

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 271/2010**

**Coram: Dr. Pramod Deo, Chairperson  
Shri S.Jayaraman, Member  
Shri V.S.Verma, Member  
Shri M.Deena Dayalan, Member**

**Date of Hearing: 14.2.2012**

**Date of Order: 23.2.2012**

**In the matter of**

Grant of provisional tariff of Muzzafarpur TPS, Stage-I, Unit-II (110 MW) of Kanti Bijlee Utpadan Nigam Ltd, for the period from 15.10.2010 to 31.3.2014.

**And**

**In the matter of**

Approval of generation tariff of Muzzafarpur TPS, Stage-I, Unit-II (110 MW) of Kanti Bijlee Utpadan Nigam Ltd for the period from 15.10.2010 to 31.3.2014.

**And**

**In the matter of**

Kanti Bijlee Utpadan Nigam Ltd, New Delhi

.....**Petitioner**

Vs

Bihar State Electricity Board, Patna

.....**Respondent**

**Parties present:**

1. Shri V.K.Padha, NTPC
2. Shri Rohit Chhabra, NTPC
3. Shri Ajay Dua, NTPC
4. Shri R.B.Sharma, Advocate, BSEB

**ORDER**

The petitioner, Kanti Bijlee Utpadan Nigam Ltd (KBUNL), has filed this petition for determination of generation tariff of Muzzafarpur TPS, Stage-I, Unit-II (110 MW) ('the generating station') for the period from 15.10.2010 to 31.3.2014, in terms of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "the 2009 Regulations").



2. Kanti Bijlee Utpadan Nigam Ltd (KBUNL), a Government company, is a subsidiary of NTPC Ltd and was set up as a joint venture company with the respondent, BSEB to take over the assets and business of the generating station which consists of two units of 110 MW capacity each, from 8.9.2006 which was under shut down since October, 2003. The entire power generated from the generating station, is supplied to the respondent.

3. The project was in depleted condition at the time of transfer and the generating station was in a position to generate power only at 10% to 15% of its capacity. As there was acute shortage of power being faced by the respondent, BSEB, only selective refurbishment works for restoration of generation from Unit-II was taken up and the commercial operation of the Unit-II was declared on 15.10.2010, without doing any major R&M work. In the absence of any major R&M works completed till the date of commercial operation of Unit-II, the operational performance indicated by the petitioner to work out the annual fixed charges and variable charges (viz. Target availability@ 60%, Auxiliary Power Consumption @ 14%, Heat Rate @ 3300 kCal/kWh & Specific oil consumption @ 6ml/kWh) are much inferior to the norms specified by the Commission for similar size units, under the 2009 Regulations.

4. The petitioner in its original petition has prayed for approval of tariff for Unit-II (1 x 110 MW) of the generating station for the period from 15.10.2010 to 31.3.2014 with relaxed operational norms and O&M expenses. Further, the petitioner has submitted that it may be allowed to file separate petitions for determination of tariff after completion of R&M of Unit-I and thereafter completion of R&M of Unit-II of the generating station. Subsequently, the petitioner filed Interlocutory Application (I.A.No.15/2011) on 4.7.2011 for amendment of Appendix-I of the petition taking

into consideration the audited accounts for the period from 1.4.2010 to 14.10.2010 and has prayed that the same may be allowed. The prayer of the petitioner in the said I.A is allowed and the revised calculations are taken on record, which will be considered in accordance with law

5. The petitioner by its letter dated 31.10.2011 has prayed that the Commission may grant provisional tariff based on the status of the Renovation & Modernisation (R&M) in the Units-I & II of the generating station in terms of Regulation 5 (4) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2011, which provides as under:

*“(4) Where application for determination of tariff of an existing or a new project has been filed before the Commission in accordance with clauses (1) and (2) of this regulation, the Commission may consider in its discretion to grant provisional tariff upto 95% of the annual fixed cost of the project claimed in the application subject to adjustment as per proviso to clause (3) of this regulation after the final tariff order has been issued:*

*Provided that recovery of capacity charge and energy charge or transmission charge, as the case may be, in respect of the existing or new project for which provisional tariff has been granted shall be made in accordance with the relevant provisions of these regulations.”*

6. The Commission by its letter dated 11.11.2011 directed the petitioner to submit additional information and the petitioner in compliance with the same has filed the information vide its affidavit dated 24.11.2011.

7. During the hearing on 14.2.2012, the learned counsel for the respondent, BSEB submitted that the petitioner may be allowed to recover tariff at a rate to be mutually determined by the parties, till such time the final tariff of the generating station is determined in this petition by the Commission considering the prayer of the petitioner. In response, the representative of the petitioner objected to the above submissions and placed before the Commission a copy of the letter of the respondent bearing No.27/Misc/IS/277/2008/1146/Patna dated 12.7.2011



addressed to the petitioner, wherein, the petitioner has been requested to expedite the early approval of tariff for the period from 15.10.2010 to 31.3.2014 in Petition No. 271/2010 by the Commission.

8. Heard the parties. The petitioner has filed the petition in terms of Regulations 5(1) and 5(2) of the 2009 Tariff Regulations and has prayed for relaxed operational norms and O&M expenses. After analyzing the actual performance of the generating station for the year 2009-10 and thereafter from 1.4.2010 till the date of commercial operation of the Unit-II (15.10.2010) and considering the likely improvement in the operational performance that could be achieved by the generating station, due to the restoration/refurbishment work done on the unit, we are of the view that the grant of provisional tariff of the generating station based on the relaxed operational norms, as discussed under, could be considered at this stage, keeping in view the interest of the sole beneficiary and the cash flow problems faced by the petitioner. We direct accordingly.

9. In view of the above, pending determination of final tariff of the generating station, we consider the grant of provisional tariff of the generating station for the period from 15.10.2010 to 31.3.2014 as stated in the subsequent paragraphs.

10. The annual fixed charges claimed by the petitioner for the period 2009-14 are as under:

	<b>2010-11</b> <i>(15.10.2010 to 31.3.2011)</i>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>
Annual Fixed charges	9304.85	9473.53	9577.63	9700.56

11. Taking into consideration the objections of the respondent, BSEB in its reply filed on 7.3.2011 and the submissions of the petitioner, the parameters for grant of provisional tariff is as under:

- (a) The Capital expenditure, on cash basis, as on 15.10.2010 and certified by Chartered Accountant is ₹16840.06 lakh and the same has been considered.
- (b) The petitioner has not claimed any projected additional capital expenditure after the date of commercial operation of Unit-II and has submitted that the additional capital expenditure shall be claimed after the implementation of R&M works.
- (c) The petitioner has informed that grant in the form of Special Central Assistance under Rashtriya Sam Vikas Yojna aggregating to ₹18750.00 lakh has been provided for the generating station. However, for working out the provisional tariff, the apportioned amount of ₹6513.54 lakh for Stage-I, Unit-II (as claimed by the petitioner) has been reduced from the capital cost of ₹16840.06 lakh (on cash basis) to arrive at the opening capital cost as on 15.10.2010. This works out to ₹10326.52 lakh and the same is considered.
- (d) Capital expenditure of ₹10326.52 lakh has been considered in the debt-equity ratio of 70:30 in line with Regulation 12 of the 2009 Regulations.

12. The claim of the petitioner for relaxation of operational norms is considered as under:

#### **O&M expenses**

13. The actual O&M expenses for the year 2009-10 are ₹3416.19 lakh and ₹1826.99 lakh for the period from 1.4.2010 to 15.10.2010. From the details submitted by the petitioner it is observed that the actual O&M expenses include Productivity Linked Incentives also, which has not been considered. After restoration/refurbishment of the unit, an actual O&M expense for the year 2009-10 is available for a complete year. For the year 2010-11, the O&M expenses do not reflect the actual cost. Accordingly, the actual O&M expense for the year 2009-10 has been considered as the base O&M after deducting the expenses on productivity linked incentive of ₹ 248.46 lakh which works out to ₹3167.73 lakh, say ₹3168.00 lakh. This works out to ₹28.80 lakh/MW. For the subsequent years, the O&M expenses/MW have been escalated @ 5.72% each year as per provisions of the 2009 Regulations. As per Power Purchase Agreement (PPA), it has been agreed by the parties that till the end of the financial year in which R& is completed, the actual

O&M expenses incurred shall be a pass through. Based on the above, the year wise O&M works out as under:

	(₹ in lakh)			
	2010-11	2011-12	2012-13	2013-14
O&M cost/ MW	30.44736	32.188949	34.0301569	35.9766818
O&M expenses allowed	1541.554008	3540.7844	3743.31726	3957.435

14. O&M expense norms allowed would be reviewed after the completion of R&M schemes.

### **Normative Annual Plant Availability Factor and Other Operational Parameters**

#### **(A) Normative Annual Plant Availability (NAPAF)**

15. The petitioner has in its original petition claimed the NAPAF of 60% for the Unit-II. Subsequently, in its submissions filed on 24.11.2011, it has the claimed the Availability Factor of 61.90% for 2009-10 and 54.16% for the period from 1.4.2010 to 15.10.2010.

16. The respondent has submitted that the Normative Target Availability should be 75% for recovery of full fixed charge.

17. It could be observed that the availability during 2009-10 was 61.90%. However, the availability from 1.4.2010 to 15.10.2010 had decreased to 54.16%. The reason for lower availability during 2010-11 was on account of the planned shutdown of Unit-II for 54 days, apparently on account of major restoration work undertaken, as additional capital expenditure of ₹6189 lakh towards restoration work has been claimed for the period 1.4.2010 to 15.10.2010. Had the unit not been under planned shutdown, the availability would have been around 60% (aprox). Accordingly, the availability of 54.16% does not reflect the actual availability, as the unit would not remain under long planned shutdown, since major restoration work is almost complete. Thus, taking into consideration that

there would be improvement in the availability of unit after 15.10.2010, the Target Availability of 62% for recovery of full fixed charges based on the performance of 2009-10 is reasonable. Hence, the same is allowed.

### **Station Heat Rate**

18. The petitioner has claimed Station Heat Rate (SHR) of 3300 Kcal/kWh. The respondent, BSEB has submitted that a normative SHR of 2935 kcal/kWh may be considered.

19. The Gross SHR is 3392 (Kcal/kWh) for 2009-10 and 3205 (Kcal/kWh) for the period from 1.4.2010 to 15.10.2010. Hence, there is a consistent improvement in SHR after refurbishment and stabilisation of its performance, since 29.1.2009. The above Heat rate has been achieved with the loading factor of around 70% and with pressure restriction of 115kg/cm<sup>2</sup> as against 140 kg/cm<sup>2</sup>. With the refurbishment of boiler pressure parts, water walls, re-heaters, super heaters, economisers, screen tubes, roof tubes, fins, refractory, insulation, bowl mills etc. in the steam generator system, it should be possible to raise the main steam pressure and the MW loading. Thus, the heat transfer in the system would be improved which would give better Heat rate to the unit. However, for the present an SHR of 3200 Kcal/kWh is possible to be achieved and appears reasonable. Therefore, the SHR of 3200 (Kcal/kWh) is allowed considering the fact that comprehensive R&M is to be undertaken.

### **Auxiliary Energy Consumption**

20. The petitioner has sought Auxiliary Energy Consumption (AEC) of 14.00%. The respondent, BSEB has proposed for an Auxiliary Energy Consumption of 10.00%. The actual data indicate that the AEC for the unit was 15.11% during the period from 1.4.2010 to 15.10.2010. We are of the view that the AEC at part load

operation would be more than at full load operation. Therefore, the AEC of 14% as claimed by the petitioner is reasonable and the same is considered.

### **Specific Oil Consumption**

21. The petitioner has adopted Specific Oil Consumption of 6 ml/kWh. The actual data on specific fuel oil consumption as available is 5.76 ml/kWh for 2009-10 and 5.78 ml/kWh for 2010-11.

22. The respondent, BSEB has prayed for adoption of Specific fuel oil consumption of 2.00 ml/kWh based on 2009 Regulations. We are of the view that with the refurbishment of burners, mills, Air pre-heaters, damper control vane, boiler tubes etc. the loading of the unit would be improved and the tripping of the unit would be less. As a result, the Oil consumption is likely to reduce as the requirement for oil support for combustion and flame stabilisation would be less. Accordingly, a Specific fuel oil consumption of 5.00 ml/kWh is allowed at this stage, providing the petitioner some margin for improvement, against the actual specific oil consumption of 5.76 ml/kWh.

23. The operating norms for Unit-II has been relaxed at present, considering the fact that Unit-II is operating after restoration/ refurbishment work and that comprehensive R&M would take considerable time before the same is actually implemented. Simultaneously, Unit-1 is undergoing comprehensive R&M and the likely implementation would be during April, 2012. After the implementation of R&M programme on Unit-1, all the operating norms allowed as above shall be reviewed by the Commission.

### Fuel component in working capital

24. In terms of the 2009 Regulations, the cost of fuel computation is based on the landed cost of coal and oil and the GCV for the preceding three months i.e. July, 2010 August, 2010 and September, 2010 from the date of commercial operation of Unit-II. The GCV of fuels are available (as fired) only for the month of July, 2010 and September, 2010 as the Unit was under shutdown in August, 2010. In view of this, the weighted average landed cost and GCV (as fired) of coal and oil has been computed based on cost and GCV of July, 2010 and September, 2010. Further, for the computation of landed cost of oil, other charges/E. tax shown as ₹2.45 lakh during July, 2010 has not been considered, as there was no other charges /E. tax during August, 2010 and September, 2010. The weighted average landed cost of coal and oil and the GCV considered are as under:

	As considered
Landed cost of Coal (₹ per tonne)	2159.169
GCV of Coal (Kcal/kg)	3280.50
Landed cost of Oil (₹ per KL)	48165.851
GCV of Oil (Kcal/Litre)	9533

25. The fuel component in working capital as computed is allowed as under:

	2010-11	2011-12 (leap year)	2012-13	2013-14
Value of 2 months Coal Stock	950.90	2071.59	2065.93	2065.93
Value of 2 months Oil Stock (LDO)	110.37	240.46	239.80	239.80
Energy Charges for two month	950.90	2071.59	2065.93	2065.93

### O &M expenses and Maintenance Spares in Working Capital

26. The following O&M expenses for 1 month and the maintenance spares allowed is as under:

	2010-11	2011-12	2012-13	2013-14
O&M Expenses (for 1 month)	<b>275.28</b>	<b>295.07</b>	<b>311.94</b>	<b>329.79</b>
Spares (20% of O&M cost)	<b>308.31</b>	<b>708.16</b>	<b>748.66</b>	<b>791.49</b>

### Cost of Secondary Fuel Oil

27. The Unit-II is presently using Light Diesel Oil (LDO) as secondary fuel. After completion of R&M, High Furnace Oil (HFO) will be used as main secondary fuel oil. Since the generating station is presently using only one secondary fuel oil i.e. LDO, the LDO cost is allowed in provisional tariff. Accordingly, cost of secondary fuel oil is allowed as under:

	(₹ in lakh)			
	<b>2010-11</b> <i>(from 15.10.2010 to 31.3.2011)</i>	<b>2011-12</b> <b>(leap year)</b>	<b>2012-13</b>	<b>2013-14</b>
Cost of Secondary Oil (LDO)	662.24	1442.73	1438.79	1438.79

28. The unit/generating station is likely to undergo R&M in future which would enhance the life of the generating station entailing capital infusion. As these details are not available, the life of generating station has been considered as 10.9 years from 15.10.2010 onwards, as claimed by the petitioner.

29. Other parameters have been considered in line with the provisions of the 2009 Regulations.

### Energy Charge Rate (ECR)

30. Energy Charge rate in Rs/kWh on ex-power plant, shall be calculated up to three decimal places in accordance with the formulae given in Regulation 21(6)(a) of the 2009 Regulations. The base energy charge is worked out as under:

<b>Description</b>	<b>Unit</b>	<b>2010-11 to 2013-14 (Unit-II)</b>
Capacity	MW	110
Gross Station Heat Rate	kCal/kWh	3200
Specific Fuel Oil Consumption	ml/kWh	5.00
Aux. Energy Consumption	%	14.00
Weighted Average GCV of Oil	kCal/l	9533
Weighted Average GCV of Coal	kCal/Kg	3280.50
Weighted Average Price of Oil	Rs./KL	48165.851
Weighted Average Price of Coal	Rs./MT	2159.169
<b>Rate of Energy Charge ex-bus per kWh Sent</b>	<b>Paise/kWh</b>	<b>241.257</b>

31. After carrying out prudence check, we allow the provisional fixed charges of the generating station for the period 2011-14, as under:

	<b>2010-11</b> <i>(15.10.2010 to 31.3.2011)</i>	<b>2011-12</b>	<b>2012-13</b>	<i>(₹ in lakh)</i> <b>2013-14</b>
Annual Fixed charges	7909.12	8052.50	8140.99	8245.48

32. The provisional fixed charges allowed as above are subject to truing-up in terms of Regulation 6 of the 2009 regulations.

33. The provisional fixed charges allowed as above is subject to adjustment as per proviso to Clause (3) of Regulation 5 of the 2009 regulations, after final tariff order has been issued.

34. The provisional tariff determined by this order shall remain in force until further orders or till the final tariff is determined by the Commission, whichever is earlier.

Sd/-

Sd/-

Sd/-

Sd/-

**[M.DEENA DAYALAN]**  
**MEMBER**

**[V.S.VERMA]**  
**MEMBER**

**[S.JAYARAMAN]**  
**MEMBER**

**[DR.PRAMOD DEO]**  
**CHAIRPERSON**