for providing Daily Discharge Data for the generating station for the financial year 2017-18 as well as for other financial years involved in the various petitions filed before this Commission.

(b) Government of West Bengal sought for the Daily Discharge Data for the period 2014-18 in respect of River Teesta from the Central Water Commission (CWC) vide letter dated 02.11.2018. CWC has provided the Data for the financial years 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18 related to monsoon period i.e. from May to October each year by letter dated 30.01.2019. WBSEDCL has compared the data provided by NHPC in the Petition with the data made available by CWC. Comparison table shows that on some days, more water was available for generation as compared to that claimed by NHPC. This indicates operational inefficiency of NHPC.



Petitioner has claimed that there were transmission constraints even when machine and water was available for generation. Being a generating company, the Petitioner is required to coordinate with transmission licensees for availability of transmission system.\

(c) NHPC has provided the Rainfall Data as available in the website of the Indian Meteorological Department (IMD) for the District Darjeeling in the State of West Bengal. Petitioner may be directed to give further data, to the extent possible relating to the rainfall for the relevant catchment area in order to undertake detailed prudence check.

(d) Silt Flushing operation cannot be claimed additionally for adjustment for shortfall in generation in the TLDP-III since silt flushing (for 8-20 hours) is a normal activity in a hydro-electric plant during monsoon to reduce the silt accumulation and same has been factored by NHPC for the operation of hydro-electric Plant. In this regard, Clause 7.4.5(iii) of Volume VI of the Detailed Project Report (DPR) provides as under:

“iii. The barrage will be emptied for about 8 to 20 hours in Monsoon months to generate the retrogressive erosion in order to remove the silt deposited in the barrage and specifically near the intake of the powerhouse. The discharge requirement for such flushing will be finalized after the hydraulic model study.”

(e) The Petitioner has claimed that operation of TLDP-III was affected during the period from 13.07.2017 to 14.09.2017 due to strike and agitation of GJMM (Gorkha Janmukti Morcha) in Darjeeling district. Shortfall on this count has been claimed by NHPC on account of reasons beyond its control. Regulation 12 of the 2014 Tariff Regulations deals with controllable and



uncontrollable factors leading to the cost escalation impacting the contract price, IDC and IEDC of the project. In the said Regulation, Force Majeure has been considered as one of the uncontrollable factors and accordingly, Force Majeure event can be considered by the Commission for grant of relief. However, it is the obligation of NHPC to satisfy the Commission that the entire machine forming part of the TLDP-III was available in all readiness for generation of electricity and the only reason as to why the machine was not operated was on account of the Force Majeure. It is further necessary for NHPC to place on record as to whether the machine during the above period was taken out for any maintenance etc. in which case the period of maintenance, repair, overall etc. cannot be considered as available for generation of electricity. Under the 2014 Tariff Regulations, target availability of a hydro power station has been fixed after factoring the time required for eventuality of the plant maintenance etc.

(f) WBSEDCL does not agree to the claim for the shortfall of generation due to high trash. NHPC has failed to install Trash Rack Cleaning Machine (TRCM) despite the fact that the same has been provided for in the DPR at Page 6-23 of Vol II. Shortfall in generation due to high trash is for reasons attributable to NHPC and, therefore, cannot be claimed in the present proceedings.

10. WBSEDCL vide affidavit dated 18.10.2019 has filed its reply to the amended petition. It has submitted that NHPC is not entitled to invoke the power to relax and/or the power to remove difficulties under provisions of the 2014 Tariff Regulations to seek recovery of loss in capacity charges. The recovery of loss in capacity charges



does not fall within the scope of Regulation 31(6) or any other regulation of the 2014 Tariff Regulations. Accordingly, the Petitioner cannot seek recovery of the same by placing reliance on Regulation 54 and Regulation 55 of the 2014 Tariff Regulations as these Regulations confer power on the Commission with regard to the regulations contained in the 2014 Tariff Regulations and not otherwise.

Rejoinder of the Petitioner to reply of WBSEDCL

11. In response to reply of the Respondent WBSEDCL, NHPC vide affidavit dated 18.7.2019 has filed its rejoinder and submitted as under:

(a) Regulations 44(7) and 44(8) of the 2019 Tariff Regulations allow recovery of shortfall during 2014-19 in FY 2019-20. The regulation reads as under:-

“(7) Shortfall in energy charges in comparison to fifty percent of the annual fixed cost shall be allowed to be recovered in six equal monthly instalments:

Provided that in case actual generation from a hydro generating station is less than the design energy for a continuous period of four years on account of hydrology factor, the generating station shall approach the Central Electricity Authority with relevant hydrology data for revision of design energy of the station.

(8) Any shortfall in the energy charge on account of saleable scheduled energy (ex-bus) being less than the saleable design energy (ex-bus) during the tariff period 2014-19 which was beyond control of the generating station and which could not be recovered during the said tariff period shall be recovered in accordance with Clause 7 of this regulation.”

(b) The Respondent has compared the inflow data provided by NHPC with inflow data provided by CWC at Teesta Bazar (Gauge & Discharge Site) and interpreted that the inflow data provided by NHPC is different from CWC discharge data. The difference between data submitted by the Respondent (on basis of CWC data) and data submitted by the Petitioner are as under:

i. Inflow data computed by NHPC is based on 24 hours average inflow at



dam site measured through control structure, whereas majority of data provided by CWC is computed based on one time water level.

- ii. Discharge/ inflow values indicated in the table submitted by the Respondent on basis of the inflow data (one time water level) at Teesta Bazar provided by CWC for the period of 2013-17, is very scattered. The discharge ranges from 250 cumecs to 2000 cumecs at same water level.
- iii. In the month of October, the average 10 daily discharge at Teesta Bazar (2014-15 to 2017-18) provided by respondent is higher by about 82% than the average long term 10 daily discharge at Teesta Bazar of CWC data (1978-94 & 2003-06) available with NHPC for hydrology study. Average 10 daily discharge based on NHPC data (2014-15 to 2017-18) is 21% less than long term average 10 daily discharge at Teesta Bazar. A sample comparison of data for the month of October is as follows:

| 10 Daily discharge for October 2015 | Average of 1978-94 & 2003-06 (CWC data) at Teesta Bazar | Average of 2014-15 & 2017-18 (CWC/ WBSEDCL data at Teesta Bazar | Average of 2014-15 & 2017-18 (NHPC data) at Teesta Bazar |
|-------------------------------------|---|---|--|
| I | 723 | 1247 | 594 |
| II | 567 | 1195 | 505 |
| III | 525 | 865 | 340 |
| Average | 602 | 1095 | 475 |
| % Higher / Lower | | 82% | -21% |

- (c) The rainfall as per IMD in sub-Himalayan basin and West Bengal region was 80% deficit in October 2014, 67% deficit in October 2015 and 1% surplus in



October 2016 with respect to normal rainfall in this region. The inflow data of TLDP-III provided by NHPC is consistent and there is no discrepancy.

(d) Regarding certification of daily discharge data from CEA/CWC, NHPC had requested CEA/CWC to certify actual inflows of TLDP-III Power Station, but CEA vide its letter dated 31.1.2017 informed that the case was referred to CWC. However, CWC vide its letter dated 23.01.2017 has shown its inability to certify the inflow series as requested.

(e) As regards claim against transmission constraints, schedule had been revised by the WBSLDC and relevant documents have been submitted. The transmission lines are under the control of WBSETCL and the Petitioner always pursued with it, if any constraint in transmission system/ generation occurred.

(f) The Respondent has categorically accepted that there is a need of silt flushing in hydro power station during monsoon season. In its reply, the Respondent has quoted the design criteria of silt flushing arrangement indicated in DPR. Design Energy is determined on the basis of discharge in 90% dependable year with 95% machine availability. The Design Energy is not directly linked with design of project structure for spillage or de-silting arrangement. In view of above, the portion of DPR quoted by the Respondent is not relevant for analyzing generation loss.

(g) The loss of generation was due to continuous strike by GJMM and the Petitioner was forced to shut down the power station leading to loss of Plant Availability Factor (PAF)/ capacity charges and generation of energy. From nature of incidence, the situation was beyond control of petitioner. Hence, it is



claimed under force majeure clause. It is true that the force majeure clause defined in regulation is applicable during construction of the project or certain natural happening during operation and maintenance of the project. All necessary documents like newspaper cuttings/ correspondence with district authority etc. have been submitted. The suggestion of the Respondent to consider this force majeure event in truing up petition is not correct.

(h) As per provision in DPR, trash rack was to be installed in the project. Trash rack for the project is required to be imported, but the same could not be done in time and subsequently some design modification in trash rack was also done. Now, the material has been received at site and same is under process of installation.

12. In response to amended reply of Respondent WBSEDCL, NHPC vide its affidavit dated 28.10.2019 has filed its rejoinder and submitted that since recovery of capacity charges due to loss of PAF is not covered under regulation 31(6) of the 2014 Tariff Regulations, the Petitioner has requested the Commission to consider it under Regulation-54 (Power to Relax) and Regulation-55 (Power to remove Difficulty) of the 2014 Tariff Regulations.

Analysis and Decision

13. The Petitioner has submitted the actual average inflows measured at dam site for each day of the year 2017-18 for which the shortfall has been claimed. Further, based on the following formulae along with certain adjustments, the Petitioner has calculated the daily maximum possible generation for 365 days based on actual inflows:



Maximum possible generation during a day (in MU)=
(Average inflow for i^{th} day) X (Maximum generation corresponding to installed capacity) / (Rated inflow for installed capacity)

14. The installed capacity of the generating station is 132 MW and rated inflow is 694 cumecs corresponding to 132 MW capacity. The sum of daily maximum possible generations for 365 days i.e. the maximum possible annual generation has been calculated by the Petitioner as 618.14 MU.

15. Based on the above methodology, maximum possible energy generation as calculated by us works out to 617.01 MU as against the maximum possible generation of 618.14 MU as submitted by the Petitioner. The difference of 1.13 MU is due to Petitioner having considered more power generation in favourable conditions. Therefore, we have taken the Petitioner's data of 618.14 MU (and not 617.01 MU as calculated by us) as the maximum possible generation by the generating station for further deliberations.

16. Design Energy of the generating station is 594.07 MU. During the FY 2017-18, the Petitioner has claimed a shortfall of 207.29 MU in generation, as the actual generation was 386.78 MU.

17. The Petitioner has claimed that out of total shortfall of 207.29 MU, generation loss of 195.53 MU was beyond the control of the Petitioner, while balance shortfall of 11.76 MU was for the reasons within the control of petitioner. The Petitioner has invoked provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations to claim relief for the shortfall of 195.53 MU.



18. The break-up of generation loss (-)11.76 MU on account of controllable factors as submitted by the Petitioner is as under:

- (a) Energy generated by depleting reservoir level on some days: 3.61 MU
- (b) Less generation for increasing reservoir level on some days: (-)9.39 MU
- (c) Unit Outage: (-) 0.25 MU for various reasons
- (d) Other constraints (partial load/ ramping up, down during peaking): (-) 5.74 MU

19. The break-up of generation loss (-) 195.53 MU claimed by the Petitioner on account of uncontrollable factors is as under:

- (a) Energy loss due to partial/ complete shutdown of plant for due to GJMM agitation: (-)185.07 MU
- (b) Energy shortfall due to less inflow: (-)41.41 MU
- (c) Energy gain due to excess inflow: 49.79 MU
- (d) Energy shortfall due to reservoir flushing: (-)10.28 MU
- (e) High Trash: (-)3.28 MU
- (f) Transmission Constraints : (-)5.28 MU

** Note: the sum of (b) and (c) i.e (+) 8.38 MU represents the net excess generation due to high inflows in comparison to the design inflows associated with design year.*

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

- (a) Low inflows in comparison to the design inflows associated with design year.
- (b) Prolonged planned/ forced outage of machines.
- (c) Inefficient operation of the plant &
- (d) Non-utilization of maximum power potential of actual inflows due to excessive spillage

21. We have analysed 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.

22. WBSEDCL has submitted the actual inflow data as obtained from the Central Water Commission (CWC) in respect of River Teesta measured at Teesta Bazar. WBSEDCL has compared the inflow data provided by NHPC in the instant petition with the data made available by CWC. Comparison table submitted by the Respondent shows that on some days, more water was available (especially in the month of October) for generation as compared to claim of NHPC. WBSEDCL has, therefore, concluded that shortfall on those days is on account of operational inefficiency of NHPC.

23. The Petitioner in its reply has submitted that data as submitted by the WBSEDCL for the month of October is higher by about 82% than the average long term 10 daily discharge at Teesta Bazar based on CWC data (1978-94 & 2003-06) available with NHPC for hydrology study, whereas the data measured by the Petitioner at the dam side for the month of October is 21% less than the long term average 10 daily discharge at Teesta Bazar based on the actual inflow data for the years 1978-94 and 2003-06.

24. From the comparison table submitted by the Respondent, the Commission observes that for certain months out of six months for which respondent has provided CWC data, the actual inflows as submitted by the Petitioner are more as compared to CWC inflows while for certain months, there is very little difference in the two sets of data. It is only for the month of October that CWC flows are on higher side as compared to the actual inflows measured by the Petitioner. As such, power



generation potential based on data of CWC is on higher side if October data is included for comparison purposes.

25. However, we are not inclined to go by the data as submitted by WBSEDCL for two reasons: i) CWC vide its letter dated 31.1.2017 has categorically refused to vet the inflow data in response to the Petitioner's request which it has made to CWC to meet the requirement of the Commission; and ii) WBSEDCL has submitted CWC inflow data only for six months out of twelve months period under consideration. For these two reasons, annual power potential of actual inflows has been calculated based on the Petitioner's data measured at the dam site which, as discussed in earlier part of this order, is considered as 618.14 MU.

26. It is observed that on account of variation in inflows as compared to the design year inflows, the Petitioner was able to generate more than the design energy during certain days of the year when the actual inflows were more than the design inflow while on certain other days when the actual inflows were less than design inflow, the Petitioner has generated less energy as compared to design energy. The Petitioner has calculated the maximum possible generation of 618.14 MU. On overall basis, the data submitted by the Petitioner indicates that with the actual flows during the year (excluding period during which plant was under shutdown due to GJMM agitation), the possible energy generation with actual inflows, over which it has no control, could have exceeded the design energy by 8.38 MU as can be seen from data at paragraph 19 {sl.no.(a) and (b) of table} of this order (49.79 MU – 41.41 MU) and the same gets subsumed in maximum possible generation that we have considered as 618.14 MU (while Design Energy was 594.07 MU). As such, the instant case is not a case of energy shortfall due to low inflows in comparison to design inflows.



(ii) Prolonged forced/ planned outage of machines.

27. 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 machines in any way affected the energy generation by non-utilization of available water flow, the Commission, vide ROP of hearing dated 2.5.2019, had directed the Petitioner to furnish the planned and forced outage data for 2017-18 (apart from the plant stoppage due to GJMM strike) along with its correlation with energy generation. In response, the Petitioner vide affidavit dated 19.6.2019 has submitted details of 83 events of outages during the year 2017-18. The breakup of the same is as follows:

| Event s | Desig n Energy (MU) | Spillage (Cumecs) | Maximu m possible generatio n based on actual inflow available (MU) | Actual Generatio n at GT (MU) | Energy shortfall (MU) | Clai me d under the head:- Shortfal l Beyond control of Power | Clai me d under the head:- Shortfall Within control of Power Station | Reasons |
|---------|---------------------|--------------------|---|-------------------------------|-----------------------|---|--|--|
| 58 | 43.16 | 0.00 | 32.49 | 30.70 | -12.46 | -10.67 | -1.79 | -10.67 MU claimed by the |
| 20 | 21.90 | 1382.00 | 30.32 | 29.01 | 7.07 | 8.38 | -1.31 | 8.38 MU of additional generatio |
| 5 | 9.90 | 1377 | 13.84 | 8.56 | -1.37 | 3.94 | 0 | 3.92 MU of additional generatio n due to excess inflow from design inflow has been |
| | | | | | | -5.28 | 0 | -5.28 MU has been adjusted in the shortfall |



28. From the above data, we note that out of 83 outages as reported by the Petitioner, during 58 outages, the inflows were less than the corresponding design year inflows. During these instances of lower inflows, the maximum possible generation from available inflows was 32.49 MU as against design energy of 43.16 MU and the actual generation was 30.70 MU. As such, out of maximum possible potential of 32.49 MU, the Petitioner was able to generate only to the extent of 30.70 MU and has owned the balance of 1.79 MU being attributable to itself. The shortfall of (-) 10.67 MU (i.e. 43.16 MU – 32.49 MU) during these 58 instances was solely attributable to less inflows which was not under the control of the petitioner and same is included in the shortfall of (-) 41.41 MU claimed by the Petitioner as indicated at paragraph 4(d) of this order. Accordingly, it is held that these outages did not have any major impact on energy generation and the minor loss of (-) 1.79 MU due to these outages has not been claimed by the Petitioner under the shortfall.

29. During 20 instances of outages, the inflows were more than the corresponding design energy inflows. We note that there was no shortfall with respect to design energy. However, for the shortfall of (-) 1.31 MU with respect to the maximum possible generation, the Petitioner has owned the responsibility by putting the same under the head “Shortfall Within control of Power Station”. Accordingly, it is concluded that these instances of partial outages did not have any major impact on the energy generation and the minor loss of (-) 1.31 MU due to these outages has not been claimed by the Petitioner under the shortfall.

30. Further, it is noticed that there are 5 instances i.e. on 15.04.2016, 24.06.2017, 15.09.2017, 17.09.2017 and 18.09.2017, when inflows were more than the



corresponding design energy inflows, but the Petitioner was not able to generate to full potential of available inflows due to transmission constraints. The Petitioner has claimed shortfall of energy generation for (-) 5.28 MU due to transmission constraints.

31. With regard to outage due to transmission constraint, the Petitioner in its reply dated 19.6.2019 has submitted CEA-certified planned/ forced outage data daily generation report & SLDC report. It is observed that outage due to transmission constraint is certified only for 15.4.2017 in the CEA report. However, all 5 instances are indicated in Daily generation report & SLDC report submitted by the Petitioner. On perusal of the reports and after correlating the daily generation report with the SLDC report, we are of the view that energy loss was due to transmission constraints and the same was beyond the control of the petitioner.

32. It is noticed that planned outages of individual machines in 42 cases have been carried out during the months of January 2018 and February 2018 which are lean months during which available water inflow can be utilized for energy generation by available machines which are not under planned outage. As such, it is noticed that the planned outage of machines during the lean months had not affected the energy generation.

33. In view of the above deliberations, it is held that these outages (83 forced outages and 42 planned outages) did not have any major impact on energy generation and the minor loss, if any, due to these outages has not been claimed by the Petitioner under the shortfall.



(iii) Inefficient operation of the plant

&

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

Loss due to Reservoir Flushing

34. The Petitioner has claimed 10.28 MU energy loss due to reservoir flushing. Hydro-power projects are designed to handle certain PPM level of silt and beyond that level, the generation is required to be stopped till the level comes down to permissible limits, subsequently plant is stopped for silt flushing once the silt level reaches some critical limit. The Respondent has submitted that silt flushing operation cannot be claimed additionally for adjustment in shortfall since silt flushing (8-20 hours) is a normal activity in a hydro-electric plant during monsoon to reduce the silt accumulation in barrage. The Petitioner in response has submitted that the Respondent has categorically accepted that there is a need of silt flushing in hydro power station during monsoon season, however, design energy is determined on the basis of discharge in 90% dependable year with 95% machine availability and as such the Design Energy is not directly linked with design of project structure for spillage or de-silting arrangement. The Petitioner has concluded that in view of above, the portion of DPR quoted by the Respondent is not relevant for analyzing generation loss.

35. Considering the fact that energy which may be lost during stoppage of plant due to high silt (and consequently silt flushing) is not under the control of the Generator and is not accounted for in the calculation of design energy, we allow the energy shortfall of 10.28 MU under reasons beyond the control of the generating station.



Loss due to GJMM Agitation

36. The Petitioner has submitted that the Power Plant was under complete shutdown from 12.07.2017 to 14.09.2017 due to GJMM agitation. It is evident from the submitted communication with State Government authorities, communication within the organization and newspaper clippings, that law and order situation in the region was not appropriate for operating the Power Plant during that period. The Petitioner was left with no option other than shutting down the plant during that period. Plant was under shutdown from 12.07.2017 and partial generation could be started again from 14.09.2017. Most of the monsoon season was lost during the period of strike/ agitation and the Petitioner could not generate for around 2 (two) months. The final status with respect to strike / agitation affect is as follows:

| Description | Design Energy (in MU) (a) | Maximum possible generation at GT with available inflows without outages and with use of installed capacity during high inflow period (in MU) (b) | Actual Generation (MU) (c) | Shortfall w.r.t to DE (d)=(a)-(c) | Shortfall w.r.t to maximum possible generation (e)=(b)-(c) (in MU) |
|--------------------------|---------------------------|---|----------------------------|-----------------------------------|--|
| 12.07.2017 to 14.09.2017 | 190.10 | 205.79 | 5.02 | 185.07 | 200.77 |

37. The Petitioner has claimed generation loss of 185.07 MU due to strike/ agitation by GJMM. The generation loss as per the details submitted by the Petitioner is 200.77 MU with respect to maximum possible generation based on the inflows available during that period and loss of 185.07 MU with respect to design energy for the above period. The Respondent has submitted that since GJMM agitation is being claimed as a force majeure event, the Petitioner needs to prove that its machines were in a condition to generate electricity during the period but was prevented from doing so due to agitation. We note that though the Respondent has asked the Petitioner to prove that the Petitioner's machines were ready to generate power, the



Respondent has itself not provided any evidence that the machines were not ready to generate power. At the same time, we also notice that there was partial generation on 12.7.2017, 1.9.2017 and 2.9.2017 when the Petitioner got an opportunity to operate its Power Plant during the period of GJMM agitation. Having noticed that the Respondent has not adduced any evidence that the Petitioner's Power Plant was not in a position to generate electricity and that the Petitioner generated electricity when it got an opportunity to operate its Power Plant, we are not inclined to consider the plea of the Respondent that the Petitioner needs to prove that its machines were in a condition to generate electricity during period of GJMM agitation. It is observed that during the period of shutdown due to GJMM agitation, there are 3 instances i.e. on 12.7.2017, 1.9.2017 and 2.9.2017, when there was partial generation to the tune of 5.02 MU. The same has been adjusted by the Petitioner in its shortfall claim of 185.07 MU (190.10 MU – 5.02 MU). As such, this generation loss does not indicate any inefficiency on part of the generator and any spillage which occurred during this period is not due to any fault of the Petitioner. The Commission is of the view that this generation loss was beyond the control of the Petitioner and it needs to be compensated.

Loss due to high trash

38. The Petitioner has claimed shortfall of 3.28 MU in energy generation due to high trash. The Petitioner has submitted that trash rack for the project was an imported item which could not be imported in time and subsequently some design modifications in trash rack was also done. Due to these reasons the trash rack was not installed on time. In this regard, it is mention that commissioning of Trash Rack Cleaning Machine (TRCM) is a requirement to be fulfilled before COD. As such, this



generation loss of 3.28 MU cannot be considered due to the reasons beyond the control of the Power Plant.

39. In view of above, to assess maximum possible annual generation with available actual inflows after accounting for the generation loss for the reasons which were beyond the control of the Petitioner and which are attributable to the petitioner, the possible generation at generator terminal has been assessed against the actual generation of 386.78 MU in the following paragraphs.

40. Possible generation assessed at generator terminal after accounting for the generation loss due to reasons beyond the control of the Petitioner i.e. energy loss due to shutdown of plant because of strike/ agitation, loss due to transmission constraint and the loss of energy due to reservoir flushing are as under:

| | | (In MU) |
|----|---|---------------|
| 1. | Energy that could have been generated by utilizing available actual inflows and 100% machine capacity i.e. 132 MW | 618.14 |
| 2. | Energy lost due to complete shutdown of plant due to GJMM strike / agitation from 13.07.2017 to 14.09.2017 (loss considered w.r.t. maximum possible generation) | (-) 200.77 |
| 3. | Energy loss due to reservoir flushing | (-) 10.28 |
| 4. | Energy loss due to high trash | 0.00 |
| 5. | Energy loss due to transmission constraint | (-) 5.28 |
| 6. | Remaining Energy that could be generated $6=1+2+3+4+5$ | 401.81 |

41. Possible energy generation assessed at generator terminal after accounting for the reasons within the control of the Petitioner are as under:

| | | (in MU) |
|----|---|---|
| | | Based on actual available flow at 100% machine capacity |
| 1. | Remaining Energy that could be generated after taking into account reasons beyond control | 401.81 |
| 2. | Energy loss due to High Trash considered by the Commission to be within the control of the petitioner | (-) 3.28 |
| 3. | Shortfall due to reasons within the control of petitioner (as claimed by the Petitioner) | (-) 11.76 |
| 4 | Remaining Energy that could be generated 4=1+2+3 | 386.77 |



42. In view of the above calculations and the fact that actual generation of the generating station i.e. 386.78 MU is almost same as the theoretical calculations , 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 Power Plant (except for energy lost due to reasons attributable to the Petitioner) or non-utilization of maximum power potential of actual inflows or excessive spillage.

43. Based on the above deliberations, the following table sums up the total energy shortfall, energy shortfall for the reasons beyond the control of the Petitioner and energy shortfall for reasons within the control of the Petitioner:

| Sl.No | Description | (MU) |
|---|--|---|
| 1. | Design Energy | 594.07 |
| 2. Energy short fall for reasons beyond the control of the Petitioner | | |
| 2.1. | Energy lost due to complete shutdown of plant due to GJMM strike / agitation from 13.07.2017 to 14.09.2017 (loss considered w.r.t. design energy) | (-) 185.07 |
| 2.2 | Energy loss due to reservoir flushing | (-) 10.28 |
| 2.3 | Energy loss due to transmission constraint | (-) 5.28 |
| 2.4. | Excess energy due to inflows being on higher side | 8.38 |
| 3. | Sub-total | (-) 192.25 |
| 4. | Energy shortfall with in the control of the petitioner (Refer paragraph 38 above) | (-) 15.04 {(-) 3.28 & (-) 11.76} |
| 5. | Total energy shortfall (3)+(4) | (-)207.29 |

44. The Petitioner has submitted the following position with respect to under-recovery of energy charges:

| Schedule Energy (Ex-Bus) (MU) | Free Energy (MU) | Net Energy Billed (MU) | ECR (₹ / Unit) | Annual Fixed Charges (₹ crore) | Energy Charges to be recovered (₹ crore) | Energy Charges actually recovered (₹ crore) | Under recovery of Energy (₹ crore) |
|-------------------------------|------------------|------------------------|----------------|--------------------------------|--|---|------------------------------------|
| 1 | 2 | 3=1-2 | 4 | 5 | 6=50% of 5 | 7=3*4/10 | 8=7-6 |
| 374.04 | 3.74 | 370.30 | 3.097 | 360.71 | 180.355 | 114.68 | -65.66 |



45. The Petitioner, in response to the ROP of hearing dated 18.6.2020 has submitted the details of energy accounted for in DSM (deviation settlement mechanism) vide affidavit dated 15.7.2020. Payment for energy under DSM is governed by provisions of the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2019 (hereinafter referred to as "the 2014 DSM Regulations"). It has been submitted by the Petitioner that 8.19 MU has been accounted for in DSM and corresponding revenue earned is Rs. 211.75 lakh. Regulation 31(6)(a) of the 2014 Tariff Regulations provides for recovery of energy charge corresponding to the energy which could not be generated for the reasons beyond the control of the Petitioner. There is no doubt that the energy accounted for in DSM is actual energy generated and also that the Petitioner has received payment for the same in terms of provisions of the 2014 DSM Regulations. Therefore, the energy that has been accounted for in DSM cannot be counted towards shortfall in energy in terms of Regulation 31(6)(a) of the 2014 Regulations and, therefore, corresponding energy charge cannot be recovered in terms of that regulation. Thus, revenue generated by the Petitioner under DSM needs to be appropriately accounted for while deciding the quantum of shortfall under provisions of Regulation 31(6)(a) of the 2014 Tariff Regulations.

46. We are also conscious of the fact that generating stations are required to provide support to the grid and for that purpose, payments for energy supplied is accounted for under provisions of the 2014 DSM Regulations. Also, often the support to the grid is through governor mode operation and is beyond control of the Petitioner. Therefore, in case the revenue received under provisions of the 2014 DSM Regulations is less than the energy that would have been received had the



same been supplied to the beneficiaries, the generator should not be adversely affected. Thus, with a view to balance the interest of the generator as well as the beneficiaries, it would be prudent to calculate the energy charge shortfall by adjusting lower of:

- a) the actual revenue earned by the generating station through DSM in the financial year (for which shortfall is claimed) and
- b) the amount that would have been paid by the beneficiaries had the same energy been scheduled.

47. In the instant case, the Petitioner has been able to generate revenue to the tune of Rs. 211.75 lakh for the energy accounted for in DSM i.e. 8.19 MU. On the other hand, the beneficiaries would have paid Rs. 251.11 lakh $[(8.19 \text{ MU} \times (1 - 0.01)) \times 10 \times 3.097 \text{ Rs./kWh}]$ (energy charges corresponding to 8.11 MU after accounting for the free power of 1%) for the same energy had it been scheduled and received by them.

48. Accordingly, the amount to be recovered in the FY 2018-19 due to shortfall in energy generation from the Design Energy during 2017-18 works out as follows:

| Sl. No. | Description | | |
|---------|--|-------------|-----------------------|
| 1. | Total shortfall in generation during FY 2017-18 (in MU) (Refer Sl.No. 5 of the table at Para 43 above) | A | 207.29 |
| 2. | Total under-recovery of energy charges during FY 2017-18 (in ₹ crore) | B | 65.66 |
| 3. | Total under-recovery of energy charges during FY 2017-18 after accounting for the revenue generated from DSM pool (in ₹ crore) | C | 63.54 (65.66-2.12) |
| 3. | Shortfall in generation due to reasons beyond control (in MU) | D | 192.25 |
| 4. | Shortfall in energy charges to be recovered during FY 2018-19 (in ₹ crore) | E= C*D/A | 58.93 |



49. 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 FY 2018-19 shall be 386.78 MU till the energy charges shortfall of ₹ 58.93 crore for FY 2017-18 is recovered by the Petitioner by revision of energy bills of FY 2018-19. Further, the difference in energy charges shortfall to be recovered for the FY 2017-18 which may arise after true up of tariff for the period 2014-19 shall be recovered directly by the Petitioner from the Respondent through supplementary bills after true-up.

50. The Petitioner has prayed that it may be allowed to recover the capacity charges lost by it because of shutdown from 12.07.2017 to 14.09.2017 due to GJMM agitation. The Petitioner has prayed that Commission may allow the recovery of lost capacity charges by invoking provisions of Regulations 54 and 55 of 2014 Tariff Regulations. The Respondent has submitted that provisions of power to relax or power to remove difficulty provided the 2014 Tariff Regulations should not be invoked in the instant case. In this regard, it is observed that there is no provision in the 2014 Tariff Regulations which allows recovery of shortfall in capacity charges for reasons beyond the control of the generating station. In this Petition, we have allowed recovery of shortfall in energy charge as claimed by the Petitioner as the Power Plant was under shutdown from 12.07.2019 to 14.09.2017 due to GJMM agitation. Having provided relief to the Petitioner for this period, we are aware that the beneficiary (the Respondent WBSEDCL) had to pay for the energy which it has not received. Having allowed recovery of energy charges as per provisions of the Regulations 31(6) of the 2014 Tariff Regulations and keeping in view equitable sharing of risks and gains between the generating company and the beneficiaries, the Commission is not inclined to invoke the provisions of Regulations 54 and 55 of



the 2014 Tariff Regulations for allowing the recovery of the capacity charges as prayed by the Petitioner for the period of GJMM agitation.

51. Petition No. 330/MP/2018 is disposed of in terms of above.

Sd/
(Arun Goyal)
Member

Sd/
(I S Jha)
Member

Sd/
(P. K. Pujari)
Chairperson

