

Petition No :



Tanda Thermal Power Station

440 MW (4 x 110 MW)

**PETITION FOR DETERMINATION OF TARIFF
FOR THE PERIOD
01.04.2019 TO 31.03.2024**

BEFORE THE HON'BLE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

PETITION NO.....

IN THE MATTER OF : Petition Under Section 62 and 79 (1) (a) of the Electricity Act, 2003 read with Chapter-V of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for approval of tariff of **Tanda Thermal Power Station (440 MW) for the period from 01.04.2019 to 31.03.2024.**

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BEFORE THE HON'BLE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

PETITION NO.....

IN THE MATTER : Petition Under Section 62 and 79 (1) (a) of the
OF Electricity Act, 2003 read with Chapter-V of the
Central Electricity Regulatory Commission
(Conduct of Business) Regulations, 1999 and
Chapter-3, Regulation-9 of Central Electricity
Regulatory Commission (Terms and Conditions of
Tariff) Regulations, 2019 for approval of tariff of
**Tanda Thermal Power Station (440 MW) for the
period from 01.04.2019 to 31.03.2024.**


AND
IN THE MATTER
OF

Petitioner: : NTPC Ltd.
NTPC Bhawan
Core-7, Scope Complex
7, Institutional Area, Lodhi Road
New Delhi-110 003.

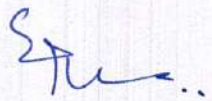
Respondent 1. Uttar Pradesh Power Corp. Ltd (UPPCL)
Shakti Bhawan
14, Ashok Marg
Lucknow – 226 001

The Petitioner humbly states that:

- 1) The Petitioner herein NTPC Ltd. (hereinafter referred to as 'Petitioner' or 'NTPC'), is a company incorporated under provisions of the Company Act, 1956 and a Government Company as defined under Section 2(45) of the Companies Act, 2013. Further, NTPC is a 'Generating Company' as defined under Section 2(28) of the Electricity Act, 2003.


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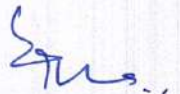
- 2) In terms of Section 79(1)(a) of Electricity Act, 2003, the Hon'ble Commission has been vested with the functions to regulate the tariff of NTPC, being a Generating Company owned and controlled by the Central Government. The regulation of the tariff of NTPC is as provided under Section 79(1)(a) read with Section 61, 62 and 64 of the Electricity Act, 2003 and the Regulations notified by the Hon'ble Commission in exercise of powers under Section 178 read with Section 61 of the Electricity Act, 2003.
- 3) The Petitioner is having power stations/ projects at different regions and places in the country. Tanda Thermal Power Station (4 x 110 MW) (hereinafter referred to as 'Tanda TPS') is one such station located in the State of Uttar Pradesh. The power generated from Tanda TPS is being supplied to the respondent UPPCL herein mentioned above.
- 4) The Hon'ble Commission has notified the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2019 (hereinafter referred to as 'Tariff Regulations 2019') which came into force from 01.04.2019, specifying the terms & conditions and methodology of tariff determination for the period 01.04.2019 to 31.03.2024.
- 5) Regulation 9(2) of Tariff Regulations 2019 provides as follows:
"(2) In case of an existing generating station or unit thereof, or transmission system or element thereof, the application shall be made by the generating company or the transmission licensee, as the case may be, by 31.10.2019, based on admitted capital cost including additional capital expenditure already admitted and incurred up to 31.3.2019 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2019-24 along with the true up petition for the period 2014-19 in accordance with the CERC (Terms and Conditions of Tariff) Regulations, 2014."


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It is submitted that the date of filing of Tariff Petition for the period 2019-24 has subsequently been extended by Hon'ble Commission vide order dated 28.10.2019 in Petition No. 331/MP/2019.

In terms of above, the Petitioner is filing the present petition for determination of tariff for Tanda TPS for the period from 01.04.2019 to 31.03.2024 as per the Tariff Regulations 2019.

- 6) The tariff of the Tanda TPS for the tariff period 1.4.2014 to 31.3.2019 was determined by the Hon'ble Commission vide its order dated 21.03.2017 in Petition No. 336/GT/2014 in accordance with the CERC (Terms & Conditions of Tariff) Regulations 2014. The petitioner vide affidavit dated 09.01.2020 had filed a separate true up petition for the period 01.04.2014 to 31.03.2019 for revision of tariff in line with the applicable provisions of Tariff Regulations 2014.
- 7) It is submitted that Hon'ble Commission vide order dated 21.03.2017 in Petition No. 336/GT/2014 has allowed a capital cost of Rs 1252.2617 Cr as on 31.03.2019 based on the admitted projected capital expenditure for the 2014-19 period. However, the actual closing capital cost as on 31.03.2019 has been worked out in the foresaid true-up petition as Rs 1244.8959 Cr based on the actual expenditure after truing up exercise for the period 2014-19. Accordingly, the Petitioner has adjusted an amount of Rs (-)7.3658 Cr from the admitted capital cost as on 31.03.2019 and accordingly the opening capital cost as on 01.04.2019 has been considered as Rs 1244.8959 Cr in the instant petition. The Hon'ble Commission may be pleased to accordingly adopt this adjustment in the admitted capital cost as on 31.3.2019 and determine the tariff in the present petition for the period 2019-24.



- 8) The capital cost claimed in the instant petition is based on the opening capital cost as on 01.04.2019 considered as above and projected estimated capital expenditures for the period 2019-24 under Regulation 26 and 27 of the Tariff Regulations, 2019.
- 9) Hon'ble Commission has determined O&M expenses of Tanda as Rs 46.16 lakh/MW. No escalation has been provided during 2019-24 period. The units of Tanda being smaller in capacity, rationalization of Man/MW ratio in comparison to large size units and other O&M components may not be possible beyond a certain point. It is most respectfully submitted that during 2014-19 period also, Tanda had witnessed an escalation in its actual O&M expenses despite various efforts (e.g. rationalisation of manpower etc) undertaken by NTPC including R&M activities.

It is further submitted that Hon'ble Commission by considering weightages of WPI & CPI and the impact of escalation in minimum wages and GST, has allowed an escalation rate of 3.51% for projecting O&M expenses norms for thermal generating stations for 2019-24 period.

In view of the above, it is submitted that Hon'ble Commission may allow 3.51% escalation per year for O&M expenses norms for 2019-24 period for Tanda TPS.

- 10) The Petitioner further respectfully submits that as per Regulation 35(1)(6) of the Tariff Regulations 2019, the water charges, security expenses and capital spares consumed for thermal generating stations are to be allowed separately. The details in respect of water charges such as type of cooling water system, water consumption, rate of water charges as applicable for 2018-19 have been furnished below. Petitioner has considered 2% escalation per year and accordingly claimed water charges. Hon'ble Commission may be pleased to

allow the same in tariff for 2019-24 period. In accordance with provision of the Regulations, the petitioner shall be furnishing the details of actuals for the relevant year at the time of truing up and the same shall be subject to retrospective adjustment.

Description	Remarks
Type of Plant	Coal
Type of cooling water system	Closed Cycle
Consumption of Water	358566000 Cubic feet / 11.37 cusec
Rate of Water charges	Rs 12.48 per 1000 cubic feet
Rate of Royalty	Rs 6 Lakhs per cusec per year
Total Water Charges (for FY 2018-19)	Rs 112.97 Lakhs

- 11) Similarly, the Petitioner is claiming the security expenses based on the estimated expenses for the period 2019-24, the same shall be subject to retrospective adjustment based on actuals at the time of truing up. In respect of capital spares consumption, it is submitted that the same shall be claimed at the time of true-up in terms of the proviso to the Regulation 35(1)(6) based on actual consumption of spares during the period 2019-24
- 12) The present petition is filed on the basis of norms specified in the Tariff Regulations 2019. It is submitted that the petitioner is in the process of installing the Emission Control Systems (ECS) in compliance of the Revised Emission Standards as notified by MoEFCC vide notification dated 07.12.2015 as amended. Completion of these schemes in compliance of revised emission norms will affect the station APC, Heat Rate, O&M expenses etc. In addition, the availability of the unit/ station would also be effected due to shutdown of the units for installation of ECS. The petitioner would be filing the details of the same in a separate petition in terms of the Regulation 29 of Tariff

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Regulations 2019. The tariff of the instant petition would undergo changes consequent to the order of the Hon'ble Commission in the said ECS petition.

- 13) It is submitted that a notification dated 25.01.2016 has been issued by Government of India, Ministry of Environment, Forest & Climate Change (MoEFCC) under the statutory provisions of Environment (Protection) Act 1986. The said notification of MoEFCC prescribed bearing the transportation cost of Fly Ash generated at power stations. In this regard, Petitioner filed a petition, being no. 172/MP/2016, before the Hon'ble Commission seeking reimbursement of the additional expenditure for Fly Ash Transportation directly from the beneficiaries as the same was in the nature of statutory expense. Hon'ble Commission vide order dated 05.11.2018 disposed of the said petition and directed as follows:

"31. Accordingly, we in exercise of the regulatory power hold that the actual additional expenditure incurred by the Petitioner towards transportation of ash in terms of the MOEFCC Notification is admissible under "Change in Law" as additional O&M expenses. However, the admissibility of the claims is subject to prudence check of the following conditions on case to case basis for each station:

- a) Award of fly ash transportation contract through a transparent competitive bidding procedure. Alternatively, the schedule rates of the respective State Governments, as applicable for transportation of fly ash.*
- b) Details of the actual additional expenditure incurred on Ash transportation after 25.1.2016, duly certified by auditors.*
- c) Details of the Revenue generated from sale of fly ash/ fly ash products and the expenditure incurred towards Ash utilisation up to 25.1.2016 and from 25.1.2016 to till date, separately.*
- d) Revenue generated from fly Ash sales maintained in a separate account as per the MoEF notification.*

32. The Petitioner is granted liberty to approach the Commission at the time of revision of tariff of the generating stations based on trueing-up exercise for the period 2014-19 in terms of Regulation 8 of the 2014 Tariff Regulations along with all details / information, duly certified by auditor."



The expenditure towards the ash transportation charges are recurring in nature. The Petitioner has been incurring ash transportation expenditure in some of its stations in the current tariff period also. In case the same is permitted to be recovered at the end of the tariff period 2019-24, there will be additional liability on the beneficiary on account of the interest payment for the period till the time the true-up petitions for the period 2019-24 is decided. To avoid the interest payment liability of the beneficiaries, it is prayed that the petitioner may be allowed to recover/ pass on the ash transportation charges after adjusting the revenue earned from sale of ash at the end of each quarter of financial year subject to true-up at the end of the period.

- 14) It is submitted that the Petitioner has already paid the requisite filing fee vide UTR No. CMS1106438370 on 22.04.2019 for the year 2019-20 and the details of the same have been duly furnished to the Hon'ble Commission vide our letter dtd 25.04.2019 For the subsequent years, it shall be paid as per the provisions of the CERC (Payment of Fees) Regulations, 2012 as amended. Further Regulation 70(1) of Tariff Regulations 2019 provides that the application fee and publication expenses may be allowed to be recovered directly from the beneficiaries at the discretion of the Hon'ble Commission. Accordingly, it is prayed that Hon'ble Commission may be pleased to allow recover filing fee and publication expenses directly from the beneficiaries.
- 15) The petitioner has accordingly calculated the tariff for 2019-24 period based on the above and the same is enclosed as **Appendix-I** to this petition.
- 16) It is submitted the Petitioner has served the copy of the Petition on to the Respondents mentioned herein above and has posted the Petition on the company website i.e. www.ntpc.co.in.



- 17) It is submitted that the petitioner is filing this tariff petition subject to the outcome of its various appeals/ petitions pending before different courts. Besides, the petitions filed by NTPC for determination of capital base as on 31.3.2019 through true-up exercise are pending before the Hon'ble Commission and would take some time. The Petitioner, therefore, reserves its right to amend the tariff petition as per the outcome in such appeals/ petitions, if required.

Prayers

In the light of the above submissions, the Petitioner, therefore, prays that the Hon'ble Commission may be pleased to:

- i) Approve tariff of Tanda Thermal Power Station for the tariff period from 01.04.2019 to 31.03.2024.
- ii) Allow escalation of normative O&M expenses
- iii) Allow the recovery of filing fees as & when paid to the Hon'ble Commission and publication expenses from the beneficiaries.
- iv) Allow reimbursement of Ash Transportation Charges directly from the beneficiaries quarterly on net basis.
- v) Pass any other order as it may deem fit in the circumstances mentioned above.


Petitioner

New Delhi

Date: 24.01.2020

BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

PETITION NO.....

IN THE MATTER OF : Petition Under Section 62 and 79 (1) (a) of the Electricity Act, 2003 read with Chapter-V of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019 for approval of tariff of **Tanda Thermal Power Station (440 MW)** for the period from 01.04.2019 to 31.03.2024

**AND
IN THE MATTER OF**

Petitioner: : NTPC Ltd.
NTPC Bhawan
Core-7, Scope Complex
7, Institutional Area, Lodhi Road
New Delhi-110 003

Respondent 1. Uttar Pradesh Power Corp. Ltd (UPPCL)
Shakti Bhawan
14, Ashok Marg
Lucknow – 226 001



S. Singh

AFFIDAVIT

I, E. Prabhakara Rao, son of Late Shri E. K. Rama Sharma aged about 52 years resident of D-311, Parsvnath Prestige, Sector-93A, Noida (UP) solemnly affirm and state as follows:

1. That I am the Additional General Manager (Commercial) in Petitioner Corporation NTPC Ltd and am well conversant with the facts of the case and am competent to swear the present affidavit.

2. The statement made in the accompanying Petition for approval of tariff of Tanda Thermal Power Station (440 MW) for the period from 01.04.2019 to 31.03.2024 are based on the official records maintained during the ordinary course of business and believed by the deponent to be true.


Deponent

Verification

I, the deponent above named, do hereby verify that the contents of the above affidavit are true to the best of my knowledge, no part of it is false and nothing material has been concealed there from.

Verified at New Delhi on this 24th Jan, 2020



Solemnly affirmed before me, read over & explained to the deponent.

Notary Public. DELHI


Deponent

24 JAN 2020

TARIFF FILING FORMS (THERMAL)

FOR DETERMINATION OF TARIFF

FOR

Tanda Thermal Power Station

(From 01.04.2019 to 31.03.2024)

PART-I

ANNEXURE-I

Checklist of Main Tariff Forms and other information for tariff filing for Thermal Stations

Form No.	Title of Tariff Filing Forms (Thermal)	Tick
FORM- 1	Summary of Tariff	✓
FORM -1 (I)	Statement showing claimed capital cost	✓
FORM -1 (II)	Statement showing Return on Equity	✓
FORM-2	Plant Characteristics	✓
FORM-3	Normative parameters considered for tariff computations	✓
FORM-3A**	Statement showing O&M Expenses	✓
FORM- 4	Details of Foreign loans	NA
FORM- 4A	Details of Foreign Equity	NA
FORM-5	Abstract of Admitted Capital Cost for the existing Projects	✓
FORM-5A**	Abstract of Claimed Capital Cost for the existing Projects	✓
FORM- 6	Financial Package upto COD	NA
FORM- 7	Details of Project Specific Loans	NA
FORM- 8	Details of Allocation of corporate loans to various projects	✓
FORM-9A**	Summary of Statement of Additional Capitalisation claimed during the period	✓
FORM-9 ##	Statement of Additional Capitalisation after COD	✓
FORM- 10	Financing of Additional Capitalisation	✓
FORM- 11	Calculation of Depreciation on original project cost	NA
FORM- 12	Statement of Depreciation	✓
FORM- 13	Calculation of Weighted Average Rate of Interest on Actual Loans	✓
FORM- 14	Draw Down Schedule for Calculation of IDC & Financing Charges	NA
FORM- 15	Details of Fuel for Computation of Energy Charges	✓
FORM- 15A**	Details of Secondary Fuel for Computation of Energy Charges	✓
FORM- 15B**	Computation of Energy Charges	✓
FORM- 16	Details of Limestone for Computation of Energy Charge Rate	NA
FORM-17	Details of Capital Spares	***
FORM- 18	Non-Tariff Income	***
FORM-19	Details of Water Charges	***
FORM-20	Details of Statutory Charges	***

Provided yearwise for the period 2019-24

PART-I

List of Supporting Forms / documents for tariff filing for Thermal Stations

Form No.	Title of Tariff Filing Forms (Thermal)	Tick
FORM-A	Abstract of Capital Cost Estimates	NA
FORM-B	Break-up of Capital Cost for Coal/Lignite based projects	NA
FORM-C	Break-up of Capital Cost for Gas/Liquid fuel based Projects	NA
FORM-D	Break-up of Construction/Supply/Service packages	NA
FORM-E	Details of variables , parameters , optional package etc. for New Project	NA
FORM-F	Details of cost over run	NA
FORM-G	Details of time over run	NA
FORM -H	Statement of Additional Capitalisation during end of the useful life	NA
FORM -I	Details of Assets De-capitalised during the period	***
FORM -J	Reconciliation of Capitalisation claimed vis-à-vis books of accounts	***
FORM -K	Statement showing details of items/assets/works claimed under Exclusions	***
FORM-L	Statement of Capital cost	***
FORM-M	Statement of Capital Woks in Progress	***
FORM-N	Calculation of Interest on Normative Loan	✓
FORM-O	Calculation of Interest on Working Capital	✓
FORM-P	Incidental Expenditure up to SCOD and up to Actual COD	NA
FORM-Q	Expenditure under different packages up to SCOD and up to Actual COD	NA
FORM-R	Actual cash expenditure	NA
FORM-S	Statement of Liability flow	***
FORM-T	Summary of issues involved in the petition	✓

** Additional Forms

*** Shall be provided at the time of true up

Sum

List of supporting documents for tariff filing for Thermal Stations

S. No.	Information / Document	Tick
1	Certificate of incorporation, Certificate for Commencement of Business, Memorandum of Association, & Articles of Association (For New Station setup by a company making tariff application for the first time to CERC)	NA
2	A. Station wise and Corporate audited Balance Sheet and Profit & Loss Accounts with all the Schedules & annexures on COD of the Station for the new station & for the relevant years.	NA
	B. Station wise and Corporate audited Balance Sheet and Profit & Loss Accounts with all the Schedules & annexures for the existing station for relevant years.	***
3	Copies of relevant loan Agreements	NA
4	Copies of the approval of Competent Authority for the Capital Cost and Financial package.	NA
5	Copies of the Equity participation agreements and necessary approval for the foreign equity.	NA
6	Copies of the BPSA/PPA with the beneficiaries, if any	NA
7	Detailed note giving reasons of cost and time over run, if applicable.	NA
	List of supporting documents to be submitted:	
	a. Detailed Project Report	
	b. CPM Analysis	
	c. PERT Chart and Bar Chart	
	d. Justification for cost and time Overrun	
8	Generating Company shall submit copy of Cost Audit Report along with cost accounting records, cost details, statements, schedules etc. for the Generating Unit wise /stage wise/Station wise/ and subsequently consolidated at Company level as submitted to the Govt. of India for first two years i.e. 2019-20 and 2020-21 at the time of mid-term true-up in 2021-22 and for balance period of tariff period 2019-24 at the time of final true-up in 2024-25. In case of initial tariff filing the latest available Cost Audit Report should be furnished.	NA
9	Any other relevant information, (Please specify)	NA
10	Reconciliation with Balance sheet of any actual additional capitalization and amongst stages of a generating station	***
11	BBMB is maintaining the records as per the relevant applicable Acts. Formats specified herein may not be suitable to the available information with BBMB. BBMB may modify the formats suitably as per available information to them for submission of required information for tariff purpose.	NA

*** Shall be provided at the time of true up

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Summary of Tariff

**PART-I
FORM- 1**

Name of the Petitioner:		NTPC Limited								
Name of the Generating Station:		Tanda Thermal Power Station								
Place (Region/District/State):		Northern Region/ Ambedkar nagar/ Uttar Pradesh								
S. No.	Particulars	Unit	Existing 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	Amount in Rs. Lakhs	
									6	7
1	2	3	4	5	6	7	8	9		
1.1	Depreciation	Rs Lakh	4,247.21	4,393.77	4,447.37	4,493.24	4,493.24	4,493.24		
1.2	Interest on Loan	Rs Lakh	39.90	-	-	-	-	-		
1.3	Return on Equity	Rs Lakh	7,328.57	7,017.35	7,028.97	7,037.74	7,037.74	7,037.74		
1.4	Interest on Working Capital	Rs Lakh	5,960.77	3,884.95	3,936.11	3,988.81	4,044.21	4,101.82		
1.5	O&M Expenses	Rs Lakh	20,605.13	22,276.38	23,255.11	24,298.02	25,411.84	26,604.21		
	Total	Rs Lakh	42,397.31	37,572.45	38,667.56	39,817.81	40,987.03	42,237.02		
2.1	Landed Fuel Cost of coal	Rs/Ton				3692.55				
	(%) of Fuel Quantity	(%)				100.00				
2.2	Landed Fuel Cost of Imported Coal	Rs/Ton								
	(%) of Fuel Quantity	(%)								
2.3	Landed Fuel Cost of coal other than FSA	Rs/Ton								
	(%) of Fuel Quantity	(%)								
2.4	Landed Fuel Cost Imported Coal other than FSA	Rs/Ton								
	(%) of Fuel Quantity	(%)								
2.5	Secondary fuel oil cost	Rs/Unit								
2.6	Energy Charge Rate ex-bus (Paise/kWh)	Rs/Unit								

S. St...
(Petitioner)

**PART-I
FORM- 1(I)**

Name of the Petitioner: **NTPC Limited**
 Name of the Generating Station: **Tanda Thermal Power Station**

Amount in Rs. Lakhs

Statement showing claimed capital cost – (A+B)						
S. No.	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
1	2	3	4	5	6	7
1	Opening Capital Cost	1,24,489.61	1,24,673.77	1,25,060.15	1,25,060.15	1,25,060.15
2	Add: Addition during the year	184.16	386.38	-	-	-
3	Less: De-capitalisation during the year	-	-	-	-	-
4	Less: Reversal during the year	-	-	-	-	-
5	Add: Discharges during the year	-	-	-	-	-
6	Closing Capital Cost	1,24,673.77	1,25,060.15	1,25,060.15	1,25,060.15	1,25,060.15
7	Average Capital Cost	1,24,581.69	1,24,866.96	1,25,060.15	1,25,060.15	1,25,060.15

Statement showing claimed capital cost eligible for RoE at normal rate (A)						
S. No.	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
1	2	3	4	5	6	7
1	Opening Capital Cost	124489.61	124496.84	124721.73	124721.73	124721.73
2	Add: Addition during the year	7.23	224.88	0.00	0.00	0.00
3	Less: De-capitalisation during the year	0.00	0.00	0.00	0.00	0.00
4	Less: Reversal during the year	0.00	0.00	0.00	0.00	0.00
5	Add: Discharges during the year	0.00	0.00	0.00	0.00	0.00
6	Closing Capital Cost	124496.84	124721.73	124721.73	124721.73	124721.73
7	Average Capital Cost	124493.23	124609.28	124721.73	124721.73	124721.73

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**PART-I
FORM- 1(I)**

Name of the Petitioner:	NTPC Limited
Name of the Generating Station:	Tanda Thermal Power Station
Amount in Rs. Lakhs	

**Statement showing claimed capital cost eligible for RoE at weighted average rate of interest
on actual loan portfolio (B)**

S. No.	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
1	2	3	4	5	6	7
1	Opening Capital Cost	0.00	176.93	338.42	338.42	338.42
2	Add: Addition during the year	176.93	161.50	0.00	0.00	0.00
3	Less: De-capitalisation during the year	0.00	0.00	0.00	0.00	0.00
4	Less: Reversal during the year	0.00	0.00	0.00	0.00	0.00
5	Add: Discharges during the year	0.00	0.00	0.00	0.00	0.00
6	Closing Capital Cost	176.93	338.42	338.42	338.42	338.42
7	Average Capital Cost	88.46	257.67	338.42	338.42	338.42

Suresh
(Petitioner)

Statement showing Return on Equity at Normal Rate		PART-I FORM- 1(IIA)				
Name of the Petitioner		NTPC Limited				
Name of the Generating Station		Tanda Thermal Power Station				
S. No.	Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
1	2	3	4	5	6	7
	Return on Equity					
1	Gross Opening Equity (Normal)	37,346.88	37,349.05	37,416.51	37,416.51	37,416.51
2	Less: Adjustment in Opening Equity	-	-	-	-	-
3	Adjustment during the year	-	-	-	-	-
4	Net Opening Equity (Normal)	37,346.88	37,349.05	37,416.51	37,416.51	37,416.51
5	Add: Increase in equity due to addition during the year	2.17	67.47	0.00	0.00	0.00
7	Less: Decrease due to De-capitalisation during the year	0.00	0.00	0.00	0.00	0.00
8	Less: Decrease due to reversal during the year	0.00	0.00	0.00	0.00	0.00
9	Add: Increase due to discharges during the year	0.00	0.00	0.00	0.00	0.00
10	Net closing Equity (Normal)	37,349.05	37,416.51	37,416.51	37,416.51	37,416.51
11	Average Equity (Normal)	37,347.96	37,382.78	37,416.51	37,416.51	37,416.51
12	Rate of ROE (%)	18.782	18.782	18.782	18.782	18.782
13	Total ROE	7,014.69	7,021.23	7,027.57	7,027.57	7,027.57

Statement showing Return on Equity at Weighted Average Rate of Interest

Name of the Petitioner: **NTPC Limited**
 Name of the Generating Station: **Tanda Thermal Power Station**

S. No.	Particulars	Amount in Rs. Lakhs						
		2019-20	2020-21	2021-22	2022-23	2023-24		
1	2	3	4	5	6	7		
	Return on Equity (beyond the original scope of work excluding additional capitalization due to Change in Law)							
1	Gross Opening Equity (Normal)	0.00	53.08	101.53	101.53	101.53	101.53	101.53
2	Less: Adjustment in Opening Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Adjustment during the year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Net Opening Equity (Normal)	0.00	53.08	101.53	101.53	101.53	101.53	101.53
5	Add: Increase in equity due to addition during the year	53.08	48.45	0.00	0.00	0.00	0.00	0.00
7	Less: Decrease due to De-capitalisation during the year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	Less: Decrease due to reversal during the year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Add: Increase due to discharges during the year	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Net closing Equity (Normal)	53.08	101.53	101.53	101.53	101.53	101.53	101.53
11	Average Equity (Normal)	26.54	77.30	101.53	101.53	101.53	101.53	101.53
12	Rate of ROE (%)	10.003	10.009	10.015	10.021	10.021	10.026	10.026
13	Total ROE	2.65	7.74	10.17	10.17	10.17	10.18	10.18

(Petitioner)

Plant Characteristics

Name of the Petitioner	NTPC Ltd			
Name of the Generating Station	Tanda TPS			
Unit(s)/Block(s)/Parameters	Unit-I	Unit-II	Unit-III	Unit-IV
Installed Capacity (MW)	110	110	110	110
Actual COD	21.03.88	11.03.89	28.03.90	20.02.98
Date of Take Over	14.01.2000			
Pit Head or Non Pit Head	Non Pit Head			
Name of the Boiler Manufacture	BHEL			
Name of Turbine Generator Manufacture	CZECH SKODA			
Main Steams Pressure at Turbine inlet (kg/Cm ²) abs	NA			
Main Steam Temperature at Turbine inlet (°C)				
Reheat Steam Pressure at Turbine inlet (kg/Cm ²)				
Reheat Steam Temperature at Turbine inlet (°C)				
Main Steam flow at Turbine inlet under MCR condition (tons/hr)				
Main Steam flow at Turbine inlet under VWO condition(tons/hr)				
Unit Gross electrical output under MCR /Rated condition (MW)				
Unit Gross electrical output under VWO condition (MW)				
Guaranteed Design Gross Turbine Cycle Heat Rate(kCal/kWh)				
Conditions on which design turbine cycle heat rate guaranteed				
% MCR				
% Makeup Water Consumption				
Design Capacity of Make up Water System				
Design Capacity of Inlet Cooling System				
Design Cooling Water Temperature (°C)				
Back Pressure				
Steam flow at super heater outlet under BMCR condition(tons/hr)				
Steam Pressure at super heater outlet under				
BMCR condition) (kg/Cm ²)				
Steam Temperature at super heater outlet under				
BMCR condition (°C)				
Steam Temperature at Reheater outlet at BMCR condition (°C)				
Design / Guaranteed Boiler Efficiency (%)				
Design Fuel with and without Blending of domestic/imported coal				
Type of Cooling Tower	Induced Draft Cooling Tower			
Type of cooling system	Closed Cycle			
Type of Boiler Feed Pump	Motor Driven			
Fuel Details				
-Primary Fuel	Coal			
-Secondary Fuel	LDO			
-Alternate Fuels	N/A			
Special Features/Site Specific Features				
Special Technological Features				
Environmental Regulation related features	ESP, DSI (under implementation)			
Any other special features				

(Petitioner)

Normative parameters considered for tariff computations

Name of the Petitioner:		NTPC Limited							
Name of the Generating Station:		Tanda Thermal Power Station							
Particulars	Unit	Existing 2018-19	(Year Ending March)						
			2019-20	2020-21	2021-22	2022-23	2023-24		
I	2	3	4	5	6	7	8		
Base Rate of Return on Equity \$\$	%	15.50	15.50	15.50	15.50	15.50	15.50	15.50	
Base Rate of Return on Equity on Add. Capitalization**	%	-	8.2549	8.2597	8.2649	8.2697	8.2738	8.2738	
Effective Tax Rate	%	21.549	17.472	17.472	17.472	17.472	17.472	17.472	
Target Availability	%	85.00	85.00						
In High Demand Season	%	-	-	85.00	85.00	85.00	85.00	85.00	
Peak Hours	%	-	-	85.00	85.00	85.00	85.00	85.00	
Off-Peak Hours	%	-	-	85.00	85.00	85.00	85.00	85.00	
In Low Demand Season(Off-Peak)	%	-	-	85.00	85.00	85.00	85.00	85.00	
Peak Hours	%	-	-	85.00	85.00	85.00	85.00	85.00	
Off-Peak Hours	%	-	-	85.00	85.00	85.00	85.00	85.00	
Auxiliary Energy Consumption	%	-	-	85.00	85.00	85.00	85.00	85.00	
Gross Station Heat Rate	kCal/kWh	12.00	11.50	11.50	11.50	11.50	11.50	11.50	
Specific Fuel Oil Consumption	ml/kWh	2750.00	2750.00	2750.00	2750.00	2750.00	2750.00	2750.00	
Cost of Coal/Lignite for WC	in Days	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Cost of Main Secondary Fuel Oil for WC	in Months	60	50	50	50	50	50	50	
Fuel Cost for WC	in Months	2	2	2	2	2	2	2	
Liquid Fuel Stock for WC	in Months								
O&M Expenses ##	Rs lakh/MW	45.8	46.16	47.78	49.46	51.19	52.99	52.99	
Maintenance Spares for WC	% of O&M	20.00	20.00	20.00	20.00	20.00	20.00	20.00	
Receivables for WC	in Days	60	45	45	45	45	45	45	
Storage capacity of Primary fuel	MT			500000					
SBI 1 Year MCLR plus 350 basis point	%	13.50	12.05	12.05	12.05	12.05	12.05	12.05	
Blending ratio of domestic coal/imported coal									

** Rate of Return on Add - cap beyond original scope and excluding Change in Law
 \$\$ Additional RoE due to better ramp rate would be claimed at the time of true-up or as per guidelines to be issued
 ## escalation of 3.5% has been considered.

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Petitioner

Part-I
FORM-3A
ADDITIONAL FORM

Calculation of O&M Expenses

Name of the Company :		NTPC Limited					
Name of the Power Station :		Tanda Thermal Power Station					
S.No.	Particulars	Amount in Rs. Lakhs					
		2019-20	2020-21	2021-22	2022-23	2023-24	
1	2	3	4	5	7	8	
1	O&M expenses under Reg.35(1)						
1a	Normative \$\$	20310.40	21023.30	21761.21	22525.03	23315.66	
2	O&M expenses under Reg.35(6)						
2a	Water Charges	115.23	117.53	119.88	122.28	124.73	
2b	Security expenses	1850.75	2114.28	2416.92	2764.53	3163.82	
2c	Capital Spares**	-	-	-	-	-	
3	O&M expenses-Ash Transportation**	-	-	-	-	-	
	Total O&M Expenses	22276.38	23255.11	24298.02	25411.84	26604.21	

** Shall be provided at the time of truing up
\$\$ escalation of 3.5% has been considered.


Petitioner

**PART I
FORM- 5**

Abstract of Admitted Capital Cost for the existing Projects

Name of the Company :	NTPC Limited		
Name of the Power Station :	Tanda Thermal Power Station		
Last date of order of Commission for the project	Date (DD-MM-YYYY)	18-07-2017	
Reference of petition no. in which the above order was passed	Petition no.	77/2001	
Following details as admitted as on the last date of the period for which tariff is approved, in the above order by the Commission:			
Capital cost as on 01.04.2019		1,25,226.17	
Amount of un-discharged liabilities included in above (& forming part of admitted capital cost)		-	
Amount of un-discharged liabilities corresponding to above admitted capital cost (but not forming part of admitted capital cost being allowed on cash basis)		519.37	
Gross Normative Debt		87,658.32	
Cumulative Repayment		87,658.32	
Net Normative Debt		-	
Normative Equity		37,567.85	
Cumulative Depreciation		85,835.00	
Freehold land		1,674.71	

(Rs. in lakh)

(Petitioner)

Abstract of Claimed Capital Cost for the existing Projects

Name of the Company :	NTPC Limited	
Name of the Power Station :	Tanda Thermal Power Station	
Reference of Final True-up Tariff Petition	Affidavit dated	09.01.2020
Capital Cost as on 31.03.2019 as per Hon'ble Commission's Order dated 21.03.2017 in Pet. No. 336/GT/2014	Rs. Lakhs	1,25,226.17
Adjustment as per Para 7 of this petition		-736.58
Following details as considered by the Petitioner as on the last date of the period for which final true-up tariff is claimed:		
Capital cost as on 01.04.2019		1,24,489.59
Amount of un-discharged liabilities included in above (& forming part of admitted capital cost)		-
Amount of un-discharged liabilities corresponding to above considered capital cost (but not forming part of admitted capital cost being allowed on cash basis)		581.95
Gross Normative Debt as on 01.04.2019	(Rs. in lakh)	87,142.71
Cumulative Repayment as on 01.04.2019		87,142.71
Net Normative Debt as on 01.04.2019		-
Normative Equity		37,346.88
Cumulative Depreciation		85,176.36
Freehold land		1,674.71

(Petitioner)

**Statement Giving Details of Project Financed through a Combination of loan
Form 8**

TRANCHE NO

BP NO 5070000011

T00001

D00029

Unsecured Loan From PFC-V		
Source of Loan :	PFC-V	
Currency :	INR	
Amount of Loan :	100,000,000,000	
Total Drawn amount :	2,500,000,000	
Date of Drawl	0	
Interest Type :	Floating	
Rate of Interest as on 01.04.2019	7.76%	
Margin, If Floating Interest :	Nil	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	Monthly	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	4 Years	
Moratorium effective from :	26.12.2008	
Repayment Period (Inc Moratorium) :	16 Years	
Repayment Frequency :	48 Quarterly Instalments	
Repayment Type :	FIFO	
First Repayment Date :	15.07.2013	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	FARAKKA III	900,000,000.00
	BARH-II	1,300,000,000.00
	TANDA R&M	150,000,000.00
	KORBA R&M	150,000,000.00
Total Allocated Amount		2,500,000,000.00

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Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050000261

T00001

D00003

Unsecured Loan From SBI-VII

Source of Loan :	SBI-VII	
Currency :	INR	
Amount of Loan :	100,000,000,000	
Total Drawn amount :	5,000,000,000	
Date of drawl	0	
Interest Type :	Floating	
Rate of Interest as on 01.04.2019	8.25%	
Upfront fees	0.08% excluding service tax	
Margin, If Floating Interest :	Nil	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	Monthly	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	4 Years	
Moratorium effective from :	08.07.2011	
Repayment Period (Inc Moratorium) :	12 Years	
Repayment Frequency :	16 Half Yearly Instalments	
Repayment Type :	AVG	
First Repayment Date :	30.09.2015	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	KOLDAM-I	710,000,000.00
	TAPOVAN	520,000,000.00
	BONGAIGAON	460,000,000.00
	BARH-I	180,000,000.00
	BARH-II	540,000,000.00
	RIHAND-III	50,000,000.00
	KUDGI-I	1,450,000,000.00
	SOLAPUR	630,000,000.00
	MOUDA-I	370,000,000.00
	TANDA-R&M	90,000,000.00
Total Allocated Amount		5,000,000,000.00

Sum.

Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

T00001

D00007

BP NO 5050000261

Unsecured Loan From SBI-VII

Source of Loan :	SBI-VII	
Currency :	INR	
Amount of Loan :	100,000,000,000	
Total Drawn amount :	5,000,000,000	
Date of Drawl	0	
Interest Type :	Floating	
Rate of Interest as on 01.04.2019	8.25%	
Upfront fees	0.08% excluding service tax	
Margin, If Floating Interest :	Nil	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	Monthly	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	4 Years	
Moratorium effective from :	08.07.2011	
Repayment Period (Inc Moratorium) :	12 Years	
Repayment Frequency :	16 Half Yearly Instalments	
Repayment Type :	AVG	
First Repayment Date :	30.09.2015	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	KOLDAM	350,000,000
	SOLAPUR	250,000,000
	VINDHYACHAL-IV	200,000,000
	TAPOVAN	200,000,000
	BARH-I	800,000,000
	MOUDA-I	150,000,000
	RIHAND-III	450,000,000
	KUDGI-I	200,000,000
	DADRI SOLAR PV	50,000,000
	A&N SOLAR PV	50,000,000
	SINGARULI 8 MW	50,000,000
	BONGAIGAON	400,000,000
	BARH-II	800,000,000
	SINGRAULI-R&M	250,000,000
	TANDA - R&M	150,000,000
	KAWAS-R&M	350,000,000
	GANDHAR -R&M	200,000,000
	TSTPP-R&M	100,000,000
Total Allocated Amount		5,000,000,000.00

Signature

Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050000261

T00001

D00014

Unsecured Loan From SBI-VII		
Source of Loan :	SBI-VII	
Currency :	INR	
Amount of Loan :	100,000,000,000	
Total Drawn amount :	3,500,000,000	
Date of Drawl	0	
Interest Type :	Floating	
Rate of Interest as on 01.04.2019	8.25%	
Upfront fees	0.08% excluding service tax	
Margin, If Floating Interest :	Nil	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	Monthly	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	4 Years	
Moratorium effective from :	08.07.2011	
Repayment Period (Inc Moratorium) :	12 Years	
Repayment Frequency :	16 Half Yearly Instalments	
Repayment Type :	AVG	
First Repayment Date :	30.09.2015	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	SOLAPUR	1,500,000,000
	KUDGI-I	1,000,000,000
	KAWAS-R&M	400,000,000
	TAPOVAN	300,000,000
	TANDA-R&M	150,000,000
	SINGRAULI-R&M	150,000,000
Total Allocated Amount		3,500,000,000.00

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Form 8- Domestic Bonds- Details of Allocation of	
Particulars	61
Source of Loan ¹	BONDS
Currency ²	INR
Amount of Loan sanctioned	107250
Interest Type ⁶	Fixed
Fixed Interest Rate, if applicable	8.10%
Base Rate, if Floating Interest ⁷	N/A
Margin, if Floating Interest ⁸	N/A
Are there any Caps/Floor ⁹	No
If above is yes, specify caps/floor	N/A
Moratorium Period ¹⁰	5
Moratorium effective from #	27-05-16
Repayment Period ¹¹	Installments Due on 27/05/2021, 27/05/2026 & 27/05/2031
Repayment effective from	27-05-21
Repayment Frequency ¹²	Installments Due on 27/05/2021, 27/05/2026 & 27/05/2031
Repayment Instalment ^{13,14}	Installments 1st - 35,750.00 2nd - 35,750.00 3rd - 35,750.00
Base Exchange Rate ¹⁶	N/A
Door to Door Maturity	15
Name of the Projects	
Anantpur Solar	4,500
BARH I	8,850
BARH II	500
Bhadla Solar	5,000
BONGAIGAON	3,000
DARLIPALLI	5,000
GADARWARA	7,500
Khargone	2,000
Kudgi	10,000
LARA I	11,000
Mauda II	4,000
Mandsaur Solar	5,000
NORTH KARANPURA	5,000
Pakri Barwadih CMB	2,000
Ramagundam I & II R & M	500
SOLAPUR	7,000
TALCHER II	1,200
Tanda II	4,500
Tanda R & M	400
Tapovan Vishnugad	2,800
Telangana	11,700
Unchahar IV	5,000
Vindhyachal V	800

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**Statement Giving Details of Project Financed through a Combination of loan
Form 8**

TRANCHE NO

BP NO 5050000382

T00001

D0005

Unsecured Loan From SBBJ-II		
Source of Loan :	SBBJ-II	
Currency :	INR	
Amount of Loan :	5,000,000,000	
Total Drawn amount :	2,000,000,000	
Date of Drawal:	29.06.2018	
Interest Type :	Floating	
Fixed Interest Rate :	-----	
Base Rate, If Floating Interest	8.25%	
Margin, If Floating Interest :	0.00%	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	Monthly	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	5 Years	
Moratorium effective from :	29.06.2018	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	10 Yearly Installments	
Repayment Type :	AVG	
First Repayment Date :	14.03.2020	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	SINGRAULI R&M	1,000,000,000
	Tanda R&M	1,000,000,000
Total Allocated Amount		2,000,000,000.00

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Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050000571

T00001

D00004

Unsecured Loan From Punjab National Bank-III		
Source of Loan :	Punjab National Bank-III	
Currency :	INR	
Amount of Loan :	20,000,000,000	
Total Drawn amount :	5,000,000,000	
Date of Drawl	21.08.2018	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	8.30%	
Margin, If Floating Interest :	0.00%	
Are there any Caps/ Floor :	Y/N	
Frequency of Intt. Payment	MONTHLY	
If Above is yes, specify Caps/ Floor :		
Moratorium Period :	3 Years	
Moratorium effective from :	21.08.2018	
Repayment Period (Inc Moratorium) :	12 Years	
Repayment Frequency :	9 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	01.02.2022	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	SINGRAULI R&M	1,000,000,000.00
	KORBA R&M	1,000,000,000.00
	RAMAGUNDAM R&M	1,000,000,000.00
	VINDHYACHAL R&M	1,000,000,000.00
	TANDA R&M	1,000,000,000.00
	Total Allocated Amount	5,000,000,000.00

Signature

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner	NTPC Limited			
Name of the Generating Station	Tanda Thermal Power Station			
Date of Take Over	14-01-2000			
For Financial Year	2019-24 (Summary)			

Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)				Justification/ Regulation under which claimed	Amount in Rs Lakh Admitted Cost by the Commission, if any	
		2019-20	2020-21	2021-22	2022-23			2023-24
1	2	3	4	5	6	7	8	9
A.	Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate							
1	Real Time Monitoring of AAQMS	7.23						
2	Fire Fighting System for CHP area		224.88					
	Total (A)	7.23	224.88					
B.	Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest							
3	Construction of 32 nos. Residential Building Type# D and 16 nos. of Type # C	83.07						
4	Gen. Relay Panel for 110MW Unit# 1&3	93.86						
5	Air Washer System for Unit # 1 & 2		119.650					
6	Rack & Pinion Lifts at crusher house		41.846					
	Total (B)	176.927	161.495					
	Total Add. Cap. Claimed (A+B)	184.159	386.380					

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(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited							Amount in Rs Lakh
Name of the Generating Station		Tanda Thermal Power Station							
Date of Take Over		14-01-2000							
For Financial Year		2019-20							
Sl. No.	Head of Work /Equipment	Accrual basis as per IGAAP	Un-discharged Liability included in col. 3	ACE Claimed (Projected)	Cash basis	IDC included in col. 3	Regulations under which claimed	Justification/ Regulation under which claimed	Admitted Cost by the Commission, if any
1	2	3	4	5=(3-4)	6	7	8	9	
A. Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate									
1	Real Time Monitoring of AAQMS	7.23	-	-	7.23	-	Reg 26(1)(b)	CPCB vide its Directions dtd 5.2.2014 (copy attached as Annexure-I) directed to install real time monitoring of AAQMS data at SPCB/PCC and CPCB server to track the emission. To comply with Statutory Direction for transmission of Real Time data of AAQMS from Tanda site to CPCB server etc, the associated system has been projected to be installed. Hon'ble Commission may be pleased to allow the same.	787.30
Total (A)		7.23	-	-	7.23	-			
B. Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest									
2	Construction of 32 nos. Residential Building Type# D and 16 nos. of Type # C	83.07	-	-	83.07	-	Reg 27	Construction of 32 nos. Residential Building Type# D and 16 nos of Type C quarters were expected to capitalised during 2014-19 period. Accordingly, Rs 787.30 Lakh was projected during 2014-19 period and Hon'ble Commission had allowed the same. Major work was capitalised during FY 2017-18 & FY 2018-19 and Rs 383.86 Lakh & Rs 433.93 Lakh were capitalised respectively. The balance amount is likely to be capitalised during FY 2019-20. Hon'ble Commission may be pleased to allow the same.	787.30
3	Gen. Relay Panel for 110MW Unit#1&3	93.86	-	-	93.86	-	Reg 25(2) (C)	Existing Electro Static Relays for Generator protection system were in service for about 15 yrs. Due to obsolescence, availability & reliability of the same was difficult. In order to enhance reliability of protection system and faster fault analysis, it was needed to replace the existing old relays with most reliable Numerical Relay. The part work has been completed and capitalised during 2014-19 period. The balance work is expected to be completed during FY 2019-20. Hon'ble Commission may be pleased to allow the same.	
Total (B)		176.93	-	-	176.93	-			
Total Add. Cap. Claimed		184.16	-	-	184.16	-			

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(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited	
Name of the Generating Station		Tanda Thermal Power Station	
Date of Take Over		14-01-2000	
For Financial Year		2020-21	

Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)			Regulations under which claimed	Justification/ Regulation under which claimed	Amount in Rs Lakh Admitted Cost by the Commission, if any
		Accrual basis as per IGAAP	Un-discharged Liability included in col. 3	Cash basis			
		3	4	5= (3-4)	6	7	8
A. Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate							
1	Fire Fighting System for CHP area	224.88	-	224.88	-	Reg 26(1) (b) & (d)	9
Total (A)		224.88	-	224.88	-		

Fire Fighting System for CHP area is essentially required to prevent any catastrophic damage in case of fire breaks out in CHP as existence of coal in CHP area makes it vulnerable to fire hazard. As per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations. 2010 (relevant pages attached as **Annexure-II**), automatic medium velocity water spray system are to be provided for area related to Coal conveyors, transfer points, crusher houses etc. Accordingly, the work was projected during 2014-19 period and Hon'ble Commission has referred the matter to CEA and has given liberty to claim at the time of truing-up. The work is expected to be completed during FY 2020-21. Since the work is essentially required for safety of the plant, it is prayed that Hon'ble Commission may be pleased to allow the same.

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited							Amount in Rs Lakh Admitted Cost by the Commission, if any
Name of the Generating Station		Tanda Thermal Power Station							
Date of Take Over		14-01-2000							
For Financial Year		2020-21							
Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)			Regulations under which claimed	7	8	9	
		Accrual basis as per IGAAP	Un-discharged Liability included in col. 3	Cash basis 5=(3-4)					IDC included in col. 3
B. Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest									
2	Air Washer System for Unit # 1 & 2	119.65	-	119.65	-	Reg 27	The work on Air Washer System of Unit- 3 & 4 was completed in 2012-13. The system count not be put in to service due to vibration problem. The work was expected to be capitalized during 2014-19 period. Accordingly, Rs 154 Lakh was projected under this work and Hon'ble Commission was pleased to allow the same. M/s Blue Star tried many efforts to resolve the vibration problem but could not succeed. Finally they agreed for replacement of all the blowers. The blowers have been replaced in two Units and the vibration has been found normal. The work have been completed in two units and capitalised during FY 2014-19 period. The work in balance two units are expected to be completed and capitalised during FY 2020-21. In line with the work allowed for Unit-3 & 4 during 2014-19 period, Hon'ble Commission may be pleased to allow the same for other two units.		
3	Rack & Pinion Lifts at crusher house	41.85	-	41.85	-	Reg 27	Both Crusher House buildings at Tanda TPS are of the height of around 30 mtr. Use of stairs for movement of men and materials to such height on regular basis for maintenance work is a matter of concern for safety of manpower handling the materials. The proposed Rack & Pinion lift will ensure safety of the manpower handling the material. Hon'ble Commission may be pleased to allow the same.		
Total (B)		161.50	-	161.50	-				
Total Add. Cap. Claimed		386.38	-	386.38	-				

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(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited						
Name of the Generating Station		Tanda Thermal Power Station						
Date of Take Over		14-01-2000						
For Financial Year		2021-22						

Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)				Regulations under which claimed	Justification/ Regulation under which claimed	Amount in Rs Lakh Admitted Cost by the Commission, if any
		Accrual basis as per IGAAP in col. 3	Un-discharged Liability included in col. 3	Cash basis in col. 3	IDC included in col. 3			
1	2	3	4	5= (3-4)	6	7	8	9
A. Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate								
	NA	-	-	-	-	-	NA	
	Total (A)	-	-	-	-	-		
B. Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest								
	NA	-	-	-	-	-	NA	
	Total (B)	-	-	-	-	-		
	Total Add. Cap. Claimed	-	-	-	-	-		

(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited							Amount in Rs Lakh
Name of the Generating Station		Tanda Thermal Power Station							
Date of Take Over		14-01-2000							
For Financial Year		2022-23							
Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)			Regulations under which claimed	Justification/ Regulation under which claimed	Admitted Cost by the Commission, if any		
1	2	3	4	5=(3-4)	6	7	8	9	
A. Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate		Accrual basis as per IGAAP	Un-discharged Liability included in col. 3	Cash basis	IDC included in col. 3				
	NA	-	-	-	-		NA		
	Total (A)	-	-	-	-				
B. Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest									
	NA	-	-	-	-		NA		
	Total (B)	-	-	-	-				
	Total Add. Cap. Claimed (A+B)	-	-	-	-				

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(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited							Amount in Rs Lakh
Name of the Generating Station		Tanda Thermal Power Station							
Date of Take Over		14-01-2000							
For Financial Year		2023-24							
Sl. No.	Head of Work /Equipment	ACE Claimed (Projected)				Regulations under which claimed	Justification/ Regulation under which claimed	Admitted Cost by the Commission, if any	
		Accrual basis as per IGAAP	Un-discharged Liability included in col. 3	Cash basis	IDC included in col. 3				
1	2	3	4	5= (3-4)	6	7	8	9	
A.	Works under Original scope, Change in Law etc. eligible for RoE at Normal Rate	-	-	-	-	-	NA		
	Total (A)	-	-	-	-	-	NA		
B.	Works beyond Original scope excluding add-cap due to Change in Law eligible for RoE at Wtd. Average rate of Interest	-	-	-	-	-	NA		
	Total (B)	-	-	-	-	-	NA		
	Total Add. Cap. Claimed (A+B)	-	-	-	-	-			

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(Petitioner)

**PART-I
FORM- 10**

Financing of Additional Capitalisation

Name of the Petitioner	NTPC Limited										
Name of the Generating Station	Tanda Thermal Power Station										
Date of Takeover	14-01-2000										

Financial Year (Starting from COD)1	Actual					Admitted				
	2019-20	2020-21	2021-22	2022-23	2023-24	2019-20	2020-21	2021-22	2022-23	2023-24
1	3	4	5	6	7	8	9	10	11	

Amount capitalised in Work/ Equipment

Financing Details	
Loan-1	
Loan-2	
Loan-3 and so on	
Total Loan2	
Equity	
Internal Resources	
Others (Pl. specify)	
Total	

Add cap is proposed to be funded in Debt:Equity ratio of 70:30


(Petitioner)

**PART-I
FORM- 12**

Statement of Depreciation

Name of the Company : **NTPC Limited**
Name of the Power Station : **Tanda Thermal Power Station**

S. No.	Particulars	Existing 2018-19	(Amount in Rs Lakh)				
			2019-20	2020-21	2021-22	2022-23	2023-24
1	2	3	4	5	6	7	8
1	Opening Capital Cost	122787.97	1,24,489.61	1,24,673.77	1,25,060.15	1,25,060.15	1,25,060.15
2	Closing Capital Cost	124489.61	1,24,673.77	1,25,060.15	1,25,060.15	1,25,060.15	1,25,060.15
3	Average Capital Cost	123638.79	1,24,581.69	1,24,866.96	1,25,060.15	1,25,060.15	1,25,060.15
1a	Cost of IT Equipments & Software included in (1) above**		-	-	-	-	-
2a	Cost of IT Equipments & Software included in (2) above**		-	-	-	-	-
3a	Average Cost of IT Equipments & Software		-	-	-	-	-
4	Freehold land	1,674.71	1,674.71	1,674.71	1,674.71	1,674.71	1,674.71
5	Rate of depreciation		-	-	-	-	-
6	Depreciable value	1,09,767.67	1,10,616.28	1,10,873.02	1,11,046.89	1,11,046.89	1,11,046.89
7.	Balance useful life at the beginning of the period	6.79	5.79	4.79	3.79	2.79	1.79
8	Remaining depreciable value	28,838.52	25,439.92	21,302.89	17,029.39	12,536.15	8,042.91
9	Depreciation (for the period)	4,247.21	4,393.77	4,447.37	4,493.24	4,493.24	4,493.24
10	Depreciation (annualised)	4,247.21	4,393.77	4,447.37	4,493.24	4,493.24	4,493.24
11	Cumulative depreciation at the end of the period		89,570.13	94,017.50	98,510.74	1,03,003.99	1,07,497.23
12	Less: Cumulative depreciation adjustment on account of un-discharged liabilities deducted as on 01.04.2009	0.00	-	-	-	-	-
13	Add: Cumulative depreciation adjustment on account of liability Discharge	0.00	-	-	-	-	-
14	Less: Cumulative depreciation adjustment on account of de-capitalisation	13.13	-	-	-	-	-
15	Net Cumulative depreciation at the end of the period after adjustments	85,176.37	89,570.13	94,017.50	98,510.74	1,03,003.99	1,07,497.23

*** Shall be provided at the time of truing up

[Signature]
(Petitioner)

		PART-I				
		FORM-13				
Name of the Company		NTPC Limited				
Name of the Power Station		Tanda				
		(Amount in lacs)				
		2019-20	2020-21	2021-22	2022-23	2023-24
1	PFC-V, T-1, D-29					
	OP Bal	781.25	656.25	531.25	408.25	281.25
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	125.00	125.00	125.00	125.00	125.00
	CI Bal	656.25	531.25	408.25	281.25	156.25
	Avg Loan	718.75	593.75	468.75	343.75	218.75
	Int Rate	7.7600%	7.7600%	7.7600%	7.7600%	7.7600%
	Interest	55.78	46.08	36.38	26.68	16.96
2	SBI VII D-3					
	OP Bal	450.00	337.50	225.00	112.50	0.00
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	112.50	112.50	112.50	112.50	0.00
	CI Bal	337.50	225.00	112.50	0.00	0.00
	Avg Loan	393.75	281.25	168.75	56.25	0.00
	Int Rate	8.2575%	8.2575%	8.2575%	8.2575%	8.2575%
	Interest	32.51	23.22	13.93	4.64	0.00
3	SBI VII D-7					
	OP Bal	750.00	562.50	375.00	187.50	0.00
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	187.50	187.50	187.50	187.50	0.00
	CI Bal	562.50	375.00	187.50	0.00	0.00
	Avg Loan	656.25	468.75	281.25	93.75	0.00
	Int Rate	8.2575%	8.2575%	8.2575%	8.2575%	8.2575%
	Interest	54.19	38.71	23.22	7.74	0.00
4	SBI VII D-14					
	OP Bal	750.00	562.50	375.00	187.50	0.00
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	187.50	187.50	187.50	187.50	0.00
	CI Bal	562.50	375.00	187.50	0.00	0.00
	Avg Loan	656.25	468.75	281.25	93.75	0.00
	Int Rate	8.2575%	8.2575%	8.2575%	8.2575%	8.2575%
	Interest	54.19	38.71	23.22	7.74	0.00
5	Bond 61					
	OP Bal	800.00	800.00	800.00	533.33	533.33
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	0.00	0.00	266.67	0.00	0.00
	CI Bal	800.00	800.00	533.33	533.33	533.33
	Avg Loan	800.00	800.00	666.67	533.33	533.33
	Int Rate	8.1300%	8.1300%	8.1300%	8.1300%	8.1300%
	Interest	65.04	65.04	54.20	43.36	43.36
6	SBBJ, D-V					
	OP Bal	10000.00	10000.00	10000.00	10000.00	10000.00
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment					
	CI Bal	10000.00	10000.00	10000.00	10000.00	10000.00
	Avg Loan	10000.00	10000.00	10000.00	10000.00	10000.00
	Int Rate	8.2500%	8.2500%	8.2500%	8.2500%	8.2500%
	Interest	825.00	825.00	825.00	825.00	825.00
7	Punjab National Bank-III, D-4					
	OP Bal	10000.00	10000.00	10000.00	8888.89	7777.78
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	0.00	0.00	1111.11	1111.11	1111.11
	CI Bal	10000.00	10000.00	8888.89	7777.78	6666.67
	Avg Loan	10000.00	10000.00	9444.44	8333.33	7222.22
	Int Rate	8.3000%	8.3000%	8.3000%	8.3000%	8.3000%
	Interest	830.00	830.00	783.89	691.67	599.44
	Total Loan					
	Net Loan Opening	13531.25	12918.75	12306.25	10315.97	8592.36
	Additions	0.00	0.00	0.00	0.00	0.00
	Repayment	612.50	612.50	1990.28	1723.61	1236.11
	Net Loan Closing	12918.75	12306.25	10315.97	8592.36	7356.25
	Avg Loan	13225.00	12612.50	11311.11	9454.17	7974.31
	Rate of Interest	8.2549%	8.2597%	8.2649%	8.2697%	8.2738%
	Interest	1091.71	1041.75	934.85	781.83	659.78
Note:-						
1)	SBI VII Rate of interest includes upfront fees of 0.0075% (i.e. 0.08%*1.1236%/12years).					

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Details of Source wise Fuel for Computation of Energy Charges

Name of the Company :		NTPC Limited												
Name of the Power Station :		Tanda Thermal Power Station												
S. No.	Month	Unit	Oct-18		Nov-18		Dec-18		Imported	Domestic	Imported	Domestic	Imported	Domestic
			Domestic	Imported	Domestic	Imported	Domestic	Imported						
1	Quantity of Coal supplied by Coal Company (including Opening Stock)	(MMT)	1,98,534.16	0.011	2,29,222.89	0.01	3,77,254.13	0.01	-61.00					
2	Adjustment (+/-) in quantity supplied made by Coal Company	(MMT)	-275.00											
3	Coal supplied by Coal Company (1+2)	(MMT)	1,98,259.16	0.011	2,28,951.89	0.01	3,77,193.13	0.01						
4	Normative Transit & Handling Losses (For coal based projects)	(MMT)	1,304.36		1,575.49		2,505.74							
5	Net coal Supplied (3-4)	(MMT)	1,96,954.80	0.011	2,27,376.40	0.01	3,74,687.39	0.01						
6	Amount charged by the Coal/Lignite Company	(Rs.)	55,36,85,627	82	60,01,60,113	82	1,00,84,52,750	81.91						
7	Adjustment (+/-) in amount charged made by Coal Company	(Rs.)	-4,20,608		-4,66,816		-1,44,927							
8	Total amount Charged (6+7)	(Rs.)	55,32,65,019	82	59,96,93,297	82	1,00,83,07,823	82						
9	Transportation charges by rail/ship/road transport	(Rs.)	21,47,97,611				40,91,47,112							
10	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	-		-		-							
11	Demurrage Charges, if any	(Rs.)	-		-		-							
12	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	-		-		-							
13	Total Transportation Charges (9+10-11+12)	(Rs.)	21,47,97,611		25,63,51,068		40,91,47,112							
13A	Others (stone picking charges, loco driver salary sampling charges etc)	(Rs.)	-2,86,18,412		-4,38,26,865		-1,87,03,585							
14	Total amount Charged for coal supplied including Transportation (8+13+13A)	(Rs.)	73,94,44,218	82	81,22,17,500	82	1,39,87,51,350	82						
15	Landed cost of coal (14/5)	Rs./MT	3,754.385	7,446.364	3,572.127	7,446.364	3,733.116	7,446.364						
17	Blending Ratio (Domestic/Imported)		100%		100%		100%							
18	Weighted average cost of coal/Lignite for preceding three months	Rs./MT	3,754.39		3,572.13		3,733.12							
20	GCV of Domestic Coal as per bill of Coal Company (Equibrated basis)	(kCal/Kg)	4,510		4,570		4,360							
22	GCV of Imported Coal as per bill Coal Company	(kCal/Kg)												
23	Weighted average GCV of coal/Lignite as Billed (Equibrated basis)	(kCal/Kg)	4,510		4,570		4,360							
24	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)												
25	GCV of Domestic Coal as received at Station (Total Moisture basis)	(kCal/Kg)	4260		4340		4060							
26	GCV of Imported Coal as received at Station (Total Moisture basis)	(kCal/Kg)												
28	Weighted average GCV of coal as received at Station (Total Moisture basis)	(kCal/Kg)	4260		4340		4060							

(Petitioner)

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Details of Secondary Fuel for Computation of Energy Charges

Name of the Company :		NTPC Limited											
Name of the Power Station :		Tanda Thermal Power Station											
Sl.No.	Month	Unit	Oct-18		Nov-18		Dec-18		LDO	HFO	LDO	HFO	
			LDO	HFO	LDO	HFO	LDO	HFO					
1	Quantity of Oil supplied by Oil Company (including opening stock)	KL	334.10	-	170.10	-	153.10	-	-	153.10	-	-	
2	Adjustment(+/-) in quantity supplied made by Oil Company	KL	-	-	-	-	-	-	-	-	-	-	
3	Oil supplied by Oil Company (1+2)	KL	334.10	-	170.10	-	153.10	-	-	153.10	-	-	
4	Normative Transit & Handling Losses	KL	-	-	-	-	-	-	-	-	-	-	
5	Net Oil Supplied (3-4)	KL	334.10	-	170.10	-	153.10	-	-	153.10	-	-	
6	Amount charged by the Oil Company	(Rs)	1,73,44,842.39	-	88,30,762.38	-	79,48,205.29	-	-	79,48,205.29	-	-	
7	Adjustment(+/-) in amount charged made by Oil Company	(Rs)	-	-	-	-	-	-	-	-	-	-	
8	Total amount charged (6+7)	(Rs)	1,73,44,842.39	-	88,30,762.38	-	79,48,205.29	-	-	79,48,205.29	-	-	
9	Transportation charges by rail / ship / road transport	(Rs)	-	-	-	-	-	-	-	-	-	-	
10	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs)	-	-	-	-	-	-	-	-	-	-	
11	Demurrage Charges, if any	(Rs)	-	-	-	-	-	-	-	-	-	-	
12	Total Transportation Charges (9+/-10-11)	(Rs)	-	-	-	-	-	-	-	-	-	-	
13	Total amount Charged for fuel supplied including Transportation (8+12)	(Rs)	1,73,44,842.39	-	88,30,762.38	-	79,48,205.29	-	-	79,48,205.29	-	-	
14	Weighted average GCV of Oil on usage basis	(kCal/L)	9,599	-	9599	-	9599	-	-	9599	-	-	
15	Landed Cost of Oil (13 / 5)	Rs / KL	51,915.122	-	51,915.123	-	51,915.123	-	-	51,915.123	-	-	

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PETITIONER

Computation of Energy Charges

Form-15B
ADDITIONAL FORM

Name of the Company	NTPC Limited
Name of the Power Station	Tanda Thermal Power Station

	2019-20	2020-21	2021-22	2022-23	2023-24
No of Days in the year	366	365	365	365	366
Sp. Oil consumption ml/kwh	0.5	0.5	0.5	0.5	0.5
Auxiliary consumption %	11.50	11.50	11.50	11.50	11.5
Heat Rate Kcal/Kwh	2,750	2,750	2,750	2,750	2,750

Computation of Energy Charges

1 Rate of Energy Charge from Sec. Fuel Oil/ Alternate Fuel (p/kwh) = $(Q_{a,n}) \times P_s$ = 2.596

2 Heat Contribution from SFO / Alternate Fuel (H_p) = $(Q_s)_n \times (GCV)_s$ = 4.800

3 Heat Contribution from coal (H_p) = $GHR - H_s$ = 2745.20

4 Specific Primary Fuel Consumption (OP_n) = $H_p / (GCV)_p$ = 0.669

5 Rate of Energy charge from Primary Fuel (p/kwh) (REC)_p = 246.999

6 Rate of Energy charge ex-bus (p/kwh) (REC) = $\frac{((REC)_s + (REC)_p)}{(1-(AUX))}$ = 282.028

Price of fuel from Form-15/15.A

Coal Cost (Rs./MT)	3692.55	3692.55	3692.55	3692.55	3692.55
Oil Cost (Rs./KL)	51915.12	51915.12	51915.12	51915.12	51915.12

Computation of Fuel Expenses for Calculation of IWC:

ESO in a year (MUs)	2907.42	2899.47	2899.47	2899.47	2907.416
ESO for 50 days (MUs)	397.188	397.188	397.19	397.19	397.188
Cost of coal for 50 Days (Rs. Lakh)	11085.31	11085.31	11085.31	11085.31	11085.31
Cost of oil for 2 months (Rs. Lakh)	142.13	141.74	141.74	141.74	142.13
Energy Expenses for 45 days (Rs. Lakh)	10081.62	10081.62	10081.62	10081.62	10081.62

Coal	Oct'18	Nov'18	Dec'18	Wtd. Avg.
Wtd. Avg. Price of Coal Rs./MT	3754.39	3572.13	3733.12	3692.55
Wtd. Avg. GCV of Coal as received kCal/Kg	4260	4340	4060	4,188.98
Wtd. Avg. GCV of Coal as received after adjustment of 85 kcal/kg				4,103.98
Sec. Oil				
Wtd. Avg. Price of Secondary Fuel Rs/KL	51915.12	51915.12	51915.12	51915.12
Wtd. Avg. GCV of Secondary Fuel kCal/L	9599	9599	9599	9599

STATIONER
PETITIONER

Name of the Petitioner NTPC Ltd

Name of the Generating Station Tanda Thermal Power Station

Statement of Capital cost

(To be given for relevant dates and year wise)

(Amount in Rs. Lakh)

S. No.	Particulars	as on 31.03.2019		
		Accrual Basis	Un-discharged Liabilities	Cash Basis
A	a) Opening Gross Block Amount as per books	1,45,832.70	782.86	1,45,049.84
	b) Amount of IDC in A(a) above		4033.16	
	c) Amount of FC in A(a) above			-
	d) Amount of FERV in A(a) above		4120.65	
	e) Amount of Hedging Cost in A(a) above			-
	f) Amount of IEDC in A(a) above			-
B	a) Addition in Gross Block Amount during the period (Direct purchases)			
	b) Amount of IDC in B(a) above			
	c) Amount of FC in B(a) above			
	d) Amount of FERV in B(a) above			
	e) Amount of Hedging Cost in B(a) above			
	f) Amount of IEDC in B(a) above			
C	a) Addition in Gross Block Amount during the period (Transferred from CWIP)			
	b) Amount of IDC in C(a) above			
	c) Amount of FC in C(a) above			
	d) Amount of FERV in C(a) above			
	e) Amount of Hedging Cost in C(a) above			
	f) Amount of IEDC in C(a) above			
D	a) Deletion in Gross Block Amount during the period			
	b) Amount of IDC in D(a) above			
	c) Amount of FC in D(a) above			
	d) Amount of FERV in D(a) above			
	e) Amount of Hedging Cost in D(a) above			
	f) Amount of IEDC in D(a) above			
E	a) Closing Gross Block Amount as per books			
	b) Amount of IDC in E(a) above			
	c) Amount of FC in E(a) above			
	d) Amount of FERV in E(a) above			
	e) Amount of Hedging Cost in E(a) above			
	f) Amount of IEDC in E(a) above			

To be filed at the time of truing-up


 (Petitioner)

Name of the Petitioner

NTPC Ltd

Name of the Generating Station

Tanda Thermal Power Station

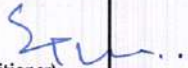
Statement of Capital Woks in Progress

(To be given for relevant dates and year wise)

(Amount in Rs. Lakh)

S. No.	Particulars	as on 31.03.2019		
		Accrual Basis	Un-discharged Liabilities	Cash Basis
A	a) Opening CWIP as per books	346.94	94.69	252.25
	b) Amount of IDC in A(a) above			-
	c) Amount of FC in A(a) above			-
	d) Amount of FERV in A(a) above			-
	e) Amount of Hedging Cost in A(a) above			-
	f) Amount of IEDC in A(a) above			-
B	a) Addition in CWIP during the period			
	b) Amount of IDC in B(a) above			
	c) Amount of FC in B(a) above			
	d) Amount of FERV in B(a) above			
	e) Amount of Hedging Cost in B(a) above			
	f) Amount of IEDC in B(a) above			
C	a) Transferred to Gross Block Amount during the period			
	b) Amount of IDC in C(a) above			
	c) Amount of FC in C(a) above			
	d) Amount of FERV in C(a) above			
	e) Amount of Hedging Cost in C(a) above			
	f) Amount of IEDC in C(a) above			
D	a) Deletion in CWIP during the period			
	b) Amount of IDC in D(a) above			
	c) Amount of FC in D(a) above			
	d) Amount of FERV in D(a) above			
	e) Amount of Hedging Cost in D(a) above			
	f) Amount of IEDC in D(a) above			
E	a) Closing CWIP as per books			
	b) Amount of IDC in E(a) above			
	c) Amount of FC in E(a) above			
	d) Amount of FERV in E(a) above			
	e) Amount of Hedging Cost in E(a) above			
	f) Amount of IEDC in E(a) above			

To be filed at the time of truing-up.


 (Petitioner)

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Calculation of Interest on Normative Loan

Name of the Company :		NTPC Limited							
Name of the Power Station :		Tanda Thermal Power Station							
S. No.	Particulars	(Amount in Rs Lakh)							
		Existing 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2022-23	2023-24
1	2	3	4	5	6	7	8	7	8
1	Gross Normative loan – Opening	85,951.57	87,142.73	87,271.64	87,542.11	87,542.11	87,542.11	87,542.11	87,542.11
2	Cumulative repayment of Normative loan up to previous year	84,994.51	87,142.73	87,271.64	87,542.11	87,542.11	87,542.11	87,542.11	87,542.11
2A	Adjustment due to liability discharge								
2B	Adjustment due to decapitalization								
3	Net Normative loan – Opening	957.06	-	-	-	-	-	-	-
4	Add: Increase due to addition during the year / period	1199.56	128.91	270.47	-	-	-	-	-
5	Less: Decrease due to de-capitalisation during the year / period	12.56	-	-	-	-	-	-	-
6	Less: Decrease due to reversal during the year / period								
7	Add: Increase due to discharges during the year / period	4.13	-	-	-	-	-	-	-
8	Less: Repayment of Loan	2148.21	128.91	270.47	-	-	-	-	-
9	Net Normative loan - Closing	-	-	-	-	-	-	-	-
10	Average Normative loan	478.53	-	-	-	-	-	-	-
11	Weighted average rate of interest (%)	8.3378	8.2549	8.2597	8.2649	8.2697	8.2738	8.2697	8.2738
12	Interest on Loan	39.90	-	-	-	-	-	-	-

Calculation of Interest on Working Capital

Name of the Company :		NTPC Limited							
Name of the Power Station :		Tanda Thermal Power Station							
		(Amount in Rs Lakh)							
S. No.	Particulars	Existing 2018-19	2019-20	2020-21	2021-22	2022-23	2023-24		
1	2	3	4	5	6	7	8		
1	Cost of Coal/Lignite	14,765.95	11085.31	11085.31	11085.31	11085.31	11085.31		
2	Cost of Main Secondary Fuel Oil	159.03	142.13	141.74	141.74	141.74	142.13		
3	Fuel Cost								
4	Liquid Fuel Stock								
5	O & M Expenses	2,068.41	1856.36	1937.93	2024.84	2117.65	2217.02		
6	Maintenance Spares	4,964.17	4455.28	4651.02	4859.60	5082.37	5320.84		
7	Receivables	22,196.29	14701.19	14848.86	14990.67	15134.82	15274.70		
8	Total Working Capital	44153.85	32240.26	32664.85	33102.16	33561.89	34039.99		
9	Rate of Interest	13.5000	12.0500	12.0500	12.0500	12.0500	12.0500		
10	Interest on Working Capital	5960.77	3884.95	3936.11	3988.81	4044.21	4101.82		

Signature
Petitioner

Statement of Liability Flow

Name of the Petitioner: NTPC Limited
Name of the Generating Station: Tandi Thermal Power Station


Sl	Name of the party	Name of Asset/ Work	Year of actual capitalisation	Liabilities as on 31.03.2019	Liability addition during FY 2019-20	Liability Discharged during FY 2019-20			Undischarge liabilities as on 31.03.2020	Remarks
						by Payment	by Reversal	Total		
			4	5	6	7	8	9=7+8	10=5+6-9	
1	For assets eligible for normal RoE	3								
2										
3	BHEL	DDCIMS U#1	2008-09	4,04,900						Allowed
4	Baliboi Environmental Engineering	Clarification plant for cw & chemical do	2010-11	13,57,201						Allowed
5	NTPC-ALSTOM POWER SERVICES PVT	R&M Of SG Unit 2	2012-13	17,11,768						Allowed
6	ELECON ENGINEERING CO LTD & HMC EQUIPMENTS PVT LTD	Stacker-cum-reclaimer	2012-13	2,73,285						Allowed
7	Baliboi Environmental Engineering	Clarification plant for cw & chemical do	2012-13	13,21,683						Allowed
8	BLUE STAR LTD-1024241	Air washer System	2014-15	3,04,040						Allowed
9	THE INDIURE PVT LTD-1004972	Dry Fly Ash Extraction system	2014-15	2,22,24,813						Allowed
10	SURGIDENT (INDIA)-1037269	Hospital Equipment	2014-15	59,890						exclusion
11	KUNAL ENTERPRISES-1078427	100 M.T PIT TYPE ELECTRONIC WEIGHBRIDGE	2015-16	2,87,262						claimed
12	THE INDIURE PVT LTD-1004972	Dry Fly Ash Extraction package for Tandi as per NOA	2015-16	30,06,027						Allowed
13	BHARAT HEAVY ELECTR	M4811122403 - MEJ:CR2.3MM:EOCTAGON:85X585	2015-16	24,783						exclusion
14	EXCEL DIESEL PVT L	M70D993668-SPARE:COMPLETE ENGINE ASSY.	2015-16	93,500						exclusion
15	GENNEXT LAB TECHNOL Do	ALLOY ANALYZER-COMP ASSY	2015-16	1,66,750						exclusion
16	CAPITAL SPARES	COILSECO UPPER BANK MODULE WITH SUPPORT	2016-17	3,66,296						exclusion
17	CAPITAL SPARES	COMPLETE H2 COOLER ASSY WITH WATER BOX	2016-17	2,07,373						exclusion
18	MBOA	DC GROUSER EARTH FAULT LOCATOR	2016-17	66,000						exclusion
19	HBL POWER SYSTEMS L	CAPITAL SPARES	2017-18	5,63,034						exclusion
20	BHARAT HEAVY ELECTRICALS LTD	CAPITAL SPARES	2017-18	25,03,251						exclusion
21	SIEMENS LTD	MBOA	2017-18	42,89,639						exclusion
22	ELECTRO THERAPY	MBOA	2017-18	87,120						exclusion
23	CU-BUILT ENGINEERS PVT LTD	MBOA	2017-18	1,17,500						exclusion
24	GURU ENTERPRISES	MBOA	2017-18	2,62,700						exclusion
25	SARTECH INTL	MBOA	2017-18	1,09,000						exclusion
26	TESTO INDIA PVT LTD	MBOA	2017-18	6,79,015						exclusion
27	THE ENERGY & RESOURCES INSTITUTE	MBOA	2017-18	1,80,040						exclusion
28	PADMARAT ENGINEERS	MBOA	2017-18	5,38,117						exclusion
29	SURGE SYSTEMS INDIA	MBOA	2017-18	57,26,710						Allowed
30	GANGOTRI ENTERPRISES LTD & MODERN TRADING COMPANY	Construction of 32 nos. Residential Building Type- D Quarters	2017-18	64,400						exclusion
31	CAPITAL SPARES	216 KV SURGE ARRESTOR COMPLETE	2018-19	45,000						exclusion
32	CAPITAL SPARES	COMPLETE OPACITY MONITOR	2018-19	36,74,656						exclusion
33	CAPITAL SPARES	FRV 1538 VX-10W MODEL	2018-19	3,26,600						exclusion
34	CAPITAL SPARES	12KV TAN DELTA AND CAPACITANCE TESTKIT	2018-19	3,244						exclusion
35	CAPITAL SPARES	MEJ:CR2.5MM:EOCTAGON:85X585	2018-19	8,09,817						exclusion
36	CAPITAL SPARES	REFRIGERATION TYPE H2 DRER	2018-19	8,09,817						exclusion
37	CAPITAL SPARES	TENDER CODE:FLOW(900-1000M3/HR)	2018-19	85,338						exclusion
38	CAPITAL SPARES	220KV CURRENT TRANSFORMERS	2018-19	1,61,000						exclusion
39	CAPITAL SPARES	COMPLETE VACUUM PUMP-140	2018-19	43,967						exclusion
40	CAPITAL SPARES	COMPLETE OPACITY MONITOR	2018-19	21,746						exclusion
41	CAPITAL SPARES	500 TAA4-impeller	2018-19	8,27,652						exclusion
42	CAPITAL SPARES	ONLINE COMPLETE PH ANALYSER	2018-19	56,600						exclusion
43	MBOA	illumination unit(xgallor barcomakelvs	2018-19	2,01,700						exclusion
44	ENVIRAD PROJECTS PVT LTD	TUBE NEST LP HEATER 4 CUIRO NICKEL TUB	2018-19	1,56,06,187						Allowed
45	INDHI ENGINEERING WORKS	3rd Raising of Ash dyke B	2018-19	1,220						exclusion
46	MBOA	Zero water discharge System	2018-19	25,67,373						exclusion
47	MBOA	VISCOMETER-COMP ASSY-DIGITAL	2018-19	14,900						exclusion
48	SHARIKA ENTERPRISES LIMITED	PHOTOCOPIER MACHINE - 35CPM	2018-19	59,69,236						claimed
Sub Total (d)				7,82,95,649						

Signature

**PART 1
FORM-T**

Summary of issue involved in the petition

Name of the Company :	NTPC Limited
Name of the Power Station :	Tanda Thermal Power Station
1 Petitioner:	NTPC Limited
2 Subject	Determination of Tariff for 2019-24 period
Prayer:	
3	<p>i) Approve tariff of Tanda Thermal Power Station for the tariff period from 01.04.2019 to 31.03.2024.</p> <p>ii) Allow the recovery of filing fees as & when paid to the Hon'ble Commission and publication expenses from the beneficiaries.</p> <p>iii) Allow reimbursement of Ash Transportation Charges directly from the beneficiaries quarterly on net basis.</p> <p>iv) Pass any other order as it may deem fit in the circumstances mentioned above.</p>
4 Respondents	
Name of Respondents	
5	1. Uttar Pradesh Power Corp. Ltd (UPPCL)
Project Scope	
Capita Cost as on 01.04.2019	124489.59
Date of Take Over	14-01-2000
Claim	
AFC (2019-20) (Rs Lakhs)	37572.45
Capital Cost as on 01.04.2019	124489.59
Initial spare	NA
NAPAF (Gen)	85%
Any Specific	NA


Petitioner

SPEED POST

B-29016/04/06/PCI-I/ 5101
To

February 05, 2014

The Chairman
All SPCBs/PCCs (as per list enclosed)

SUB: DIRECTIONS UNDER SECTION 18(1)(b) OF THE WATER (PREVENTION & CONTROL OF POLLUTION) ACT, 1974 and THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981 IN THE MATTER OF POLLUTION CONTROL IN 17 CATEGORY OF HIGHLY POLLUTING INDUSTRIES , CETPs AND COMMON HAZRDOUS WASTE & BIOMEDICAL WASTE INCINERATORS- REGARDING SELF MONITORING OF COMPLIANCE

WHEREAS, under Section 17 of the Water (Prevention & Control of Pollution) Act, 1974, and under Section 17 of the Air (Prevention & Control of Pollution) Act, 1981, one of the function of the State Pollution Control Boards(SPCBs)/Pollution Control Committees(PCCs) is to plan a comprehensive programme for the prevention, control or abatement of pollution of streams, wells and air pollution in the State/Union territory and to secure the execution thereof; and

WHEREAS, under section 16 of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the Central Pollution Control Board (CPCB), constituted under Water (Prevention and Control of Pollution) Act, 1974 is to coordinate activities of the State Pollution Control Boards and Pollution Control Committees and to provide technical assistance and guidance to SPCBs / PCCs; and

WHEREAS, the SPCBs and PCCs are empowered to stipulate standards for discharge of environmental pollutants for various categories of industries and common effluent treatment plants (CETPs) , Common Hazardous waste and Biomedical waste incinerators even more stringent than those notified by the Central Government, under the Environmental (Protection) Act, 1986 and rules framed there under; and



Page 1 of 5

WHEREAS, Pharmaceuticals, Chlor Alkali, Fertilizers, Oil Refinery, Dye and dye intermediate, Pesticides, Petrochemical, Large Power plants, Cement, Aluminium, Zinc, Copper, Iron & steel, Large Pulp & paper, Distillery, Sugar and Tannery industries located in States/UTs have been discharging environmental pollutants directly or indirectly into the ambient air and water, which pose constant threat to cause adverse effect on the water and air quality ; and

WHEREAS, Common Hazardous waste and Biomedical waste incinerators and Common Effluent Treatment Plants(CETPs) located in States/UTs have been discharging environmental pollutants directly or indirectly into the ambient air and water; and

WHEREAS, the SPCBs and PCCs are also required to ensure installation and regular operation of the requisite pollution control facilities in the polluting industries; and

WHEREAS, there is need to inculcate habit of self monitoring mechanism within the industries for complying the prescribed standards and this can be achieved by the methods like installing online effluent and emission monitoring devices; and

WHEREAS, number of industries (as per list) under 17 category (Annexure-I) which are operating in the state/UT have been identified can be suitably directed for installation and commissioning of online monitoring systems (emission and or effluent); and

WHEREAS, number of Common Hazardous waste and Biomedical waste incinerators and CETPs operating in the state/UT (as per list) can also be considered for installation and commissioning of online monitoring systems (emission and or effluent);and

WHEREAS, for strengthening the monitoring and compliance through self regulatory mechanism ,online source and effluent monitoring systems need to be

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installed and operated by the developers and the industries on 'polluter pays principle' ;and

WHEREAS, some of the SPCBs have already given specific conditions in consent to operate of 17 categories of highly polluting industries/ and Common Hazardous waste and Biomedical waste incinerators to install continuous emission and effluent monitoring systems; and

WHEREAS, it is envisaged in "National Environment Policy- 2006" that to strengthen the testing infrastructure and network for monitoring ambient environmental quality and progressively ensure real-time, and online availability of the monitoring data; and

WHEREAS, CPCB had earlier issued letter dated January 12,2011 to SPCBs /PCCs to direct all the 17 categories of highly polluting industries to install automatic air and water quality stations to monitor the ambient quality; and

WHEREAS ,it is becoming a need and necessity to regulate and minimize inspection of industries on routine basis and instead efforts need to be made to bring self discipline in the industries to exercise self monitoring & compliance and transmit data of effluent and emission compliance to SPCBs/PCCs and to CPCB on continuous basis; and

WHEREAS, there could be some time needed for getting such devices standardised and requiring confidence on data generated but needless to emphasize that efforts towards setting up to continuous monitoring devices is essential; and

WHEREAS, the ground truthing of the values indicated by the online devices need to be done before bringing them in public domain for proper interpretation and such measures need to be taken at the level of SPCBs/PCCs .And whereas for regulatory purposes and for purposes of actions to be taken against non complying industries /facilities, the existing methods of sampling,

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analysis and related procedures under the existing statutes need to be continued; and

WHEREAS, SPCBs and PCCS have prescribed standards for various parameters as per the notified standards under Environment(Protection) Act,1986 and the State Boards may refer to the parameters which should be monitored by installing continuous effluent and emission monitoring devices(Annexure -II);and


Whereas, continuous effluent and emission monitoring devices can be installed in those industries which are continuously letting out effluents and emissions out of their premises: and

Now, therefore, in exercise of the powers conferred under Section 18 (1) (b) of the Water (Prevention & Control of Pollution) Act, 1974, and 18 (1) (b) of the Air (Prevention & Control of Pollution) Act, 1981 and keeping in view strengthening of the monitoring mechanism for effective compliance through self regulatory mechanism,you are directed to issue the following directions to all the industries under 17 categories of highly polluting industries, and CETPs, Common Hazardous waste and Biomedical waste incinerators:

- a. To Install online continuous Stack Emission Monitoring Systems (CSEMS) in 17 categories of highly polluting industries and in Common Hazardous waste and Biomedical waste incinerators for the parameters(industry/sector specific parameter) mentioned in the consent to operate/authorisation not later than by March 31,2015;
- b. To install online effluent quality monitoring system at the outlet of effluent treatment plants of the 17 category industries and in CETPs for the measurement of the parameters(industry/sector specific parameter) like flow, pH, COD, BOD, TSS and for other consented parameters as per the guidelines provided; not later than by March 31, 2015;
- c. To connect and upload the online emission and effluent monitoring data at SPCBs/PCCs and CPCB server in a time bound manner but not later than by March 31,2015;


- d. To ensure regular maintenance and operation of the online system with temper proof mechanism having facilities for online calibration;
- e. To submit bank guarantee of 25 % of the cost of online monitoring systems (emission and effluent whichever applicable) for ensuring timely installation of online monitoring systems within 90 days from the date of receipt of directions issued by SPCBs/PCCs to the industries;

The SPCB shall install the necessary software and hardware in their headquarter for centralized data collection, analysis and corrective action .The action taken report along with time bound action plan for each industry under the 17 category of industry and CETPs, Common Hazardous waste and Biomedical waste incinerators for installation of online monitoring systems (emission and or effluent) shall be submitted to the Central Pollution Control Board within 120 days from the date of receipt of these directions.


(Susheel Kumar)
Chairman

Copy to:

1. The Advisor(CP Division)
Ministry of Environment & Forests
Paryavaran Bhawan
CGO Complex, Lodi Road
New Delhi - 110 003
2. I/C PCI-I,II,III and HWMD
3. All Zonal Officer ,CPCB
4. ✓ I/c IT Division, CPCB
5. I/c. ESS, CPCB


(Susheel Kumar)

Spu.



भारत का राजपत्र

The Gazette of India

असाधारण

EXTRAORDINARY

भाग III—खण्ड 4

PART III—Section 4

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 211]

नई दिल्ली, शुक्रवार, अगस्त 20, 2010/श्रावण 29, 1932

No. 211]

NEW DELHI, FRIDAY, AUGUST 20, 2010/SHRAVANA 29, 1932

CENTRAL ELECTRICITY AUTHORITY

NOTIFICATION

New Delhi, the 20th August, 2010

No. CEA/TETD/MP/R/01/2010.—In exercise of the powers conferred by sub-section (2) of Section 177 of the Electricity Act, 2003, the Central Electricity Authority hereby makes the following regulations namely :—

1. Short Title and Commencement.—(1) These regulations may be called the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.—(1) In these regulations, unless the context otherwise requires,—

- (a) "Act" means the Electricity Act, 2003;
- (b) "Authority" means the Central Electricity Authority established under sub-section (2) of Section 70 of the Act;
- (c) "Base Load Operation" means operation at maximum continuous rating (MCR) or its high fraction;
- (d) "Basic Insulation Level (BIL)" means reference voltage level expressed in peak (crest) voltage with standard 1.2/50 μ s lightning impulse wave. Apparatus should be capable of withstanding test wave of basic insulation level or higher;
- (e) "Black Start" means the start up of a generating unit or gas turbine or internal combustion (IC) engine based generating set without use of external power following grid failure;
- (f) "Boiler Maximum Continuous Rating (BMCR)" means the maximum steam output, the steam generator (boiler) can deliver continuously at rated parameters;

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- (ii) The demineralized water shall be stored in minimum 2 nos. DM water storage tanks of total storage capacity equal to 24 hour Station requirement.

(e) *Waste Water Treatment System*

The waste water generated at various locations shall be segregated at the source of generation according to its type. Similar type of waste water shall be collected at one point and treated. The treated water shall be collected in central monitoring basin and recycled for plant use or disposed off complying with the requirements of MOE&F and any other stipulation of the CPCB and SPCB in this regard.

(5) **Fire detection, alarm and protection system**

- (a) A comprehensive fire detection, alarm as well as fire protection system shall be installed for the Station in conformity with relevant IS. In addition, all buildings shall conform to National Building Code. Fire protection system shall be designed as per the guidelines of Tariff Advisory Committee (TAC) established under Insurance Act 1938 and /or NFPA.
- (b) Automatic fire detection and alarm system shall be intelligent and addressable type and shall be provided to facilitate detection of fire at the incipient stage and give warning to the fire fighting staff.
- (c) Major equipment to be used for fire detection and protection system shall be in accordance with Indian Standards or UL (Underwriters Laboratories, USA) or FM (Factory Mutuals, USA) or LPCB (Loss Prevention Certification Board, UK) or VDS (Germany).
- (d) Dedicated fire water storage and pumping facilities shall be provided for the fire fighting system as per TAC guidelines. Main fire water pumps shall be electrically driven and standby pumps shall be diesel engine driven.
- (e) Hydrant system, complying with TAC guidelines, shall be provided at various locations to cover the entire Station.
- (f) All major and minor fire risks in the Station shall be protected against fire by suitable automatic fire protection systems. Following systems shall be generally adopted for various fire risks:
 - (i) Automatic high velocity water spray system, complying with TAC guidelines, shall be provided for the following areas:
 - (A) Transformers of rating 10 MVA and above or oil filled transformers with oil capacity of more than 2000 litres;

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- (B) Alternatively, these transformers may be provided with Nitrogen injection based fire protection system. The transformers of 220kV or higher voltage may preferably be provided with Nitrogen injection based fire protection system in addition to automatic high velocity water spray system;
- (C) Lubricating oil systems including storage tanks, purifier units, coolers, turbine oil canal pipelines;
- (D) Generator seal oil system tanks, coolers;
- (E) Steam generator burner fronts.
- (ii) Steam turbine bearing housing and air pre-heater shall be provided with manually actuated high velocity water spray system.
- (iii) Automatic medium velocity water spray system, complying with TAC guidelines, shall be provided for the areas relating to:
- (A) Cable galleries, cable vaults, cable spreader rooms, cable risers, cable shafts etc.;
- (B) Coal conveyors, transfer points, crusher houses etc.;
- (C) Fuel oil pumping stations;
- (D) LDO and day oil tanks;
- (E) DG set building.
- (iv) Automatic foam system shall be provided for fuel oil storage tanks as per NFPA guidelines.
- (v) Automatic inert gas flooding system, comprising of 2x100% inert gas cylinder batteries and conforming to NFPA, shall be provided for Unit control rooms, control equipment rooms and area above false ceiling of these rooms.
- (g) Portable fire extinguishers as per TAC guidelines shall be provided for each room/area of power station in addition to fixed fire protection system to extinguish fire in its early phase to prevent its spread.
- (h) Fire station and fire tenders alongwith trained staff shall also be provided for the Station.
- (i) Passive fire protection measures such as fire barriers for cable galleries and shafts etc., fire retardant coatings, fire resistant penetration sealing for all openings in floors, ceilings, walls etc., fire proof doors etc. shall be provided to prevent spreading and for containment of fire.

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