

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Date of hearing: 23.3.2018

Coram:

**Shri P.K. Pujari, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member
Shri Ravindra Kumar Verma, Member (E.O)**

Petition No. 244/MP/2016 with I.A. No. 86/2017

Subject : Petition for measurement of GCV of coal from the samples taken from the Railway Wagon Top.

Petitioner : NTPC Limited.

Respondents : GRIDCO Limited & Others.

Petition No. 139/MP/2017

Subject : Petition under Section 79 of the Electricity Act, 2003 read with Regulation 54 and 55 of the CERC (Terms and Conditions of Tariff) Regulations 2014 seeking appropriate relief due to extreme practical difficulty faced by the petitioner in implementing Regulation 30(6) of the said Regulation and directions issued by the Commission in its order dated 25.1.2016 and for consequential directions.

Petitioner : Maithon Power Limited.

Respondents : Tata Power Delhi Distribution Limited & Others.

Petition No. 220/MP/2016

Subject : Petition under Section 79 (1) (f) of the Electricity Act, 2003 seeking adjudication of dispute between West Bengal State Electricity Distribution Company Limited and NTPC Limited and Damodar Valley Corporation relating to over invoicing and recovery of Rs. 1192.67 crores.

Petitioner : West Bengal State Electricity Distribution Co. Ltd. (WBSEDCL).

Respondents : NTPC Ltd. and Others

Petition No. 311/MP/2015

Subject : Petition for appropriate directions restraining the respondent from recovering the energy charge rate strictly in terms of the Tariff Regulations framed by the Commission.



Petitioner : Tata Power Delhi Distribution Company Limited.

Respondent : NTPC Ltd.

Petition No. 64/MP/2016 with I.A. Nos. 84 and 85 of 2017

Subject : Petition under Section 79 (1) (f) of the Electricity Act, 2003 read with Regulation 30(7) of CERC (Terms and Conditions of Tariff), Regulations, 2014 seeking adjudication of dispute between petitioners i.e. BSES Rajdhani Power Limited and BSES Yamuna Power Limited with NTPC Ltd.

Petitioner : 1. BSES Rajdhani Power Limited (BRPL)
2. BSES Yamuna Power Limited (BYPL)

Respondent : NTPC Ltd.

Parties present

Shri M.G.Ramachandran, Advocate, NTPC
Ms. Poorva Saigal, Advocate, NTPC
Ms. Swapna Seshadri, Advocate, NTPC
Shri Ashwin Ramanathan, Advocate, NTPC
Shri Venkatesh, Advocate, MPL
Shri Pratyush Singh, Advocate, MPL
Shri Somesh Srivastava, Advocate, MPL
Shri Sandeep, Advocate, MPL
Shri Divyanshu Bhatt, Advocate, NTPC-APCPL
Shri Deep Rao Palepu, Advocate, NTPC
Shri Gopal Jain, Sr. Advocate, TPDDL
Shri Anupam Varma, Advocate, TPDDL
Shri Buddy Ranganadhan, Advocate, BRPL &BYPL
Shri Rahul Kinra, Advocate, BRPL
Shri Ashutosh Kumar Srivastava, Advocate, BYPL
Shri Rajkumar Mehta, Advocate, GRIDCO
Shri S. Vallinayagam, Advocate, TANGEDCO
Ms. Catherine Ayallore, Advocate, WBSIEDCL
Shri Vishrov Mukerjee, Advocate, WBSIEDCL
Shri Raunak Jain, Advocate, TPDDL
Shri Vishvendra Tomar, Advocate, TPDDL
Shri R.B. Sharma, Advocate, BSP(H)CL
Shri Ravin Dubey, Advocate, MPPMCL
Shri Sameer Singh, BYPL
Ms. Aditi Sanghi, TPDDL
Shri Nishant Grover, BYPL
Shri Sumit Sachdev, TPDDL
Shri Balaji, NTPC
Shri Ajay Dua, NTPC
Shri Umesh Ambeti, NTPC
Shri Vivek Kumar, NTPC
Shri Sukhjinder Singh, NTPC
Shri Anurag Naik, MPL
Shri Chainmoy Kumar Dash, GRIDCO



Shri Manish Garg, UPPCL
Shri Anurag Bansal, TPDDL
Shri Kanishk, BRPL

Record of Proceedings

At the outset, the learned counsel appearing for BRPL & BYPL referred to the observations of the Commission in paras 9 & 10 of the ROP of the hearing dated 7.12.2017 and submitted that it has no knowledge on the clarification/information, if any, received from MOP/CEA.

2. The learned counsel appearing for the Petitioners, NTPC and MPL pointed out that in Petition Nos. 244/MP/2016 and 139/MP/2017, the issue of measurement of GCV of coal and the difficulties faced thereunder has been raised and is therefore not directly related to the issues raised in other Petitions filed by the discoms. Accordingly, the learned counsels prayed that Petition Nos. 244/MP/2016 and 139/MP/2017 may be heard separately and not be linked to other Petitions.

3. In response, the learned Sr. Counsel appearing for TPDDL clarified that though the Respondents in their Petitions have prayed for refund of the excess charges recovered by NTPC and MPL, the issue relating to 'measurement of GCV of coal' would necessarily have an impact in the relief claimed in the said Petitions filed by the discoms. Accordingly, he prayed that the Petitions may be clubbed and heard by the Commission. Similar submissions were made by the learned counsel for BRPL & BYPL and the learned counsel appearing for other discoms.

4. The Commission however observed that since Petition Nos. 244/MP/2016 and 139/MP/2017 relate to the 'measurement of GCV of coal' only these Petitions would be clubbed and heard. However, at the request of the learned counsels for the discoms, the Commission observed that the Petitions filed by discoms would be listed on the same day.

5. The Commission observed that clarification has been furnished by CEA vide letter dated 20.3.2018. The learned counsels for the Petitioner and the Respondent discoms submitted that the letter of CEA may be shared and the parties may be granted time to file their response to the CEA letter dated 20.3.2018. The Commission directed the parties in Petition Nos. 244/MP/2016 and 139/MP/2017 to file their response to the CEA letter dated 20.3.2018, on affidavit, with copy to the other, on or before **20.4.2018**. No extension of time shall be granted for any reason whatsoever. The Commission further directed that no request for adjournment of the hearing of the Petitions shall be entertained.

6. These Petitions shall be listed for hearing on **25.5.2018**.

By order of the Commission

**Sd/-
(T. Rout)
Chief (Legal)**





सत्यमेव जयते

भारत सरकार
Government of India
विद्युत् मंत्रालय
Ministry of Power
केन्द्रीय विद्युत् प्राधिकरण
Central Electricity Authority
तापीय परियोजना योजना एवं विकास प्रभाग
Thermal Project Planning & Development Division

विषय: कोयले की जीसीवी में मार्जिन लॉस का आधार - के संबंध में।

Sub: Basis of Margin Loss in GCV of coal – reg.

यह पत्र सीईआरसी D.O. संख्या CERC/Secy-2018/ दिनांक 09.03.2018 के संदर्भ में है। इस पत्र में के.वी.प्रा. द्वारा विद्युत् मंत्रालय को लिखे गए दिनांक 17.10.2017/18.10.2017 के पत्रों का उल्लेख किया गया है जिसमें 'as fired' तथा 'as received' जीसीवी के बीच में मार्जिन लॉस के बारे में सूचित किया गया था।

इस मार्जिन लॉस के आधार के संदर्भ में के.वि.प्रा. की टिप्पड़ी इस पत्र के साथ संलग्न है (Annexure-I)।

यह पत्र अध्यक्ष (के.वी.प्रा.) के अनुमोदन से जारी किया जा रहा है।

संलग्न: उपरोक्त अनुसार

जि.एस. मंडल
20.3.2018
एन. एस. मंडल
(मुख्य अभियन्ता)

Secretary, CERC, 3rd Floor Chandralok Building, 36, Janpath, New Delhi-01

संख्या: 228/Misc./टी.पी.पी. डी./के.वी.प्रा/2018

367

दिनांक 20.03.2018

प्रतिलिपि:

1. Secretary, Ministry of Power – for kind information please

Comments of CEA

1. The Recommendation of CEA dated 17.10.2017/18.10.2017 was consequent to the directions received from MoP/Gol through letter dated 28.6.2017, which was pursuant to the request from the Central Commission to the GOI to seek the advice of CEA vide letter dated 19.06.2017 (copy of the letters enclosed herewith for ready reference). Accordingly, the recommendation given by CEA is as per the decision of the Central Government to seek the advice of CEA pertaining to coal based generation of electricity and the communication from the Central Commission.
2. Section 73 of the Electricity Act, 2003 deals with the functions and duties of the Central Electricity Authority and as per Clause(n) which deals with advising "the Appropriate Government and the Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; ...".
3. Further, Clause(h) under Section 73 of the Electricity Act 2003 states as to, "advise the Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter if, in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity."

In view of the above, the letters dated 17.10.2017/18.10.2017 issued to Ministry of Power and carrying the recommendations of CEA on the given subject matter pertains to Section 73(h) & Section 73(n) of the Electricity Act 2003.



4. In regard to the basis for arriving at the margin for loss of GCV of coal between 'as fired' and 'as received' stage, the following is submitted:

(a) The issue was examined in detail and the following specialist agencies were consulted:

1. Central Institute of Mining and Fuel Research (CIMFR)
2. Central Power Research Institute (CPRI)

These are specialist Central Government Institutes working in the field of coal and power and are extensively involved in sampling and testing of coal at various power stations and mines.

(b) It was unanimously agreed by all i.e. CEA, CIMFR and CPRI that there would be unavoidable loss of GCV which is measured from samples taken from Wagon top till the point of firing. It is the considered opinion of CEA as well as CIMFR and CPRI that the loss of GCV is due to the following:

1. Effect of moisture in GCV of coal samples taken from wagon top
2. Loss in GCV during coal storage inside power plant.
3. Reduction in GCV during handling inside power plant.

5. While examining the subject, CEA has also considered various national and international papers/studies and the practices being followed in different states by different SERCs. Based on that, above aspects have been deliberated in CEA recommendations submitted via its letters dated 17.10.2017/18.10.2017 and have been elaborated in following paragraphs.

6. Effect of Moisture in GCV of coal sample taken from Wagon Top

- This issue was deliberated with CIMFR and CPRI in a meeting with CEA held on 21.09.2017.
- In the meeting, CPRI informed that it has experienced a difference around 50 kcal/kg in GCV of coal samples taken from wagon top and that from moving conveyor after crusher.
- CIMFR informed that it is not practically possible to draw samples up to the bottom of the wagon due to time constraints, so samples are drawn from the wagon top as per FSA conditions. Wagon top sample generally does not represent the whole lot and there could be variations in coal quality in wagon top and bottom on account of improper loading.
- In a meeting with Coal India Ltd. held on 11.10.2017 on the subject matter, CIL acknowledged the difficulties in drawing samples as per BIS standard in power plants due to time consumed in the process.
- CIMFR explained the effect of moisture on coal and informed that on an average, 1% moisture loss can cause an increase of around 40-50 kcal/kg in coal GCV.
- As per *Minutes of the 40th Meeting of Forum of Regulators (FOR)* held at New Delhi on 2nd April 2014, in its presentation on "*Fuel audit study of PSPCL thermal power stations for Punjab State Electricity Regulatory Commission, Chandigarh*", CPRI has stated that for 1% moisture, GCV impact varies from 51-100 kcal/kg as calculated through various methods.
- As per CPRI report on "*Fuel audit study of PSPCL's thermal generating stations*" submitted to Punjab State Electricity Regulatory Commission, Chandigarh, it is stated that PSPCL receives coal from various coal companies such as PANEM, Monnet, BCCL, CCL etc. which has around 4-5% surface moisture in mix of all types of coal.

ndv

Considering above, CEA is of the view that while taking coal sample from wagon top, GCV measurement will not be representative for the whole lot due to impact of moisture change. GCV measurement of wagon top coal will give comparatively higher GCV value due to settling of moisture at the bottom of the wagon and loss of moisture from wagon top during transportation of coal. On this account, for calculating energy charge, a GCV compensation of around 70-80 kcal/kg may be allowed to the generator.

7. Loss in GCV during coal storage inside power plant

Many National and International papers/case studies acknowledge the loss in GCV during coal storage. Observations of few are as follows:

- 5.6% GCV loss during 10 months' storage for low rank coals in Brazil
Study: Losses of Coal Supply chain by IEA Clean Coal Centre
- Up to 8.7% GCV loss during 01-year storage
Study: Stack Yard Coal Property Change Analysis of NTPC's Farakka Plant by IIT Kharagpur
- Approx. 597 kcal/kg GCV loss during 01-year storage
Study: Coal-quality deterioration in a coal stack of a power station by D. Banerjee, M. Hirani, S.K. Sanyal
- 421 kcal/kg GCV loss in Indian Coal during 01-year storage
Study: Assessment of Deterioration in Coal Quality upon prolonged storage by Pranay, U.K. Arora, Anil Kumar, S.K. Saxena, B.P. Singh
- As per the study on 'Losses of Coal Supply chain by IEA Clean Coal Centre', quantifying these losses (in mass terms) (loss due to self-combustion) is impossible to generalize since the conditions of loss depends on the coal type and the way the coal is stored. In energy terms, it is reasonable to assume losses are probably not more than 2%.
- In the meeting with CEA on 21.09.2017, CPRI & CIMFR stated that loss of GCV during coal storage is mainly due to oxidation and weathering effect.



- In its meeting with CEA on 21.09.2017, CIMFR further informed that most of the losses in GCV during long storage of coal takes place in the initial period of storage, mostly due to loss in volatile content.

Considering above, CEA is of the view that there is a loss of GCV in the coal stock where coal is stored inside the power plant. On this account, for calculating energy charge, a GCV compensation of around 35 kcal/kg (on an average 1% loss for a coal of 3500 kcal/kg GCV) may be allowed to the generator for a storage of 30 days in a non-pit head station and 15 kcal/kg for pit head station.

8. Reduction in GCV during handling inside power plant

- C&AG in its Performance Audit Report No. 35 of 2016 on "*Fuel Management of Coal Based Power Stations of NTPC Limited*" submitted to MoP has observed that GCV of coal progressively decreased from 'as billed' stage to 'as fired' stage.
- As per the study on '*Losses of Coal Supply chain by IEA Clean Coal Centre*', it is written as "*in terms of minimizing dust, one technique involves wetting the surface of the stockpile to inhibit the airborne suspension of dust. One drawback of course is the addition of moisture, which reduces the heating value of the coal.*"
- It is further written in the above study that, "*Added moisture through either exposure to weather or water spray for dust suppression adds weight to coal but reduces the heating value per tonne of coal delivered.*"

Considering this, CEA is of the view that there is minor unavoidable loss of GCV in the coal during handling inside the power plant and for that purpose, a GCV compensation of around 2-3 kcal/kg may be allowed to the generator.

9. As per CPRI report on "*Fuel audit study of PSPCL's thermal generating stations*" submitted to Punjab State Electricity Regulatory Commission, Chandigarh, it is stated that, "*While the audit of quantities of coal are in*

order, a drop in heating value is observed between the receipt and bunkered quantity beyond the normal deterioration. The process needs to be improved to minimize the drop in the GCV before it is fired into the boilers. A number of measures have been suggested for the coal yard and for the monitoring process of coal quality to restrict difference in GCVs to within 150 kcal/kg.

10. Further, CEA has also examined the views taken by various State Regulators for considering such loss for the purpose of tariff allowed to generators. Maharashtra ERC allows a margin of 150 kcal/kg for storage loss. The ERCs of Gujarat, Orissa, Chattisgarh allow loss of GCV to generators as the ECR is allowed on the basis of 'as fired' GCV.
11. As this margin would vary from plant to plant, season to season and to varying coal characteristics, accordingly, CEA in its recommendation dated 17.10.2017/18.10.2017 given to MoP, has recommended a margin of 85-100 kCal/kg for pit head stations and a margin of 105-120 kCal/kg for non-pit head stations. This needs to be considered as loss of GCV measured at Wagon top at unloading point till the point of firing in the boiler and the generator needs to be compensated for the same.





No. 3/2/2017-Th-I
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg
New Delhi dated the 28th June, 2017

To,

✓ The Chairperson,
Central Electricity Authority,
Sewa Bhawan,
R.K. Puram,
New Delhi.

Subject: The issue of measurement of GCV on "as received" basis as per the 2014 Tariff Regulation -reg.

Sir,

I am directed to enclose herewith a copy of DO No. 9/21/-RA-GC/MoP/CERC/Pt. File dated 19th June, 2017 received from Central Electricity Regulatory Commission (CERC) on the above mentioned subject for information and further necessary action.

Yours faithfully,

Encl: as above

Chandan Kumar
(Chandan Kumar)
Section Officer
Tele: 2371-9710



Mem (TH)



Ju
30/6/17

30/6/17

Sd/ Jain

30/6/17

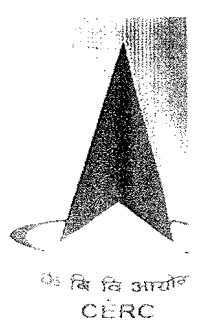
CE (TH)



सत्यमेव जयते

Sanoj Kumar Jha, IAS
Secretary

केन्द्रीय विद्युत विनियामक आयोग
CENTRAL ELECTRICITY REGULATORY COMMISSION



के वि दि आयोग
CERC

No. 3/21/2017 RA-GC/MoP/CEERC/Pt. File

Dated: 19th June, 2017

3:

Please refer to your DO letter No. 3/2/2017-Th.I dated 5.4.2017.

2. The recommendations of the Controller & Auditor General of India (C&AG), the views of NTPC thereon and the suggestions of Ministry of Power have been examined in the Commission. In the report of the C&AG, it has been emphasized that while the quantity of coal is not weighed by the stations, quality assessment of coal has inherent as well as manmade infirmities due to heterogeneous nature of coal and sampling errors and therefore, there is a need to appropriately review the method for energy pricing. C&AG has suggested the Ministry of Power to coordinate with the Commission to examine this aspect and review the method of energy pricing.
3. NTPC in its reply has highlighted the issues of sampling error on account of change of point of sampling for measurement of GCV from "as fired" to "as received" as per the 2014 Tariff Regulations, non-homogenous nature of samples taken from the wagons, loss of GCV from point of "as received" to the point of "as fired", and difficulty with coal sampling through augers.
4. In this connection, it is clarified that the Commission introduced the measurement of GCV on "as received" basis in 2014 Tariff Regulations on the basis of the recommendation of the Central Electricity Authority and after carrying out an elaborate process of stakeholder consultation wherein NTPC and other stakeholders were given opportunity to present their views. The Commission after consideration of all aspects of the matter including the responses from NTPC and other stakeholders decided that the measurement of GCV on "as received" basis at the generating station would balance the interest of the generators as well as the consumers. The generators will not be burdened with the loss of GCV from the mines end till the coal reaches the generating station since the coal samples are

Contd. ...2/-

तीसरी मंजिल, चन्द्रलोक बिल्डिंग, 36, जनपथ, नई दिल्ली-110 001

Third Floor, Chandernok Building, 36, Janpath, New Delhi-110 001

Phone : 91-11-2375 3915, Fax : 91-11-2375 3923, E-mail : secy@cercind.gov.in / secyskj@gmail.com

taken after the coal is received and the consumers will not have to bear the loss of GCV on account of inefficient handling which takes place after the coal reaches the generating station till the same is fired.

5. NTPC has challenged the Regulation 30 (6) of CERC 2014 in a Review Petition regarding measurement of GCV of coal on "as received" basis before the Hon'ble High Court of Delhi in Petition No. 1641/2014. Hon'ble High Court has already granted stay on the operation of the Regulation.

6. The Hon'ble High Court of Delhi in its interim order dated 17.9.2015 directed the Commission to decide about the stage where GCV of coal can be measured on "as received" basis. Accordingly, the Commission after hearing NTPC and other parties vide order dated 25.1.2016 in Petition No. 283/GT/2014 decided that the samples of coal for measurement on "as received" basis shall be taken from the wagon top either manually or through the mechanical augers. NTPC filed a Review Petition No. 11/RP/2016 highlighting the similar issues as has been highlighted in response to the recommendations of C&AG. Those issues were examined in detail and the Review Petition was rejected being devoid of merit. Subsequently, NTPC vide its letter no. 01:CD:701 dated 5.9.2016 intimated the Commission that NTPC would measure GCV on "as received" basis w.e.f. 1.10.2016 after setting up the mechanism to draw samples from railway wagon top before unloading.

7. NTPC in the hearing dated 10.11.2016 before the Hon'ble High Court of Delhi sought liberty to approach the Commission to highlight the difficulties encountered in implementing the orders of CERC. In terms of the liberty granted by the Hon'ble High Court, NTPC has filed Petition No. 244/MP/2016 in the Commission in which notice has been issued to all the Distribution Companies. The Petition before the Commission is listed for further hearing on 4.7.2017 and the Writ Petition before the Hon'ble High Court of Delhi is listed for final hearing on 13.9.2017.

8. It is pertinent to mention that as per Section 73(n) of the Electricity Act, 2003, Central Electricity Authority has been vested with the functions to advise the Appropriate Govt. and Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity. Further, as per para 5 (b) (i)

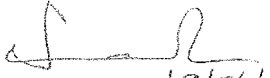
of the Tariff Policy, the Central Commission in consultation with the Central Electricity Authority, shall notify the operating norms from time to time for generation and transmission. At the stage of making of 2014 Tariff Regulations, the Central Commission consulted CEA and based on the recommendations of the CEA, introduced the measurement of GCV on "as received" basis after considering the comments of the stakeholders including NTPC on the said recommendation of CEA. MoP may consider consulting the Central Electricity Authority in this regard.

9. Copies of the following documents are enclosed for your perusal:-

- a) Copy of the Writ Petition filed by NTPC (except annexures).
- b) Copy of the reply filed by the Commission before the Hon'ble High Court of Delhi.
- c) Copy of the Interim Order dated 17.9.2015 issued by the Hon'ble High Court of Delhi.
- d) Copy of the Order dated 25.1.2016 in Petition No. 283/GT/2015 issued by the Commission.
- e) Copy of the Order dated 30.6.2016 in Review Petition No. 11/RP/2016 issued by the Commission.
- f) Copy of the Petition No. 244/MP/2016 filed by NTPC before the Commission.

10. In view of the above, the Commission is of the view that the issues in the context of observations of C&AG regarding pricing of energy cannot be considered at this stage since, the issue of measurement of GCV on "as received" basis as per the 2014 Tariff Regulation is presently sub-judice.

Yours sincerely,



19/06/17

(Sanoj Kumar Jha)

Shri Aniruddha Kumar
Joint Secretary, Ministry of Power (MoP),
Shram Shakti Bhawan, Rafi Marg,
New Delhi - 110001.