

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 39/RP/2017

In

Petition No. 146/GT/2015

Coram:

Shri P. K. Pujari, Chairperson

Dr. M. K. Iyer, Member

Date of Order: 19th December 2018

In the matter of

Petition for review of the Order dated 24.7.2017 passed by the Hon'ble Commission in Petition No. 146/GT/2015 in the matter regarding approval of tariff of Circulating Fluidized Bed Combustion Technology based NLC Thermal Power Station-II Expansion Units I & II (2 x 250 MW) for the period from their actual date of commercial operation till 31.3.2019.

In the matter of

NLC India Limited,
Commercial Department,
Corporate office,
Neyveli-607801

.....Petitioner

Vs

1. The Chief Engineer (Planning),
Tamil Nadu Generation and Distribution Corporation Ltd.
144, Anna Salai; Chennai – 600002.

2. The Director (Commercial)
Power Company of Karnataka Ltd, KPTCL Complex, Kaveri Bhavan,
Bangalore – 560009.



3. The Managing Director,
Bangalore Electricity Supply Company Ltd (BESCOM)
Krishna Rajendra Circle
Bangalore - 560 001.

4. The Managing Director,
Mangalore Electricity Supply Company Ltd (MESCOM)
Paradigm Plaza, A.B. Shetty Circle
Mangalore - 575 001.

5. The Managing Director,
CESC Mysore (Chamundeshwari Electricity Supply Co. Ltd.)
Corporate Office No. 927, L.J.Avenue,
New Kantharaj Urs Road
Saraswathipuram, Mysore - 570 009.

6. The Managing Director,
GESCOM (Gulbarga Electricity Supply Company Ltd.)
Main road, Gulbarga, Gulbarga -585 102
Karnataka.

7. The Managing Director,
HESCOM (Hubli Electricity Supply Company Ltd.) Corporate office
P.B.Road, Navanagar
Hubli - 580 025.

8. The Chief Engineer (Commercial)
Kerala State Electricity Board Ltd.,
Vaidyuthi Bhavanam,
Pattom, Thiruvananthapuram-695004.

9. The Superintending Engineer I,
Puducherry Electricity Department,



Parties present: -

Shri M.G.Ramachandran, Advocate, NLC
Shri Shubham Arya, Advocate, NLC
Ms. Poorva Saigal, Advocate, NLC
Ms. Anushree Bardhan, Advocate, NLC
Shri S. Vallinayagam, Advocate, TANGEDCO

ORDER

The petitioner, NLC India Limited, has filed this review petition seeking review of order dated 24.07.2017 in Petition No 146/GT/2015, whereby the Commission had determined the tariff in respect of Circulating Fluidized Bed Combustion Technology (CFBC) based NLC Thermal Power Station-II Expansion for Unit-II from actual COD (22.04.2015) to 04.07.2015 and for Unit-I & II (i.e. station) from COD of Unit-I (05.07.2015) to 31.03.2019, in accordance with the provisions of the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2014 (hereinafter referred to as 'the 2014 Tariff Regulations'). The Commission, vide order dated 24.07.2017 in Petition No 146/GT/2015, had determined the annual fixed charges of the generating station as under:

(Rs in Lakh)

	2015-16		2016-17	2017-18	2018-19
	22.4.2015 to 4.7.2015 (Unit- II)	5.7.2015 to 31.3.2016 (Units I & II)			
Return on Equity	1732.14	13726.42	19279.48	19824.47	19824.47
Interest on Loan	2008.42	15480.57	19683.83	17099.73	14988.49
Depreciation	1535.38	12167.21	17089.48	17572.56	17572.56
Interest on	454.19	3619.70	4937.87	4954.88	5100.84



Working Capital					
O&M Expense	1296.86	9451.08	13564.19	14414.19	15319.19
Total	7026.98	54444.98	74554.85	73865.84	72805.56

2. Aggrieved by the said order dated 24.07.2017, the petitioner in this review petition has submitted that there are errors apparent on the face of the order and sought review on the following issues:

- a) Non-consideration of the aspect of time overrun.
- b) Disallowance of an amount of Rs 540.04 Cr. in the capital cost for the financial year 2016-17.
- c) Disallowance of Interest During Construction (IDC), Incidental Expenses During Construction (IEDC) and non allowance of the total normative IDC.
- d) The Station Heat Rate of 2863.11 kCal/kWh claimed by NLC not being allowed.
- e) While, calculating the interest on working capital, the landed cost of the lignite has not been taken into account (i.e. inclusive of taxes and duties i.e. Clean Energy Cess, Excise Duty and Service Tax on Royalty) and only the base price and Royalty has been considered.
- f) The Commission has also while calculating the interest on working capital proceeded to consider the lime stone stock only for 45 days as against 60 days which should have been considered for non-pit head station.
- g) The Commission while computing Interest on Loan in determination of Interest on working Capital, has not carried over the net loan closing figure of the previous year to the net loan opening figure of the next year.
- h) The auxiliary consumption has been computed at 10% as against the claim of 15.02%



3. The case was last heard on 16.10.2018. Based on the submissions of the petitioner and the documents available on record, we proceed to examine the issues raised in the petition as detailed in the subsequent paragraphs.

A. Issue regarding consideration of Time overrun:

4. The petitioner has submitted that the Commission in Para 27 of the order has allowed a time over run of 56 months as against the claim of NLC of 77 months for Unit I revising the SCOD to 1.10.2013 for the computation of IDC and IEDC. Similarly for Unit II, the time over run allowed is 42.5 months as against the claim for 71 months and thereby revising the SCOD to 16.12.2012. In the above the Commission, has considered time overrun up to the event of Boiler Light up respectively for Units I and II at 35 months on the basis that the time over run of Unit I for the same event took 35 months. It is submitted that NLC in its petition, has stated in detail the reason for time over run of 56 months for Unit II up to the stage of boiler light up, in as much as the project execution encountered multifarious issues, peculiar to Unit II. However, the Commission has maintained the allowance of time overrun of only 35 Months for Unit II similar to time overrun of Unit No I.

5. The Commission, after having accepted the claim of NLC that the time overrun of 35 months in case of Unit I till the period of boiler light up was beyond the control of NLC, namely, on account of increased quantum of work due to a new technology being adopted for the first time; ought to have appreciated the difficulties faced by NLC for the period till the boiler light up of Unit II considering the same reasons given by NLC independently in regard to number of months. The reasons for the time overrun of 56 Months for Unit II as would be clear from the Petition filed by NLC are as under:



- i. The 250 MW CFBC Boiler involves a huge quantity of equipments weighing about 30,000 tonnes as against 16000 tonnes involved in conventional boiler. This is much higher than that of 500 MW Boiler.
- ii. 56200 site welding joints (of which 8000 Nos. of T 91 special high alloy steel) as against 19500 joints in conventional boiler. Welding of T91 joints is a special requirement for this boiler which has a long heat treatment cycle time (approx. 30 hrs per Cycle) for completing each joint.
- iii. There are several Link pipe- connections from Back pass to FBHEs for SH & RH Headers which involves welding of High Alloy steel (SA 335 P 91) with high Heat Treatment cycle time which is not the requirement for PF Boilers.
- iv. There are about 53 headers in this Boiler and welding of their connecting tubes to the respective SH& RH coils (involving T91 coils partially) are sequential and voluminous.
- v. The erection of combustor ducts, Cyclones and FBHE's return legs etc. requires to be done in a specific sequence
- vi. Quantity of about 5000 Tons of Refractory application as against a mere 50 Tons involved in conventional boiler, which consumes more time.
- vii. The refractory application works involve 3 types of layers to be carried out sequentially one over the other after proper setting time.
- viii. This technology consumes more time with enormous amount of shuttering works, anchor welding, Holders for Brick supports etc.
- ix. Based on the feedback regarding the refractory failure, Ceramic coating is done inside the cyclone areas.
- x. It was envisaged during the course of erection to ensure surface protection against SO_x and prevent refractory failure.
- xi. The design of CFBC boilers require additional systems like Bed material system, Bed Ash system, Lime handling system, Emergency Boiler feed pump, Emergency cooling water system, Blowers and piping etc.
- xii. The above quantum of works in this CFBC boiler is more than that of a 500 MW conventional boiler.



- xiii. In general, there was heavy shortage of both skilled and unskilled manpower in all the packages throughout the execution phase. The local manpower availability is very meagre to cater to the requirement and turnkey contractors have to mobilise most of the manpower from northern parts of the country.
- xiv. The delays occurred due to product development and validity establishment in ordering and supply of associated equipments, for the execution of 250MW CFBC Boiler for the 1st time in India.
- xv. The intricacies in the design & layout of boiler necessitate sequential erection of boiler equipments, which caused delay in erection. The engineering issues/ fouling problems faced at site needed to be re-designed and solved with suitable modifications. This caused considerable delay in execution.
- xvi. The location of the site – Cuddalore district is more prone to heavy rains and severe cyclonic storms. During the monsoon period (October to December) the progress of works got affected badly for 2 to 3 months every year due to the heavy rains. Also the site was ravaged on two occasions due to severe cyclonic storms. The Thane cyclone on 31.11.2011 with wind velocities reaching up to 140 kmph caused damages on the site and delayed the resumption of work.
- xvii. Difficulties were faced during the civil foundation works in the initial construction periods due to the presence of water table and semi_confined aquifers just below the surface level in this location. Due to this, continuous dewatering operations had to be carried out during foundation works with the result of huge volume of earth handling due to sliding of the strata. This caused considerable time for the completion of civil works.
- xviii. The erection work was stopped for a few days due to strikes on various accounts during 2007 to 2009.
- xix. The above delays in erection activities accounted for delay as per following details: -

Drum lifting	Scheduled U i: 19-11-06 U ii:19-03-07	Actual U i: 06-02-08 U ii:31-05-08	Delayed by 14 months for both units
Boiler	U i: 18-09-07	U i: 27-06-09	Delayed by 21 months.



hydro test	U ii:18-01-08	U ii:30-07-10	Delayed by 30 months.
Boiler light up	U i : 19.02.08 U ii :19.06.08	U i : 28.02.11 U ii :28.02.13	Delayed by 36 months for unit i and 56 months for unit ii

xx. At the time of investment approval, there was no benchmark available on timeline for units of 250 MW CFBC Boilers in India and the above schedules were prepared by NLC on the basis of the schedules available for 125 MW CFBC Boilers.

6. While NLC put forth all its efforts in dealing with the above issues, the delay is due to the nature of works involved in 250 MW CFBC technologies with huge quantum of works and other factors, over which NLC has no control. The implications of absorption of new technology introduced for the first time in India and that there will be issues to be sorted out as compared to the installation of plant and machinery with an existing technology is required to be considered by the Commission.

7. The petitioner has further submitted that above aspects have not been considered by the Commission. In the context of the above, the Appellate Tribunal's order dated 27.4.2011 in Appeal No. 72 of 2010 in Para 18 is of relevance that has laid down that if there are reasons beyond the control of the generating company, the generating company should be given the benefit of additional cost incurred due to time over run. The Commission has duly acknowledged that the CFBC technology was adopted by NLC due to its various benefits. The problems faced by NLC are those which are associated with an absolutely new technology and that too which is implemented on a large scale.

8. The Respondent No. 1, TANGEDCO vide its affidavit dated 12.06.2018 has submitted that there is a time gap of 28 months between the synchronization of Unit-I and Unit-II. The statement of the petitioner that all the modification work which were carried out in Unit-I were



carried out in Unit-II also, clearly exhibits that the planning and coordination for execution of the project is upon the petitioner. Therefore, it is the responsibility of the petitioner to commission the units at the earliest and the petitioner should not pass on the responsibilities to others and burden the beneficiaries. The respondent, TANGEDCO, has further submitted that the petitioner has not indicated any error apparent on the face of the order but has only sought to reargue the case on merits.

9. The petitioner in its rejoinder dated 26.6.2018 has submitted that the delay was on account of a new technology being used for the very first time on such a scale in India. It is wrong and denied that there was no proper planning or project management on the part of NLC. It is denied that there was any lack of co-ordination or that there was unorganized work structure during the execution of the project attributable to NLC.

10. Respondent No. 8, KSEBL, vide its affidavit dated 4.7.2018 has submitted that the petitioner NLCIL in its review petition has failed to demonstrate an “error apparent on the face of the record” or “discovery of new and important matter” warranting the exercise of power of review and therefore the petition is not maintainable. The order of the Commission denying the time overrun was based upon detailed examination of the documents on record and after analyzing all the difficulties encountered in implementing the CFBC technology in India for the first time. The respondent KSEBL has further submitted that the Commission vide its several orders has disallowed cost overrun and time overrun and resultant increase in the capital cost of the project based on the principles laid down by APTEL in its judgment dated 27.4.2011 in appeal no 72 of 2010. The claim now raised by the petitioner was made in the original petition also and there are no new facts or development substantiating the review.

11. The petitioner in its rejoinder dated 10.07.2018 has submitted that the reply filed by KSEBL is devoid of any merits and reiterated its claim of Time overrun as submitted in the



review petition. The petitioner further vide affidavit dated 27.10.2018 has submitted that the reasons for delay mentioned in the review petition, were beyond the control of the Review Petitioner.

12. TANGEDCO vide its affidavit dated 16.11.2018 has submitted that the claim of the Petitioner for review is not justifiable and thus liable to be rejected as the Average Plant Availability Factor and Plant Load Factor in respect of TPS-II Expansion for the year 2017-18 is below 50%. Even though, the plant is not running at the full capacity, the cost of lignite excavated from Mine-II Expansion is included in the pooled cost, thus resulting into additional financial expenditure upon the beneficiaries.

Analysis and Decision

13. We have examined the replies, rejoinders and the submission of the Petitioner in the review petition and other documents placed on record.

14. There was a total time overrun of 77 months for Unit-I (which consists of 35 months from zero date to boiler light up and 42 months from boiler light up to COD due to technical flaws in stabilization and achieving full load of 250 MW) and 71 months for Unit-II (56 months for zero date to boiler light up and 15 months from boiler light up to COD). Time over-run of 56 months for Unit-I (35 months from zero date to boiler light up and 21 months due to technical flaws) and 42.5 months (35 months from zero date to boiler light up and 7.5 months from boiler light up to COD) for Unit-II due to the time taken for increased quantum of work and technical flaws, were condoned and the remaining period of time over-run of 21 months for Unit-I and 28.5 months for Unit-II were not condoned. The Review Petitioner has contended that the Commission, after having accepted the claim of NLC time overrun of 35 months in case of Unit I till the period of boiler light up should have also appreciated the



difficulties faced by NLC in case of Unit-II for the period till the boiler light up and ought to have considered 56 months instead of restricting it to 35 months considering the same reasons given by NLC independently in regard to number of months. However, we note that the issue raised by the review petitioner was duly considered by us in the order dated 24.07.2017 in Petition No.146//GT/2015 and the Commission in the said order has allowed 35 months delay for Unit-I & Unit-II for the increased quantum of work in CFBC boiler with the following observations: -

“21. The submissions of the petitioner that there was much more refractory application, erection quantity and welding joints in CFBC boiler compared to conventional boiler is acceptable. It is observed that the time taken in a conventional boiler from the foundation of civil work to Boiler light up is approximately 24 months. Considering the volume of work involved in CFBC boiler the time taken from civil foundation work to Boiler light up is almost 48 months in the typical commissioning schedule of 53 months for Unit-I and 57 months for Unit-II as per investment approval of NLC, CFBC boiler for TPSII(Exp.) and commissioning schedule of 36 months for Unit-I in case of conventional boiler in recently commissioned NTPC station, Bongaigaon TPS. It could be observed that the original commissioning schedule of the NLC TPS-II (Exp.) had margins of about 17 months keeping in view the quantum of work involved in CFBC boilers. In this backdrop, after giving thoughtful consideration to the submission of petitioner and the nature of refractory work, erection work and welding joints involved in execution of CFBC project along with the time taken by these special welding joints, refractory work etc., we are inclined to condone 35 months delay for Unit-I. The delay of 56 months for Unit-II is on a much higher side even after considering the volume of work and considering the fact that for same amount of work there was delay of 35 months in case of Unit-I. In view of this the delay of 35 months, instead of 56 months delay has been condoned in case of Unit-II also. Accordingly, time overrun of 35 months for Unit-I and 35 months for Unit-II up to boiler light up have been condoned.”

15. The commission has taken a conscious view in allowing time overrun of 35 months for both the units up to boiler light up. We do not agree with contention of the Petitioner that there is error apparent on the face of the record and, therefore, the submission of the review petitioner regarding time overrun is not accepted. Review on this ground is rejected.

16. Further, the review petitioner has argued that while the Commission has recognized that the CFBC technology was adopted by NLC due to its various benefits and the problems



faced by NLC were those which are considered with new technology on a CFBC boiler on a larger scale, the total delay from boiler light up to COD in case of Unit-I & Unit-II should have been allowed in full instead of sharing it in ratio of 50:50 with the beneficiaries. The Commission at Para-22 of the order dated 24.7.2017 has acknowledged the technical issues being faced in adoption of new technology, and duly considering this fact has observed that risk due to adoption of new technology in time and cost overrun should be borne by project developer and the beneficiaries to encourage new technology which are environmentally benign and beneficial to both. The operative part of the Commission's observation in Para-22 of the order is reproduced below:

"22. It is observed from the submissions of the petitioner that there has been significant problems in implementation of the CFBC technology and the petitioner has submitted that such failures is due to the fact that 250 MW CFBC boilers are being implemented for the first time by the petitioner and also due to adoption of new technology, there were technical flaws and teething problems. It is noticed that there was delay of 42 months for Unit-I and 15 months for Unit-II from boiler light up to declaration of COD. The main reason for delay from boiler light up to COD in case of Unit-I is on account of failure of PA fan bearing & impellar, refractory failure, clinker formation due to non fluidization, bed formation in lignite transport feeders, accumulation of bed material in secondary air duct, burner choking, repeated failure of Superheater coil at higher loads etc. and modifications carried out for primary air duct support, ID fan duct, Back pass coil support and Rotary air lock feeder etc. In case of Unit-II it is noticed that all the design deficiencies/technical flaws have been corrected/rectified prior to the synchronization along with the rectification works undertaken for Unit-I. Therefore, the entire delay in respect of Unit-II was mainly up to synchronization of the said unit. In fact, the petitioner had actually covered up the delay of 3 months up to COD and the total delay up to COD has been reduced to 71 months for Unit-II. The petitioner has attributed the delay of frequent and long shutdown of the units due to frequent cyclone chokes in both the units, HP casing temperature. It is observed that owing to the new technology the cause analysis and remedial measures were attempted by the EPC contractor, M/s. BHEL by trying successive attempts, modifications were carried out in ducts, hanger tubes, roof sealing and rotary air lock feeders etc. thereby consuming more time and leading to the outage for longer periods. In addition to this, other problems like failure of FBHE coil support due to resonance of natural frequency of the equipment and modification in the design, cutting, dismantling of entire SH and Reheater coils, refractory damages in both the units, modification work in the wind box assembly, economizer coil puncture etc. have also contributed to the delay in commissioning. As submitted by the petitioner all the modification works which were carried out in Unit-I of the generating station were also carried out in Unit-II also except the duct modification work which was carried out with respect to Unit-II only. In our considered view, the failure of PA fan, steam cooled wall tube, Non-metallic expansion joint in seal pots, PA wind box, Back pass entry



FBHE support system, problem in lignite conveyor and feeders etc. experienced during achieving full load were design problems as CFBC boiler of higher size of 250 MW is the first of its kind in India. It is noticed that in respect of Circulating Fluidized Bed Combustion (CFBC) Technology of 125 MW at Barsingsar Thermal Power Plant (2x125 MW) of the petitioner which was commissioned by same EPC contractor M/s BHEL during 2011-12, technical flaws and teething problems had arisen and the Commission while determining the tariff of the generating station from COD of Unit-I (29.12.2011) to 31.3.2014 vide order dated 10.7.2015 in Petition No. 197/GT/2013 had partly condoned the time overrun on the ground that the delay due to technical flaws had occurred due to adoption of new technology. The petitioner and EPC contractor had gained experience up to some extent from Barsingsar project of the petitioner with regard to the defects in design and reasons for repeated failure in achieving sustained operation at full load. However, in case of this generating station, we notice that the technical problems faced were more severe compared to Barsingsar TPS and repetitive, where the petitioner had no other alternative but to repose confidence on the EPC contractor to overcome these problems so that the machines are stabilized and COD could be declared. In our considered view, the up-gradation to higher sizes CFBC is a continuous process on the part of the manufacturer, the project company and would also involve the beneficiaries concerned. We also understand the fact that in its continuing improvement there would be problems during stages of design, manufacturing and engineering and also in stabilization of units. There is no denying of the fact that the delay due to technical flaws had occurred due to adoption of new technology and once the problems in Unit-I was rectified, there was not much problem faced in Unit-II due to technical flaws. Keeping in view the larger interest of environment, the beneficiaries and the Project developer, we are of the view that the beneficiaries cannot be fully burdened by passing over all the risks of huge delay in the commissioning of the project. Also, the beneficiaries should encourage the adoption of new technology which are environment friendly and share some risks towards unforeseen technical flaws which had occurred during the commissioning of the project. In this background, we are of the considered view that the delay of 42 months in case of Unit-I and 15 months in case of Unit-II from Boiler light up to COD shall equally be borne by the petitioner and beneficiaries in the ratio 50:50.”

17. We thus find that the petitioner in the review petition has only re-argued his case on merits regarding time overrun. This Commission has given detailed reasons for taking the view, which has been taken after considering all the afore-mentioned contentions of the Review Petitioner. The decision of the Commission is discussed at length at Para-19 to Para-28 of the impugned order dated 24.07.2017 in Petition No.146/GT/2015. The petitioner wants to reopen the findings on the issue of disallowance of time overrun and wants this Commission to re-consider each and every fact on this issue which has already been taken



into consideration and discussed at length in the impugned order by the Commission while arriving at the said finding.

18. The commission has taken a conscious view of not allowing 21 months for Unit-I and 28.5 months for Unit-II for the time overrun. Hence, there is no error apparent on the face of the record and the submission of the review petitioner regarding time overrun is not accepted. In the above background, we do not find any error apparent on the face of the record and accordingly, review on this ground is rejected.

B. Issue regarding Disallowance of an amount of Rs 540.45 crores in the capital cost for the financial year 2016-17 and disallowance of Interest During Construction IDC, Incidental Expenses During Construction IEDC and non-allowance of the total normative IDC: -

19. The review petitioner in respect of disallowance of Rs 540.45 Cr has submitted that the Commission has disallowed the amount in the capital cost due to reduction under the following heads:

- (a) IDC: Rs. 586.61 Cr allowed against a claim of Rs. 795.51 Cr.
- (b) Normative IDC: Rs. 133.41 Cr has been allowed as against the claim of Rs. 382.67 Cr.
- (c) IEDC: Rs. 218.18 Cr has been allowed as against the claim of Rs. 276.55 Cr.
- (d) Initial Spares: Rs 17.45 Cr has been disallowed as being excess of normative 4% of Plant & Machinery.
- (e) LD: Rs. 6.46 Cr disallowed on LD adjustment.

20. The review petitioner, NLCIL, has submitted that the delay of 21 months disallowed in case of Unit I and the delay of 28.5 months disallowed in the case of Unit II are beyond the control of NLCIL and, therefore, the cost overrun ought to have been allowed in totality.

There has been double jeopardy in the order, namely, that while the time over run and cost



overrun have not been allowed fully, the liquidated damages received by NLC from the contractors which relates to the period for which the time over run has been disallowed, had also been considered and adjusted. The review petitioner cannot be deprived of the liquidated damages proportionate to the time over run disallowed by the Commission. Further, the Initial Spares expenditure of Rs 17.45 Cr has been disallowed as being excess of normative 4% of Plant & Machinery (para 38). The Commission ought to have appreciated that the power plant is the first such plant in South East Asia with CFBC Technology of 250 MW Capacity of Lignite fuel involving increased equipments over conventional boilers and that such expenditure on initial spares is incidental to it.

21. The Respondent, TANGEDCO vide its affidavit dated 12.06.2018 submitted that a considerable delay could have been avoided if there was proper planning and project management. The delay was not beyond the control of the petitioner and the petitioner cannot transfer the responsibility of the said delay upon the beneficiaries. Further, the review petitioner has failed to make out any case to interfere in the well-considered norms provided under Regulation 13 of the 2014 Tariff Regulations. Hence, the review claimed by the petitioner is liable to be dismissed as it is devoid of merits.

22. TANGEDCO vide affidavit dated 16.11.2018 has submitted that the Review Petitioner has not raised the issue of disallowance of Initial spares in its Review Petition. The Commission in the said order has restricted the initial spares as per the provisions laid down under the 2014 Tariff Regulations. The review Petitioner should have challenged the provisions of the Regulations and as such there is no error apparent in the order. Hence, the claim of the Petitioner for review of the order dated 24.7.2017 is liable to be rejected.

23. Respondent No.8, KSEBL vide its affidavit dated 4.7.2018 has submitted that the order of the Commission denying the time overrun was on the basis of detailed examination



of the documents on record and after analyzing all the aspects of difficulties encountered in implementing the CFBC technology in India for the first time and the Commission vide its several orders has disallowed cost overrun and time overrun and resultant increase in the capital cost of the project.

24. The petitioner in its rejoinder dated 26.6.2018 has reiterated its earlier submission and submitted that it is wrong that there was no proper planning or project management or any lack of co-ordination or that there was unorganized work structure during the execution of the project on the part of NLC. It has submitted that the delay disallowed by the Commission was beyond the control of NLC.

Analysis and Decision

25. We have considered the documents, replies and rejoinders by the petitioner and respondents on record. The petitioner in the review petition has argued his case regarding reduction of Capital cost under the head of IDC, Normative IDC, IEDC, Initial spares and LD.

26. The reduction in IDC, normative IDC and IEDC is apportioned as per the time overrun allowed and disallowed and accordingly prorata reduction has been carried out. The prorata reduction as per time overrun disallowed could be seen at Para 28, 33 and 34 of the impugned order dated 24.07.2017 in Petition No. 146/GT/2015.

27. The Commission in the said order dated 24.07.2017 in Petition No. 146/GT/2015 has clearly directed petitioner to furnish the comprehensive details/ documents at the time of truing up of tariff of the generating station for the period 2014-19. The relevant para has been extracted as under: -

"It is noticed that the petitioner in the original petition vide affidavit dated 8.5.2015 (soft copy) has filled in Form 7 (Details of Project Specific Loan). Subsequently, vide affidavit dated



28.3.2016 the petitioner has revised and furnished Form 8 (Details of Allocation of Corporate Loan to various projects) instead of Form 7. In reply to ROP dated 2.8.2016, the petitioner has not furnished complete details/ documents in support of the revisions in floating rate of interest. In the absence of the same, the rate of interest as claimed by the petitioner vide affidavit dated 31.8.2016 has been considered in this order for the purpose of tariff with a direction to the petitioner to furnish comprehensive details/ documents at the time of truing up of tariff of the generating station for the period 2014-19. Accordingly, the IDC and Normative IDC is allowed as under:

	COD of Unit-II (22.4.2015)	COD of Station (5.7.2015)
<i>IDC computed up to SCOD (reset)</i>	27281.65	58661.76
<i>Normative IDC computed up to SCOD (reset)</i>	5109.44	13340.58

28. Further, The Commission in the said order dated 24.07.2017 in Petition No.146/GT/2015 had disallowed the excess claim of Rs 17.45 Cr in initial spares with the following observations: -

“38. The total Plant and Machinery cost including taxes and duties as per Form-5B is `155138.00 lakh. Further, the petitioner has capitalized initial spares of `7951.00 lakh as on COD of the generating station (5.7.2015). Accordingly, the initial spares capitalized for `7951.00 lakh works out to 5.125% of the Plant and Equipment cost which is beyond the ceiling limit of 4% (`6205.52 lakh) specified under the said regulations. Hence, initial spares have been restricted to `6205.52 lakh upto COD of the generating station with deduction of `1745.48 lakh as on COD of the generating station. The petitioner is directed to furnish the details of additional capital expenditure along with the break-up of actual plant & machinery cost up to cut-off date and the details of initial spares capitalized up to the cut-off date at the time of truing-up of tariff in terms of the Regulation 8 of the 2014 Tariff Regulations.”

29. From above decision of the Commission in the said order dated 24.07.2017, it is clear that deduction of initial spares of Rs 17.45 Cr was strictly in terms of Regulation 13 of the 2014 Tariff Regulations. However, the petitioner was directed by the Commission to furnish details of capital expenditure including plant & machinery up to cut off date (31.3.2018) and initial spares capitalized up to cut off date. Therefore, at the time of true-up of tariff the initial



spares would be revisited. Hence, there is no error apparent on the face of the order regarding the reduction of Rs 17.45 Cr of initial spares.

30. Further, the petitioner has submitted that the review petitioner cannot be deprived of the liquidated damages proportionate to the time over run disallowed by the Commission. The Commission has given reasons for taking the view. The relevant paragraph of the decision of the Commission is reproduced hereunder: -

“26.the problems faced by the petitioner in design, construction, erection and in commissioning (stabilization) of CFBC boilers was on account of adoption of new environment friendly technology and the same was intended for better utilization of scarce resources. The adoption of new technology was in good faith and the delay due to problems associated with new technology cannot be attributed to the petitioner. Accordingly, the situation is covered in terms of the principle laid down in para 7.4 (ii) of the judgment of the Tribunal and the time overrun of 56 months (35+21) for Unit I and 42.5 months (35+7.5) for Unit II has been condoned. The LD and Insurance proceeds if any, recovered for the total delay of 77 months and 71 months, shall be adjusted in the capital cost pro rata for 56 months for Unit-I and 42.5 months for Unit-II. The balance LD if any, may be retained by the petitioner.”

31. Hence, it could be clearly seen from above observation of the Commission in the order dated 24.7.2017, that the LD and insurance proceeds proportionate to the period of delay condoned shall be adjusted in the capital cost and balance LD proportionate to the period of delay not condoned shall be retained by the Petitioner. Accordingly, LD for the time overrun of 21 months disallowed in case of Unit-I and 28.5 months in case of Unit-II was allowed to be retained by the petitioner. Hence, there is no merit in the contention of the petitioner that there has been double jeopardy in the order.

32. From the above discussions, we find that the Commission has dealt with the issues regarding reduction of Rs 540.45 crores in the capital cost for the financial year 2016-17 in lieu of IDC, Normative IDC, IEDC, Initial spares and LD. We do not find any error apparent on face of the record nor any other sufficient reason has been brought forth by the Petitioner for



review of the Order. Therefore, review sought in this regard is not tenable. Accordingly, the review is disallowed.

C. Issue regarding Disallowance of Station Heat Rate of 2863.11 kcal/kwh.

33. The petitioner has submitted that the Commission has allowed Station Heat Rate of only 2559.94 Kcal/kWh in terms of the table provided under 36(C)(b)(i) of the Tariff Regulations, 2014, as against the claim of 2863.11 Kcal/Kwh. NLC had claimed for a higher SHR in view of the various factors that are affecting the Gross Station Heat Rate of the station which is first of its kind CFBC boiler in South-East Asia.

34. The petitioner has further submitted that the design margin multiplying factor of 1.065 ought to have been reckoned as applicable for 2009-14 tariff period in lieu of 1.045 applicable for 2014-19 tariff period since the project design value specification was frozen during the 2004-09 tariff period and the station was envisaged to have been commissioned in 2009. The Commission had in earlier instances considered Lignite Thermal Power Stations of NLC as unique, which could not be compared/ applied as such with standardized norms and parameters stipulated in the Regulations and hence relaxed the norms of operation including Station Heat rate.

35. The Respondent TANGEDCO vide its affidavit dated 12.06.2018 and 16.11.2018 has submitted that the Commission has determined the station heat rate in accordance with the norms provided under the 2014 Tariff Regulations. In the present review petition, the petitioner is trying to challenge the norms which are not possible under this forum. Therefore, the claim of the petitioner is liable to be rejected.

36. Respondent No. 8, KSEBL vide its affidavit dated 4.7.2018 has submitted that the matter raised by the petitioner does not deserve any merit and is outside the scope of this



review petition as the consideration of station heat rate by the Commission was after due consideration of CFBC technology and by applying the norms for CFBC technology as specified in the 2014 Tariff Regulations.

37. The petitioner in its rejoinder dated 26.6.2018 has submitted that it is not challenging the provisions of the 2014 Tariff Regulations as contended by TANGEDCO but instead is seeking to invoke the Commission's power to relax and power to remove difficulty under provisions of these Regulations given the unique characteristics of the CFBC technology and the challenges faced by NLC on account of the same.

38. The review petitioner in its rejoinder dated 10.7.2018 and its affidavit dated 27.10.2018 has reiterated its submission that it has claimed for a higher SHR of 2863.11 kCal/kWh in view of the various factors such as lower boiler efficiency and various aberrational parameters that are actually affecting the Gross Station Heat Rate of the station.

Analysis and Decision

39. We have examined the submission of the Petitioner and respondents in the review petition. The design margin of 1.065 was applicable for 2009-14 tariff regulations but the COD of the generating station was declared on 05.07.2015 i.e. during 2014-19 period. Accordingly multiplying factor of 1.045 is applicable as per the 2014 Tariff Regulations. The consideration of Station heat rate of 2559.94 kcal/kWh was as per Regulation 36 (C)(b) (i) of the 2014 Tariff Regulations. Hence, there is no error as far as consideration of heat rate and its multiplying factor is concerned. The contention of the petitioner was not accepted and accordingly the Commission after going through the details furnished by the petitioner in the original petition has allowed the Station heat rate of 2559.94 kcal/kWh. The relevant para of the impugned order dated 24.7.2017 regarding Station heat rate is reproduced as under: -



“79. The petitioner has submitted the design turbine cycle heat rate and boiler efficiency as 1952.9 kcal/kWh and 78.62% respectively at 100% MCR and 0% make-up water. Accordingly, the unit design heat rate worked out is 2483.97 kcal/kWh (1952.9/0.7862). Further, the petitioner has considered deviation factor of 6.5% from Design Heat Rate which is not in conformity with the 2014 Tariff Regulations. Accordingly, by considering the above parameters along with the moisture factor, the petitioner has claimed GSHR of 2863.11 Kcal/kWh.

80. In terms of Regulation 36(C)(b)(i) of the 2014 Tariff Regulations, for the new Thermal Generating Station achieving COD on or after 1.4.2014, the Gross Station Heat Rate= 1.045 x Design Heat Rate (kcal/kWh) (i.e. 1.045x2483.97 =2595.75), provided that the design heat rate shall not exceed the maximum design unit heat rates depending upon the pressure and temperature ratings of the units. The maximum design heat rate as specified by the Commission for plants having temperature (537°C/537°C) and pressure(170 kg/cm²) rating nearer to the generating station using sub-bituminous coal is 2267 kcal/kwh. Provided, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP where the BFP are electrically operated. As the BFP of the generating station is motor driven the maximum design unit heat rate is 2227 kCal/kWhr (2267-40). Provided further that in case of lignite-fired generating stations (including stations based on CFBC technology), maximum design heat rates shall be increased using factor for moisture content given in sub-clause (C)(a)(iv) of this regulation. The petitioner has stated that the proximate and ultimate analysis of lignite has indicated 53% moisture content. Hence, by using multiplication factor of 1.1% for lignite having 50% moisture, the ceiling design heat rate works out to 2449.7 kcal/kwh(1.1 x 2227). Thus, taking the deviation factor of 1.045, the Gross Station Heat rate is 2559.94 kcal/kwh (1.045x2449.7). Accordingly, the GSHR of 2559.94 kcal/kWh has been considered for the purpose of tariff.”

40. From the above observation of the Commission, it is clear that the consideration of Gross station heat rate of 2559.94 kcal/kWh was as per Regulation 36 (C)(b) (i) of the 2014 Tariff Regulations. Hence, there is no error apparent as contended by the petitioner. Hence, the claim of the petitioner for review of the Order is rejected.

D. Issue regarding Computation of Interest on Working Capital.

41. The petitioner, NLC, has submitted that in the computation of Interest on Working Capital for the period 2014-19, the Commission has included only the base transfer price of Lignite (including Royalty) instead of the Landed price of primary fuel which includes all the statutory duties and Taxes also. The Commission ought to have taken the Landed price of primary fuel into account while computing the interest on working capital which is in line with



its regulations. This Commission has not considered taxes and duties, cess (Clean energy cess, Excise Duty and Service tax on Royalty).

42. Further, as per Regulation 28(1)(a)(i) and (ii), the cost of limestone to be considered while computing interest on working capital is 30 + 30 days for non-pithead station (as in the present case). The Commission has at Para 90 inadvertently allowed the cost for only 45 days which is applicable for pithead stations.

43. The Respondent, TANGEDCO vide its affidavit dated 12.06.2018 submitted that the Commission while admitting the working capital expenditure, has considered the lignite price as quoted by the petitioner. The petitioner is trying to challenge the regulation which is not permissible under this forum.

44. The petitioner in its rejoinder dated 26.6.2018 has reiterated its submissions of the review petition.

45. Respondent No. 8, KSEBL vide its affidavit dated 4.7.2018 has submitted that the lignite price considered for computation of working capital is the price submitted by the petitioner itself. The petitioner in its rejoinder dated 10.7.2018 has reiterated its contention and further vide affidavit dated 27.10.2018 has submitted that the Commission has included only the base transfer price of Lignite (including Royalty) instead of the Landed price of primary fuel which includes all the statutory duties and taxes as provided for in the Regulation 28 of the 2014 Tariff Regulations. Additionally, the cost of limestone to be considered by the Commission is 30 + 30 days for non-pithead station (as in the present case), as against 45 days (which is applicable for pithead stations) allowed by the Commission. These aspects can also be considered at the time of truing up.



46. The respondent TANGEDCO vide its affidavit dated 16.11.2018 has submitted that since the Petitioner has not furnished the landed cost of lignite including the details of duties/taxes applicable, based on the records, the Commission has considered the base price and royalty for the purpose of calculation of working capital. Further, NLCIL is a pit-head generating station hence the claim for considering the 60 days of stock of limestone for calculation of interest on working capital is not as per the Regulations and therefore, the Commission has rightly rejected the claim of the Petitioner.

Analysis and Decision

47. We have considered the submission of the Petitioner and the respondents in the review petition in the light of the submission made vide affidavit dated 02.11.2016 in the Tariff Petition No.146/GT/2015, based on which the Commission took the decision in the order dated 24.07.2017 for computation of Interest on working capital.

48. Regulation 28 of the 2014 Tariff Regulations regarding Interest on Working Capital provides as under: -

“28. Interest on Working Capital:

(1) The working capital shall cover:

(a) Coal-based/lignite-fired thermal generating stations:

(i) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(ii) Cost of coal or lignite and limestone for 30 days for generation corresponding to the normative annual plant availability factor;

(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;

(iv) Maintenance spares @ 20% of operation and maintenance expenses specified in regulation 29;

(v) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the normative annual plant availability factor; and



(vi) Operation and maintenance expenses for one month.

(2) The cost of fuel in cases covered under sub-clauses (a) and (b) of clause (1) of this regulation shall be based on the landed cost incurred (taking into account normative transit and handling losses) by the generating company and gross calorific value of the fuel as per actual for the three months preceding the first month for which tariff is to be determined and no fuel price escalation shall be provided during the tariff period.”

49. Further, the regulation 30 (8) of the 2014 Tariff Regulations regarding the landed cost of fuel provides as follows:

“(8) The landed cost of fuel for the month shall include price of fuel corresponding to the grade and quality of fuel inclusive of royalty, taxes and duties as applicable, transportation cost by rail / road or any other means, and, for the purpose of Computation of energy charge.”

50. The Commission in the petition no 146/GT/2015, while allowing Lignite transfer price & Energy Charges at Paras 92 & 93 of the order dated 24.7.2017 had made the following observations: -

“92. The petitioner has claimed year-wise Energy Charges for the period 2015-19 based on Station Heat rate of 2863.11 kCal/kWh, weighted average lignite price of `1981/Ton & GCV of 2645.67 kCal/kg for Unit-II for the year 2015-16 and `2299/ Ton and GCV of 2640.33 kCal/kg for the generating station (Unit-I&II) for the period from 2015-19 and oil procured and burnt for the preceding three months as under:

2015-16		2016-17	2017-18	2018-19
(22.04.2015 to 04.07.2015) Unit-II	(05.07.2015 to 31.03.2016) Station			
2.532	2.912	2.912	2.912	2.912

93. It is observed that the lignite Transfer price for the period 2015-19 as submitted by the petitioner was calculated based on MoC guidelines dated 2.1.2015 and the same has been considered by the Commission for computation of fuel component and energy charges in working capital. This has been considered for the computation and recovery of Energy Charges for the period 2015-19. This is however subject to adjustment after truing up of lignite price at the end of the tariff period 2014-19 as per MOC guidelines based on the detailed justification and information for the variation in the year to year lignite transfer price for the period 2014-19 as submitted by the petitioner.”

51. The consideration of the base lignite transfer price in the order dated 24.7.2017 is due to the fact that the petitioner in the Tariff petition no 146/GT/2015 had not submitted the



details of excise duty & other taxes. however, the base lignite transfer price considered by the Commission was including the Royalty @6%.

52. The base transfer price of lignite should be inclusive of clean energy cess, excise duty, other taxes and duties and Royalty/ tonne for the computation of interest on working capital. It is also observed that the wage revision of the Non-executives and workmen w.e.f. 1.1.2012 is due for NLCIL Mines. The petitioner NLCIL vide its Petition No. 32/MP/2018 has claimed the increase in Operation and Maintenance expenses incurred by NLCIL's Mines and prayed to allow appropriate adjustment of money due from/ payable to beneficiaries of NLCIL Stations for the period 01.01.2012 to 31.03.2014. The claim of the impact of wage revision of its employee to the extent considered and allowed by the Commission would further change the Lignite Transfer Price. Hence, the petitioner is given liberty to approach the Commission at the time of Truing up with revised Lignite Transfer Price, after including the Clean Energy Cess, Excise duty and the wage revision impact of the non-executives & workmen in the base transfer price of lignite. This revised Lignite Transfer Price would be used for computation of Interest on Working Capital during truing up of 2014-19 Tariffs.

53. Further, with regard to consideration of 45 days cost of limestone while computing interest on working capital. Regulation 28(1)(a)(i) and (ii), of Tariff Regulations, 2014 provides as under: -

“(a) Coal-based/lignite-fired thermal generating stations

(i) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(ii) Cost of coal or lignite and limestone for 30 days for generation corresponding to the normative annual plant availability factor;.....”

54. The above regulation clearly stipulates 15 days cost of lignite and limestone towards stock and 30 days towards generation for pit-head generating station. Accordingly, the



petitioner's generating station being a pit-head generating station, the Commission had allowed 45 days cost of lignite and limestone as per the regulation. Hence, there is no merit in the contention of the petitioner for considering 60 days cost of lignite and limestone while computing interest on working capital.

E. Issue regarding consideration of interest on loan:

55. While computing interest on loan, it is noticed that the net loan closing figure of the previous year has inadvertently not been carried forward to the net loan opening figure for the next year. Thus, there is an error apparent on the face of the record and the same is required to be corrected. Accordingly, review on this ground is allowed which shall be rectified at the time of truing up.

F. Issue regarding consideration of Auxiliary Power Consumption:

56. The review petitioner with regard to the auxiliary power consumption has submitted that only 10% has been allowed, as against the claim of 15.02%, on the ground that details of quantification have not been furnished. The petitioner has submitted that for Barsingsar Generating station of NLC using CFBC technology, Auxiliary Consumption has been fixed at 11.50%. NLC has further submitted that the details for seeking auxiliary power consumption at 15.02% have been furnished.

57. The petitioner has submitted that the higher auxiliary power consumption for CFBC based lignite power station is due to the increased deployment of auxiliary equipment such as more number of high capacity air blowers, more & higher capacity auxiliaries as the stream requirement higher BMCR rating than the conventional boilers, additional RO DM Plant & Lime handling Plant system, more equipment in Water Chemical Treatment plant, more stream with more equipment in Lignite handling system than conventional plant etc.,



58. The Respondent TANGEDCO vide its affidavit dated 12.06.2018 has submitted that the 2014 Tariff Regulations was notified by the Commission after consultation with stakeholders and the petitioner should have raised the issue before the notification of these Regulations.

59. The petitioner in its rejoinder dated 26.6.2018 has submitted that NLCIL has given the details for seeking higher auxiliary power consumption at 15.02% in its petition. It has reiterated that the higher auxiliary power consumption for CFBC based lignite power station is due to the increased deployment of auxiliary equipment than a conventional PF system. Each and every allegation to the contrary is denied.

60. Respondent No. 8, KSEBL vide its affidavit dated 4.7.2018 has submitted that as per the 2014 Tariff Regulations, the APC of CFBC based technology is 10% as allowed by the Commission. Therefore, the petitioner has no right to raise the issue.

61. The review petitioner in its rejoinder dated 10.7.2018 has submitted that it is wrong and denied that NLC is trying to challenge the 2014 Tariff Regulations in the present review petition as the higher auxiliary power consumption for CFBC based lignite power station is due to the increased deployment of auxiliary equipment as compared to a conventional PF system. Further, the review petitioner vide affidavit dated 27.10.2018 has submitted that the Review Petitioner would urge the issue in the true up proceedings.

62. The respondent TANGEDCO vide its affidavit dated 16.11.2018 has submitted that the petitioner NLCIL is trying to challenge the Operational norms provided under the 2014 Tariff Regulations, which cannot be permitted. However, the claim of the Petitioner for review of the Auxiliary consumption could be taken at the time of true up.



Analysis and Decision

63. The Commission in the impugned order restricted the Auxiliary Power Consumption claimed by the petitioner to 10%, as the petitioner did not submit the detailed quantification of auxiliary power consumption due to additional equipments. The Commission in the said order has clearly granted liberty to the petitioner to submit the actual auxiliary consumption data at the time of truing up. Relevant para of the order of the Commission dated 24.07.2017 in Petition No.146/GT/2015, reproduced hereunder: -

“In terms of above regulation, the Auxiliary Power Consumption (APC) of 10% is provided for the generating station. However, the petitioner has claimed APC of 15% due to higher number of auxiliary equipments in CFBC technology as compared to conventional technology power plants. Such auxiliary equipments, as per the submission, includes higher capacity air blowers, higher BMCR rating than the conventional boilers, additional RO, DM Plant & Lime Handling system, increased no. of equipments in Water Chemical Treatment Plant and Lignite Handling System. The petitioner has however not furnished the detail quantification in support of the increased claim of 15% in APC. Accordingly, the APC of 10% in terms of the above regulation has been considered. The petitioner is however, directed to submit the actual auxiliary consumption at the time of truing up of tariff.”

64. Hence, the contention of the petitioner that there is error apparent on the face of the order regarding consideration of Auxiliary Power consumption cannot be considered at this stage. As per direction in the impugned order, the claim of the petitioner for higher Auxiliary consumption shall be considered at the time of truing up after prudence check of the details furnished by the petitioner.

65. Petition No. 39/RP/2017 is disposed of in terms of the above.

Sd/-

**(Dr. M.K.Iyer)
Member**

Sd/-

**(P. K. Pujari)
Chairperson**

