

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Review Petition No. 28/2012**

**in**

**Petition No. 229/2009**

**Coram:**

**Dr. Pramod Deo, Chairperson**

**Shri S. Jayaraman, Member**

**Shri V. S. Verma, Member**

**Shri M.Deena Dayalan, Member**

**Date of Hearing: 29.1.2013**

**Date of Order: 15.3.2013**

**IN THE MATTER OF**

Review of order dated 17.10.2012 in Petition No.229/2009 regarding determination of generation tariff for Tanda Thermal Power Station, (440 MW) for the period from 1.4.2009 to 31.3.2014.

**AND**

**IN THE MATTER OF**

NTPC Ltd

**...Petitioner**

Vs

Uttar Pradesh Power Corporation Ltd, Lucknow

**....Respondent**

**Parties Present:**

1. Shri Shankar Saran, NTPC
2. Shri Rohit Chhabra, NTPC
3. Shri Amit Arora, NTPC
4. Shri Ajay Dua, NTPC

**ORDER**

Petition No. 229/2009 was filed by the petitioner, NTPC, for approval of generation tariff in respect of Tanda Thermal Power Station (440 MW) (hereinafter referred to as 'the generating station') for the period from 1.4.2009 to 31.3.2014, based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ('the 2009 Tariff Regulations'). The Commission by its order dated 17.10.2012 approved the capital cost for the period 2009-14 as under:



	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening capital cost	94506.05	97882.64	104811.95	112457.67	114363.86
Projected Additional capital expenditure	3376.59	6929.31	7645.72	1906.19	1500.00
<b>Closing Capital cost</b>	<b>97882.64</b>	<b>104811.95</b>	<b>112457.67</b>	<b>114363.86</b>	<b>115863.86</b>
<b>Average Capital cost</b>	<b>96194.34</b>	<b>101347.29</b>	<b>108634.80</b>	<b>113410.76</b>	<b>115113.85</b>

2. The annual fixed charges approved by Commission *vide* its order dated 17.10.2012 is as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	3409.05	3591.66	3849.93	3220.52	3356.77
Interest on Loan	822.24	717.10	788.55	754.38	653.46
Return on Equity	6776.22	7139.21	7652.56	7988.99	8108.97
Interest on Working Capital	4202.24	4248.56	4314.61	4340.28	4387.35
O & M Expenses	11550.00	12210.00	12909.60	13648.80	14427.60
Cost of Secondary fuel Oil	1694.99	1694.99	1699.64	1694.99	1694.99
Compensation Allowance	0.00	0.00	0.00	0.00	0.00
Special Allowance	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>28454.75</b>	<b>29601.53</b>	<b>31214.88</b>	<b>31647.97</b>	<b>32629.14</b>

3. Aggrieved by the said order, the petitioner has filed this review petition seeking review of the order dated 17.10.2012 on the following issues, namely:

- (a) Allowance of ₹48.14 lakh on account of Air-conditioning of Thyristor room in the year 2010-11 mistakenly, instead of the year 2011-12, as claimed by the petitioner.
- (b) Application of depreciation rate of 3.5439% for 2009-14 tariff period based on the depreciation rate of 2004-09 instead of depreciation rate based on Regulations 2009.

4. Heard the representative of the petitioner on 'admission'.

**Additional Capitalization of Air-conditioning of Thyristor room**

5. The net additional capitalization allowed during the period 2009-14 in the table under paragraph 33 of the order dated 17.10.2012 is as under:

(₹ in lakh)

Sl. No.	Head of work/ Equipment	Actual/Projected Capital Expenditure					Total
		2009-10 (actual)	2010-11 (actual)	2011-12	2012-13	2013-14	
<b>A</b>	<b>R&amp;M Schemes</b>						
1 to 63	Assets under R & M schemes ( <i>list of assets enclosed at Annex.-I</i> )	2626.75	6179.44	4296.26	706.43	0.00	13808.88
	De-capitalization	140.47	449.03	370.52	81.24	0.00	1041.26
(a)	<b>Net Amount allowed</b>	2486.28	5730.41	3925.74	625.19	0.00	12767.62
72	Renovation of ESP Unit#3	104.12	0.48	0.00	0.00	0.00	104.60
73	Renovation of ESP Unit#4	0.00	582.55	0.00	0.00	0.00	582.55
74	Renovation of ESP Unit#2			379.34	0.00	0.00	379.34
	De-cap of ESPs	11.97	67.05	43.62	0.00	0.00	122.64
b)	Net amount allowed on ESPs	92.15	515.98	335.72	0.00	0.00	943.85
(a)+(b)	Total amount allowed on R&M (Net basis) - (A)	<b>2578.43</b>	<b>6246.39</b>	<b>4261.46</b>	<b>625.19</b>	<b>0.00</b>	<b>13711.47</b>
<b>(B)</b>	<b>Ash Handling</b>						
64	First Raising of Ash Dyke –A	797.68	0.00	600.00	0.00	0.00	<b>1397.68</b>
65	First Raising of Ash Dyke –B	0.00	563.87	0.00	0.00	0.00	563.87
66	Contingency raising of Ash Dyke-A	0.00	0.00	89.90	0.00	0.00	89.90
67	2 <sup>nd</sup> raising of Ash Dyke-A	0.00	0.00	0.00	1281.00	0.00	1281.00
68	2 <sup>nd</sup> raising of Ash Dyke –B	0.00	0.00	0.00	0.00	1500	1500.00
	<b>Total (B)</b>		<b>563.87</b>	<b>689.90</b>	<b>1281.00</b>	<b>1500.00</b>	<b>4832.45</b>
<b>(C)</b>	<b>Change in Law</b>						
71	Procurement, Installation & commissioning of automatic continuous Air quality Monitoring system (AAQMS)	0.00	96.53	0.00	0.00	0.00	96.53
75	So <sub>x</sub> & No <sub>x</sub> Analyzer-ESP side – 4 nos. for four units	0.00	0.00	0.00	0.00	0.00	0.00
77	Chlorine leak absorption system	0.00	0.00	0.00	0.00	0.00	0.00
69	Dry Ash Evacuation System	0.00	0.00	2694.36	0.00	0.00	2694.36
70	Ash Brick Making machine	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Total (C)</b>	0.00	96.53	2694.36	0.00	0.00	2790.89
	<b>Others</b>	0.00	0.00	0.00	0.00	0.00	0.00
76	Supply of electricity under 5 Km scheme	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Net Additional Capitalization allowed (A+B+C)</b>	<b>3376.11</b>	<b>6906.85</b>	<b>7645.72</b>	<b>1906.19</b>	<b>1500.00</b>	<b>21334.81</b>

6. The petitioner has submitted that the expenditure of Rs 48.14 lakh an account of Air Conditioning of Thyristor Room at Sl .No.63 of the R&M schemes included in Form -9 of the amended tariff petition has been inadvertently allowed by the Commission during the year 2010-11 instead of the year 2011-12 as claimed by the petitioner and the same is required to be corrected. On verification of the records it is noticed that the expenditure of ₹48.14 lakh in respect of the said asset was claimed by the petitioner during the year 2011-12, but the same had been allowed and considered by the Commission in order dated 17.10.2012 during the year 2010-11. This is an error apparent on the face of the order and this



inadvertent error is corrected by this order. Accordingly, the expenditure of ₹48.14 lakh in respect of Air Conditioning of Thyristor Room has been considered during the year 2011-12 as claimed by the petitioner and after adjustment, the net amount allowed for assets under R&M schemes in order dated 17.10.2012 is revised as under:

							(₹ in lakh)
SI no	Head of works/equipments	2009-10 (actual)	2010-11 (actual)	2011-12	2012-13	2013-14	Total R&M
1 to 63	Assets under R & M schemes	2626.75	6131.30	4344.40	706.43	0.00	13808.88

7. In terms of the above and after rectification of an arithmetical error of ₹0.06 lakh in the calculation of the total additional capital expenditure allowed during the year 2010-11 in our order dated 17.10.2012, the additional capital expenditure allowed for the period 2009-14 in the table under paragraph 33 of the order dated 17.10.2012 is revised as under:

								(₹ in lakh)
SI. No.	Head of work/ Equipment	Actual/Projected Capital Expenditure					Total	
		2009-10 (actual)	2010-11 (actual)	2011-12	2012-13	2013-14		
<b>A</b>	<b>R&amp;M Schemes</b>							
1 to 63	Assets under R & M schemes ( <i>list of assets enclosed at Annex.-I</i> )	2626.75	6131.30	4344.40	706.43	0.00	13808.88	
	De-capitalization	140.47	449.03	370.52	81.24	0.00	1041.26	
(a)	<b>Net Amount allowed</b>	<b>2486.28</b>	<b>5682.27</b>	<b>3973.88</b>	<b>625.19</b>	<b>0.00</b>	<b>12767.62</b>	
72	Renovation of ESP Unit#3	104.12	0.48	0.00	0.00	0.00	104.60	
73	Renovation of ESP Unit#4	0.00	582.55	0.00	0.00	0.00	582.55	
74	Renovation of ESP Unit#2	0.00	0.00	379.34	0.00	0.00	379.34	
	De-cap of ESPs	11.97	67.05	43.62	0.00	0.00	122.67	
b)	Net amount allowed on ESPs	92.15	515.98	335.72	0.00	0.00	943.85	
(a)+(b)	Total amount allowed on R&M (Net basis) - (A)	<b>2578.43</b>	<b>6198.25</b>	<b>4309.60</b>	<b>625.19</b>	<b>0.00</b>	<b>13711.47</b>	
<b>(B)</b>	<b>Ash Handling</b>							
64	First Raising of Ash Dyke –A	797.68	0.00	600.00	0.00	0.00	<b>1397.68</b>	
65	First Raising of Ash Dyke –B	0.00	563.87	0.00	0.00	0.00	563.87	
66	Contingency raising of Ash Dyke-A	0.00	0.00	89.90	0.00	0.00	89.90	
67	2 <sup>nd</sup> raising of Ash Dyke-A	0.00	0.00	0.00	1281.00	0.00	1281.00	
68	2 <sup>nd</sup> raising of Ash Dyke –B	0.00	0.00	0.00	0.00	1500	1500.00	
	<b>Total (B)</b>	<b>797.68</b>	<b>563.87</b>	<b>689.90</b>	<b>1281.00</b>	<b>1500.00</b>	<b>4832.45</b>	
<b>(C)</b>	<b>Change in Law</b>							
71	Procurement, Installation & commissioning of automatic continuous Air quality Monitoring system (AAQMS)	0.00	96.53	0.00	0.00	0.00	96.53	
75	So <sub>x</sub> & No <sub>x</sub> Analyzer-ESP side – 4 nos. for four units	0.00	0.00	0.00	0.00	0.00	0.00	
77	Chlorine leak absorption system	0.00	0.00	0.00	0.00	0.00	0.00	
69	Dry Ash Evacuation System	0.00	0.00	2694.36	0.00	0.00	2694.36	
70	Ash Brick Making machine	0.00	0.00	0.00	0.00	0.00	0.00	
	<b>Total (C)</b>	<b>0.00</b>	<b>96.53</b>	<b>2694.36</b>	<b>0.00</b>	<b>0.00</b>	<b>2790.89</b>	

	<b>Others</b>	0.00	0.00	0.00	0.00	0.00	0.00
76	Supply of electricity under 5 Km scheme	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Net Additional Capitalization allowed (A+B+C)</b>	<b>3376.11</b>	<b>6858.65</b>	<b>7693.86</b>	<b>1906.19</b>	<b>1500.00</b>	<b>21334.81</b>

### Depreciation

8. As regards the issue in paragraph 3(b) above, the petitioner has submitted that the Commission while calculating the depreciation has taken the life of the generating station as 25 years from the date of take over i.e 14.1.2000 and accordingly calculated the life of the generating station as 9.21 years as on 1.4.2009 and accordingly applied the depreciation rate till 2011-12 and has spread over the balance depreciation from 2012-13. It has been submitted that the Commission while applying the depreciation rate has however inadvertently considered the depreciation rate of 3.5439% applicable for the tariff period 2004-09 instead of applying the depreciation rate applicable as per the 2009 Tariff Regulations for the period 2009-14. Accordingly, the petitioner has prayed that depreciation allowed for the period 2009-14 in order dated 17.10.2012 may be revised by applying the depreciation rates based on the 2009 Tariff Regulations.

9. We have examined the matter. It is noticed that the Commission in its order dated 17.10.2012 while considering the weighted average rate of depreciation rates for the years 2009-10, 2010-11 and 2011-12 had inadvertently applied weighted average rate of depreciation pertaining to the period 2004-09 instead of applying the weighted average rate of depreciation based on the depreciation schedule (Annexure-III) of the 2009 Tariff Regulations. This is an error apparent on the face of the order and the same is rectified by this order. Accordingly, for the purpose of calculation of depreciation, the weighted average rate of depreciation considered for the years 2009-10, 2010-11 and 2011-12 as per Annexure-III of the 2009 Tariff

Regulations is 5.1462%, 5.1544% and 5.1609% respectively and thereafter the remaining depreciation is spread over the balance useful life of the generating station from 2012-13.

10. Based on the above discussions, the annual fixed charges of the generating station for the period 2009-14 is revised as shown in the subsequent paragraphs.

### **Additional capital expenditure**

11. The additional capital expenditure allowed for the purpose of tariff for 2009-14 after taking into account the liabilities discharged during the period 2009-11, is revised as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Actual/projected additional capital expenditure allowed as above	3376.11	6858.65	7693.86	1906.19	1500.00
Liabilities discharged	0.48	22.46	0.00	0.00	0.00
<b>Actual/projected additional capital expenditure allowed</b>	<b>3376.59</b>	<b>6881.11</b>	<b>7693.86</b>	<b>1906.19</b>	<b>1500.00</b>

### **Capital Cost**

12. Accordingly, the capital cost considered for the purpose of tariff for period 2009-14 is as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Capital cost	94506.05	97882.64	104763.74	112457.60	114363.79
Additional Capital Expenditure	3376.59	6881.11	7693.86	1906.19	1500.00
<b>Closing Capital cost</b>	<b>97882.64</b>	<b>104763.74</b>	<b>112457.60</b>	<b>114363.79</b>	<b>115863.79</b>
<b>Average Capital cost</b>	<b>96194.34</b>	<b>101323.19</b>	<b>108610.67</b>	<b>113410.70</b>	<b>115113.79</b>

### **Return on Equity**

13. Return on equity is calculated as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Notional Equity- Opening	28351.81	29364.79	31429.12	33737.28	34309.14
Addition of Equity due to additional capital expenditure	1012.98	2064.33	2308.16	571.86	450.00
Normative Equity-Closing	29364.79	31429.12	33737.28	34309.14	34759.14
Average Normative Equity	28858.30	30396.96	32583.20	34023.21	34534.14
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%

Tax Rate for the year 2008-09	33.990%	33.990%	33.990%	33.990%	33.990%
Rate of Return on Equity (Pre Tax)	23.481%	23.481%	23.481%	23.481%	23.481%
<b>Return on Equity(Pre Tax)- (annualised)</b>	<b>6776.22</b>	<b>7137.51</b>	<b>7650.86</b>	<b>7988.99</b>	<b>8108.96</b>

### Interest on loan

14. Interest on loan is computed as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Gross opening loan	66154.23	68517.85	73334.62	78720.32	80054.66
Cumulative repayment of loan upto previous year	49041.09	53884.91	58755.77	64071.18	66849.44
Net loan Opening	17113.14	14632.93	14578.85	14649.15	13205.21
Addition due to additional capitalisation	2363.61	4816.77	5385.70	1334.33	1050.00
Repayment of loan during the year	4950.33	5222.56	5605.30	2835.13	2971.39
Less: Repayment adjustment on account of de-capitalization	106.71	361.26	289.90	56.87	0.00
Add: Repayment adjustment on account of discharges / reversals corresponding to un-discharged liabilities deducted as on 1.4.2009	0.20	9.56	0.00	0.00	0.00
Net Repayment	4843.82	4870.86	5315.40	2778.27	2971.39
Net Loan Closing	14632.93	14578.85	14649.15	13205.21	11283.83
Average Loan	15873.04	14605.89	14614.00	13927.18	12244.52
Weighted Average Rate of Interest on Loan	4.9403%	4.2234%	4.2212%	4.0424%	3.9380%
<b>Interest on Loan</b>	<b>784.17</b>	<b>616.86</b>	<b>616.89</b>	<b>562.99</b>	<b>482.19</b>

### Depreciation

15. As decided in paragraph 9 of this order, the rate of depreciation considered for the years 2009-10, 2010-11 and 2011-12 is 5.1462%, 5.1544% & 5.1609% respectively and thereafter the remaining depreciation is spread over the balance useful life of the generating station. Based on this, depreciation is worked out as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening capital cost	94506.05	97882.64	104763.74	112457.60	114363.79
Closing capital cost	97882.64	104763.74	112457.60	114363.79	115863.79
Average capital cost	96194.34	101323.19	108610.67	113410.70	115113.79
Depreciable value @ 90%	85067.67	89683.63	96242.37	100562.39	102095.18
Remaining useful life at the beginning of the year	15.79	14.79	13.79	12.79	11.79
Balance depreciable value	35571.42	35374.00	37162.89	36250.34	35021.10
<b>Depreciation (annualized)</b>	<b>4950.33</b>	<b>5222.56</b>	<b>5605.30</b>	<b>2835.13</b>	<b>2971.39</b>
Cumulative depreciation at the end	54446.58	59532.19	64684.78	67147.19	70045.46
Less: Cumulative depreciation reduction due to de-capitalization	137.20	464.47	372.73	73.12	0.00
Less: Cumulative depreciation adjustment on account of discharges / reversal of liabilities	(-) 0.25	(-) 11.76	0.00	0.00	0.00

out of liabilities deducted as on 1.4.2009					
Net Cumulative depreciation (at the end of the period)	54309.63	59079.48	64312.06	67074.07	70045.46

16. There is no change in the O&M expenses allowed vide order dated 17.10.2012.

### Interest on working capital

17. Consequent upon the above, the receivable component of the working capital is revised as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Variable Charges -2 months	13003.29	13003.29	13038.91	13003.29	13003.29
Fixed Charges - 2 months	4998.21	5193.73	5471.64	5176.53	5343.48
<b>Total</b>	<b>18001.50</b>	<b>18197.01</b>	<b>18510.56</b>	<b>18179.82</b>	<b>18346.77</b>

18. Interest on working capital is worked out as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Coal Stock – 2 months	13003.29	13003.29	13038.91	13003.29	13003.29
Oil Stock – 2 months	282.50	282.50	283.27	282.50	282.50
O&M expenses – 1 month	962.50	1017.50	1075.80	1137.40	1202.30
Maintenance Spares	2310.00	2442.00	2581.92	2729.76	2885.52
Receivables – 2 months	18001.50	18197.01	18510.56	18179.82	18346.77
<b>Total working capital</b>	<b>34559.79</b>	<b>34942.30</b>	<b>35490.46</b>	<b>35332.76</b>	<b>35720.37</b>
Rate of interest	12.2500%	12.2500%	12.2500%	12.2500%	12.2500%
<b>Interest on working capital</b>	<b>4233.57</b>	<b>4280.43</b>	<b>4347.58</b>	<b>4328.26</b>	<b>4375.75</b>

19. Based on the above, the annual fixed charges for the period 2009-14 is revised as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	4950.33	5222.56	5605.30	2835.13	2971.39
Interest on Loan	784.17	616.86	616.89	562.99	482.19
Return on Equity	6776.22	7137.51	7650.86	7988.99	8108.96
Interest on Working Capital	4233.57	4280.43	4347.58	4328.26	4375.75
O&M Expenses	11550.00	12210.00	12909.60	13648.80	14427.60
Secondary Fuel Oil	1694.99	1694.99	1699.64	1694.99	1694.99
Separate Compensation Allowance	0.00	0.00	0.00	0.00	0.00
Special Allowance	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>29989.28</b>	<b>31162.35</b>	<b>32829.87</b>	<b>31059.17</b>	<b>32060.88</b>

**Note :** (a) All figures are on annualized basis. (b) All the figures under each head have been rounded. The figure in total column in each year is also rounded. Because of rounding of each figure the total may not be arithmetic sum of individual items in columns.



20. The difference between the annual fixed charges determined by this order and those determined by order dated 17.10.2012 shall be adjusted by the parties in six equal monthly installments, in terms of the proviso to Regulation 5(3) of the 2009 Tariff Regulations.

21. Except the above, all other terms contained in the order dated 13.4.2012 remains unchanged.

22. Review Petition No. 28/2012 is disposed of as above in the admission stage.

**Sd/-**  
**[M.Deena Dayalan]**  
**Member**

**Sd/-**  
**[V. S. Verma]**  
**Member**

**Sd/-**  
**[S. Jayaraman]**  
**Member**

**Sd/-**  
**[Dr. Pramod Deo]**  
**Chairperson**