

Summary of Issues: Nabinagar Super Thermal Power Station-I (1980 MW)

(In compliance with CERC notice dated 07.06.2024)

The major highlights of the Nabinagar STPS-I (1980 MW) Truing up petition are as follows:-

The present petition is being filed under Section 62 and 79 (1) (a) of the Electricity Act, 2003 read with Chapter-I of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023 and Chapter-3, Regulation-9(2) of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for revision of tariff of Nabinagar Super Thermal Power Station, Stage-I (1980 MW) for the period from 01.04.2024 to 31.03.2029 after the truing up exercise based on actual expenditures as on 31.03.2024.

Nabinagar STPS-I is located at Aurangabad district in Bihar and comprises of three units of 660 MW with station COD on 01.06.2022. The power generated from NSTPS-I is being supplied to various discoms as per MoP allocation and respective PPAs including North Bihar Power Distribution Company Ltd, South Bihar Power Distribution Company Ltd., Jharkhand Urja Vikas Nigam Limited, The Energy and Power Department, Govt of Sikkim, Uttar Pradesh Power Corporation Limited (UPPCL) and Gujarat Urja Vikas Nigam Limited (GUVNL).

The actual Additional Capital Expenditure on cash basis for the FY 2024-25, 2025-26 and 2026-27 are Rs 148.47 cr, Rs 521.74 cr and Rs 640 cr respectively amounting to total of Rs 1310.21 crores during the 2024-29 period. The same has been depicted year wise in Form 9A of the Appendix-I along with applicable regulations and justification for the claims. It is humbly requested to approve the actual Additional Capital expenditure during the period of 2024-29.

The petitioner humbly submits that petition no. 227/MP/2024 has been filed by the petitioner concerning Ash Transport Expenditure for its stations which is under active consideration of this Hon'ble Commission and the outcome of the said petition will be applicable to the instant petition also.

It is humbly submitted to allow reimbursement of Ash Transportation Charges directly from the beneficiaries on monthly basis, subject to true up. The ash transportation expenses claim has been depicted in Form 3A of Appendix-I.

Hon'ble Commission may please allow the claims of water charges, capital spares and security expenses for the instant station as per projections, as claimed by the Petitioner in Form 3A of Appendix-I.

- It is mentionable that as per the bipartite agreement between Nabinagar STPS (erstwhile NPGCL) and Government of Bihar the total water charges are payable by the petitioner consists of capital cost recovery Charges with 10% escalation per annum. (Rs. 317000 per month for FY-2017-18 with 10% escalation every year) along with variable charges as per water Consumption at the rate of Govt. Notified Rate of Water Charges. It is submitted that water is a subject matter under the control of Government of Bihar (Water Resource Department) and NTPC has no control over it. It is also an essential input for generation of electricity from a thermal power plant. NTPC is bound to pay the water charges as per the agreement signed with the Government of Bihar (Water Resource Department). The detailed calculation for the water charges claim as per the agreement is submitted in Form 3A. Hon'ble Commission may please allow the claim of water charges paid on allocation basis. Copy of water agreement between NTPC Nabinagar STPS-I and Government of Bihar (Water Resource Department) is enclosed along with the petition at **Annexure G**.

- It is further mentioned that the Nabinagar STPS-I is a central government owned thermal power station which is of national importance. As such Safety and security of this important infrastructure project against any threat (national or international) is a prime concern. The main security of these central government owned thermal power station is provided by the Central Industrial Security Force (CISF). CISF is a statutory body set up under an Act of the Parliament of India and a central armed police force in India under the Ministry of Home Affairs (MHA) whose primary mission is to provide security to large institutions like FSPTS-I&II. Deployment of the CISF is done as per the security threat perception, survey and as per the guidelines of MHA. In addition to the CISF, certain security is provided by other local and national agencies for critically less sensitive locations as per the plant specific needs. In view of this Hon'ble Commission may please allow the projected claims of security expenses as submitted in Form 3A. The actual claims will be submitted at the time of truing up.
- It is humbly submitted that the capital spares on store issuance basis for the instant station will be claimed by the Petitioner at the time of truing up in Form 3A of Appendix-I.

In the light of above submission and as per the Petition being filed by the Petitioner for revision of tariff of Nabinagar Super Thermal Power Station, Stage-I (1980 MW), The Hon'ble Commission may please approve revised tariff for the tariff period 2024-29 as per provision of Regulation 9(2) of Tariff Regulations 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-III of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for approval of tariff of Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) **for the period from 01.04.2024 to 31.03.2029.**

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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-III of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for approval of tariff of Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) **for the period from 01.04.2024 to 31.03.2029.**

AND
IN THE MATTER OF

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

Respondents

1. North Bihar Power Distribution Company Ltd.,
Vidyut Bhawan, Bailey Road
Patna 800 001
2. South Bihar Power Distribution Company Ltd.,
Vidyut Bhawan, Bailey Road
Patna 800 001
3. Jharkhand Bijlee Vitaran Nigam Ltd.,
Engineering Building, HEC Township,
Dhurwa,
Ranchi – 834 004
4. Power Department,

Govt. of Sikkim,
Kazi Road, Gangtok, Sikkim – 737 101

- 5 Uttar Pradesh Power Corp. Limited
Shakti Bhawan
14, Ashok Marg, Lucknow – 226001

- 6 Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan, Racecourse,
Vadodara, Gujarat – 39007

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.

- 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. Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) (hereinafter

referred to as NSTPS Stg-I is one such station located in the State of Bihar. The power generated from NSTPS Stg-I is being supplied to the respondents herein above.

4) The Hon'ble Commission has notified the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2024 (hereinafter 'Tariff Regulations 2024') which came into force from 01.04.2024, specifying the terms & conditions and methodology of tariff determination for the period 01.04.2024 to 31.03.2029.

5) Regulation 9(2) of Tariff Regulations 2024 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 30.11.2024, based on admitted capital cost including additional capital expenditure already admitted and incurred up to 31.3.2024 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2024-29 along with the true up petition for the period 2019-24 in accordance with the CERC (Terms and Conditions of Tariff) Regulations, 2019.”

In terms of above, the Petitioner is filing the present petition for determination of tariff for NSTPS Stg-I for the period from 01.04.2024 to 31.03.2029 as per the Tariff Regulations 2024.

6) The tariff of the NSTPS Stg-I for the tariff period from 06.09.2019 (Unit-I COD) – 01.06.2022 (Station COD) is under determination by the Hon'ble Commission in amended Petition No. 2/GT/2024 in accordance with the CERC (Terms & Conditions of Tariff) Regulations 2019. The petitioner vide affidavit dated 20.11.2024 had filed a separate true up petition for the period 01.06.2022 to 31.03.2024 for revision of tariff in line with the applicable provisions of Tariff Regulations 2019.

7) The capital cost claimed in the instant petition is based on the closing capital cost as on 01.04.2024 considered as above and projected estimated capital expenditures claimed

for the period 2024-29 under Regulation 19 and Regulation 24, 25 and 26 of the Tariff Regulations, 2024.

- 8) The Petitioner further respectfully submits that as per Regulation 36(1)(6) of the Tariff Regulations 2024, the water charges, security expenses, ash transportation 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 2023-24 have been furnished below. Water charges claimed is provided year on year on an estimated basis for 24-29 and same may be allowed in tariff for the 2024-29. In accordance with provision of the Regulations, the petitioner shall be furnishing the details of actual 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 based station
Type of cooling water system	Closed Circuit Cooling System
Allocated water for Nabinagar STPS	125 cusecs
Rate of Water charges	Rs. 4.76 per cubic meter + Capital cost Recovery of Rs. 317000 per month for FY 2017-18 with 10% escalation every year
Total Water Charges	2048 lacs

- 9) Similarly, the Petitioner is claiming the security & ash transportation expenses based on the estimated expenses for the period 2024-29, 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 36(1)(6) based on actual consumption of spares during the period 2024-29.
- 10) However, it is submitted that the expenditure towards the ash transportation charges is recurring in nature and the Petitioner has been incurring ash transportation expenditure in its stations in the current tariff period also. In case the same is permitted to be recovered after the issuance of the tariff order for the period 2024-29, there will be additional liability on the beneficiary on account of the interest payment for the period till the time the tariff

petitions for the period 2024-29 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 on a monthly basis subject to true-up at the end of the 2024-29 period.

- 11)** The petitioner humbly submits that petition no. 227/MP/2024 has been filed by the petitioner concerning Ash Transport Expenditure for its stations which is under active consideration of this Hon'ble Commission and the outcome of the said petition will be applicable to the instant petition also
- 12)** The Petitioner further respectfully submits that the wage/ salary revision of the employees of the Petitioner will be due with effect from 1.1.2027. As per Regulation 36(1)(8) of the Tariff Regulations 2024, the impact on account of implementation of wage/ pay revision shall be allowed at the time of truing up of tariff. The Petitioner therefore craves liberty to approach the Hon'ble Commission for allowing the impact on account of implementation of wage/ pay revision of the employees of the Petitioner with effect from 1.1.2027, based on the actual payments whenever paid by it.
- 13)** The present petition is filed on the basis of norms specified in the Tariff Regulations 2024. 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 MOEF 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 be also affected due to shutdown of the units for installation of ECS.
- 14)** It is submitted that Hon'ble Commission has prescribed boiler efficiency and turbine heat rate separately for deriving the unit heat rate where the Unit Heat Rate is not guaranteed by the suppliers. It is submitted that the instant station was envisaged during the control period of CERC (Terms and Conditions of Tariff) Regulations, 2009 and equipments including SG and TG specifications for tendering / award was stipulated considering the

boiler efficiency and the turbine heat rate prescribed by the Hon'ble Commission in the Tariff Regulations at that time. Based on the same the equipments were ordered through competitive bidding. It was not possible for the petitioner to specify the efficiency parameters at the time of finalizing the contracts on the instant station as per the efficiency parameters specified in Tariff Regulations 2024-29 which are more stringent.

In a similar case, Hon'ble Commission in its order dated 20.02.2014 in Petition No. 160/GT/2012 has considered the design parameters for computing Gross Heat Rate of the station with appropriate operating margin and has stated as under:

Quote

“161. As per the guaranteed turbine cycle heat rate of 1945 kCal/kWh and boiler efficiency of 88.5% along with the deviation of 6.5 % as per the 2009 Tariff Regulations, the Gross Heat Rate works out to 2340.59 kcal/kWh. Without the margin of Auxiliary consumption of 6.5%, the Gross Heat Rate works out as 2197.74 kcal/kWh. In light of this, achieving a GSHR of 2220 kcal/kWh as per submission of the respondents 1 to 6 is not possible. Also, the EPC contract was finalized in 2006 and there was no possibility for the petitioner to specify the Station Heat Rate as per the 2009 Tariff Regulations. In view of above, we consider a GSHR of 2340.59 kCal/kWh based on guaranteed turbine cycle heat rate 1945 kCal/kWh and boiler efficiency of 88.5% with a deviation of 6.5 % from the guaranteed design value.”

UNQUOTE

Further, Hon'ble Commission vide its order dated 21.04.2022 in petition no 362/GT/2020 while determining tariff of Kahalgaon STPS-II of NTPC Limited has relaxed the boiler efficiency for computing Gross Heat Rate of the station with appropriate operating margin. The same is quoted below:

Quote

“157. Accordingly, the Commission considered the SHR of 2425 kCal /kWh as approved for 2009-14 tariff period and in exercise of Power to Relax under Regulation 54 and Power to Remove Difficulty under Regulations 55 of Tariff Regulations, 2014 allowed boiler efficiency of the units of the generating station below 0.85 for the period 2014–19”

UNQUOTE

Further, if the Petitioner had stipulated more stringent unit heat rate this would have increased the capital cost commensurate to the efficiency parameters sought. The benefit of the lower capital cost due to lower efficiency parameters has already been passed onto the beneficiaries in terms of lower capital cost. If now the boiler efficiency for working out the normative heat rate is considered as 86% instead of the actual design efficiency of 85.42 %, the unit heat rate would be worked out to be 2226.69 kcal/kwh and the operating margin available over the design heat rate would be 3.8 % only which is much less than the operating margin of 4.5% allowed in the Tariff Regulations 2024. Moreover, it is submitted that boiler efficiency is largely a function of coal quality. In view of above submission, it is prayed that Gross Station Heat rate may be allowed based on guaranteed turbine cycle heat rate and actual boiler efficiency of 85.42 % with an operating margin of 4.5 % from the guaranteed design value. The tariff computation attached at Appendix-I is based on considering Station Heat Rate as per design heat rate with applicable operating margin of 4.5%.

- 15) The FGD is tentatively due for commissioning in U#1 of NSTPS Stage-in FY'25-26 and in U#2 & 3 in FY'26-27. Accordingly weighted average landed cost of limestone in Form-16A of Appendix-I pertaining to instant station has been provided on an estimated basis, which will be subject to true up.
- 16) It is submitted that the Petitioner has already paid the requisite filing fee for the year 2024-25 and the details of the same have been duly furnished to the Hon'ble Commission vide our letter dtd. 17.04.2024. For the subsequent years, it shall be paid as per the provisions of the CERC (Payment of Fees) Regulations, 2012 as amended. Further Regulation 94 (1) of Tariff Regulations 2024 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 fee directly from the beneficiaries.
- 17) The petitioner has accordingly calculated the tariff for 2024-29 period based on the above and the same is enclosed as **Appendix-I** to this petition.

- 18) The Petitioner humbly submits that the pay/wage revision for the employees of the Petitioner will be due wef 01.01.2027. Further, the wage/pay revision of CISF and Kendriya Vidyalaya employees will also be due for revision during the tariff period 2024-29. Regulation-36(1)(8) of CERC (Terms & Conditions of Tariff) Regulations-2024 provides as below:

“In the case of a generating company owned by the Central or State Government, the impact on account of implementation of wage or pay revision shall be allowed at the time of truing up of tariff.”

In accordance with the above said regulation, the Petitioner shall approach the Hon'ble Commission for allowing the impact of Pay/wage revision of employees of the Petitioner i.e. NTPC Limited, CISF and Kendriya Vidyalaya (wherever applicable) as additional O&M at the time of truing-up of tariff for the control period 2024-29. Hon'ble Commission may be pleased to consider the impact of wage/pay revision as an additional impact on O&M and allow the same as additional O&M over and above the normative O&M.

- 19) 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.

- 20) In accordance with the 'Conduct of Business Regulations 2023' of the Hon'ble Commission, the Petitioner shall, within 7 days after filing the tariff petition, publish a notice about such filing in at least two daily leading digital newspapers one in English language and another in any of the Indian languages, having wide circulation in each of the States and Union Territories where the beneficiaries are situated, as per Form 14 appended to these regulations. Subsequently, the Petitioner shall submit the proof of publications as soft copies of the publications under an affidavit through the e-filing portal of the Hon'ble Commission within one week from the date of publication. Further, the Petitioner shall also submit the detail of expenses incurred for publication of the notice alongwith the prayer for recovery of Publication Expenses as per Regulation-94 of CERC Tariff Regulations 2024.

- 21) The filing fee for the instant Petition has been paid for FY 2024-25 vide Payment Reference No 37c568eba62158b7b321 on 24.04.24 as per Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time. For subsequent years, it shall be paid as per the provisions of CERC (Payment of Fee) Regulations 2012. Further, the proof of payment of fees is being submitted in Form I specified under Regulation 12 of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time. Hon'ble Commission may be pleased to take the above into consideration and allow the recovery of filing fee for the instant station as per Regulation-94 of CERC Tariff Regulations 2024.
- 22) 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 31.3.2024 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 Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) **for** the tariff period 01.04.2024 to 31.03.2029.
- ii) Allow the recovery of filing fees as & when paid to the Hon'ble Commission and publication expenses from the beneficiaries.
- iii) Allow reimbursement of Ash Transportation Charges directly from the beneficiaries on monthly basis, subject to true up.
- iv) Allow the recovery of pay/wage revision as additional O&M over and above the normative O&M.
- v) Consider station heat rate based on design heat rate with applicable operating margin.

- vi) Pass any other order as it may deem fit in the circumstances mentioned above.

Petitioner

Noida

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-III of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for approval of tariff of Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) **for the period from 01.04.2024 to 31.03.2029.**

AND
IN THE MATTER OF

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

Respondents: 1. North Bihar Power Distribution
Company Limited.,
Vidyut Bhawan, Bailey Road,
Patna-800001
& Others



AFFIDAVIT

I, Prashant Chaturvedi, S/o Dr. S.C. Chaturvedi, aged about 48 years, working as Additional General Manager (Commercial) at NTPC Limited, having my office at 7th Floor, EOC, Sector- 24, Noida- 201301, do hereby solemnly affirm and state as under:

1. That the deponent is the Additional General Manager (Commercial) of the Petitioner NTPC Ltd. and is well conversant with the facts and the circumstances of the case and therefore competent to swear this affidavit.

प्रशांत चतुर्वेदी / PRASHANT CHATURVEDI
अतिरिक्त महाप्रबन्धक (व्यावसायिक)
Addl. General Manager (Commercial)
7th Floor, EOC, Sector-24, Noida-201301

Chaturvedi

2. That the accompanying Petition under Section 62 and 79 (1) (a) of the Electricity Act, 2003, has been filed by my authorized representative under my instruction and the contents of the same are true and correct to the best of my knowledge and belief.
3. That the annexures annexed to the Petition are correct and true copies of the respective originals.
4. That the Deponent has not filed any other Petition or Appeal before any other forum or court of law with respect to the subject matter of the dispute.

प्रशान्त चतुर्वेदी/PRASHANT CHATURVEDI
 अपर महाप्रबन्धक (वाणिज्यिक) (Deponent)
 Addl. General Manager (Commercial)
 एन टी पी सी लिमिटेड/NTPC LIMITED
 EOC, A-8A, Sector-24, NOIDA-201301

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 therefrom.

Verified at Noida (UP) on this day of 2024.

प्रशान्त चतुर्वेदी/PRASHANT CHATURVEDI
 अपर महाप्रबन्धक (वाणिज्यिक) (Deponent)
 Addl. General Manager (Commercial)
 एन टी पी सी लिमिटेड/NTPC LIMITED
 EOC, A-8A, Sector-24, NOIDA-201301



ATTESTED
 YGENDRA SINGH
 NOTARY NOIDA
 G B NAGAR (U.P) INDIA

28 NOV 2024

TARIFF FILING FORMS (THERMAL)

FOR DETERMINATION OF TARIFF

FOR

Nabinagar Super Thermal power Station Stage-I

(From 01.04.2024 to 31.03.2029)

PART-I

APPENDIX-I

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. 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. 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	NA
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.	*
9	Any other relevant information, (Please specify)	
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
*	Information shall be provided at the time of true up	
Note	1: Electronic copy of the petition (in words format) and detailed calculation as per these formats (in excel format) and any other information submitted has to be uploaded in the e-filing website and shall also be furnished in pen drive/flash drive.	

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-3B**	Statement of Special Allowance	NA
FORM- 4	Details of Foreign loans	✓
FORM- 4A	Details of Foreign Equity	NA
FORM-5	Abstract of Admitted Capital Cost for the existing Projects	NA
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	✓
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 Secondday 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 2024-29

** Additional Forms

PART-I

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

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 Works 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	✓

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

Summary of Tariff

Name of the Petitioner:	NTPC Limited
Name of the Generating Station:	Nabinagar Super Thermal power Station Stage-I
Place (Region/District/State):	Eastern Region/ Aurangabad/ Bihar

Amount in Rs. Lakhs

S. No.	Particulars	Unit	Existing 2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7	8	9
1.1	Depreciation	Rs Lakh	85,135.10	86,430.20	88,099.02	90,991.76	92,585.36	92,585.36
1.2	Interest on Loan	Rs Lakh	81,076.30	75,466.78	70,061.80	65,930.05	60,151.57	52,479.59
1.3	Return on Equity	Rs Lakh	96,325.77	97,767.57	99,631.69	1,02,904.12	1,04,707.20	1,04,707.20
1.4	Interest on Working Capital	Rs Lakh	19,055.95	19,548.53	19,864.02	20,073.89	20,189.41	20,264.35
1.5	O&M Expenses	Rs Lakh	53,443.98	73095.18	76685.79	80342.90	83709.07	87269.59
1.6	Special Allowance (If applicable)	Rs Lakh	NA					
	Total	Rs Lakh	335037.10	352308.27	354342.32	360242.73	361342.61	357306.08
2.1	Landed Fuel Cost (coal/gas/RLNG/ liquid)	Rs/Ton		4,248.09				
	(%) of Fuel Quantity	(%)		100				
2.2	Landed Fuel Cost (coal from Integrated mine) as per FSA, if any, approved by beneficiaries or as per allocation of coal quantity	Rs/Ton						
	(%) of Fuel Quantity	(%)						
2.3	Landed Fuel Cost Imported Coal			NA				
	(%) of Fuel Quantity							
2.4	Landed Fuel Cost (coal/gas /RLNG/liquid) other than FSA	Rs/Ton		NA				
	(%) of Fuel Quantity	(%)						
2.5	Landed Fuel Cost Imported Coal other than FSA.			NA				
	(%) of Fuel Quantity							
3	Secondary Fuel							
	Secondary fuel oil cost	Rs/Unit		0.047				
	Energy Charge Rate ex-bus (Paise/kWh)	Rs/Unit		2.763				

(Petitioner)

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

Name of the Petitioner: NTPC Limited
Name of the Generating Station: Nabinagar Super Thermal power Station Stage-I

Amount in Rs. Lakhs

Statement showing claimed capital cost – (A+B)

S. No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
1	Opening Capital Cost	17,28,122.90	17,46,832.25	17,99,095.81	18,63,095.81	18,63,095.81
2	Add: Addition during the year/period	18,709.35	52,263.56	64,000.00	-	-
3	Less: De-capitalisation during the year/period	-	-	-	-	-
4	Less: Reversal during the year / period	-	-	-	-	-
5	Add: Discharges during the year/ period	-	-	-	-	-
6	Closing Capital Cost	17,46,832.25	17,99,095.81	18,63,095.81	18,63,095.81	18,63,095.81
7	Average Capital Cost	17,37,477.57	17,72,964.03	18,31,095.81	18,63,095.81	18,63,095.81

Statement showing claimed capital cost eligible for RoE at normal rate (A)

S. No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
1	Opening Capital Cost	1728122.90	1742969.57	1795143.85	1859143.85	1859143.85
2	Add: Addition during the year / period	14846.67	52174.28	64000.00	0.00	0.00
3	Less: De-capitalisation during the year / period	0.00	0.00	0.00	0.00	0.00
4	Less: Reversal during the year / period	0.00	0.00	0.00	0.00	0.00
5	Add: Discharges during the year / period	0.00	0.00	0.00	0.00	0.00
6	Closing Capital Cost	1742969.57	1795143.85	1859143.85	1859143.85	1859143.85
7	Average Capital Cost	1735546.23	1769056.71	1827143.85	1859143.85	1859143.85

Statement showing claimed capital cost eligible for RoE at one year MCLR + 350 bps subject to ceiling of 14.00% (B)

S. No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
1	Opening Capital Cost	0.00	3862.68	3951.96	3951.96	3951.96
2	Add: Addition during the year / period	3862.68	89.28	0.00	0.00	0.00
3	Less: De-capitalisation during the year / period	0.00	0.00	0.00	0.00	0.00
4	Less: Reversal during the year / period	0.00	0.00	0.00	0.00	0.00
5	Add: Discharges during the year / period	0.00	0.00	0.00	0.00	0.00
6	Closing Capital Cost	3862.68	3951.96	3951.96	3951.96	3951.96
7	Average Capital Cost	1931.34	3907.32	3951.96	3951.96	3951.96

(Petitioner)

Name of the Petitioner:	NTPC Limited
Name of the Generating Station:	Nabinagar Super Thermal power Station Stage-I

Statement showing Return on Equity at Normal Rate

Amount in Rs. Lakhs						
S. No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
	Return on Equity					
1	Gross Opening Equity (Normal)	5,18,436.87	5,21,732.07	5,37,357.57	5,56,557.57	556557.5665
2	Less: Adjustment in Opening Equity	-				
3	Adjustment during the year		0.00	0.00	0.00	0.00
4	Net Opening Equity (Normal)	5,18,436.87	5,21,732.07	5,37,357.57	5,56,557.57	5,56,557.57
5	Add: Increase in equity due to addition during the year / period	3295.20	15625.50	19200.00	0.00	0.00
7	Less: Decrease due to De-capitalisation during the year / period	0.00	0.00	0.00	0.00	0.00
8	Less: Decrease due to reversal during the year / period	0.00	0.00	0.00	0.00	0.00
9	Add: Increase due to discharges during the year / period	0.00	0.00	0.00	0.00	0.00
10	Net closing Equity (Normal)	5,21,732.07	5,37,357.57	5,56,557.57	5,56,557.57	5,56,557.57
11	Average Equity (Normal)	5,20,084.47	5,29,544.82	5,46,957.57	5,56,557.57	5,56,557.57
12	Rate of ROE (%)	18.782	18.782	18.782	18.782	18.782
13	Total ROE	97,682.26	99,459.11	1,02,729.57	1,04,532.64	1,04,532.64

(Petitioner)

Name of the Petitioner:		NTPC Limited				
Name of the Generating Station:		Nabinagar Super Thermal power Station Stage-I				
<u>Statement showing Return on Equity linked to SBI MCLR</u>						
Amount in Rs. Lakhs						
S. No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
	Return on Equity (beyond the original scope of work including additional capitalization due to Change in Law, ECS, Force Majeure)					
1	Gross Opening Equity (Normal)	0.00	1158.80	1185.59	1185.59	1185.59
2	Less: Adjustment in Opening Equity	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
4	Net Opening Equity (Normal)	0.00	1158.80	1185.59	1185.59	1185.59
5	Add: Increase in equity due to addition during the year / period	1158.80	26.78	0.00	0.00	0.00
7	Less: Decrease due to De-capitalisation during the year / period	0.00	0.00	0.00	0.00	0.00
8	Less: Decrease due to reversal during the year / period	0.00	0.00	0.00	0.00	0.00
9	Add: Increase due to discharges during the year / period	0.00	0.00	0.00	0.00	0.00
10	Net closing Equity (Normal)	1158.80	1185.59	1185.59	1185.59	1185.59
11	Average Equity (Normal)	579.40	1172.20	1185.59	1185.59	1185.59
12	Rate of ROE (%)	14.723	14.723	14.723	14.723	14.723
13	Total ROE	85.31	172.58	174.55	174.55	174.55
(Petitioner)						

Plant Characteristics

Name of the Petitioner : NTPC Ltd.

Name of the Generating Station : Nabinagar Super Thermal Power Project Stage-I (3x660MW)

Unit(s)/ Block(s) Parameters	Unit-I	Unit-II	Unit-III
Installed Capacity (MW)	660	660	660
Schedule COD as per Investment Approval	31-05-2017	30-11-2017	31-05-2018
Actual COD	6-Sep-19	23-Jul-21	1-Jun-22
Pit Head or Non Pit Head	Non Pit Head		
Name of the Boiler Manufacture	BHEL		
Name of Turbine Generator Manufacture	Alstom Bharat Forge Pvt. Limited		
Main Steams Pressure at Turbine inlet (kg/Cm2) abs	247.00		
Main Steam Temperature at Turbine inlet (°C)	565.00		
Reheat Steam Pressure at Turbine inlet (kg/Cm2)	54.34		
Reheat Steam Temperature at Turbine inlet (°C)	593.00		
Main Steam flow at Turbine inlet under MCR condition (tons /hr)	1922.10		
Main Steam flow at Turbine inlet under VWO condition (tons /hr) ²	2041.2		
Unit Gross electrical output under MCR /Rated condition (MW) ²	660		
Unit Gross electrical output under VWO condition (MW) ²	693		
Guaranteed Design Gross Turbine Cycle Heat Rate (kCal/kWh) ³	1832		
Boiler Efficiency specified by Manufacturer (%)	85.42		
Conditions on which design turbine cycle heat rate guaranteed			
% MCR	100		
% Makeup Water Consumption	0		
Design Capacity of Make up Water System	3 % of MCR		
Design Capacity of Inlet Cooling System	72000 Ton/Hour		
Design Cooling Water Temperature (degree C)	33		
Back Pressure	77 mm Hg		
Steam flow at super heater outlet under BMCR condition (tons/hr)	2120		
Steam Pressure at super heater outlet under BMCR condition) (kg/Cm2)	255		
Steam Temperature at super heater outlet under BMCR condition (°C)	568		
Steam Temperature at Reheater outlet at BMCR condition (°C)	593		
Design / Guaranteed Boiler Efficiency (%)⁴	85.42		
Design Fuel with and without Blending of domestic/imported coal	442 Ton/Hour		
Type of Cooling Tower	IDCT		
Type of cooling system	Closed Circuit Cooling		
Type of Boiler Feed Pump	2nos TDBFP; 2 nos. MDBFP		
Type of Coal Mill	Bowl Mill		
Fuel Details			
- Primary Fuel	Coal		
-Secondary Fuel	LDO		
-Alternate Fuels		
Types of SOX control system	FGD under implimentation		
Types of NOX control system	1.Separated Over fire Air Damper Control(SOFA) 2.Close Coupled Over fire Air Damper Control(CCOFA)		
Details of SPM control system	ESPs		
Special Features/Site Specific Features			
Special Technological Features	Supercritical		
Environmental Regulation related features	1. FGD under implementation. 2. ESPs have been installed to limit particulate emission.		
Any other special features			
1. At Turbine MCR condition.			
2. With 0% (Nil) make up and design Cooling water temperature			
3. At TMCR output based on gross generation, 0% (Nil) makeup and design Cooling water temperature.			
4. With Performance coal based on Higher Heating Value (HHV) of fuel and at BMCR) out put			
5. Closed circuit cooling, once through cooling, sea cooling, natural draft cooling, induced draft cooling etc.			
6. Motor driven, Steam turbine driven etc.			
7. Coal or natural gas or Naptha or lignite etc.			
8. Any site specific feature such as Merry-Go-Round, Vicinity to sea, Intake /makeup water systems etc. scrubbers etc. Specify all such features			
9. Any Special Technological feature like Advanced class FA technology in Gas Turbines, etc.			
10. Environmental Regulation related features like FGD, ESP etc.,			
Note 1: In case of deviation from specified conditions in Regulation, correction curve of manufacturer may also be submitted.			
Note 2: Heat Balance Diagram has to be submitted along with above information in case of new stations.			
Note 3: The Terms – MCR, BMCR, HHV, Performance coal, are as defined in CEA Technical Standards for Construction of Electric Plants and			

Normative parameters considered for tariff computations

Name of the Petitioner:	NTPC Limited
Name of the Generating Station:	Nabinagar Super Thermal power Station Stage-I

(Year Ending March)

Particulars	Unit	Existing 2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
1	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
Base Rate of Return on Equity on Add. Capitalization	%	-	8.3545	8.3457	8.3457	8.3391	8.3481
Effective Tax Rate	%	17.4720	17.4720	17.4720	17.4720	17.4720	17.4720
Target Availability	%	85.00	85.00	85.00	85.00	85.00	85.00
Peak Hours	%	85.00	85.00	85.00	85.00	85.00	85.00
Off Peak Hours	%	85.00	85.00	85.00	85.00	85.00	85.00
β- Average Monthly Frequency Response Performance ##	0-1						
Auxiliary Energy Consumption ***	%	6.25	5.750	6.750	6.750	6.750	6.750
Gross Station Heat Rate	kCal/kWh	2251.93	2241.21	2241.21	2241.21	2241.21	2241.21
Specific Fuel Oil Consumption	ml/kWh	0.50	0.50	0.50	0.50	0.50	0.50
Cost of Coal/Lignite for WC1	in Days	50	50	50	50	50	50
Cost of Main Secondary Fuel Oil for WC1	in Months	2	2	2	2	2	2
Fuel Cost for WC2	in Months						
Liquid Fuel Stock for WC2	in Months						
O&M Expenses	Rs lakh/MW	23.26	25.78	27.13	28.56	30.06	31.64
Maintenance Spares for WC	% of O&M	20.00	20.00	20.00	20.00	20.00	20.00
Receivables for WC	in Days	45	45	45	45	45	45
Storage capacity of Primary fuel *	MT	458190	458190	458190	458190	458190	0
SBI 1 Year MCLR plus 325 basis point	%	12.00	11.90	11.90	11.90	11.90	11.90
Blending ratio of domestic coal/imported coal							
Norms for consumption of reagent							
Specific Limestone consumption for Wet Limestone FGD	g/KWhr			8.01	8.01	8.01	8.01
Specific Limestone consumption for Lime Spray Dryer or Semi-dry FGD							
Specific consumption of sodium bicarbonate							
Specific Limestone consumption for CFBC based generating station							
specific urea consumption of the SNCR							
Specific ammonia consumption of the SCR							
Transit and Handling Losses of coal or lignite, as applicable							

\$\$ Additional RoE due to better ramp rate would be claimed at the time of true-up or as per guidelines to be issued

*** APC has been considered as per para 9 & 14 of the Petition

To be submitted at the time of truing up based on RPC certification

Petitioner

Calculation of O&M Expenses

Name of the Company :		NTPC Limited				
Name of the Power Station :		Nabinagar Super Thermal power Station Stage-I				
						Amount in Rs. Lakhs
S.No.	Particulars	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7
1	O&M expenses under Reg.36(1)					
1a	Normative	51044.40	53717.40	56548.80	59518.80	62647.20
2	O&M expenses under Reg.36(6)					
2a	Water Charges ## **	2185.77	2189.57	2193.38	2197.18	2200.99
2b	Security expenses **	2812.01	3079.81	3233.80	3557.18	3912.90
2c	Capital Spares***	0.00	0.00	0.00	0.00	0.00
3	O&M expenses-Ash Transportation**	17053.00	17053.00	17053.00	17053.00	17053.00
4	O&M expenses-FGD**		646.00	1313.92	1382.90	1455.50
	Total O&M Expenses	73095.18	76685.79	80342.90	83709.07	87269.59

** Subject to true up

*** Shall be provided at the truing up

Petitioner

Abstract of Claimed Capital Cost for the existing Projects

Name of the Company :	NTPC Limited		
Name of the Power Station :	Farakka Super Thermal power Station Stage-I&II		
Last date of order of Commission for the project		Date (DD-MM-YYYY)	NA
Reference of petition no. in which the above order was passed		Petition no.	
Following details (whether admitted and /or considered) as on the last date of the period for which tariff is claimed			31.03.2029
Capital cost	(Rs. in lakh)		1863095.81
Amount of un-discharged liabilities included in above (& forming part of admitted capital cost)			NA
Amount of un-discharged liabilities corresponding to above admitted capital cost (but not forming part of admitted capital cost being allowed on cash basis)			
Gross Normative Debt			13,04,167.07
Cumulative Repayment			2,68,648.95
Net Normative Debt			10,35,518.12
Normative Equity			5,58,928.74
Cumulative Depreciation			7,30,071.83
Freehold land			1,02,411.78
			(Petitioner)

Details of Project specific loans

Name of the Petitioner		NTPC Ltd.					
Name of the Generating Station		Nabinagar Super Thermal Power Project Stage-I					
Particulars	Package1	Package2	Package3	Amount in Lakhs		Package6	Package7
				Package4	Package5		
1	2	3	4	5	6	7	8
Source of Loan¹	REC Ltd	Canara Bank (TL -I)	Canara Bank (e-Syndicate Bank)@	Canara Bank (TL -II)	Bank of Baroda*	UCO Bank	Bank of Maharashtra
Currency ²	INR	INR	INR	INR	INR	INR	INR
Amount of Loan sanctioned	8,77,500.00	80,000.00	50,000.00	1,54,152.00	4,00,000.00	75,000.00	47,300.00
Amount of Gross Loan drawn upto 31.03.2019	8,77,500.00	40,000.00	-	-	-	-	-
Amount of Gross Loan drawn upto 06.09.2019 (COD Unit #1)	8,77,500.00	79,707.80	-	-	-	-	-
Amount of Gross Loan drawn upto 23.07.2021 (COD Unit #2)	8,77,500.00	80,000.00	50,000.00	1,01,570.11	-	-	-
Amount of Gross Loan drawn upto 01.06.2022 (COD Unit #3)	8,77,500.00	80,000.00	50,000.00	1,54,740.73	4,00,000.00	14,000.00	12,500.00
Interest Type ⁶	CPSU Card rate	MCLR based	MCLR based	MCLR based	MCLR based	MCLR based	MCLR based
Fixed Interest Rate, if applicable							
Base Rate, if Floating Interest ⁷	9.95% / 9.70%	8.65%	8.60%	8.15%	8.65%	8.60%	8.15%
Margin, if Floating Interest ⁸	-170bps	-	-	-	0	-	-
Are there any Caps/Floor ⁹	No	No	No	No	No	No	No
If above is yes, specify floor							
Moratorium Period ¹⁰	6months	6months	6months	6months	6months	Moratorium of 3 years from the date of first drawl.	Moratorium of 3 years from the date of first drawl.
Moratorium effective from	COD	COD	COD	COD	COD	30.03.2022	30.03.2022
Repayment Period ¹¹	15Years	14.5Years	14.5Years	14.5Years	15Years	12 Years	12Years
Repayment effective from	30.09.2022	31.12.2022	31.12.2022	31.12.2022	30.09.2022	31.03.2025	31.03.2025
Repayment Frequency ¹²	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Annual	Annual
Repayment Instalment ^{13,14}	60	58	58	58	60	12	12
Base Exchange Rate ¹⁶	1	1	1	1	1	1	1
Are foreign currency loan hedged?	NA	NA	NA	NA	NA	NA	NA
If above is yes, specify details ¹⁷							

*Part Refinancing of Term Loan of REC Ltd to the tune of Rs.400,000 Lakh has been done from Bank of Baroda.

(Petitioner)

Name of the Company	Form-8						
Name of the Power Station	Nabinagar						
Particulars							
	USD 750 Million Drawl IV	USD 750 Million Drawl V	USD 750 Million Drawl VI	JPY Equ. \$400 Million Drawl I	JPY Equ. \$400 Million Drawl II	JPY Equ. \$400 Million Drawl III	JPY Equ. \$400 Million Drawl IV
Source of Loan							
Drawal							
Currency	USD	USD	USD	JPY	JPY	JPY	JPY
Amount of loan sanctioned	10,00,00,000	10,00,00,000	10,00,00,000	13,51,55,00,000	13,89,20,00,000	14,77,60,00,000	14,25,65,00,000
Amount of Gross Loan drawn upto 19.03.2024	10,00,00,000	10,00,00,000	10,00,00,000	13,51,55,00,000	13,89,20,00,000	14,77,60,00,000	14,25,65,00,000
Interest Type	Floating	Floating	Floating	Floating	Floating	Floating	Floating
Fixed Interest Rate, if applicable	-	-	-	-	-	-	-
Base Rate, if floating interest*	6 Month Term SOFR*	6 Month Term SOFR*	6 Month Term SOFR*	6M Compounded TONA	6M Compounded TONA	6M Compounded TONA	6M Compounded TONA
Margin, if floating interest rate	1.16933%	1.16933%	1.16933%	1.20000%	1.20000%	1.20000%	1.20000%
Are there any Caps / Floor	No	No	No	No	No	No	No
If above is Yes, specify Caps / Floor	-	-	-	-	-	-	-
Moratorium Period	4	4	4	4	4	4	4
Moratorium effective from	25-Apr-2022	25-Apr-2022	25-Apr-2022	31-Aug-2023	31-Aug-2023	31-Aug-2023	31-Aug-2023
Repayment period	Yearly	Yearly	Yearly	Yearly	Yearly	Yearly	Yearly
Repayment effective from	05-Oct-2026	05-Oct-2026	05-Oct-2026	31-Aug-2027	31-Aug-2027	31-Aug-2027	31-Aug-2027
Repayment frequency	Seven times	Seven times	Seven times	Seven times	Seven times	Seven times	Seven times
Repayment installment	1,42,85,714	1,42,85,714	1,42,85,714	1,93,07,85,714	1,98,45,71,429	2,11,08,57,143	2,03,66,42,857
				-	-	-	-
Base Exchange Rate -							
Are foreign currency loan hedged	No	No	No	-	-	-	-
If above is Yes, specify details	-	-	-				
Name of the Projects	%	%	%	%	%	%	%
Nabinagar	14.13%	6.04%	7.28%	3.15%	1.22%	0.60%	6.06%

**Form 8
TRANCHE NO**

BP NO 5050001441

T00001

D00001

Unsecured Loan From HDFC Bank Ltd. XII

Source of Loan :	HDFC Bank Ltd. XII	
Currency :	INR	
Amount of Loan :	50,00,00,00,000	
Total Drawn amount :	5,00,00,00,000	
Date of drawl	13-Oct-23	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	3 Years	
Moratorium effective from :	13.10.2023	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	13.10.2027	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	SINGRAULI-I & II FGD	17,00,00,000.00
	UNCHAHAR-I, II & III-FGD	1,00,00,000.00
	TANDA II	20,00,00,000.00
	KORBA-I,FGD	8,00,00,000.00
	VINDHYACHAL-III&IV FGD	1,00,00,000.00
	SIPAT-I (3X660 MW) FGD	3,00,00,000.00
	SIPAT-II (3X660 MW) FGD	7,00,00,000.00
	TSTPS STAGE-II & I FGD	1,00,00,000.00
	BARH I	75,00,00,000.00
	TAPOVAN VISHNUGARH (4X130	24,00,00,000.00
	BARH II FGD	1,00,00,000.00
	NORTH KARANPURA	50,00,00,000.00
	RAMAGUNDAM-I & II FGD	3,00,00,000.00
	RAMAGUNDAM-III (1X500 MW)	1,00,00,000.00
	MOUDA-I FGD	2,00,00,000.00
	MAUDA II FGD	3,00,00,000.00
	SOLAPUR FGD	1,00,00,000.00
	KUDGI FGD	1,00,00,000.00
	LARA	10,00,00,000.00
	LARA, STAGE-II, 2X800 MW	80,00,00,000.00

	GADARWARA	10,00,00,000.00
	RAMMAM (3X40MW)	13,50,00,000.00
	KHARGONE	20,00,00,000.00
	TELANGANA	92,50,00,000.00
	TALLAIPALLI	16,00,00,000.00
	BARAUNI-II	10,00,00,000.00
	KERANDARI CMB	9,00,00,000.00
	NABINAGAR	20,00,00,000.00
	Total Allocated Amount	5,00,00,00,000.00

**Form 8
TRANCHE NO**

BP NO 5050001441

T00001

D00002

Unsecured Loan From HDFC Bank Ltd. XII		
Source of Loan :	HDFC Bank Ltd. XII	
Currency :	INR	
Amount of Loan :	50,00,00,00,000	
Total Drawn amount :	5,00,00,00,000	
Date of drawl	01-Nov-23	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	3 Years	
Moratorium effective from :	13.10.2023	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	13.10.2027	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I (3X 660MW)	50,00,00,000.00
	TAPOVAN VISHNUGARH	13,00,00,000.00
	NORTH KARANPURA	66,00,00,000.00
	RAMMAM (3X40MW)	7,00,00,000.00
	TELANGANA (2X800MW)	25,00,00,000.00
	TTPS III (2X660MW)	30,00,00,000.00
	LARA, STAGE-II, 2X800 MW	4,50,00,000.00
	NOKH SOLAR PLOT-I (245MW)	20,00,00,000.00
	NOKH SOLAR PLOT-II (245MW)	40,00,00,000.00
	NOKH SOLAR PLOT-III (245M	30,00,00,000.00
	NABINAGAR	15,00,00,000.00
	TALAIPALI COAL MINE	20,00,00,000.00
	KERANDARI	43,00,00,000.00
	RIHAND- I FGD	4,00,00,000.00
	RIHAND- II & III FGD	8,00,00,000.00

	UNCHAHAR-I, II & III-FGD	4,00,00,000.00
	VINDHYACHAL-I &II FGD	7,50,00,000.00
	VINDHYACHAL-III &IV FGD	6,50,00,000.00
	SIPAT-I (3X660 MW) FGD	1,50,00,000.00
	SIPAT-II FGD	11,00,00,000.00
	KORBA-I, II & III FGD	10,50,00,000.00
	BARH-II FGD	2,00,00,000.00
	RAMAGUNDAM-I & II FGD	6,00,00,000.00
	RAMAGUNDAM-III (1X500 MW)	4,00,00,000.00
	SIMHADRI-II & I FGD	4,50,00,000.00
	MOUDA-II FGD	3,00,00,000.00
	SOLAPUR-FGD	4,50,00,000.00
	KUDGI-FGD	1,00,00,000.00
	SINGRAULI-I & II FGD	13,00,00,000.00
	FARAKKA-I , II & III FGD	11,00,00,000.00
	KAHALGAON-I & II FGD	26,00,00,000.00
	TSTPS STAGE-II & I FGD	8,50,00,000.00
	Total Allocated Amount	5,00,00,00,000.00

**Form 8
TRANCHE NO**

BP NO 5050001441

T00001

D00003

Unsecured Loan From HDFC Bank Ltd. XII		
Source of Loan :	HDFC Bank Ltd. XII	
Currency :	INR	
Amount of Loan :	50,00,00,00,000	
Total Drawn amount :	10,00,00,00,000	
Date of drawl	01-Dec-23	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	3 Years	
Moratorium effective from :	13.10.2023	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	13.10.2027	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I (3X 660MW)	2,13,00,00,000.00
	TAPOVAN VISHNUGARH (4X130	86,50,00,000.00
	NORTH KARANPURA (3X660)	47,00,00,000.00
	RAMMAM (3X40MW)	10,00,00,000.00
	LARA, STAGE-II, 2X800 MW	75,00,00,000.00
	GANDHAR 20MW	1,00,00,000.00
	SOLAPUR SOLAR (23MW)	3,00,00,000.00
	RIHAND SOLAR (20MW)	2,00,00,000.00
	ANTA SOLAR (90MW)	6,00,00,000.00
	NOKH SOLAR PLOT-I (245MW)	15,00,00,000.00
	NOKH SOLAR PLOT-II (245MW)	24,00,00,000.00
	NOKH SOLAR PLOT-III (245M	29,00,00,000.00
	LARA-I	70,00,00,000.00
	KHARGONE	43,00,00,000.00
	GADARWARA	30,00,00,000.00

	DARLIPALLI	50,00,00,000.00
	TANDA-II	10,00,00,000.00
	BARAUNI-II (2X250MW)	20,00,00,000.00
	NABINAGAR	20,00,00,000.00
	CHATTI BARIATU CMB	20,00,00,000.00
	TALAIPALI COAL MINE	22,00,00,000.00
	KERANDARI	14,00,00,000.00
	PAKRI BARWADIH CMB	60,00,00,000.00
	RIHAND- I FGD	5,00,00,000.00
	RIHAND- II & III FGD	5,00,00,000.00
	UNCHAHAR-I, II & III-FGD	4,00,00,000.00
	VINDHYACHAL-I &II FGD	8,50,00,000.00
	VINDHYACHAL-III &IV FGD	5,50,00,000.00
	SIPAT-II FGD	4,00,00,000.00
	KORBA-I, II & III FGD	20,50,00,000.00
	BARH-II FGD	2,00,00,000.00
	RAMAGUNDAM-I & II FGD	20,00,00,000.00
	RAMAGUNDAM-III FGD	4,00,00,000.00
	MOUDA-I FGD	2,00,00,000.00
	MOUDA-II FGD	1,00,00,000.00
	SOLAPUR-FGD	1,00,00,000.00
	KUDGI-FGD	2,00,00,000.00
	SINGRAULI-I & II FGD	21,00,00,000.00
	FARAKKA-I , II & III FGD	1,00,00,000.00
	KAHALGAON-I & II FGD	17,00,00,000.00
	TSTPS STAGE-II & I FGD	6,00,00,000.00
	Total Allocated Amount	10,00,00,00,000.00

**Form 8
TRANCHE NO**

BP NO 5050001441

T00001

D00004

Unsecured Loan From HDFC Bank Ltd. XII		
Source of Loan :	HDFC Bank Ltd. XII	
Currency :	INR	
Amount of Loan :	50,00,00,00,000	
Total Drawn amount :	8,75,00,00,000	
Date of drawl	01-Jan-24	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	3 Years	
Moratorium effective from :	13.10.2023	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	13.10.2027	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I (3X 660MW)	2,40,00,00,000.00
	TAPOVAN VISHNUGARH (4X130	32,00,00,000.00
	NORTH KARANPURA (3X660)	1,47,00,00,000.00
	RAMMAM (3X40MW)	3,00,00,000.00
	TELANGANA (2X800MW)	40,00,00,000.00
	GANDHAR 20MW	1,00,00,000.00
	RIHAND SOLAR (20MW)	1,00,00,000.00
	ANTA SOLAR (90MW)	2,00,00,000.00
	NOKH SOLAR PLOT-II (245MW)	22,00,00,000.00
	NOKH SOLAR PLOT-III (245M	36,00,00,000.00
	LARA	32,00,00,000.00
	GADARWARA	9,00,00,000.00
	DARLIPALLI	25,00,00,000.00
	TANDA-II	20,00,00,000.00
	BARAUNI-II (2X250MW)	9,00,00,000.00

	NABINAGAR	9,00,00,000.00
	CHATTI BARIATU CMB	9,50,00,000.00
	TALAIPALI COAL MINE	20,00,00,000.00
	KERANDARI	3,50,00,000.00
	PAKRI BARWADIH CMB	40,00,00,000.00
	DULANGA COAL MINE	3,00,00,000.00
	RIHAND- I FGD	11,50,00,000.00
	RIHAND- II & III FGD	1,00,00,000.00
	VINDHYACHAL-I &II FGD	3,00,00,000.00
	VINDHYACHAL-III &IV FGD	1,00,00,000.00
	SIPAT-I (3X660 MW) FGD	1,00,00,000.00
	SIPAT-II FGD	6,50,00,000.00
	KORBA-I,II,III FGD	26,50,00,000.00
	BARH-II FGD	1,00,00,000.00
	RAMAGUNDAM-I & II FGD	16,00,00,000.00
	RAMAGUNDAM-III FGD	3,50,00,000.00
	SOLAPUR-FGD	35,00,00,000.00
	KUDGI-FGD	4,00,00,000.00
	SINGRAULI-I & II FGD	6,00,00,000.00
	FARAKKA-I , II & III FGD	15,50,00,000.00
	KAHALGAON-I & II FGD	18,00,00,000.00
	TSTPS STAGE-II & I FGD	21,50,00,000.00
	Total Allocated Amount	8,75,00,00,000.00

**Form 8
TRANCHE NO**

BP NO 5050001441

T00001

D00006

Unsecured Loan From HDFC Bank Ltd. XII		
Source of Loan :	HDFC Bank Ltd. XII	
Currency :	INR	
Amount of Loan :	50,00,00,00,000	
Total Drawn amount :	7,00,00,00,000	
Date of drawl	01-Mar-24	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	3 Years	
Moratorium effective from :	13.10.2023	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	13.10.2027	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I (3X 660MW)	40,00,00,000.00
	TAPOVAN VISHNUGARH	52,00,00,000.00
	NORTH KARANPURA (3X660MW)	1,10,00,00,000.00
	RAMMAM (3X40MW)	18,00,00,000.00
	TELANGANA (2X800MW)	50,00,00,000.00
	TTPS III (2X660MW)	5,00,00,000.00
	LARA, STAGE-II, 2X800 MW	6,00,00,000.00
	SOLAPUR SOLAR (23MW)	1,00,00,000.00
	ANTA SOLAR (90MW)	55,00,00,000.00
	NOKH SOLAR PLOT-I (245MW)	56,50,00,000.00
	NOKH SOLAR PLOT-II 245MW	1,21,50,00,000.00
	NOKH SOLAR PLOT-III (245M	66,00,00,000.00
	GADARWARA	20,00,00,000.00
	DARLIPALLI	10,00,00,000.00

	TANDA-II	5,00,00,000.00
	BARAUNI-II (2X250MW)	4,00,00,000.00
	NABINAGAR	10,00,00,000.00
	TALAIPALI COAL MINE	8,00,00,000.00
	KERANDARI	30,00,00,000.00
	RIHAND- I FGD	22,00,00,000.00
	RIHAND- II & III FGD	1,00,00,000.00
	SIPAT-II FGD	1,00,00,000.00
	KORBA-I, II & III FGD	6,00,00,000.00
	MOUDA-II FGD	2,00,00,000.00
	Total Allocated Amount	7,00,00,00,000.00

Statement Giving Details of Project Financed through a Combination of loan

**Form 8
TRANCHE NO**

BP NO 5050001342

T00001

D00003

Unsecured Loan From UCO BANK IV		
Source of Loan :	UCO BANK IV	
Currency :	INR	
Amount of Loan :	10,00,00,00,000	
Total Drawn amount :	2,50,00,00,000	
Date of Drawal:	08.05.2023	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.70%	
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 :	3 Years	
Moratorium effective from :	08.05.2023	
Repayment Period (Inc Moratorium) :	12 Years	
Repayment Frequency :	12 Yearly	
Repayment Type :	AVG	
First Repayment Date :	11.11.2026	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I (3X 660MW)	200000000
	TAPOVAN VISHNUGARH	120000000
	NORTH KARANPURA	200000000
	RAMMAM	300000000
	TELANGANA	350000000
	NOKH SOLAR PLOT-I	200000000
	NOKH SOLAR PLOT-III	130000000
	DARLIPALLI	400000000
	NABINAGAR	800000000
	CHATTI BARIATU CMB	100000000
	TALAI PALI COAL MINE	700000000
	KIRENDARI	800000000

	RIHAND-I FGD	70000000
	RIHAND- II & III FGD	10000000
	UNCHAHAR-I, II & III-FGD	60000000
	VINDHYACHAL-I &II FGD	70000000
	VINDHYACHAL-III &IV FGD	30000000
	SIPAT-II FGD	30000000
	RAMAGUNDAM-III	30000000
	KORBA-I, II & III (3X200	120000000
	RAMAGUNDAM-I & II FGD	50000000
	SIMHADRI-II & I (2X500 MW	10000000
	MOUDA-I FGD	10000000
	MOUDA-II FGD	20000000
	SOLAPUR-FGD	30000000
	KUDGI-FGD	20000000
	SINGRAULI-I & II FGD	130000000
	FARAKKA-I , II & III FGD	10000000
	KAHALGAON-I & II FGD	10000000
	TSTPS STAGE-II & I FGD	100000000
	Total Allocated Amount	2,50,00,00,000.00

Statement Giving Details of Project Financed through a Combination of loan

Form 8

EARLIER BP NO 5050001232

TRANCHE NO

BP NO 5050001323

T00001

D00001

Unsecured Loan From UCO BANK V		
Source of Loan :	UCO BANK V	
Currency :	INR	
Amount of Loan :	7,50,00,00,000	
Total Drawn amount :	2,90,00,00,000	
Date of Drawal:	12-09-2023	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	8.00%	
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 :	3 Years	
Moratorium effective from :	12-Sep-23	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly	
Repayment Type :	AVG	
First Repayment Date :	30.03.2026	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	LARA	26,00,00,000.00
	KHARGONE	30,00,00,000.00
	GADARWARA	30,00,00,000.00
	DARLIPALLI	30,00,00,000.00
	TANDA-II	30,00,00,000.00
	NABINAGAR	32,00,00,000.00
	RIHAND- II & III FGD	6,00,00,000.00
	UNCHAHAHAR-I, II & III-FGD	4,00,00,000.00
	VINDHYACHAL-I &II FGD	8,00,00,000.00
	VINDHYACHAL-III &IV FGD	10,00,00,000.00
	SIPAT-II FGD	10,00,00,000.00
	KORBA-I, II & III FGD	8,00,00,000.00

	BARH-II FGD	4,00,00,000.00
	RAMAGUNDAM-I & II FGD	15,00,00,000.00
	RAMAGUNDAM-III FGD	4,00,00,000.00
	SIMHADRI-II & I FGD	9,00,00,000.00
	MOUDA-I FGD	5,00,00,000.00
	SOLAPUR-FGD	15,00,00,000.00
	KUDGI-FGD	4,00,00,000.00
	FARAKKA-I , II & III FGD	10,00,00,000.00
	Total Allocated Amount	2,90,00,00,000.00

Statement Giving Details of Project Financed through a Combination of loan

**Form 8
TRANCHE NO**

BP NO 5050000641

T00001

D00004

Unsecured Loan From HDFC Bank Ltd. VI		
Source of Loan :	HDFC Bank Ltd. VI	
Currency :	INR	
Amount of Loan :	15,00,00,00,000	
Total Drawn amount :	4,30,00,00,000	
Date of drawl	01.01.2020	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.65%	
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 :	6 Years	
Moratorium effective from :	01.01.2020	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	9 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	26.09.2025	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BARH-I	27,00,00,000
	NORTH KARANPURA	10,00,00,000
	KHARGONE	40,00,00,000
	TELANGANA	30,00,00,000
	UNCHAHAR-FGD	20,00,00,000
	NCPS-FGD	40,00,00,000
	VINDHYACHAL-V FGD	10,00,00,000
	SIPAT-I FGD	25,00,00,000
	KORBA-I FGD	20,00,00,000
	BARH-II FGD	20,00,00,000
	RAMAGUNDAM-I FGD	20,00,00,000
	SIMHADRI-FGD	50,00,00,000
	MOUDA-II FGD	10,00,00,000

	SOLAPUR-FGD	15,00,00,000
	KUDGI-FGD	50,00,00,000
	AURAIYA SOLAR 20MW	18,00,00,000
	KAYAKULAM FLOATING	15,00,00,000
	BILHAUR SOLAR 140MW / Nabinagar	10,00,00,000
Total Allocated Amount		4,30,00,00,000

Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050001341

T00001

D00001

Unsecured Loan From Bank of Baroda II

Source of Loan :	Bank of Baroda II	
Currency :	INR	
Amount of Loan :	20,00,00,00,000	
Total Drawn amount :	2,00,00,00,000	
Date of Drawal :	11.11.2022	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	7.10%	
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 :	3 Years	
Moratorium effective from :	11.11.2022	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly	
Repayment Type :	AVG	
First Repayment Date :	11.11.2026	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :		
Project Code	Project Name	Amount
	TAPOVAN VISHNUGARH	5,00,00,000.00
	DARLIPALLI	30,00,00,000.00
	NABINAGAR-I	35,00,00,000.00
	TALAIPELLI COAL MINE	6,00,00,000.00
	NORTH KARANPURA (3X660)	36,00,00,000.00
	RAMAGUNDAM FLOATING SOLAR	3,00,00,000.00
	KAYAMKULAM FS (70 MW)	6,00,00,000.00
	AURAIYA SOLAR FS 20MW	5,00,00,000.00
	JETSAR SOLAR 160MW	39,00,00,000.00
	DEVIKOT SOLAR (150 MW)	13,00,00,000.00
	DEVIKOT SOLAR (90 MW)	10,00,00,000.00
	ETTAYAPURAM SOLAR (230MW)	12,00,00,000.00
Total Allocated Amount		2,00,00,00,000.00

Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050001385

T00001

D00001

Unsecured Loan From Bank of Baroda NABINAGAR

Source of Loan :	Bank of Baroda Nabinagar	
Currency :	INR	
Amount of Loan :	4,00,00,00,000	
Total Drawn amount :	37,33,33,33,332	
Date of Drawal :	01.07.2023	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	8.10%	
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 :	3 Years	
Moratorium effective from :	29.09.2021	
Repayment Period (Inc Moratorium) :	16 Years	
Repayment Frequency :	57 equal Quarterly instalments	
Repayment Type :	AVG	
First Repayment Date :	30.09.2022	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :		
Project Code	Project Name	Amount
	NABINAGAR-I	37,33,33,33,332.00
Total Allocated Amount		37,33,33,33,332.00

**Form 8
TRANCHE NO**

BP NO 5050001151

T00001

D00009

Unsecured Loan From HDFC Bank Ltd. X		
Source of Loan :	HDFC Bank Ltd. X	
Currency :	INR	
Amount of Loan :	30,00,00,00,000	
Total Drawn amount :	14,47,23,794	
Date of drawl	27-Apr-23	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	8.01%	
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 :	3 Years	
Moratorium effective from :	24.11.2021	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly Instalment	
Repayment Type :	AVG	
First Repayment Date :	24.11.2025	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	BONGAIGAON	2405000000
	Barh-I (3x 660MW)	144723794
	North Karanpura (3x660)	300000000
	NABINAGAR-I	7327376206
Total Allocated Amount		10,17,71,00,000

Statement Giving Details of Project Financed through a Combination of loan

Form 8

TRANCHE NO

BP NO 5050001101

T00001

D00002

Unsecured Loan From UCO Bank -III		
Source of Loan :	UCO Bank - III	
Currency :	INR	
Amount of Loan :	5,00,00,00,000	
Total Drawn amount :	5,00,00,00,000	
Date of Drawal:	27-04-2023	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	8.30%	
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 :	1 Years	
Moratorium effective from :	27.07.2021	
Repayment Period (Inc Moratorium) :	10 Years	
Repayment Frequency :	9 Yearly	
Repayment Type :	AVG	
First Repayment Date :	11.07.2023	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	NABINAGAR-I	5,00,00,00,000.00
Total Allocated Amount		5,00,00,00,000.00

Statement Giving Details of Project Financed through a Combination of loan

Form 8

EARLIER BP NO 5050001232

TRANCHE NO

BP NO 5050001323

T00001

D00001

Unsecured Loan From UCO BANK V		
Source of Loan :	UCO BANK V	
Currency :	INR	
Amount of Loan :	7,50,00,00,000	
Total Drawn amount :	1,69,99,98,204	
Date of Drawal:	02.12.2022	
Interest Type :	Floating	
Fixed Interest Rate :		
Base Rate, If Floating Interest	6.30%	
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 :	3 Years	
Moratorium effective from :	02.12.2022	
Repayment Period (Inc Moratorium) :	15 Years	
Repayment Frequency :	12 Yearly	
Repayment Type :	AVG	
First Repayment Date :	30.03.2026	
Base Exchange Rate :	RUPEE	
Date of Base Exchange Rate :	N.A.	
Project Code	Project Name	Amount
	NABINAGAR-I	1,69,99,98,204.00
Total Allocated Amount		1,69,99,98,204.00

Form-9 Summary

Statement of Additional Capitalization for the period 2024-29 (Value in Rs. Lakhs)								
Name of the Generating station : NSTPS (Stage-I, 3 x 660 MW)								
SL No	Description of Work	Additional Capital expenditure claim (Projected)					Regulation under which claimed	Justification
		FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29		
1	Site Levelling & Infrastructure works	980.00	1200.00				24 (1)(b)	All additional Capital Expenditure has been claimed against original scope of work up to cut off date.
2	SG & Offsite civil works package	700.00	500.00					
3	TG & chimney civil works	500.00						
4	Main township	2300.00	15700.00					
5	Main Plant SG	400.00						
6	Capital Spares	700.00	200.00					
7	Main Plant TG	200.00						
8	Station control & instrumentation	38.99	50.00					
9	Coal handling Plant	580.00	120.00					
10	Ash Handling & AWRS	2800.00	1300.00					
11	Ash Dyke	350.00						
12	CW system & MUW system civil works package	600.00						
13	Cooling Towers	200.00						
14	PT Plant	65.00	70.00					
15	Fire detection & Protection system	50.00						
16	Air conditioning system	70.00	105.00					
17	Ventilation system	50.00	40.00					
18	EHV & HT transformers (ICT)	40.00						
19	Gen. Bus duct & MV us duct	50.00						
20	HT switchgears	30.00						
21	400 / 132 KV Switchyard package	50.00	500.00					
22	Satellite & communication system incl VSAT at site	230.00						
23	FGD		32300.00	64000.00				
Total (A)		10,983.99	52,085.00	64,000.00	-	-		Against ODe of FGD system in U#1 & 2 in 25-26 & U#3 in 26-27

B. Works beyond Original scope including add-cap due to Change in Law eligible for SBIMCLR: 350 BPS							
1	Chlorination System (CLO2)	102.68					<p>26 (1) (b), 26 (1) (d) & 26(1)(i)</p> <p>Chlorine gas is being dozed directly at various stages of water treatment to maintain water quality and to inhibit organic growth in the water retaining structures. Chlorine gas is very hazardous and may prove fatal in case of leakage; handling and storage of same involves risk to the life of public at large.</p> <p>Installation of ClO2 system by replacing chlorine gas injecting system is being undertaken at all NTPC stations to enhance safety of personnel engaged in power plant operation. Work taken-up in accordance to the various provisions and objectives of the "National Disaster Management Guidelines – Chemical Disasters" which provides that industrial systems shall be continuously improved and upgraded for the prevention and management of chemical accidents. It is also pertinent that the action for inslation of ClO2 system is also in compliance with the duties necessitated for an employer (NTPC) under the clause 6(1)(a) and 6(1)(d) of "The Occupational Safety, Health and Working Conditions Code, 2020" notified by Ministry of Law & Justice, Gov vide Gazette Notification dated 29.09.2020 relevant extracts of which are reproduced below:</p> <p>"DUTIES OF EMPLOYER AND EMPLOYEES, ETC.</p> <p>6.(1) Every employer shall:</p> <p>(a)ensure that workplace is free from hazards which cause or are likely to cause injury or occupational disease to the employees;</p> <p>...</p> <p>(e)Provide and maintains, as far as is reasonably practicable, a working environment that is safe and without risk to the health of the employees"</p> <p>Some of the major benefits of installation of ClO2 system are as under</p> <p>(a) Avoid possible accidents due to leakage of chlorine while handling</p> <p>(b) Improves safety of personnel and plant & equipment</p> <p>(c) Increases the shelf life of water retaining structures/ equipment such as clarifiers, storage tanks, cooling towers, condenser tubes & piping etc thereby reduces the replacement cost.</p> <p>(d) Helps in complying with statutory direction of some states that have already made it mandatory.</p> <p>Additionally Chlorine dioxide (ClO2) dosing also helps control bacteria, algae, and biofilm in cooling towers and prevents Legionella contamination and improve heat transfer efficiency in Cooling Towers. In view of the above, it is humbly requested that Hon'ble Commission may be pleased to allow the same as a change in law event or compliance of any existing law under Regulation 26(1) (b), under Regulation 26 (1)(d) which permits consideration for need for higher security and safety of the plant as advised or directed by statutory authorities responsible for national or internal security and also under 26(1)(i) as it results in higher operating efficiency in Cooling towers.</p>
2	HMI Upgradation	2480.00					<p>26 (1) (b)</p> <p>Guidelines on Cyber security features in Power Sector was issued by the Hon'ble CEA on Oct21 (Annex-A). The HMI system previously deployed at Station relied on the Windows XP operating system. Since Microsoft no longer supports Windows XP, this created significant cybersecurity risks. To address these concerns and ensure continued functionality of the system, an upgrade project was necessary.</p> <p>However, existing HMI software and hardware were not directly compatible with Windows 10. Therefore, the project scope encompassed a complete Replacement and Modernization (R&M) of the HMI system. Communication from the HMI OEM, Yokogawa, regarding this incompatibility is attached as Annex-B.</p> <p>Hon'ble Commission has allowed the similar additional capital expenditure incurred on HMI upgradation in Anta gas power station and Mejja thermal power station vide its order dated 05.09.2023 (in petition no. 432-GT-2020) and order dated 27.04.2023 (in petition no. 568-GT-2020) respectively.</p> <p>Further Hon'ble SC in it's judgement dated 20.04.23 declared "94. Perusal of the definition of the term "Law" itself would clearly show that the term "Law" would mean all laws including In view of the same, Electricity Laws in force in India and any statute, ordinance, regulation, Notification or code, rule, or any interpretation of any of them by an Indian Governmental Instrumentality and having force of law. It would further reveal that the term "Law" shall also include all applicable rules, regulations, orders, Notifications by an Indian Governmental Instrumentality and shall also include all rules, regulations, decisions and orders of the CERC and the MERC." SC order has been attached as Annexure C. Therefore, for continued and efficient operation of the system, it is humbly requested that Hon'ble Commission may be pleased to allow the same under Regulation 26(1)(b) of Tariff Regulations 2024 on account of obsolescence of Technology</p>
3	ZLD	1280.00					<p>Zero Liquid Discharge (ZLD) needs to be installed in compliance of Environment (Protection) Rules, 1986, which mandates thermal power plant to avoid discharge of waste water for the prevention and control of water pollution (Copy attached at Annex D). Further, as per the 'Consent to operate' dated 15.06.2022, granted by the Bihar State Pollution Control Board (Copy attached at Annex E), the Zero liquid discharge has to be ensured by the power generating station.</p> <p>ZLD involves installation of following schemes which reduces requirement of freshwater consumption thereby reduces water charges liability on to the beneficiaries.</p> <p>a) Utilization of Waste water used for coal dust suppression,</p> <p>b) Sludge water recovery,</p> <p>c) Boiler blow down used as CT make up,</p> <p>d) Separation of storm water and effluent drains etc.</p> <p>Further, Hon'ble Commission has allowed additional capital expenditure incurred on implementation of ZLD in Petition No-396/GT/2020 vide its order dated 27.09.2022.</p> <p>Therefore, to comply with this stringent regulatory requirement, it is humbly requested that Hon'ble Commission may be pleased to allow the same at the instant station under Regulation 26 (1) (b) & 26(1) (i) of Tariff Regulations 2019.</p>
4	Fly Ash Brick Manufacturing Plant	89.28					<p>26 (1) (b)</p> <p>As per MOEF Notification dated 31.12.21.(attached as Annexure F)</p> <p>Quote</p> <p>"Responsibilities of thermal power plants to dispose fly ash and bottom ash.—</p> <p>(1) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall be</p> <p>primarily responsible to ensure 100 per cent utilisation of ash (fly ash, and bottom ash) generated by it in an eco-friendly manner as given in sub-paragraph (2);</p> <p>(2) The ash generated from coal or lignite based thermal power plants shall be utilised only for the following eco-friendly purposes, namely:-</p>
Total (B)		3862.68	89.28	0.00	0.00	0.00	
Total Add. Cap. Claimed (A+B)		14846.67	52174.28	64000.00	0.00	0.00	

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited						
Name of the Generating Station		Nabinagar Super Thermal power Station Stage-I						
COD		01-06-2022						
For Financial Year		2024-25						
Sl. No.	Head of Work /Equipment	ACE Claimed (Actual / Projected)				Regulations under which claimed	Justification	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	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								
1	Site Levelling & Infrastructure works	500.00		500.00		24 (1)(b)	All additional Capital Expenditure has been claimed against original scope of work up to cut off date.	
2	Other infrastructure works (civil)	300.00		300.00				
3	Other infrastructure works Elect	180.00		180.00				
4	SG & Offsite civil works package	700.00		700.00				
5	TG & chimney civil works	500.00		500.00				
6	Main township	2300.00		2300.00	800.00			
7	Main Plant SG	400.00		400.00				
8	Capital Spares	700.00		700.00				
9	Main Plant TG	200.00		200.00				
10	Station control & instrumentation	38.99		38.99				
11	Coal handling Plant	580.00		580.00				
12	Ash Handling & AWRS	2800.00		2800.00	800.00			
13	Ash Dyke	350.00		350.00				
14	CW system & MUW system civil works package	600.00		600.00				
15	Cooling Towers	200.00		200.00				
16	PT Plant	65.00		65.00				
17	Fire detection & Protection system	50.00		50.00				
18	Air conditioning system	70.00		70.00				
19	Ventilation system	50.00		50.00				
20	EHV & HT transformers (ICT)	40.00		40.00				
21	Gene. Bus duct & MV us duct	50.00		50.00				
22	HT switchgears	30.00		30.00				
23	400 / 132 KV Switchyard package	50.00		50.00				
24	Satellite & communication system incl VSAT at site	230.00		230.00				
	Total (A)	10,983.99	-	10,983.99	1,600.00			

B. Works beyond Original scope under add-cap due to Change in Law						
1	Chlorination System (CLO2)	102.68	-	102.68		<p>Chlorine gas is being dozed directly at various stages of water treatment to maintain water quality and to inhibit organic growth in the water retaining structures. Chlorine gas is very hazardous and may prove fatal in case of leakage; handling and storage of same involves risk to the life of public at large.</p> <p>Installation of ClO2 system by replacing chlorine gas injecting system is being undertaken at all NTPC stations to enhance safety of personnel engaged in power plant operation. Work taken-up in accordance to the various provisions and objectives of the "National Disaster Management Guidelines – Chemical Disasters" which provides that industrial systems shall be continuously improved and upgraded for the prevention and management of chemical accidents. It is also pertinent that the action for inslation of ClO2 system is also in compliance with the duties necessitated for an employer (NTPC) under the clause 6(1)(a) and 6(1)(d) of "The Occupational Safety, Health and Working Conditions Code, 2020" notified by Ministry of Law & Justice, Gol vide Gazette Notification dated 29.09.2020 relevant extracts of which are reproduced below:</p> <p>"DUTIES OF EMPLOYER AND EMPLOYEES, ETC.</p> <p>6.(1) Every employer shall:</p> <p>(a)ensure that workplace is free from hazards which cause or are likely to cause injury or occupational disease to the employees;</p> <p>(c)Provide and maintains, as far as is reasonably practicable, a working environment that is safe and without risk to the health of the employees"</p> <p>Some of the major benefits of installation of ClO2 system are as under</p> <p>(a) Avoid possible accidents due to leakage of chlorine while handling</p> <p>(b) Improves safety of personnel and plant & equipment</p> <p>(c) Increases the shelf life of water retaining structures/ equipment such as clarifiers, storage tanks, cooling towers, condenser tubes & piping etc thereby reduces the replacement cost.</p> <p>(d) Helps in complying with statutory direction of some states that have already made it mandatory.</p> <p>Additionally Chlorine dioxide (ClO2) dosing also helps control bacteria, algae, and biofilm in cooling towers and prevents Legionella contamination and improve heat transfer efficiency in Cooling Towers. In view of the above, it is humbly requested that Hon'ble Commission may be pleased to allow the same as a change in law event or compliance of any existing law under Regulation 26(1) (b), under Regulation 26 (1)(d) which permits consideration for need for higher security and safety of the plant as advised or directed by statutory authorities responsible for national or internal security and also under 26(1)(i) as it results in higher operating efficiency in Cooling towers.</p>
2	HMI Upgradation	2,480.00	-	2,480.00	80	<p>Guidelines on Cyber security features in Power Sector was issued by the Hon'ble CEA on Oct'21 (Annex-A). The HMI system previously deployed at Station relied on the Windows XP operating system. Since Microsoft no longer supports Windows XP, this created significant cybersecurity risks. To address these concerns and ensure continued functionality of the system, an upgrade project was necessary.</p> <p>However, existing HMI software and hardware were not directly compatible with Windows 10. Therefore, the project scope encompassed a complete Replacement and Modernization (R&M) of the HMI system. Communication from the HMI OEM, Yokogawa, regarding this incompatibility is attached as Annex-B.</p> <p>Hon'ble Commission has allowed the similar additional capital expenditure incurred on HMI upgradation in Anta gas power station and Mejia thermal power station vide its order dated 05.09.2023 (in petition no. 432-GT-2020) and order dated 27.04.2023 (in petition no. 568-GT-2020) respectively.</p> <p>Further Hon'ble SC in it's judgement dated 20.04.23 declared "94. Perusal of the definition of the term "Law" itself would clearly show that the term "Law" would mean all laws including In view of the same, Electricity Laws in force in India and any statute, ordinance, regulation, Notification or code, rule, or any interpretation of any of them by an Indian Governmental Instrumentality and having force of law. It would further reveal that the term "Law" shall also include all applicable rules, regulations, orders, Notifications by an Indian Governmental Instrumentality and shall also include all rules, regulations, decisions and orders of the CERC and the MERC." SC order has been attached as Annexure C. Therefore, for continued and efficient operation of the system, it is humbly requested that Hon'ble Commission may be pleased to allow the same under Regulation 26(1)(b) of Tariff Regulations 2024 on account of obsolescence of Technology</p>
3	ZLD	1,280.00	-	1,280.00	230	<p>Zero Liquid Discharge (ZLD) needs to be installed in compliance of Environment (Protection) Rules, 1986, which mandates thermal power plant to avoid discharge of waste water for the prevention and control of water pollution (Copy attached at Annex D). Further, as per the 'Consent to operate' dated 15.06.2022, granted by the Bihar State Pollution Control Board (Copy attached at Annex E), the Zero liquid discharge has to be ensured by the power generating station.</p> <p>ZLD involves installation of following schemes which reduces requirement of freshwater consumption thereby reduces water charges liability on to the beneficiaries.</p> <p>a) Utilization of Waste water used for coal dust suppression,</p> <p>b) Sludge water recovery,</p> <p>c) Boiler blow down used as CT make up,</p> <p>d) Separation of storm water and effluent drains etc.</p> <p>Further, Hon'ble Commission has allowed additional capital expenditure incurred on implementation of ZLD in Petition No-396/GT/2020 vide its order dated 27.09.2022.</p> <p>Therefore, to comply with this stringent regulatory requirement, it is humbly requested that Hon'ble Commission may be pleased to allow the same at the instant station under Regulation 26 (1) (b) & 26(1) (i) of Tariff Regulations 2019.</p>
Total (B)		3,862.68	-	3,862.68	310.00	
Total Add. Cap. Claimed (A+B)		14,846.67	-	14,846.67	1,910.00	
(Petitioner)						

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner	NTPC Limited
Name of the Generating Station	Nabinagar Super Thermal power Station Stage-I
COD	01-06-2022
For Financial Year	2025-26

Amount in Rs Lakh

Sl. No.	Head of Work /Equipment	ACE Claimed (Actual / Projected)				Regulations under which claimed	Justification	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								
1	Site Levelling & Infrastructure works	800.00		800.00		24 (1)(b)	All additional Capital Expenditure has been claimed against original scope of work up to cut off date.	
2	Other infrastructure works (civil)	400.00		400.00				
3	SG & Offsite civil works package	500.00		500.00				
4	Main township	15700.00		15700.00	5500.00		Against ODe of FGD system in U#1 & 2	
5	FGD System	32300.00		32300.00	4500.00			
6	Capital Spares	200.00		200.00				
7	Station control & instrumentation	50.00		50.00				
8	Coal handling Plant	120.00		120.00				
9	Ash Handling & AWRS	1300.00		1300.00	400.00			
10	PT Plant	70.00		70.00				
11	Air Conditioning for Aux Buildings	105.00		105.00				
12	Ventilation system	40.00		40.00				
13	400 / 132 KV Switchyard package	500.00		500.00				
Total Add. Cap. Claimed (A)		52,085.00	-	52,085.00	10,400.00			
B. Works beyond Original scope under add-cap due to Change in Law								
1	Fly Ash Brick Manufacturing Plant	89.28	-	89.28		26 (1) (b)	As per MOEF Notification dated 31.12.21,(attached as Annexure F) Quote "Responsibilities of thermal power plants to dispose fly ash and bottom ash.— (1) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall be primarily responsible to ensure 100 per cent utilisation of ash (fly ash, and bottom ash) generated by it in an eco-friendly manner as given in sub-paragraph (2); (2) The ash generated from coal or lignite based thermal power plants shall be utilised only for the following eco-friendly purposes, namely:- (i) Fly ash based products viz. bricks, blocks, tiles, fibre cement sheets, pipes, boards, panels;" Unquote Hon'ble Commission may kindly allow the mentioned work under 26(1)b, as per CERC Tariff Regulation 2024.	
Total Add. Cap. Claimed (A)		52,174.28	-	52,174.28	10,400.00			

(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited						
Name of the Generating Station		Nabinagar Super Thermal power Station Stage-I						
COD		01-06-2022						
For Financial Year		2026-27						
								Amount in Rs Lakh
Sl. No.	Head of Work /Equipment	Accrual basis as per IGAAP	ACE Claimed (Actual / Projected)			Regulations under which claimed	Justification	Admitted Cost by the Commission, if any
			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								
1	FGD	64000.00		64000.00	7500.00	24 (1)(b)	Against Ode of FGD system in U#3	
Total Add. Cap. Claimed (A)		64,000.00	-	64,000.00	7,500.00			
								(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner	NTPC Limited
Name of the Generating Station	Nabinagar Super Thermal power Station Stage-I
COD	01-06-2022
For Financial Year	2027-28

								Amount in Rs Lakh
Sl. No.	Head of Work /Equipment	ACE Claimed (Actual / Projected)				Regulations under which claimed	Justification	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								
1	NIL			0.00				
Total Add. Cap. Claimed (A)		-	-	-				

(Petitioner)

Year wise Statement of Additional Capitalisation after COD

Name of the Petitioner		NTPC Limited						
Name of the Generating Station		Nabinagar Super Thermal power Station Stage-I						
COD		01-06-2022						
For Financial Year		2028-29						
								Amount in Rs Lakh
Sl. No.	Head of Work /Equipment	ACE Claimed (Actual / Projected)				Regulations under which claimed	Justification	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								
Total Add. Cap. Claimed (A)		-	-	-				
								(Petitioner)

Name of the Petitioner	NTPC Limited
Name of the Generating Station	Nabinagar Super Thermal power Station Stage-I
Date of Commercial Operation	01-06-2022

		Amount in Rs Lakh									
Financial Year (Starting from COD)1	Actual					Admitted					
	2024-25	2025-26	2026-27	2027-28	2028-29	2024-25	2025-26	2026-27	2027-28	2028-29	
1		3	4	5	6	7	8	9	10	11	

Amount capitalised in Work/ Equipment

Financing Details	Add cap is proposed to be finance in Debt:Equity ratio of 70:30
Loan-1	
Loan-2	
Loan-3 and so on	
Total Loan2	
Equity	
Internal Resources	
Others (Pl. specify)	
Total	

(Petitioner)

Calculation of Depreciation

Name of the Petitioner

Nabinagar Super Thermal power Station Stage-I

Name of the Generating Station

01-06-2022

(Amount in Rs Lakh)

S. No.	Name of the Assets ¹	Gross Block as on 31.03.2024 or as on COD, whichever is later and subsequently for each year thereafter upto 31.3.2029	Depreciation Rates as per CERC's Depreciation Rate Schedule	Depreciation Amount for each year from 31.03.2024 up to 31.03.2029
1	2	3	4	5 = Col.3 X Col.4
1	Freehold Land	102411.78	0.00	0.00
1a	Right of use- Land	79.59	4.00	3.18
2	Roads, bridges, culverts & helipads	7192.25	3.34	240.22
3	Other Buildings	39371.63	3.34	1315.01
4	Temporary erection	802.94	100.00	802.94
5	Water supply, drainage & sewerage	2338.01	5.28	123.45
6	Plant and machinery	1546720.73	5.28	81666.85
7	Electrical Installations	23092.99	5.28	1219.31
8	Railway Siding	40682.95	5.28	2148.06
9	Earth Dam Reservoir	734.62	5.28	38.79
10	Furniture and fixtures	2786.99	6.33	176.42
11	Other Office Equipments	620.65	6.33	39.29
12	IT, EDP, WP machines & SATCOM equipment	921.27	15.00	138.19
13	Vehicles including speedboats	41.97	9.50	3.99
14	Construction equipment	1674.89	5.28	88.43
15	Communication equipment	216.82	6.33	13.72
16	Hospital equipment	84.51	5.28	4.46
17	Laboratory and workshop equipment	1542.76	5.28	81.46
18	Software	98.48	33.33	32.83
	TOTAL	1771418.848		88136.60
	Weighted Average Rate of Depreciation (%)		4.98	

(Petitioner)

Statement of Depreciation

Name of the Company :		NTPC Limited					
Name of the Power Station :		Nabinagar Super Thermal power Station Stage-I					
(Amount in Rs Lakh)							
S. No.	Particulars	Existing 2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7	8
1	Opening Capital Cost	1690957.54	17,28,122.90	17,42,969.57	17,95,143.85	18,59,143.85	18,59,143.85
2	Closing Capital Cost	1728122.90	17,42,969.57	17,95,143.85	18,59,143.85	18,59,143.85	18,59,143.85
3	Average Capital Cost	1709540.22	17,35,546.23	17,69,056.71	18,27,143.85	18,59,143.85	18,59,143.85
1a	Cost of IT Equipments & Software included in (1) above ^^	1,204.58	1,521.35	1,521.35	1,521.35	1,521.35	1,521.35
2a	Cost of IT Equipments & Software included in (2) above ^^	1,521.35	1,521.35	1,521.35	1,521.35	1,521.35	1,521.35
3a	Average Cost of IT Equipments & Software	1,362.97	1,521.35	1,521.35	1,521.35	1,521.35	1,521.35
4	Freehold land	1,02,411.78	1,02,411.78	1,02,411.78	1,02,411.78	1,02,411.78	1,02,411.78
5	Rate of depreciation	4.98	4.98	4.98	4.98	4.98	4.98
6	Depreciable value	14,46,514.60	14,69,973.14	15,00,132.57	15,52,411.00	15,81,211.00	15,81,211.00
7.	Balance useful life at the beginning of the period	22.97	21.97	20.97	19.97	18.97	17.97
8	Remaining depreciable value	12,95,799.91	11,90,593.03	11,34,322.26	10,98,501.66	10,36,309.90	9,43,724.53
9	Depreciation (for the period)	85,135.10	86,430.20	88,099.02	90,991.76	92,585.36	92,585.36
10	Depreciation (annualised)	85,135.10	86,430.20	88,099.02	90,991.76	92,585.36	92,585.36
11	Cumulative depreciation at the end of the period	279523.28	3,65,810.31	4,53,909.34	5,44,901.10	6,37,486.46	7,30,071.83
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	143.17	-	-	-	-	-
15	Net Cumulative depreciation at the end of the period after adjustments	2,79,380.11	3,65,810.31	4,53,909.34	5,44,901.10	6,37,486.46	7,30,071.83
^^ Shall be provided at the time of true up							
(Petitioner)							

Form-13

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
1	Loan 5 - Bank of Baroda					
	Gross loan - Opening	4,00,000.00	4,00,000.00	4,00,000.00	4,00,000.00	4,00,000.00
	Cumulative repayments of Loans upto previous period	46,666.67	73,333.33	1,00,000.00	1,26,666.67	1,53,333.33
	Net Loan Opening	3,53,333.33	3,26,666.67	3,00,000.00	2,73,333.33	2,46,666.67
	add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	26,666.67	26,666.67	26,666.67	26,666.67	26,666.67
	Net Loan Closing	3,26,666.67	3,00,000.00	2,73,333.33	2,46,666.67	2,20,000.00
	Average Net Loan	3,40,000.00	3,13,333.33	2,86,666.67	2,60,000.00	2,33,333.33
	Rate of Interest on loan on annual basis	8.0500%	8.0500%	8.0500%	8.0500%	8.0500%
	Interest on Loan	27,370.00	25,223.33	23,076.67	20,930.00	18,783.33
2	Loan 1: REC Ltd⁽¹⁾					
	Gross loan - Opening	1,29,424.11	1,29,424.11	1,29,424.11	1,29,424.11	1,29,424.11
	Cumulative repayments of Loans upto previous period	13,161.77	21,790.05	30,418.32	39,046.59	47,674.87
	Net Loan Opening	1,16,262.33	1,07,634.06	99,005.78	90,377.51	81,749.24
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	8,628.27	8,628.27	8,628.27	8,628.27	8,628.27
	Net Loan Closing	1,07,634.06	99,005.78	90,377.51	81,749.24	73,120.96
	Average Net Loan	1,11,948.20	1,03,319.92	94,691.65	86,063.37	77,435.10
	Rate of Interest on loan on annual basis	9.1950%	9.1950%	9.1950%	9.1950%	9.1950%
	Interest on Loan	10,293.64	9,500.27	8,706.90	7,913.53	7,120.16
3	Loan 1: REC Ltd⁽²⁾					
	Gross loan - Opening	3,40,117.56	3,40,117.56	3,40,117.56	3,40,117.56	3,40,117.56
	Cumulative repayments of Loans upto previous period	34,588.23	57,262.73	79,937.23	1,02,611.74	1,25,286.24
	Net Loan Opening	3,05,529.33	2,82,854.83	2,60,180.33	2,37,505.82	2,14,831.32
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	22,674.50	22,674.50	22,674.50	22,674.50	22,674.50
	Net Loan Closing	2,82,854.83	2,60,180.33	2,37,505.82	2,14,831.32	1,92,156.81
	Average Net Loan	2,94,192.08	2,71,517.58	2,48,843.07	2,26,168.57	2,03,494.07
	Rate of Interest on loan on annual basis	9.0700%	9.0700%	9.0700%	9.0700%	9.0700%
	Interest on Loan	26,683.22	24,626.64	22,570.07	20,513.49	18,456.91
6	Loan 8 - HDFC X (Refinancing of Canara Bank Loans referred to in SI No 3 and SI No 4 above)					
	Gross loan - Opening	47,413.76	47,413.76	47,413.76	47,413.76	47,413.76
	Cumulative repayments of Loans upto previous period	-	-	3,951.15	7,902.29	11,853.44
	Net Loan Opening	47,413.76	47,413.76	43,462.61	39,511.47	35,560.32
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	3,951.15	3,951.15	3,951.15	3,951.15
	Net Loan Closing	47,413.76	43,462.61	39,511.47	35,560.32	31,609.17
	Average Net Loan	47,413.76	45,438.19	41,487.04	37,535.89	33,584.75
	Rate of Interest on loan on annual basis	8.0200%	8.0200%	8.0200%	8.0200%	8.0200%
	Interest on Loan	3,802.58	3,644.14	3,327.26	3,010.38	2,693.50
7	Loan 8 - HDFC X (Additional Loan)					
	Gross loan - Opening	25,860.00	25,860.00	25,860.00	25,860.00	25,860.00
	Cumulative repayments of Loans upto previous period	-	-	2,155.00	4,310.00	6,465.00
	Net Loan Opening	25,860.00	25,860.00	23,705.00	21,550.00	19,395.00
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	2,155.00	2,155.00	2,155.00	2,155.00
	Net Loan Closing	25,860.00	23,705.00	21,550.00	19,395.00	17,240.00
	Average Net Loan	25,860.00	24,782.50	22,627.50	20,472.50	18,317.50
	Rate of Interest on loan on annual basis	7.9500%	7.9500%	7.9500%	7.9500%	7.9500%
	Interest on Loan	2,055.87	1,970.21	1,798.89	1,627.56	1,456.24

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
8	Loan4 - Canara Bank (Loan - 2)					
	Gross loan - Opening	1,54,740.73	1,54,740.73	1,54,740.73	1,54,740.73	1,54,740.73
	Cumulative repayments of Loans upto previous period	19,516.73	30,188.51	40,860.28	51,532.06	62,203.83
	Net Loan Opening	1,35,224.00	1,24,552.22	1,13,880.45	1,03,208.67	92,536.90
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	10,671.77	10,671.77	10,671.77	10,671.77	10,671.77
	Net Loan Closing	1,24,552.22	1,13,880.45	1,03,208.67	92,536.90	81,865.12
	Average Net Loan	1,29,888.11	1,19,216.34	1,08,544.56	97,872.79	87,201.01
	Rate of Interest on loan on annual basis	7.9500%	7.9500%	7.9500%	7.9500%	7.9500%
	Interest on Loan	10,326.10	9,477.70	8,629.29	7,780.89	6,932.48
12	Loan 11 - UCO Bank V (Refinancing of UCO Bank NPGCL referred to in Loan No 6 above)					
	Gross loan - Opening	16,999.98	16,999.98	16,999.98	16,999.98	16,999.98
	Cumulative repayments of Loans upto previous period	-	-	1,416.67	2,833.33	4,250.00
	Net Loan Opening	16,999.98	16,999.98	15,583.32	14,166.65	12,749.99
	Add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	-	1,416.67	1,416.67	1,416.67	1,416.67
	Net Loan Closing	16,999.98	15,583.32	14,166.65	12,749.99	11,333.32
	Average Net Loan	16,999.98	16,291.65	14,874.98	13,458.32	12,041.65
	Rate of Interest on loan on annual basis	8.7000%	8.7000%	8.7000%	8.7000%	8.7000%
	Interest on Loan	1,479.00	1,417.37	1,294.12	1,170.87	1,047.62
13	Loan 11 - UCO Bank V					
	Gross loan - Opening	3,200.00	3,200.00	3,200.00	3,200.00	3,200.00
	Cumulative repayments of Loans upto previous period	-	-	266.67	533.33	800.00
	Net Loan Opening	3,200.00	3,200.00	2,933.33	2,666.67	2,400.00
	Add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	-	266.67	266.67	266.67	266.67
	Net Loan Closing	3,200.00	2,933.33	2,666.67	2,400.00	2,133.33
	Average Net Loan	3,200.00	3,066.67	2,800.00	2,533.33	2,266.67
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	259.20	248.40	226.80	205.20	183.60
14	Loan 7 - Bank of Maharashtra (5050001251)					
	Gross loan - Opening	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
	Cumulative repayments of Loans upto previous period	-	333.33	666.67	1,000.00	1,333.33
	Net Loan Opening	4,000.00	3,666.67	3,333.33	3,000.00	2,666.67
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	333.33	333.33	333.33	333.33	333.33
	Net Loan Closing	3,666.67	3,333.33	3,000.00	2,666.67	2,333.33
	Average Net Loan	3,833.33	3,500.00	3,166.67	2,833.33	2,500.00
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	310.50	283.50	256.50	229.50	202.50
15	Loan 7 - Bank of Maharashtra (Addl Drawl on 30.6.2022)					
	Gross loan - Opening	5,500.00	5,500.00	5,500.00	5,500.00	5,500.00
	Cumulative repayments of Loans upto previous period	-	458.33	916.67	1,375.00	1,833.33
	Net Loan Opening	5,500.00	5,041.67	4,583.33	4,125.00	3,666.67
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	458.33	458.33	458.33	458.33	458.33
	Net Loan Closing	5,041.67	4,583.33	4,125.00	3,666.67	3,208.33
	Average Net Loan	5,270.83	4,812.50	4,354.17	3,895.83	3,437.50
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	426.94	389.81	352.69	315.56	278.44
16	Loan 7 - Bank of Maharashtra (Addl Drawl on 21.7.2022)					
	Gross loan - Opening	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
	Cumulative repayments of Loans upto previous period	-	166.67	333.33	500.00	666.67
	Net Loan Opening	2,000.00	1,833.33	1,666.67	1,500.00	1,333.33
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	166.67	166.67	166.67	166.67	166.67
	Net Loan Closing	1,833.33	1,666.67	1,500.00	1,333.33	1,166.67
	Average Net Loan	1,916.67	1,750.00	1,583.33	1,416.67	1,250.00
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	155.25	141.75	128.25	114.75	101.25

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
17	Loan 7 - Bank of Maharashtra (Addl Drawl on 23.8.2022)					
	Gross loan - Opening	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	Cumulative repayments of Loans upto previous period	-	83.33	166.67	250.00	333.33
	Net Loan Opening	1,000.00	916.67	833.33	750.00	666.67
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	83.33	83.33	83.33	83.33	83.33
	Net Loan Closing	916.67	833.33	750.00	666.67	583.33
	Average Net Loan	958.33	875.00	791.67	708.33	625.00
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	77.63	70.88	64.13	57.38	50.63
18	Loan 9 - UCO Bank III (Refinancing of Canara Bank Loans referred to in SI No 3 and SI No 4 above)					
	Gross loan - Opening	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
	Cumulative repayments of Loans upto previous period	5,555.56	9,722.22	13,888.89	18,055.56	22,222.22
	Net Loan Opening	44,444.44	40,277.78	36,111.11	31,944.44	27,777.78
	Add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	4,166.67	4,166.67	4,166.67	4,166.67	4,166.67
	Net Loan Closing	40,277.78	36,111.11	31,944.44	27,777.78	23,611.11
	Average Net Loan	42,361.11	38,194.44	34,027.78	29,861.11	25,694.44
	Rate of Interest on loan on annual basis	8.1000%	8.1000%	8.1000%	8.1000%	8.1000%
	Interest on Loan	3,431.25	3,093.75	2,756.25	2,418.75	2,081.25
19	Loan 10 - HDFC Bank VI					
	Gross loan - Opening	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	Cumulative repayments of Loans upto previous period	-	-	111.11	222.22	333.33
	Net Loan Opening	1,000.00	1,000.00	888.89	777.78	666.67
	Add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	-	111.11	111.11	111.11	111.11
	Net Loan Closing	1,000.00	888.89	777.78	666.67	555.56
	Average Net Loan	1,000.00	944.44	833.33	722.22	611.11
	Rate of Interest on loan on annual basis	7.9500%	7.9500%	7.9500%	7.9500%	7.9500%
	Interest on Loan	79.50	75.08	66.25	57.42	48.58
20	Loan 12 - Bank of Baroda II					
	Gross loan - Opening	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00
	Cumulative repayments of Loans upto previous period	-	-	-	291.67	583.33
	Net Loan Opening	3,500.00	3,500.00	3,500.00	3,208.33	2,916.67
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	291.67	291.67	291.67
	Net Loan Closing	3,500.00	3,500.00	3,208.33	2,916.67	2,625.00
	Average Net Loan	3,500.00	3,500.00	3,354.17	3,062.50	2,770.83
	Rate of Interest on loan on annual basis	8.0500%	8.0500%	8.0500%	8.0500%	8.0500%
	Interest on Loan	281.75	281.75	270.01	246.53	223.05
21	Loan 13 - UCO Bank IV (Drawn on 8.11.2023)					
	Gross loan - Opening	800.00	800.00	800.00	800.00	800.00
	Cumulative repayments of Loans upto previous period	-	-	-	66.67	133.33
	Net Loan Opening	800.00	800.00	800.00	733.33	666.67
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	66.67	66.67	66.67
	Net Loan Closing	800.00	800.00	733.33	666.67	600.00
	Average Net Loan	800.00	800.00	766.67	700.00	633.33
	Rate of Interest on loan on annual basis	7.7000%	7.7000%	7.7000%	7.7000%	7.7000%
	Interest on Loan	61.60	61.60	59.03	53.90	48.77
15	Loan 15 - HDFC Bank Limited-XII (Drawn on 13.10.2023)					
	Gross loan - Opening	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	166.67
	Net Loan Opening	2,000.00	2,000.00	2,000.00	2,000.00	1,833.33
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	166.67	166.67
	Net Loan Closing	2,000.00	2,000.00	2,000.00	1,833.33	1,666.67
	Average Net Loan	2,000.00	2,000.00	2,000.00	1,916.67	1,750.00
	Rate of Interest on loan on annual basis	7.6000%	7.6000%	7.6000%	7.6000%	7.6000%
	Interest on Loan	152.00	152.00	152.00	145.67	133.00
16	Loan 15 - HDFC Bank Limited-XII (Drawn on 1.11.2023)					
	Gross loan - Opening	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	125.00
	Net Loan Opening	1,500.00	1,500.00	1,500.00	1,500.00	1,375.00
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	125.00	125.00
	Net Loan Closing	1,500.00	1,500.00	1,500.00	1,375.00	1,250.00
	Average Net Loan	1,500.00	1,500.00	1,500.00	1,437.50	1,312.50
	Rate of Interest on loan on annual basis	7.6000%	7.6000%	7.6000%	7.6000%	7.6000%
	Interest on Loan	114.00	114.00	114.00	109.25	99.75
17	Loan 15 - HDFC Bank Limited-XII (Drawn on 1.12.2023)					
	Gross loan - Opening	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	166.67
	Net Loan Opening	2,000.00	2,000.00	2,000.00	2,000.00	1,833.33
	Add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	166.67	166.67
	Net Loan Closing	2,000.00	2,000.00	2,000.00	1,833.33	1,666.67

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
	Average Net Loan	2,000.00	2,000.00	2,000.00	1,916.67	1,750.00
	Rate of Interest on loan on annual basis	7.6000%	7.6000%	7.6000%	7.6000%	7.6000%
	Interest on Loan	152.00	152.00	152.00	145.67	133.00
18	Loan 15 - HDFC Bank Limited-XII (Drawn on 1.1.2024)					
	Gross loan - Opening	900.00	900.00	900.00	900.00	900.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	75.00
	Net Loan Opening	900.00	900.00	900.00	900.00	825.00
	Add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	-	-	-	75.00	75.00
	Net Loan Closing	900.00	900.00	900.00	825.00	750.00
	Average Net Loan	900.00	900.00	900.00	862.50	787.50
	Rate of Interest on loan on annual basis	7.6000%	7.6000%	7.6000%	7.6000%	7.6000%
	Interest on Loan	68.40	68.40	68.40	65.55	59.85

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
19	Loan 15 - HDFC Bank Limited-XII (Drawn on 1.3.2024)					
	Gross loan - Opening	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	83.33
	Net Loan Opening	1,000.00	1,000.00	1,000.00	1,000.00	916.67
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	83.33	83.33
	Net Loan Closing	1,000.00	1,000.00	1,000.00	916.67	833.33
	Average Net Loan	1,000.00	1,000.00	1,000.00	958.33	875.00
	Rate of Interest on loan on annual basis	7.6000%	7.6000%	7.6000%	7.6000%	7.6000%
	Interest on Loan	76.00	76.00	76.00	72.83	66.50
20	Loan 17 - Bonds Series 78					
	Gross loan - Opening	5,664.00	5,664.00	5,664.00	5,664.00	5,664.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	-
	Net Loan Opening	5,664.00	5,664.00	5,664.00	5,664.00	5,664.00
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	-	-
	Net Loan Closing	5,664.00	5,664.00	5,664.00	5,664.00	5,664.00
	Average Net Loan	5,664.00	5,664.00	5,664.00	5,664.00	5,664.00
	Rate of Interest on loan on annual basis	7.4700%	7.4700%	7.4700%	7.4700%	7.4700%
	Interest on Loan	423.10	423.10	423.10	423.10	423.10
21	USD 750 Million I Drawl IV					
	Gross loan - Opening	11,650.00	11,650.00	11,650.00	11,650.00	11,650.00
	Cumulative repayments of Loans upto previous period	-	-	-	1,664.29	3,328.57
	Net Loan Opening	11,650.00	11,650.00	11,650.00	9,985.71	8,321.43
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	1,664.29	1,664.29	1,664.29
	Net Loan Closing	11,650.00	11,650.00	9,985.71	8,321.43	6,657.14
	Average Net Loan	11,650.00	11,650.00	10,817.86	9,153.57	7,489.29
	Rate of Interest on loan on annual basis	6.7698%	6.7698%	6.7698%	6.7698%	6.7698%
	Interest on Loan	788.68	788.68	732.35	619.68	507.01
22	USD 750 Million I Drawl V					
	Gross loan - Opening	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	714.29	1,428.57
	Net Loan Opening	5,000.00	5,000.00	5,000.00	4,285.71	3,571.43
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	714.29	714.29	714.29
	Net Loan Closing	5,000.00	5,000.00	4,285.71	3,571.43	2,857.14
	Average Net Loan	5,000.00	5,000.00	4,642.86	3,928.57	3,214.29
	Rate of Interest on loan on annual basis	6.7698%	6.7698%	6.7698%	6.7698%	6.7698%
	Interest on Loan	338.49	338.49	314.31	265.96	217.60
23	USD 750 Million I Drawl VI					
	Gross loan - Opening	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	857.14	1,714.29
	Net Loan Opening	6,000.00	6,000.00	6,000.00	5,142.86	4,285.71
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	857.14	857.14	857.14
	Net Loan Closing	6,000.00	6,000.00	5,142.86	4,285.71	3,428.57
	Average Net Loan	6,000.00	6,000.00	5,571.43	4,714.29	3,857.14
	Rate of Interest on loan on annual basis	6.7698%	6.7698%	6.7698%	6.7698%	6.7698%
	Interest on Loan	406.19	406.19	377.17	319.15	261.12
24	JPY Equ. \$400 Million Drawl I					
	Gross loan - Opening	2,600.00	2,600.00	2,600.00	2,600.00	2,600.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	371.43
	Net Loan Opening	2,600.00	2,600.00	2,600.00	2,600.00	2,228.57
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	371.43	371.43
	Net Loan Closing	2,600.00	2,600.00	2,600.00	2,228.57	1,857.14
	Average Net Loan	2,600.00	2,600.00	2,600.00	2,414.29	2,042.86
	Rate of Interest on loan on annual basis	1.2155%	1.2155%	1.2155%	1.2155%	1.2155%
	Interest on Loan	31.60	31.60	31.60	29.35	24.83
25	JPY Equ. \$400 Million Drawl II					
	Gross loan - Opening	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	142.86
	Net Loan Opening	1,000.00	1,000.00	1,000.00	1,000.00	857.14
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	142.86	142.86
	Net Loan Closing	1,000.00	1,000.00	1,000.00	857.14	714.29
	Average Net Loan	1,000.00	1,000.00	1,000.00	928.57	785.71
	Rate of Interest on loan on annual basis	1.2155%	1.2155%	1.2155%	1.2155%	1.2155%
	Interest on Loan	12.16	12.16	12.16	11.29	9.55

S No.	Loan	2024-25	2025-26	2026-27	2027-28	2028-29
26	JPY Equ. \$400 Million Drawl III					
	Gross loan - Opening	500.00	500.00	500.00	500.00	500.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	71.43
	Net Loan Opening	500.00	500.00	500.00	500.00	428.57
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	71.43	71.43
	Net Loan Closing	500.00	500.00	500.00	428.57	357.14
	Average Net Loan	500.00	500.00	500.00	464.29	392.86
	Rate of Interest on loan on annual basis	1.2155%	1.2155%	1.2155%	1.2155%	1.2155%
	Interest on Loan	6.08	6.08	6.08	5.64	4.78
27	JPY Equ. \$400 Million Drawl IV					
	Gross loan - Opening	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00
	Cumulative repayments of Loans upto previous period	-	-	-	-	714.29
	Net Loan Opening	5,000.00	5,000.00	5,000.00	5,000.00	4,285.71
	add: Drawal(s) during the year					
	Less: Repayment(s) during the year	-	-	-	714.29	714.29
	Net Loan Closing	5,000.00	5,000.00	5,000.00	4,285.71	3,571.43
	Average Net Loan	5,000.00	5,000.00	5,000.00	4,642.86	3,928.57
	Rate of Interest on loan on annual basis	1.2222%	1.2222%	1.2222%	1.2222%	1.2222%
	Interest on Loan	61.11	61.11	61.11	56.74	48.01
	Gross loan - Opening	12,30,370.14	12,30,370.14	12,30,370.14	12,30,370.14	12,30,370.14
	Cumulative repayments of Loans upto previous period	1,19,488.96	1,93,338.51	2,75,088.65	3,60,432.84	4,47,693.70
	Net Loan Opening	11,10,881.18	10,37,031.63	9,55,281.49	8,69,937.30	7,82,676.44
	add: Drawal(s) during the year	-	-	-	-	-
	Less: Repayment(s) during the year	73,849.55	81,750.14	85,344.19	87,260.86	87,260.86
	Net Loan Closing	10,37,031.63	9,55,281.49	8,69,937.30	7,82,676.44	6,95,415.59
	Average Net Loan	10,73,956.41	9,96,156.56	9,12,609.39	8,26,306.87	7,39,046.02
	Rate of Interest on loan on annual basis	8.3545%	8.3457%	8.3391%	8.3402%	8.3481%
	Interest on Loan	89,723.83	83,135.99	76,103.38	68,915.58	61,696.41

Note:

1. In case of Foreign Loan, the Calculations in Indian Rupees is to be furnished. However, the calculations in original currency is also to be furnished seperately in the same form.

FORM-15

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd

Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	April 2023		May 2023		June 2023		
		Domestic	Imported	Domestic	Imported	Domestic	Imported	
A) OPENING QUANTITY								
1	Opening quantity of coal/Lignite	(MT)	1,05,026.86	4,074.00	1,17,816.42	360.88	2,33,160.70	5,879.54
2	Value of stock		37,66,96,391.29	59789576.92	40,53,25,134.90	49,06,542.81	80,35,43,605.19	8,05,34,263.98
B) QUANTITY								
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	7,79,455.56	32,311.50	8,78,240.87	35,518.70	7,70,240.33	22.40
3	- Qty Received (Pit Head)	(MT)		32,311.50		35,518.70		22.40
3	- Qty Received (Non Pit Head)	(MT)	7,79,455.56		8,78,240.87		7,70,240.33	
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-3,538.70	-	-1,048.36	-	-1,705.38	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	7,75,916.86	32,311.50	8,77,192.51	35,518.70	7,68,534.95	22.40
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,207.33	64.62	7,017.54	71.04	6,148.28	0.04
6.01	- Normative Loss (Pit Head)	(MT)	0	64.62	0	71.04	0	0.04
6.02	- Normative Loss (Non Pit Head)	(MT)	6,207.33		7,017.54		6,148.28	
7	Net coal / Lignite Supplied (5-6)	(MT)	7,69,709.53	32,246.88	8,70,174.97	35,447.66	7,62,386.67	22.36
C) PRICE								
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,99,81,42,488.00	47,49,33,007.91	2,25,35,16,776.00	51,01,86,589.67	2,06,98,43,845.00	3,55,536.03
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-85,48,273.41	-4,08,99,915.00	-25,31,383.25	-2,46,10,203.00	-42,92,030.71	0.00
10	Handling, Sampling and such other similar charges		48,172.99	0.00	41,75,502.73	0.00	3,06,74,193.96	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,98,96,42,387.58	43,40,33,092.91	2,25,51,60,895.48	48,55,76,386.67	2,09,62,26,008.15	3,55,536.03
D) TRANSPORTATION								
12	Transportation charges by rail/ship/road transport	(Rs.)	63,99,01,493.00	0.00	74,05,65,111.00	0.00	67,46,60,855.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	0	0	0	0	0	0
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00	0.00	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	31,25,103.29	0.00	38,71,514.49	0.00	27,11,345.58	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	64,30,26,596.29	0.00	74,44,36,625.49	0.00	67,73,72,200.58	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,63,26,68,983.87	43,40,33,092.91	2,99,95,97,520.97	48,55,76,386.67	2,77,35,98,208.73	3,55,536.03
E) TOTAL COST								
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,440.31	13,596.11	3,446.31	13,697.37	3,593.14	13,705.73
19	Blending Ratio (Domestic/Imported)	%	95.46%	4.54%	96.19%	3.81%	99.28%	0.72%
20	Weighted average cost of Coal /Lignite (Including biomass)	(Rs./MT)	3,900.91		3,837.26		3,665.87	
20.1	Weighted average cost of Coal /Lignite (Excluding biomass)		3,900.91		3,837.26		3,665.87	
F) QUALITY								
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,269.00	N/A	4,249.00	N/A	4,072.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,246.00	N/A	4,047.00	N/A	4,037.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00	N/A	5,000.00	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	5,000.00	N/A	5,000.00	N/A	5,000.00
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	(kCal/Kg)	4,623.00		4,523.50		4,518.50	
25.1	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	(kCal/Kg)	4,623.00		4,523.50		4,518.50	
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,870.00	N/A	3,869.00	N/A	3,834.00	N/A
27	GCV of domestic coal supplied as received at station	(kCal/Kg)	3,869.00	N/A	3,829.00	N/A	3,746.00	N/A
28	GCV of imported coal of opening stock as received at station	(kCal/Kg)	N/A	5,204.00	N/A	5,143.00	N/A	5,046.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	5,136.00	N/A	5,041.00	N/A	5,267.00
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	(kCal/Kg)	3,927		3,880		3,776	
30.1	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	(kCal/Kg)	3,927		3,880		3,776	

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd

Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	July 2023		Aug 2023		Sep 2023	
		Domestic	Imported	Domestic	Imported	Domestic	Imported
A) OPENING QUANTITY							
1 Opening quantity of coal/Lignite	(MT)	2,37,641.11	411.90	1,50,246.76	-	1,53,733.07	
2 Value of stock		85,38,77,963.29	56,45,338.40	55,82,71,124.88	-	58,39,42,738.99	
B) QUANTITY							
3 Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	785472.63	0.00	873278.60	0.00	720898.17	8,144.90
3 - Qty Received (Pit Head)	(MT)		0.00		0.00		8,144.90
3 - Qty Received (Non Pit Head)	(MT)	7,85,472.63		8,73,278.60		7,20,898.17	
4 Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-	-6,974.96	-	-6,488.78	-
5 Coal supplied by Coal/Lignite Company (3+4)	(MT)	7,85,472.63	0.00	8,66,303.64	0.00	7,14,409.39	8,144.90
6 Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,283.78	0.00	6,930.43	0.00	5,715.28	16.29
6.01 - Normative Loss (Pit Head)	(MT)	0	0.00	0	0.00	0	16.29
6.02 - Normative Loss (Non Pit Head)	(MT)	6,283.78		6,930.43		5,715.28	
7 Net coal / Lignite Supplied (5-6)	(MT)	7,79,188.85	0.00	8,59,373.21	0.00	7,08,694.11	8,128.61
C) PRICE							
8 Amount charged by the Coal /Lignite Company	(Rs.)	2,24,57,13,794.00	0.00	2,55,55,14,359.00	0.00	2,10,33,29,842.72	9,55,99,848.00
9 Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	0.00	-1,74,65,611.18	0.00	-1,62,65,432.02	0.00
10 Handling, Sampling and such other similar charges		2,40,39,247.14	0.00	21,90,353.67	0.00	6,89,20,362.86	0.00
11 Total amount Charged (8+9+10)	(Rs.)	2,26,97,53,041.14	0.00	2,54,02,39,101.49	0.00	2,15,59,84,773.56	9,55,99,848.00
D) TRANSPORTATION							
12 Transportation charges by rail/ship/road transport	(Rs.)	65,25,36,247.00	0.00	73,34,44,086.00	0.00	65,67,53,571.00	0.00
13 Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	0	0	0	0	0	0
14 Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00	0.00	0.00	0.00
15 Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	20,62,652.70	0.00	30,06,136.97	0.00	27,27,861.36	0.00
16 Total Transportation Charges (12+13+14+15)	(Rs.)	65,45,98,899.70	0.00	73,64,50,222.97	0.00	65,94,81,432.36	0.00
17 Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,92,43,51,940.84	0.00	3,27,66,89,324.46	0.00	2,81,54,66,205.92	9,55,99,848.00
E) TOTAL COST							
18 Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,715.69	13,705.60	3,798.42	0.00	3,941.68	11,760.91
19 Blending Ratio (Domestic/Imported)	%	99.95%	0.05%	100.00%	0.00%	99.01%	0.99%
20 Weighted average cost of Coal /Lignite (Including biomass)	(Rs./MT)	3,720.44		3,798.42		4,019.13	
20.1 Weighted average cost of Coal /Lignite (Excluding biomass)		3,720.44		3,798.42		4,019.13	
F) QUALITY							
21 GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,137.00	N/A	4,000.00	N/A	4,157.00	N/A
22 GCV of domestic coal as per bill of coal company.	(kCal/Kg)	3,957.00	N/A	4,157.00	N/A	4,163.00	N/A
23 GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00	N/A	5,000.00	N/A	0.00
24 GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	0.00	N/A	0.00	N/A	5,000.00
25 Weighted average GCV of Coal /Lignite as billed (Including biomass)	(kCal/Kg)	3,957.00		4,157.00		4,581.50	
25.1 Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	(kCal/Kg)	3,957.00		4,157.00		4,581.50	
26 GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,730.00	N/A	3,668.00	N/A	3,643.00	N/A
27 GCV of domestic coal supplied as received at station	(kCal/Kg)	3,648.00	N/A	3,638.00	N/A	3,709.00	N/A
28 GCV of imported coal of opening stock as received at station	(kCal/Kg)	N/A	0.00	N/A	0.00	N/A	0.00
29 GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	0.00	N/A	0.00	N/A	4,988.00
30 Weighted average GCV of coal/ Lignite as Received (Including biomass)	(kCal/Kg)	3,668		3,644		3,710	
30.1 Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	(kCal/Kg)	3,668		3,644		3,710	

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd

Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	Oct 2023			Nov 2023			Dec-23			
		Domestic (Other Sources)	Domestic (NTPC Mines)	Imported	Domestic (Other Sources)	Domestic (NTPC Mines)	Imported	Domestic (Other Sources)	Domestic (NTPC Mines)	Imported	
A) OPENING QUANTITY											
1	Opening quantity of coal/Lignite	(MT)	49,772.187	-	-	78,358.066	1,053.56	1,112.81	87,753.525	1,110.75	10,599.20
2	Value of stock		19,61,85,858.65	-	-		35,04,633.40	1,32,57,925.69		37,16,742.19	13,42,61,414.34
B) QUANTITY											
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	5,67,748.66	1,73,623.130	35,388.800	5,58,525.840	1,97,341.560	62,655.000	6,29,422.340	87,359.820	1,35,768.200
3	- Qty Received (Pit Head)	(MT)			35,388.80			62,655.00			1,35,768.20
3	- Qty Received (Non Pit Head)	(MT)	5,67,748.66	1,73,623.13		5,58,525.84	1,97,341.56		6,29,422.34	87,359.82	
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-5,907.740	-	-	-7,148.91	-	-	-2,976.70	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	5,67,748.660	1,67,715.39	35,388.80	5,58,525.84	1,90,192.65	62,655.00	6,29,422.34	84,383.12	1,35,768.20
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	4,541.99	335.43	70.78	4,468.21	1,521.54	125.31	5,035.38	675.06	271.54
6.01	- Normative Loss (Pit Head)	(MT)	0.00	0.00	70.78	0.00	0.00	125.31	0.00	0.00	271.54
6.02	- Normative Loss (Non Pit Head)	(MT)	4541.99	335.43	70.78	4468.21	1521.54	125.31	5035.38	675.06	271.54
7	Net coal / Lignite Supplied (5-6)	(MT)	5,63,206.67	1,67,379.96	35,318.02	5,54,057.63	1,88,671.11	62,529.69	6,24,386.96	83,708.06	1,35,496.66
C) PRICE											
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,52,20,53,347.00	43,74,60,215.00	42,07,75,070.74	1,54,64,19,790.00	49,74,30,919.00	79,29,09,563.30	1,75,91,09,058.00	22,05,62,890.00	1,73,13,23,340.13
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	-1,48,01,183.85	0.00	0.00	-1,79,24,119.21	0.00	0.00	-74,74,760.87	0.00
10	Handling, Sampling and such other similar charges		8,02,001.32	3,75,946.35	0.00	10,50,622.13	2,22,602.33	0.00	2,63,67,104.74	36,01,858.78	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,52,28,55,348.32	42,30,34,977.50	42,07,75,070.74	1,54,74,70,412.13	47,97,29,402.12	79,29,09,563.30	1,78,54,76,162.74	21,66,89,987.91	1,73,13,23,340.13
D) TRANSPORTATION											
12	Transportation charges by rail/ship/road transport	(Rs.)	52,20,56,248.00	13,30,88,818.00	0.00	56,69,68,676.00	15,07,17,570.00	0.00	59,12,82,760.00	6,68,43,589.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	0	0	0	0	0	0	0	0	0
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	27,58,725.77	6,62,772.65	0.00	25,40,851.04	8,97,748.09	0.00	27,28,531.02	3,78,702.76	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	52,48,14,973.77	13,37,51,590.65	0.00	56,95,09,527.04	15,16,15,318.09	0.00	59,40,11,291.02	6,72,22,291.76	0.00
17	Total amount Charged for coal/Lignite supplied including Transportation (11+16)	(Rs.)	2,04,76,70,322.09	55,67,86,568.15	42,07,75,070.74	2,11,69,79,939.17	63,13,44,720.21	79,29,09,563.30	2,37,94,87,453.76	28,39,12,279.67	1,73,13,23,340.13
E) TOTAL COST											
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,660.58	0.00	0.00	3,347.45	3,346.16	12,667.12	3,341.32	3,391.10	12,769.59
19	Blending Ratio (Domestic/Imported)	%	72.72%	22.62%	4.65%	69.27%	23.99%	6.75%	74.23%	12.29%	13.49%
20	Weighted average cost of Coal /Lignite (Including biomass)	(Rs./MT)	3,969.00				4,289.99			4,966.58	
20.1	Weighted average cost of Coal /Lignite (Excluding biomass)			3,969.00			4,289.99			4,966.58	
F) QUALITY											
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,162.00	0.00	N/A	4,177.00	4,601.00	N/A	4,192.00	4,601.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,179.00	4,601.00	N/A	4,194.00	4,601.00	N/A	4,103.00	4,601.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	N/A	0.00	N/A	N/A	5,000.00	N/A	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	N/A	5,000.00	N/A	N/A	5,000.00	N/A	N/A	5,000.00
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	(kCal/Kg)		4,593.33			4,598.33			4,568.00	
25.1	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	(kCal/Kg)		4,593.33			4,598.33			4,568.00	
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,697.00	0.00	N/A	3,614.00		N/A	3,576.00		N/A
27	GCV of domestic coal supplied as received at station	(kCal/Kg)	3,606.00	3,828.00	N/A	3,570.00	3,997.00	N/A	3,604.00	3,782.00	N/A
28	GCV of imported coal of opening stock as received at station	(kCal/Kg)	N/A	N/A	0.00	N/A	N/A	4,919.00	N/A	N/A	4,919.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	N/A	4,919.00	N/A	N/A	4,915.00	N/A	N/A	4,975.00
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	(kCal/Kg)		3,724			3,771			3,807	
30.1	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	(kCal/Kg)		3,724			3,771			3,807	

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd

Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	Jan-24			Feb-24			Mar-24			
		COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED	COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED	COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED	
A) OPENING QUANTITY											
1	Opening quantity of coal/Lignite	(MT)	2129.18	212517.61	55325.86	647.00	532666.52	89890.74	647.02	576168.01	79807.35
2	Value of stock		7220272.14	809627575.92	706488653.25	2166127.54	2068469075.74	1148104245.49	2128749.91	2169407092.51	1028413245.20
B) QUANTITY											
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	82547.97	637042.62	123662.20	7554.92	621654.26	41991.60	15486.27	617136.73	72505.90
3	- Qty Received (Pit Head)	(MT)	0.00	0.00	123662.20	0.00	0.00	41991.60	0.00	0.00	72505.90
3	- Qty Received (Non Pit Head)	(MT)	82547.97	637042.62	0.00	7554.92	621654.26	0.00	15486.27	617136.73	0.00
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-2227.14	0.00	0.00	0.00	0.00	0.00	-934.32	0.00	0.00
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	80320.83	637042.62	123662.20	7554.92	621654.26	41991.60	14551.95	617136.73	72505.90
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	642.57	5096.34	247.32	60.44	4973.23	83.98	116.42	4937.09	145.01
6.01	- Normative Loss (Pit Head)	(MT)	0.00	0.00	247.32	0.00	0.00	83.98	0.00	0.00	145.01
6.02	- Normative Loss (Non Pit Head)	(MT)	642.57	5096.34	0.00	60.44	4973.23	0.00	116.42	4937.09	0.00
7	Net coal / Lignite Supplied (5-6)	(MT)	79678.26	631946.28	123414.88	7494.48	616681.03	41907.62	14435.53	612199.64	72360.89
C) PRICE											
8	Amount charged by the Coal /Lignite Company	(Rs.)	208305575.00	1900358827.00	1576427339.24	24300888.00	1656891644.47	550275228.83	39304447.00	1897501301.94	951814872.48
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-5587520.54	0.00	0.00	0.00	0.00	0.00	-2352322.13	0.00	0.00
10	Handling,Sampling and such other similar charges		539583.58	4279557.05	0.00	297306.98	24463819.68	0.00	365042.81	31593094.29	-0.2
11	Total amount Charged (8+9+10)	(Rs.)	203257638.04	1904638384.05	1576427339.24	24598194.98	1681355464.15	550275228.83	37317167.68	1929094396.23	951814872.28
D) TRANSPORTATION											
12	Transportation charges by rail/ship/road transport	(Rs.)	63412092.00	564985233.00	0.00	21991.00	578604993.20	0.00	11741468.00	608070062.39	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00	0.00	867356.00	0.00	0.00	278150.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	63412092.00	564985233.00	0.00	21991.00	577737637.20	0.00	11741468.00	607791912.39	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	266669730.04	2469623617.05	1576427339.24	24620185.98	2259093101.35	550275228.83	49058635.68	2536886308.62	951814872.28
E) TOTAL COST											
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3347.98	3883.23	12772.22	3290.10	3765.23	12886.20	3393.81	3960.30	13013.41
19	Blending Ratio (Domestic/Imported)	%	16.84	64.71	18.44	1.18	90.60	8.22	2.27	87.56	10.17
20	Weighted average cost of Coal /Lignite (Including biomass)	(Rs./MT)		5432.29			4509.24			4867.97	
20.1	Weighted average cost of Coal /Lignite (Excluding biomass)			5432.29			4509.24			4867.97	
F) QUALITY											
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4601	4109	0	4601	4425	0	4408	4418	0
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4601	4535	0	4408	4411	0	4601	4481	0
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	0	0	5000	0	0	5000	0	0	5000
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	0	0	5000	0	0	5000	0	0	5000
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	(kCal/Kg)		4562			4465			4510	
25.1	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)			4,562.00			4,465.00			4,510.00	
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3782	3600	0	3808	3723	0	3562	3755	0
27	GCV of domestic coal supplied as received at station	(kCal/Kg)	3808	3765	0	3562	3783	0	4697	3736	0
28	GCV of imported coal of opening stock as received at station	(kCal/Kg)	0	0	4971	0	0	4948	0	0	4944
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	0	0	4937	0	0	4937	0	0	5011
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	(kCal/Kg)		3963			3851			3891	
30.1	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	(kCal/Kg)		3963			3851			3891	

FORM-15A

Part-I Form-15A Final Details / information to be submitted in respect of Fuel for computation of Energy Name of the Company: NTPC Limited Name of the Power Station: Nabinagar Super Thermal Power Station								
Sl.No.	Particulars	Unit	April 2023	May 2023	June 2023	July 2023	Aug 2023	Sep 2023
1	Opening quantity of LDO	(KL)	4,379.485	4,337.485	4,033.685	4,018.568	4,009.778	3,617.778
2	Value of Stock	(Rs.)	41,96,64,983.70	41,56,40,325.71	38,65,28,632.89	38,64,31,869.59	38,55,86,609.26	34,78,91,267.81
3	Quantity of LDO supplied by Oil company	(KL)	0.000	0.000	242.838			
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)						
5	HFO/LDO supplied by Oil company (3+4)	(KL)	0.000	0.000	242.838	0.000	0.000	0.000
6	Normative transit & Handling losses	(KL)	0	0	0	0	0	0
7	Net Oil supplied (5-6)	(KL)	0.000	0.000	242.838	0.000	0.000	0.000
8	Amount charged by Oil Company	(Rs.)			24629121.3	0	0	0
9	Adjustment in amount charged made by Oil Company	(Rs.)						
10	Total amount charged (8+9)	(Rs.)	0	0	24629121.3	0	0	0
11	Transportation charges by rail/ship/road	(Rs.)						
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)						
13	Demurrage Charges, if any	(Rs.)						
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)						
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)						
16	Others/ E.TAX	(Rs.)						
17	Total amount charged for HFO (10+15+16)	(Rs.)	0	0	24629121.3	0	0	0
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00	9,164.00	9,164.00	9,164.00	9,164.00	9,164.00
19	Weighted average rate of Secondary Fuel	Rs/KL	95,825.19	95,825.19	96,143.00	96,161.59	96,161.59	96,161.59

Part-I								
Form-15A Final								
Details / information to be submitted in respect of Fuel for computation of Energy								
Name of the Company: NTPC Limited								
Name of the Power Station: Nabinagar Super Thermal Power Station								
Sl.No.	Particulars	Unit	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	March 2024
1	Opening quantity of LDO	(KL)	3,385.348	2,664.873	3,249.338	3,249.338	3,122.987	2,873.031
2	Value of Stock	(Rs.)	32,55,40,430.53	25,62,76,672.31	30,47,86,863.50	30,47,86,863.50	29,31,70,304.27	24,76,09,991.73
3	Quantity of LDO supplied by Oil company	(KL)	112.845	864.677		75.399	1,487.844	853.104
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)						
5	HFO/LDO supplied by Oil company (3+4)	(KL)	112.845	864.677	0.000	75.399	1487.844	853.104
6	Normative transit & Handling losses	(KL)	0	0	0	0	0	0
7	Net Oil supplied (5-6)	(KL)	112.845	864.677	0.000	75.399	1487.844	853.104
8	Amount charged by Oil Company	(Rs.)	1,08,69,614.06	7,75,01,474.01		72,62,688.03	11,88,14,360.85	7,08,61,393.00
9	Adjustment in amount charged made by Oil Company	(Rs.)						
10	Total amount charged (8+9)	(Rs.)	10869614.06	77501474.01	0	7262688.03	118814360.9	70861393
11	Transportation charges by rail/ship/road	(Rs.)						
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)						
13	Demurrage Charges, if any	(Rs.)						
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)						
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)						
16	Others/ E.TAX	(Rs.)						
17	Total amount charged for HFO (10+15+16)	(Rs.)	10869614.06	77501474.01	0	7262688.03	118814360.9	70861393
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,071.00	9,152.00	9,121.00	9,167.00	9,190.00	9,152.00
19	Weighted average rate of Secondary Fuel	Rs/KL	96,166.81	94,566.77	93,799.68	93,856.91	89,351.50	85,469.63

**Details of Reagent for
Computation of Supplementary Energy Charge Rate****

Name of the Petitioner: NTPC Ltd.

Name of the Generating Station: Nabinagar Super Thermal Power Station

S. No.	Month _____	Unit	Values
	Opening Quantity		
1	Opening Quantity of Reagent	(Metric Tonne)	
2	Value of Stock	(Rs.)	
	Quantity		
3	Quantity of Reagent supplied by Limestone or Reagent supply Company	(Metric Tonne)	
4	Adjustment (+/-) in quantity supplied made by Limestone or Reagent supply Company	(Metric Tonne)	
5	Net quantity of Reagent Received (3±4)	(Metric Tonne)	
6	Amount charged for Reagent supply Company	(Rs.)	
7	Adjustment (+/-) in amount charged made for Reagent supply by the Company	(Rs.)	
8	Total amount Charged (6±7)	(Rs.)	
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 Reagent supplied including Transportation (8+12)	(Rs.)	
14	Weighted Average Cost of Reagent during the month $[(2+13)/(1+5)]^{**}$	(Rs/ tonne)	2,835.30
15	Purity of Reagent received during the month	(%)	
16	Sulphur Content in the Coal	(%)	

*** Tentative cost, actual will be provided at the time of truing up.*

Name of the Petitioner		NTPC Ltd.			Form L
Name of the Generating Station		Nabinagar STPS			
Statement of Capital cost as on 01.06.2022					Rs Lakhs
		2023-24			
		Stage I			
Sl. No.	Particulars	Accrual Basis	Undischarged Liability	Cash Basis	Remarks
A	a) Opening Gross Block Amount as per books	1771414.66	62437.82	1708976.84	
	c) Amount of IDC in A(a) above	431422.72	0.00	431422.72	
	d) Amount of FC in A(a) above	0.00	0.00	0.00	
	e) Amount of FERV in A(a) above	0.00	0.00	0.00	
	f) Amount of Hedging Cost in A(a) above	0.00	0.00	0.00	
	g) Amount of IEDC in A(a) above	75194.97	0.00	75194.97	
				0.00	
B	a) Addition in Gross Block Amount during the period (Direct purchases)				
	c) Amount of IDC in B(a) above				
	d) Amount of FC in B(a) above				
	e) Amount of FERV in B(a) above				
	f) Amount of Hedging Cost in B(a) above				
	g) Amount of IEDC in B(a) above				
C	a) Addition in Gross Block Amount during the period (Transferred from CWIP)				
	c) Amount of IDC in C(a) above				
	d) Amount of FC in C(a) above				
	e) Amount of FERV in C(a) above				
	f) Amount of Hedging Cost in C(a) above				
	g) Amount of IEDC in C(a) above				
D	a) Deletion in Gross Block Amount during the period				
	c) Amount of IDC in D(a) above				
	d) Amount of FC in D(a) above				
	e) Amount of FERV in D(a) above				
	f) Amount of Hedging Cost in D(a) above				
	g) Amount of IEDC in D(a) above				
E	a) Closing Gross Block Amount as per books				
	c) Amount of IDC in E(a) above				
	d) Amount of FC in E(a) above				
	e) Amount of FERV in E(a) above				
	f) Amount of Hedging Cost in E(a) above				
	g) Amount of IEDC in E(a) above				
					Petitioner

Name of the Petitioner		NTPC Ltd.			Form M	
Name of the Generating Station		Nabinagar Super Thermal Power Station (3*660 MW)				
Statement of Capital cost as on 01.06.2022						
				2024-25		Rs Lakhs
				Stage I		
Sl. No.	Particulars	Accrual Basis	Undischarged Liability	Cash Basis	Remarks	Remarks
A	a) Opening CWIP as per books	87609.38	22090.11	65519.27		
	b) Amount of IDC in A(a) above	12101.45	0.00	12101.45		
	c) Amount of FC in A(a) above	0.00	0.00	0.00		
	d) Amount of FERV in A(a) above	0.00	0.00	0.00		
	e) Amount of Hedging Cost in A(a) above	0.00	0.00	0.00		
	f) Amount of IEDC in A(a) above	5139.52	0.00	5139.52		
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 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					
Petitioner						

Calculation of Interest on Normative Loan

Name of the Company :		NTPC Limited					
Name of the Power Station :		Nabinagar Super Thermal power Station Stage-I					
(Amount in Rs Lakh)							
S. No.	Particulars	Existing 2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7	8
1	Gross Normative loan – Opening	11,83,670.47	12,09,686.03	12,20,078.70	12,56,600.69	13,01,400.69	13,01,400.69
2	Cumulative repayment of Normative loan up to previous year	1,83,371.50	2,68,361.72	3,54,791.92	4,42,890.95	5,33,882.71	6,26,468.07
3	Net Normative loan – Opening	10,00,298.97	9,41,324.31	8,65,286.78	8,13,709.75	7,67,517.98	6,74,932.62
4	Add: Increase due to addition during the year / period	19479.25	10,392.67	36,522.00	44,800.00	-	-
5	Less: Decrease due to de-capitalisation during the year / period	-541.11	0.00	0.00	0.00	0.00	0.00
6	Less: Decrease due to reversal during the year / period						
7	Add: Increase due to discharges during the year / period	7077.61	0.00	0.00	0.00	0.00	0.00
8	Net addition in loan during the period (4+5+6+7)	26015.75	10392.67	36522.00	44800.00	0.00	0.00
9	Less: Repayment of Loan	85135.10	86,430.20	88,099.02	90,991.76	92,585.36	92,585.36
10	Repayment adjustment on account of de capitalisation	143.17					
11	Repayment adjustment on account of discharges/reversals corresponding to un discharged liabilities deducted as on 1.4.2009	-					
12	Net Normative loan - Closing	9,41,322.79	8,65,286.78	8,13,709.75	7,67,517.98	6,74,932.62	5,82,347.26
13	Average Normative loan	9,70,810.88	9,03,305.54	8,39,498.26	7,90,613.87	7,21,225.30	6,28,639.94
14	Weighted average rate of interest	8.3514	8.3545	8.3457	8.3391	8.3402	8.3481
15	Interest on Loan	81076.30	75466.78	70061.80	65930.05	60151.57	52479.59

(Petitioner)

Calculation of Interest on Working Capital

Name of the Company :		NTPC Limited					
Name of the Power Station :		Nabinagar Super Thermal power Station Stage-I					
(Amount in Rs Lakh)							
S. No.	Particulars	Existing 2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
1	2	3	4	5	6	7	8
1	Cost of Coal/Lignite	34,943.60	51640.00	51640.00	51640.00	51640.00	51640.00
1a	Cost of limestone**			470.17	470.17	470.17	470.17
2	Cost of Main Secondary Fuel Oil	355.33	1156.40	1156.40	1156.40	1159.57	1156.40
3	Fuel Cost						
4	Liquid Fuel Stock						
5	O & M Expenses (including FGD)	1,818.28	6091.27	6390.48	6695.24	6975.76	7272.47
6	Maintenance Spares (including FGD)	4,363.86	14619.04	15337.16	16068.58	16741.81	17453.92
7	Receivables (including FGD)	47,346.77	90766.68	91930.31	92657.76	92671.64	92295.71
8	Total Working Capital	88827.83	164273.38	166924.52	168688.15	169658.95	170288.66
9	Rate of Interest	12.0000	11.9000	11.9000	11.9000	11.9000	11.9000
10	Interest on Working Capital	10659.34	19548.53	19864.02	20073.89	20189.41	20264.35

** Tentative cost. Actual data will be furnished at the time of truing up.

Petitioner

Computation of Energy Charges

Form-Oi

ADDITIONAL FORM

Name of the Company	NTPC Limited
Name of the Power Station	Nabinagar Super Thermal power Station Stage-I

Computation of Energy Charges

1	Rate of Energy Charge from Sec. Fuel Oil/ Alternate Fuel (p/kwh)	$(REC)_s = (Q_s)_n \times P_s$	4.706
2	Heat Contribution from SFO / Alternate Fuel (H _s)	$(H_s) = (Qs)_n \times (GCV)_s$	4.577
3	Heat Contribution from coal (H _p) _s	$(H_p)_s = GHR \cdot H_s$	2236.63
3	Heat Contribution from coal (H _p) _s		0.00
4	Specific Primary Fuel Consumption (Qp) _n	$(Qp)_n = H_p / (GCV)_p$	0.602
5	Rate of Energy charge from Primary Fuel (p/kwh)	$(REC)_p$	255.694
6	Rate of Energy charge bus (p/kWh)	$(REC)_{bus} = ((REC)_s + (REC)_p) / (1-(AUX))$	276.287 for 2023-24

		2024-25	2025-26	2026-27	2027-28	2028-29
No of Days in the year	Days	365	365	365	366	365
Sp. Oil consumption	ml/kwh	0.5	0.5	0.5	0.5	0.5
Auxiliary consumption	%	5.750	5.750	5.750	5.750	5.750
Heat Rate	Kcal/Kwh	2,241.21	2,241.21	2,241.21	2,241.21	2,241.21

Computation of Variable Charges

Variable Charge (Coal)	p/kwh	271.294	271.294	271.294	271.294	271.294
Variable Charge (FGD)	p/kwh	4.993	4.993	4.993	4.993	4.993
Variable Charge (Oil)	p/kwh		5.32858	5.329	5.329	5.329
Total	p/kwh	276.287	281.615	281.615	281.615	281.615

Price of fuel from Form-15/15A

Coal Cost	(Rs./MT)	4248.09	4248.09	4248.09	4248.09	4248.09
Oil Cost	(Rs./KL)	94124.12	94124.12	94124.12	94124.12	94124.12

Computation of Fuel Expenses for Calculation of IWC:

ESO in a year	(MUs)	13895.35	13895.35	13895.35	13933.42	13895.353
ESO for 50 days	(MUs)	1903.473	1903.473	1903.47	1903.47	1903.473
Cost of coal for 50 Days	(Rs. Lakh)	51640.00	51640.00	51640.00	51640.00	51640.00
Cost of oil for 2 months	(Rs. Lakh)	1156.40	1156.40	1156.40	1159.57	1156.40
Cost of limestone for 50 days	(Rs. Lakh)					
Energy Expenses for 45 days	(Rs. Lakh)	47331.42	48244.27	48244.27	48244.27	48244.27

Coal					Wtd. Avg.
	Wtd. Avg. Price of Coal			Rs./MT	4248.09
	Wtd. Avg. GCV of Coal as received			kCal/Kg	3800.93
	Wtd. Avg. GCV of Coal as received after adjustment of 85 kcal/kg				3715.93
Sec. Oil					
	Wtd. Avg. Price of Secondary Fuel			Rs/KL	94124.12
	Wtd. Avg. GCV of Secondary Fuel			kCal/L	9153.08

PETITIONER

Computation of Supplementary ECR and IOWC corresponding to FGD

Particular	Unit	2024-25	2025-26	2026-27	2027-28	2028-29
No. of days	days	365.00	365.00	365.00	366.00	365.00
FGD Capacity ODe achieved	MW		1980	1980	1980	1980
CVPF	kCal/Kg	3715.93	3715.93	3715.93	3715.93	3715.93
CVSF	kCal/Litre	9153.08	9153.08	9153.08	9153.08	9153.08
LPPF	Rs/MT	4248.09	4248.09	4248.09	4248.09	4248.09
LPSF	Rs/KL	94124.12	94124.12	94124.12	94124.12	94124.12
AUX-Norm	%	5.75	5.75	5.75	5.75	5.75
GHR-Norm	kCal/kWh	2,140.62	2,140.62	2,140.62	2,140.62	2,140.62
SFC-Norm	Litre/kWh	0.0005	0.0005	0.0005	0.0005	0.0005
ECR	Rs/kWh	2.641	2.641	2.641	2.641	2.641
AUX for DESOX(Norm)	%	1	1	1	1	1
NEW AUX-NORM	%	6.75	6.75	6.75	6.75	6.75
NEW GHR-NORM	kCal/kWh	2,140.62	2,140.62	2,140.62	2,140.62	2,140.62
NEW-SFC-NORM	Litre/kWh	0.0005	0.0005	0.0005	0.0005	0.0005
NEW ECR	Rs/kWh	2.669	2.669	2.669	2.669	2.669
Delta ECR	Rs/kWh	0.028	0.028320	0.028	0.028	0.028
Design SO2 removal efficiency	%	96.91	96.91	96.91	96.91	96.91
Landed price of reagent	Rs/MT	2835.30	2835.30	2835.30	2835.30	2835.30
K(FGD Constant)	number	35.53	35.53	35.53	35.53	35.53
SHR Station Heat rate	kCal/kWh	2,140.62	2,140.62	2,140.62	2,140.62	2,140.62
S-Sulphur Content	%	0.42	0.42	0.42	0.42	0.42
CVPF	kCal/Kg	3715.93	3715.93	3715.93	3715.93	3715.93
LP-Lime stone purity	%	89.00	89.00	89.00	89.00	89.00
Specific Reagent consumption 'SRC' =(K x SHR x S /CVPF) x (85/LP)	gm/kWh	8.19	8.21	8.21	8.21	8.21
ECR (corresponding to reagent consumption)	Rs/kWh	0.02489	0.02497	0.025	0.025	0.025
Supplementary ECR	Rs/kWh	0.05	0.0532858	0.05	0.05	0.05
ESO in the period	MUs	0.00	13747.92	13747.92	13785.59	13747.92
Cost of limestone in the period	Rs Lakh	0.00	3432.24	3432.24	3441.65	3432.24
Supplementary Energy Expenses in the period	Rs Lakh	0.00	7325.69	7325.69	7345.76	7325.69
Total cost of limestone for 50 days	Rs Lakh	0.00	470.17	470.17	470.17	470.17
Total Supplementary Energy Expenses for 45 d	Rs Lakh	0.00	903.17	903.17	903.17	903.17

Summary of issue involved in the petition

Name of the Company :		NTPC Limited
Name of the Power Station :		Nabinagar Super Thermal power Station Stage-I
1	Petitioner:	NTPC Limited
2	Subject	Petition Under Section 62 and 79 (1) (a) of the Electricity Act, 2003 read with Chapter-III of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023 and Chapter-3, Regulation-9 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for approval of tariff of Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) for the period from 01.04.2024 to 31.03.2029.
3	Prayer:	<p>i) Approve tariff of Nabinagar Super Thermal Power Station, Stage-I (3 X 660 MW) for the tariff period 01.04.2024 to 31.03.2029.</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 on monthly basis, subject to true up.</p> <p>iv) Allow the recovery of pay/wage revision as additional O&M over and above the normative O&M.</p> <p>v) Consider station heat rate based on design heat rate with applicable operating margin.</p> <p>vi) Pass any other order as it may deem fit in the circumstances mentioned above.e.</p>
4	Respondents:	As per Petition
Name of Respondents		
a.		
b.		
c.		
5	Project Scope	
	Cost	Cost: Rs 19412.52 Crs at price level of Q2, 2021
	Commissioning	Unit-I on 06.09.2019, Unit-II on 23.07.2021 and Unit#III on 01.06.2022
	Claim	As per Petition
	AFC (lakhs)	352308.27
	Capital cost (lakhs)	1728122.90
	Initial spare	4% Of Plant & Machinery
	NAPAF (Gen)	85%
	Any Specific	

WEIGHTED AVERAGE RATE OF INTEREST

BP No	Name of the Bank	From	To	No of days	Rate of interest	Weighted value	1.6.2022 to 31.3.2023	1.4.2023 to 31.3.2024	Fin Year
	REC Limited NPGCL-I	01-04-2023	31-03-2024	366	8.50%	31.11	8.5594%	8.5000%	2023-24
	REC Limited NPGCL-II	01-04-2023	31-03-2024	366	8.50%	31.11	8.5594%	8.5000%	2023-24
5050001101	UCO Bank-III	10-Mar-24	31-Mar-24	22.00	8.10%	1.782	0	7.9466%	2023-24
5050001151	HDFC X	01-Jun-23	31-Mar-24	305.00	7.95%	24.2475	0	7.9562%	2023-24
5050000641	HDFC Bank Ltd. VI	01-Jun-23	31-Mar-24	305.00	7.95%	24.2475	8.0100%	7.9600%	2023-24
5050001323	UCO Bank-V	10-Mar-24	31-Mar-24	22.00	8.10%	1.782	7.5104%	7.9373%	2023-24
5050001341	Loan 12 - Bank of Baroda II	11-Feb-24	31-Mar-24	50.00	8.05%	4.025	7.4890%	7.9791%	2023-24
5050001342	UCO Bank-IV	08-Nov-23	31-Mar-24	145.00	7.70%	11.165	0	7.7000%	2023-24
5050001385	Bank of Baroda-III (NPGCL) Loan 14 - Bank of Baroda-III	01-Jul-23	28-Aug-23	59.00	7.95%	4.6905			2023-24
5050001385	(NPGCL) (Drawn on 1.7.2023)	29-Aug-23	28-Jan-24	153.00	8.00%	12.24			2023-24
5050001385		29-Jan-24	31-Mar-24	63.00	8.05%	5.0715	0	8.0007%	2023-24
5050001441	Loan 15 - HDFC Bank Limited- XII (Drawn on 1.3.2024)	13-Mar-24	31-Mar-24	19.00	7.60%	1.444	0	7.6731%	2023-24
5050001441	Loan 15 - HDFC Bank Limited- XII (Drawn on 1.3.2024)	13-Mar-24	31-Mar-24	19.00	7.60%	1.444	0	7.6860%	2023-24
	Loan 15 - HDFC Bank Limited- XII (Drawn on 1.3.2024)	13-Mar-24	31-Mar-24	19.00	7.60%	1.444	0	7.6939%	2023-24
	Loan 15 - HDFC Bank Limited- XII (Drawn on 1.3.2024)	13-Mar-24	31-Mar-24	19.00	7.60%	1.444	0	7.6737%	2023-24
	Loan 15 - HDFC Bank Limited- XII (Drawn on 1.3.2024)	13-Mar-24	31-Mar-24	19.00	7.60%	1.444	0	7.6194%	2023-24
	Bank of Maharashtra	09-Feb-24	31-Mar-24	52.00	8.10%	4.212	7.4819%	7.9746%	2023-24
	Canara Bank (33)-NPGCL	01-Jun-23	31-Mar-24	305.00	7.95%	24.2475	7.269%	7.9417%	2023-24
	Bank of Baroda	29-Jan-24	31-Mar-24	63.00	8.05%	5.0715			2023-24

WEIGHTED AVERAGE RATE OF INTEREST IF LOANS

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024 To 31-03-2024		WAVG rate
										No of days	Product	
SBI, NEW YORK	01-04-2019	14-05-2019	4.25500%	5.46000%	10.00000%	Act/360	2019-20	4.279574%	100%	0	0	
SBI, NEW YORK	15-05-2019	28-07-2019	3.98763%	5.46000%	10.00000%	Act/360	2019-20	4.010660%	100%	0	0	
SBI, NEW YORK	29-07-2019	29-01-2020	3.57750%	5.46000%	10.00000%	Act/360	2019-20	3.598161%	100%	0	0	
SBI, NEW YORK Weighted Average rate												0.00000%
JPY Equ. 350Million A	01-04-2019	11-04-2019	0.95933%	5.46000%	100.00000%	Act/360	2019-20	1.014735%	100%	0	0	
JPY Equ. 350Million A	12-04-2019	10-10-2019	0.95700%	5.46000%	100.00000%	Act/360	2019-20	1.012270%	100%	0	0	
JPY Equ. 350Million A	11-10-2019	29-02-2020	0.95000%	5.46000%	100.00000%	Act/360	2019-20	1.004866%	100%	0	0	
JPY Equ. 350Million A	01-03-2020	31-03-2020	0.95000%	5.46000%	100.00000%	Act/360	2019-20	1.004866%	100%	0	0	
JPY Equ. 350Million A	01-04-2020	12-04-2020	0.95000%	5.46000%	100.00000%	Act/360	2020-21	1.004866%	100%	0	0	
JPY Equ. 350Million A	13-04-2020	11-10-2020	0.97417%	5.46000%	100.00000%	Act/360	2020-21	1.030432%	100%	0	0	
JPY Equ. 350Million A	12-10-2020	31-03-2021	0.95000%	5.46000%	100.00000%	Act/360	2020-21	1.004866%	100%	0	0	
JPY Equ. 350Million A	01-04-2021	11-04-2021	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-04-2021	10-10-2021	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million A	11-10-2021	31-03-2022	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million A	01-04-2022	10-04-2022	0.95000%	5.46000%	100.00000%	Act/360	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million A	11-04-2022	11-07-2022	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-07-2022	11-10-2022	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-10-2022	11-01-2023	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-01-2023	31-03-2023	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million A	01-04-2023	11-04-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-04-2023	11-07-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-07-2023	11-10-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-10-2023	11-01-2024	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million A	12-01-2024	31-03-2024	0.96342%	5.46000%	100.00000%	Act/365	2023-24	1.019061%	100%	1	0.01021853	
JPY Equ. 350Million A Weighted Average rate												1.02190%
JPY Equ. 350Million B	01-04-2019	11-04-2019	0.95933%	5.46000%	100.00000%	Act/360	2019-20	1.014735%	100%	0	0	
JPY Equ. 350Million B	12-04-2019	10-10-2019	0.95700%	5.46000%	100.00000%	Act/360	2019-20	1.012270%	100%	0	0	
JPY Equ. 350Million B	11-10-2019	29-02-2020	0.95000%	5.46000%	100.00000%	Act/360	2019-20	1.004866%	100%	0	0	
JPY Equ. 350Million B	01-03-2020	31-03-2020	0.95000%	5.46000%	100.00000%	Act/360	2019-20	1.004866%	100%	0	0	
JPY Equ. 350Million B	01-04-2020	12-04-2020	0.95000%	5.46000%	100.00000%	Act/360	2020-21	1.004866%	100%	0	0	
JPY Equ. 350Million B	13-04-2020	11-10-2020	0.97417%	5.46000%	100.00000%	Act/360	2020-21	1.030432%	100%	0	0	
JPY Equ. 350Million B	12-10-2020	31-03-2021	0.95000%	5.46000%	100.00000%	Act/360	2020-21	1.004866%	100%	0	0	
JPY Equ. 350Million B	01-04-2021	11-04-2021	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-04-2021	10-10-2021	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million B	11-10-2021	31-03-2022	0.95000%	5.46000%	100.00000%	Act/360	2021-22	1.004866%	100%	0	0	
JPY Equ. 350Million B	01-04-2022	10-04-2022	0.95000%	5.46000%	100.00000%	Act/360	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million B	11-04-2022	11-07-2022	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-07-2022	11-10-2022	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-10-2022	11-01-2023	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-01-2023	31-03-2023	0.95000%	5.46000%	100.00000%	Act/365	2022-23	1.004866%	100%	0	0	
JPY Equ. 350Million B	01-04-2023	11-04-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-04-2023	11-07-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-07-2023	11-10-2023	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-10-2023	11-01-2024	0.95000%	5.46000%	100.00000%	Act/365	2023-24	1.004866%	100%	0	0	
JPY Equ. 350Million B	12-01-2024	31-03-2024	0.96342%	5.46000%	100.00000%	Act/365	2023-24	1.019061%	100%	1	0.01021853	
JPY Equ. 350Million B Weighted Average rate												1.02190%

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024 To 31-03-2024		WAVG rate
										No of days	Product	
JPY Equ. 300Million A	01-04-2019	09-04-2019	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million A	10-04-2019	09-07-2019	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million A	10-07-2019	09-01-2020	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million A	10-01-2020	29-02-2020	1.03467%	5.46000%	100.00000%	Act/360	2019-20	1.094426%	100%	0	0	
JPY Equ. 300Million A	01-03-2020	31-03-2020	1.03467%	5.46000%	100.00000%	Act/360	2019-20	1.094426%	100%	0	0	
JPY Equ. 300Million A	01-04-2020	12-07-2020	1.03467%	5.46000%	100.00000%	Act/360	2020-21	1.094426%	100%	0	0	
JPY Equ. 300Million A	13-07-2020	12-01-2021	1.02000%	5.46000%	100.00000%	Act/360	2020-21	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-01-2021	31-03-2021	1.02000%	5.46000%	100.00000%	Act/360	2020-21	1.078908%	100%	0	0	
JPY Equ. 300Million A	01-04-2021	12-07-2021	1.02000%	5.46000%	100.00000%	Act/360	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-07-2021	12-01-2022	1.02000%	5.46000%	100.00000%	Act/360	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-01-2022	31-03-2022	1.02000%	5.46000%	100.00000%	Act/365	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million A	01-04-2022	12-04-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-04-2022	12-07-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-07-2022	12-10-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-10-2022	12-01-2023	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-01-2023	31-03-2023	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million A	01-04-2023	12-04-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-04-2023	12-07-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-07-2023	12-10-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million A	13-10-2023	14-01-2024	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million A	15-01-2024	31-03-2024	1.03665%	5.46000%	100.00000%	Act/365	2023-24	1.096520%	100%	1	0.01099524	
JPY Equ. 300Million A Weighted Average rate												1.09950%
JPY Equ. 300Million B	01-04-2019	09-04-2019	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million B	10-04-2019	09-07-2019	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million B	10-07-2019	09-01-2020	1.02000%	5.46000%	100.00000%	Act/360	2019-20	1.078908%	100%	0	0	
JPY Equ. 300Million B	10-01-2020	29-02-2020	1.03467%	5.46000%	100.00000%	Act/360	2019-20	1.094426%	100%	0	0	
JPY Equ. 300Million B	01-03-2020	31-03-2020	1.03467%	5.46000%	100.00000%	Act/360	2019-20	1.094426%	100%	0	0	
JPY Equ. 300Million B	01-04-2020	12-07-2020	1.03467%	5.46000%	100.00000%	Act/360	2020-21	1.094426%	100%	0	0	
JPY Equ. 300Million B	13-07-2020	12-01-2021	1.02000%	5.46000%	100.00000%	Act/360	2020-21	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-01-2021	31-03-2021	1.02000%	5.46000%	100.00000%	Act/360	2020-21	1.078908%	100%	0	0	
JPY Equ. 300Million B	01-04-2021	12-07-2021	1.02000%	5.46000%	100.00000%	Act/360	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-07-2021	12-01-2022	1.02000%	5.46000%	100.00000%	Act/360	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-01-2022	31-03-2022	1.02000%	5.46000%	100.00000%	Act/365	2021-22	1.078908%	100%	0	0	
JPY Equ. 300Million B	01-04-2022	12-04-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-04-2022	12-07-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-07-2022	12-10-2022	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-10-2022	12-01-2023	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-01-2023	31-03-2023	1.02000%	5.46000%	100.00000%	Act/365	2022-23	1.078908%	100%	0	0	
JPY Equ. 300Million B	01-04-2023	12-04-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-04-2023	12-07-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-07-2023	12-10-2023	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million B	13-10-2023	14-01-2024	1.02000%	5.46000%	100.00000%	Act/365	2023-24	1.078908%	100%	0	0	
JPY Equ. 300Million B	15-01-2024	31-03-2024	1.03665%	5.46000%	100.00000%	Act/365	2023-24	1.096520%	100%	1	0.01099524	
JPY Equ. 300Million B Weighted Average rate												1.09950%

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024 To 31-03-2024		WAVG rate
										No of days	Product	
JPY Equ. 750M Drawl (I to IV)	29-01-2020	29-02-2020	0.80000%	5.46000%	58.73020%	Act/360	2019-20	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-03-2020	31-03-2020	0.80000%	5.46000%	58.73020%	Act/360	2019-20	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2020	28-04-2020	0.80000%	5.46000%	58.73020%	Act/360	2020-21	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-04-2020	29-07-2020	0.80000%	5.46000%	58.73020%	Act/360	2020-21	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-07-2020	28-01-2021	0.80000%	5.46000%	58.73020%	Act/360	2020-21	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-01-2021	31-03-2021	0.80000%	5.46000%	58.73020%	Act/360	2020-21	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2021	28-07-2021	0.80000%	5.46000%	58.73020%	Act/360	2021-22	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-07-2021	31-08-2021	0.80000%	5.46000%	58.73020%	Act/360	2021-22	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-09-2021	30-01-2022	0.80000%	5.46000%	58.73020%	Act/360	2021-22	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-01-2022	31-03-2022	0.80000%	5.46000%	58.73020%	Act/365	2021-22	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2022	27-04-2022	0.80000%	5.46000%	58.73020%	Act/365	2022-23	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-04-2022	27-07-2022	0.80000%	5.46000%	58.73020%	Act/365	2022-23	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-07-2022	27-10-2022	0.80000%	5.46000%	58.73020%	Act/365	2022-23	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-10-2022	29-01-2023	0.80000%	5.46000%	58.73020%	Act/365	2022-23	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-01-2023	31-03-2023	0.80000%	5.46000%	58.73020%	Act/365	2022-23	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2023	27-04-2023	0.80000%	5.46000%	58.73020%	Act/365	2023-24	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-04-2023	30-07-2023	0.80000%	5.46000%	58.73020%	Act/365	2023-24	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-07-2023	29-10-2023	0.80000%	5.46000%	58.73020%	Act/365	2023-24	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-10-2023	30-01-2024	0.80000%	5.46000%	58.73020%	Act/365	2023-24	0.827135%	75%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-01-2024	31-03-2024	0.83190%	5.46000%	58.73020%	Act/365	2023-24	0.860117%	75%	1	0.00646855	
JPY Equ. 750M Drawl (I to IV)	29-01-2020	29-02-2020	1.02000%	5.46000%	52.38100%	Act/360	2019-20	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-03-2020	31-03-2020	1.02000%	5.46000%	52.38100%	Act/360	2019-20	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2020	28-04-2020	1.02000%	5.46000%	52.38100%	Act/360	2020-21	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-04-2020	29-07-2020	1.02000%	5.46000%	52.38100%	Act/360	2020-21	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-07-2020	28-01-2021	1.02000%	5.46000%	52.38100%	Act/360	2020-21	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-01-2021	31-03-2021	1.02000%	5.46000%	52.38100%	Act/360	2020-21	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2021	28-07-2021	1.02000%	5.46000%	52.38100%	Act/360	2021-22	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	29-07-2021	31-08-2021	1.02000%	5.46000%	52.38100%	Act/360	2021-22	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-09-2021	30-01-2022	1.02000%	5.46000%	52.38100%	Act/360	2021-22	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-01-2022	31-03-2022	1.02000%	5.46000%	52.38100%	Act/365	2021-22	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2022	27-04-2022	1.02000%	5.46000%	52.38100%	Act/365	2022-23	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-04-2022	27-07-2022	1.02000%	5.46000%	52.38100%	Act/365	2022-23	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-07-2022	27-10-2022	1.02000%	5.46000%	52.38100%	Act/365	2022-23	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-10-2022	29-01-2023	1.02000%	5.46000%	52.38100%	Act/365	2022-23	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-01-2023	31-03-2023	1.02000%	5.46000%	52.38100%	Act/365	2022-23	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	01-04-2023	27-04-2023	1.02000%	5.46000%	52.38100%	Act/365	2023-24	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	28-04-2023	30-07-2023	1.02000%	5.46000%	52.38100%	Act/365	2023-24	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-07-2023	29-10-2023	1.02000%	5.46000%	52.38100%	Act/365	2023-24	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	30-10-2023	30-01-2024	1.02000%	5.46000%	52.38100%	Act/365	2023-24	1.050857%	25%	0	0	
JPY Equ. 750M Drawl (I to IV)	31-01-2024	31-03-2024	1.05190%	5.46000%	52.38100%	Act/365	2023-24	1.083722%	25%	1	0.00271673	
JPY Equ. 750M Drawl (I to IV) Weighted Average rate												0.91850%

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024 To 31-03-2024		WAVG rate
										No of days	Product	
JPY Equ. 750M Drawl (V-VI)	27-11-2020	25-02-2021	0.80000%	5.46000%	0.00000%	Act/360	2020-21	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	26-02-2021	31-03-2021	0.80000%	5.46000%	0.00000%	Act/360	2020-21	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2021	28-07-2021	0.80000%	5.46000%	0.00000%	Act/360	2021-22	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	29-07-2021	31-08-2021	0.80000%	5.46000%	0.00000%	Act/360	2021-22	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-09-2021	30-01-2022	0.80000%	5.46000%	0.00000%	Act/360	2021-22	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-01-2022	31-03-2022	0.80000%	5.46000%	0.00000%	Act/365	2021-22	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2022	27-04-2022	0.80000%	5.46000%	0.00000%	Act/365	2022-23	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-04-2022	27-07-2022	0.80000%	5.46000%	0.00000%	Act/365	2022-23	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-07-2022	27-10-2022	0.80000%	5.46000%	0.00000%	Act/365	2022-23	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-10-2022	29-01-2023	0.80000%	5.46000%	0.00000%	Act/365	2022-23	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	30-01-2023	31-03-2023	0.80000%	5.46000%	0.00000%	Act/365	2022-23	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2023	27-04-2023	0.80000%	5.46000%	0.00000%	Act/365	2023-24	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-04-2023	30-07-2023	0.80000%	5.46000%	0.00000%	Act/365	2023-24	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-07-2023	29-10-2023	0.80000%	5.46000%	0.00000%	Act/365	2023-24	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	30-10-2023	30-01-2024	0.80000%	5.46000%	0.00000%	Act/365	2023-24	0.800000%	75%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-01-2024	31-03-2024	0.83190%	5.46000%	0.00000%	Act/365	2023-24	0.831900%	75%	1	0.00625634	
JPY Equ. 750M Drawl (V-VI)	27-11-2020	25-02-2021	1.02000%	5.46000%	0.00000%	Act/360	2020-21	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	26-02-2021	31-03-2021	1.02000%	5.46000%	0.00000%	Act/360	2020-21	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2021	28-07-2021	1.02000%	5.46000%	0.00000%	Act/360	2021-22	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	29-07-2021	31-08-2021	1.02000%	5.46000%	0.00000%	Act/360	2021-22	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-09-2021	30-01-2022	1.02000%	5.46000%	0.00000%	Act/360	2021-22	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-01-2022	31-03-2022	1.02000%	5.46000%	0.00000%	Act/365	2021-22	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2022	27-04-2022	1.02000%	5.46000%	0.00000%	Act/365	2022-23	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-04-2022	27-07-2022	1.02000%	5.46000%	0.00000%	Act/365	2022-23	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-07-2022	27-10-2022	1.02000%	5.46000%	0.00000%	Act/365	2022-23	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-10-2022	29-01-2023	1.02000%	5.46000%	0.00000%	Act/365	2022-23	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	30-01-2023	31-03-2023	1.02000%	5.46000%	0.00000%	Act/365	2022-23	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	01-04-2023	27-04-2023	1.02000%	5.46000%	0.00000%	Act/365	2023-24	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	28-04-2023	30-07-2023	1.02000%	5.46000%	0.00000%	Act/365	2023-24	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-07-2023	29-10-2023	1.02000%	5.46000%	0.00000%	Act/365	2023-24	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	30-10-2023	30-01-2024	1.02000%	5.46000%	0.00000%	Act/365	2023-24	1.020000%	25%	0	0	
JPY Equ. 750M Drawl (V-VI)	31-01-2024	31-03-2024	1.05190%	5.46000%	0.00000%	Act/365	2023-24	1.051900%	25%	1	0.00263695	0.88930%
JPY Equ. 750M Drawl (V-VI) Weighted Average rate												
Mizuho II	01-04-2019	14-07-2019	4.11463%	5.46000%	100.00000%	Act/360	2019-20	4.352264%	100%	0	0	
Mizuho II	15-07-2019	14-01-2020	3.46263%	5.46000%	100.00000%	Act/360	2019-20	3.662608%	100%	0	0	
Mizuho II	15-01-2020	25-03-2020	3.05720%	5.46000%	100.00000%	Act/360	2019-20	3.233763%	100%	0	0	
Mizuho II	26-03-2020	31-03-2020	2.23213%	5.46000%	100.00000%	Act/360	2019-20	2.361043%	100%	0	0	
Mizuho II	01-04-2020	27-09-2020	2.23213%	5.46000%	100.00000%	Act/360	2020-21	2.361043%	100%	0	0	
Mizuho II	28-09-2020	25-03-2021	1.52350%	5.46000%	100.00000%	Act/360	2020-21	1.611487%	100%	0	0	
Mizuho II	26-03-2021	31-03-2021	1.45950%	5.46000%	100.00000%	Act/360	2020-21	1.543791%	100%	0	0	
Mizuho II	01-04-2021	31-08-2021	1.45950%	5.46000%	100.00000%	Act/360	2021-22	1.543791%	100%	0	0	
Mizuho II	01-09-2021	27-09-2021	1.45950%	5.46000%	100.00000%	Act/360	2021-22	1.543791%	100%	0	0	
Mizuho II Weighted Average rate												0.00000%
Euro Loan I Drawl I	07-06-2021	05-12-2021	0.95000%	1.77703%		Act/360	2021-22	0.966882%	100%	0	0	
Euro Loan I Drawl I	06-12-2021	31-03-2022	0.95000%	1.77703%		Act/360	2021-22	0.966882%	100%	0	0	
Euro Loan I Drawl I	01-04-2022	05-06-2022	0.95000%	1.77703%		Act/360	2022-23	0.966882%	100%	0	0	
Euro Loan I Drawl I	06-06-2022	05-12-2022	0.95000%	1.77703%		Act/360	2022-23	0.966882%	100%	0	0	
Euro Loan I Drawl I	06-12-2022	31-03-2023	3.35600%	1.77703%		Act/360	2022-23	3.415637%	100%	0	0	
Euro Loan I Drawl I	01-04-2023	05-06-2023	3.35600%	1.77703%		Act/360	2023-24	3.415637%	100%	0	0	
Euro Loan I Drawl I	06-06-2023	05-12-2023	4.67800%	1.77703%		Act/360	2023-24	4.761129%	100%	0	0	
Euro Loan I Drawl I	06-12-2023	31-03-2024	4.89500%	1.77703%		Act/360	2023-24	4.981985%	100%	1	0.05065019	5.06500%
Euro Loan I Drawl I Weighted Average rate												

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024 To 31-03-2024	
										No of days	Product
Euro Loan I Drawl II	11-08-2021	31-08-2021	0.95000%	1.743516%		Act/360	2021-22	0.966563%	100%	0	0
Euro Loan I Drawl II	01-09-2021	05-12-2021	0.95000%	1.743516%		Act/360	2021-22	0.966563%	100%	0	0
Euro Loan I Drawl II	06-12-2021	31-03-2022	0.95000%	1.743516%		Act/360	2021-22	0.966563%	100%	0	0
Euro Loan I Drawl II	01-04-2022	05-06-2022	0.95000%	1.743516%		Act/360	2022-23	0.966563%	100%	0	0
Euro Loan I Drawl II	06-06-2022	05-12-2022	0.95000%	1.743516%		Act/360	2022-23	0.966563%	100%	0	0
Euro Loan I Drawl II	06-12-2022	31-03-2023	3.35600%	1.743516%		Act/360	2022-23	3.414512%	100%	0	0
Euro Loan I Drawl II	01-04-2023	05-06-2023	3.35600%	1.743516%		Act/360	2023-24	3.414512%	100%	0	0
Euro Loan I Drawl II	06-06-2023	05-12-2023	4.67800%	1.743516%		Act/360	2023-24	4.759562%	100%	0	0
Euro Loan I Drawl II	06-12-2023	31-03-2024	4.89500%	1.743516%		Act/360	2023-24	4.980345%	100%	1	0.05063351
Euro Loan I Drawl II Weighted Average rate											5.06340%
Euro Loan I Drawl III	21-09-2021	05-12-2021	0.95000%	1.743516%		Act/360	2021-22	0.966563%	100%	0	0
Euro Loan I Drawl III	06-12-2021	31-03-2022	0.95000%	1.743516%		Act/360	2021-22	0.966563%	100%	0	0
Euro Loan I Drawl III	01-04-2022	05-06-2022	0.95000%	1.743516%		Act/360	2022-23	0.966563%	100%	0	0
Euro Loan I Drawl III	06-06-2022	05-12-2022	0.95000%	1.743516%		Act/360	2022-23	0.966563%	100%	0	0
Euro Loan I Drawl III	06-12-2022	31-03-2023	3.35600%	1.743516%		Act/360	2022-23	3.414512%	100%	0	0
Euro Loan I Drawl III	01-04-2023	05-06-2023	3.35600%	1.743516%		Act/360	2023-24	3.414512%	100%	0	0
Euro Loan I Drawl III	06-06-2023	05-12-2023	4.67800%	1.743516%		Act/360	2023-24	4.759562%	100%	0	0
Euro Loan I Drawl III	06-12-2023	31-03-2024	4.89500%	1.743516%		Act/360	2023-24	4.980345%	100%	1	0.05063351
Euro Loan I Drawl III Weighted Average rate											5.06340%
USD 750 Million Drawl I	25-04-2022	24-07-2022	2.12913%	0		Act/360	2022-23	2.129130%	87%	0	0
USD 750 Million Drawl I	25-07-2022	24-10-2022	3.72092%	0		Act/360	2022-23	3.720920%	87%	0	0
USD 750 Million Drawl I	25-10-2022	31-03-2023	5.67396%	0		Act/360	2022-23	5.673960%	87%	0	0
USD 750 Million Drawl I	01-04-2023	24-04-2023	5.67396%	0		Act/360	2023-24	5.673960%	87%	0	0
USD 750 Million Drawl I	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%	0	0
USD 750 Million Drawl I	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%	1	0.05832156
USD 750 Million Drawl I	25-04-2022	24-07-2022	2.04913%	5.46000%	100.00000%	Act/360	2022-23	2.167474%	13%	0	0
USD 750 Million Drawl I	25-07-2022	24-10-2022	3.64092%	5.46000%	100.00000%	Act/360	2022-23	3.851195%	13%	0	0
USD 750 Million Drawl I	25-10-2022	31-03-2023	5.59396%	5.46000%	100.00000%	Act/360	2022-23	5.917030%	13%	0	0
USD 750 Million Drawl I	01-04-2023	24-04-2023	5.59396%	5.46000%	100.00000%	Act/360	2023-24	5.917030%	13%	0	0
USD 750 Million Drawl I	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%	0	0
USD 750 Million Drawl I	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%	1	0.00937608
USD 750 Million Drawl I Weighted Average rate											6.76980%
USD 750 Million Drawl II	29-07-2022	24-10-2022	3.75674%	0		Act/360	2022-23	3.756740%	87%	0	0
USD 750 Million Drawl II	25-10-2022	31-03-2023	5.67396%	0		Act/360	2022-23	5.673960%	87%	0	0
USD 750 Million Drawl II	01-04-2023	24-04-2023	5.67396%	0		Act/360	2023-24	5.673960%	87%	0	0
USD 750 Million Drawl II	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%	0	0
USD 750 Million Drawl II	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%	1	0.05832156
USD 750 Million Drawl II	29-07-2022	24-10-2022	3.67674%	5.46000%	100.00000%	Act/360	2022-23	3.889084%	13%	0	0
USD 750 Million Drawl II	25-10-2022	31-03-2023	5.59396%	5.46000%	100.00000%	Act/360	2022-23	5.917030%	13%	0	0
USD 750 Million Drawl II	01-04-2023	24-04-2023	5.59396%	5.46000%	100.00000%	Act/360	2023-24	5.917030%	13%	0	0
USD 750 Million Drawl II	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%	0	0
USD 750 Million Drawl II	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%	1	0.00937608
USD 750 Million Drawl II Weighted Average rate											6.76980%
USD 750 Million Drawl III	28-09-2022	24-10-2022	4.41820%	0		Act/360	2022-23	4.418200%	87%	0	0
USD 750 Million Drawl III	25-10-2022	31-03-2023	5.67396%	0		Act/360	2022-23	5.673960%	87%	0	0
USD 750 Million Drawl III	01-04-2023	24-04-2023	5.67396%	0		Act/360	2023-24	5.673960%	87%	0	0
USD 750 Million Drawl III	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%	0	0

Info:

(i) Floating rate, interest basis and withholding tax rates are as per mail received from IF on 10.10.2024

Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From 31-03-2024		WAVG rate
										To	31-03-2024	
USD 750 Million Drawl III	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%	1	0.05832156	
USD 750 Million Drawl III	28-09-2022	24-10-2022	4.06820%	5.46000%	100.00000%	Act/360	2022-23	4.303152%	13%	0	0	
USD 750 Million Drawl III	25-10-2022	31-03-2023	5.59396%	5.46000%	100.00000%	Act/360	2022-23	5.917030%	13%	0	0	
USD 750 Million Drawl III	01-04-2023	24-04-2023	5.59396%	5.46000%	100.00000%	Act/360	2023-24	5.917030%	13%	0	0	
USD 750 Million Drawl III	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%	0	0	
USD 750 Million Drawl III	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%	1	0.00937608	
USD 750 Million Drawl III Weighted Average rate												6.76980%

Info:

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Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From	31-03-2024	No of days	Product	WAVG rate
										To	31-03-2024			
USD 750 Million Drawl IV	09-11-2022	31-03-2023	5.71764%	0		Act/360	2022-23	5.717640%	87%			0	0	
USD 750 Million Drawl IV	01-04-2023	24-04-2023	5.71764%	0		Act/360	2023-24	5.717640%	87%			0	0	
USD 750 Million Drawl IV	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%			0	0	
USD 750 Million Drawl IV	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%			1	0.05832156	
USD 750 Million Drawl IV	09-11-2022	31-03-2023	5.63764%	5.46000%	100.00000%	Act/360	2022-23	5.963232%	13%			0	0	
USD 750 Million Drawl IV	01-04-2023	24-04-2023	5.63764%	5.46000%	100.00000%	Act/360	2023-24	5.963232%	13%			0	0	
USD 750 Million Drawl IV	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%			0	0	
USD 750 Million Drawl IV	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%			1	0.00937608	
USD 750 Million Drawl IV Weighted Average rate														6.76980%
USD 750 Million Drawl V	23-12-2022	31-03-2023	5.71764%	0		Act/360	2022-23	5.717640%	87%			0	0	
USD 750 Million Drawl V	01-04-2023	24-04-2023	5.71764%	0		Act/360	2023-24	5.717640%	87%			0	0	
USD 750 Million Drawl V	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%			0	0	
USD 750 Million Drawl V	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%			1	0.05832156	
USD 750 Million Drawl V	23-12-2022	31-03-2023	5.63764%	5.46000%	100.00000%	Act/360	2022-23	5.963232%	13%			0	0	
USD 750 Million Drawl V	01-04-2023	24-04-2023	5.63764%	5.46000%	100.00000%	Act/360	2023-24	5.963232%	13%			0	0	
USD 750 Million Drawl V	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%			0	0	
USD 750 Million Drawl V	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%			1	0.00937608	
USD 750 Million Drawl V Weighted Average rate														6.76980%
USD 750 Million Drawl VI	08-02-2023	31-03-2023	5.71764%	0		Act/360	2022-23	5.717640%	87%			0	0	
USD 750 Million Drawl VI	01-04-2023	24-04-2023	5.71764%	0		Act/360	2023-24	5.717640%	87%			0	0	
USD 750 Million Drawl VI	25-04-2023	24-10-2023	6.26834%	0		Act/360	2023-24	6.268340%	87%			0	0	
USD 750 Million Drawl VI	25-10-2023	31-03-2024	6.61909%	0		Act/360	2023-24	6.619090%	87%			1	0.05832156	
USD 750 Million Drawl VI	08-02-2023	31-03-2023	5.63764%	5.46000%	100.00000%	Act/360	2022-23	5.963232%	13%			0	0	
USD 750 Million Drawl VI	01-04-2023	24-04-2023	5.63764%	5.46000%	100.00000%	Act/360	2023-24	5.963232%	13%			0	0	
USD 750 Million Drawl VI	25-04-2023	24-10-2023	6.26834%	5.46000%	100.00000%	Act/360	2023-24	6.630358%	13%			0	0	
USD 750 Million Drawl VI	25-10-2023	31-03-2024	6.53909%	5.46000%	100.00000%	Act/360	2023-24	6.916744%	13%			1	0.00937608	
USD 750 Million Drawl VI Weighted Average rate														6.76980%
JPY Equ. \$400 Million Drawl I	15-05-2023	14-11-2023	1.20000%	0		Act/365	2023-24	1.200000%	100%			0	0	
JPY Equ. \$400 Million Drawl I	15-11-2023	31-03-2024	1.21218%	0		Act/365	2023-24	1.212180%	100%			1	0.01215501	
JPY Equ. \$400 Million Drawl I Weighted Average rate														1.21550%
JPY Equ. \$400 Million Drawl II	24-07-2023	14-11-2023	1.20000%	0		Act/365	2023-24	1.200000%	100%			0	0	
JPY Equ. \$400 Million Drawl II	15-11-2023	31-03-2024	1.21218%	0		Act/365	2023-24	1.212180%	100%			1	0.01215501	
JPY Equ. \$400 Million Drawl II Weighted Average rate														1.21550%
JPY Equ. \$400 Million Drawl III	25-09-2023	14-11-2023	1.20000%	0		Act/365	2023-24	1.200000%	100%			0	0	
JPY Equ. \$400 Million Drawl III	15-11-2023	31-03-2024	1.21218%	0		Act/365	2023-24	1.212180%	100%			1	0.01215501	
JPY Equ. \$400 Million Drawl III Weighted Average rate														1.21550%
JPY Equ. \$400 Million Drawl IV	22-12-2023	31-03-2024	1.21886%	0		Act/365	2023-24	1.218860%	100%			1	0.01222199	
JPY Equ. \$400 Million Drawl IV Weighted Average rate														1.22220%
JBIC Green I Drawl I	25-02-2021	16-03-2021	0.92000%	0.00000%		Act/360	2020-21	0.920000%	100%			0	0	
JBIC Green I Drawl I	17-03-2021	31-03-2021	0.92000%	0.00000%		Act/360	2020-21	0.920000%	100%			0	0	
JBIC Green I Drawl I	01-04-2021	16-09-2021	0.92000%	0.00000%		Act/360	2021-22	0.920000%	100%			0	0	
JBIC Green I Drawl I	17-09-2021	16-03-2022	0.92000%	0.00000%		Act/360	2021-22	0.920000%	100%			0	0	
JBIC Green I Drawl I	17-03-2022	31-03-2022	0.96017%	0.00000%		Act/360	2021-22	0.960170%	100%			0	0	
JBIC Green I Drawl I	01-04-2022	19-09-2022	0.96017%	0.00000%		Act/360	2022-23	0.960170%	100%			0	0	
JBIC Green I Drawl I	20-09-2022	16-03-2023	0.93264%	0.00000%		Act/360	2022-23	0.932640%	100%			0	0	
JBIC Green I Drawl I	17-03-2023	31-03-2023	0.93557%	0.00000%		Act/360	2022-23	0.935570%	100%			0	0	
JBIC Green I Drawl I	01-04-2023	18-09-2023	0.93557%	0.00000%		Act/360	2023-24	0.935570%	100%			0	0	

Info:

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Name of the Loan	From	To	Floating Rate of interest	Withholding Tax (WHT)	Applicability of Withholding Tax	Interest Basis	Financial year	Interest rate (incl WHT)	Loan Proportion	From	To	No of days	Product	WAVG rate
										31-03-2024	31-03-2024			
JBIC Green I Draw I	19-09-2023	17-03-2024	0.95966%	0.00000%		Act/360	2023-24	0.959660%	100%			0	0	
JBIC Green I Draw I	18-03-2024	31-03-2024	1.07223%	0.00000%		Act/360	2023-24	1.072230%	100%			1	0.01090101	
JBIC Green I Draw I Weighted Average rate														1.09010%
JBIC Green I Draw II	27-09-2021	16-03-2022	0.92000%	0.00000%		Act/360	2021-22	0.920000%	100%			0	0	
JBIC Green I Draw II	17-03-2022	31-03-2022	0.96017%	0.00000%		Act/360	2021-22	0.960170%	100%			0	0	
JBIC Green I Draw II	01-04-2022	19-09-2022	0.96017%	0.00000%		Act/360	2022-23	0.960170%	100%			0	0	
JBIC Green I Draw II	20-09-2022	16-03-2023	0.93264%	0.00000%		Act/360	2022-23	0.932640%	100%			0	0	
JBIC Green I Draw II	17-03-2023	31-03-2023	0.93557%	0.00000%		Act/360	2022-23	0.935570%	100%			0	0	
JBIC Green I Draw II	01-04-2023	18-09-2023	0.93557%	0.00000%		Act/360	2023-24	0.935570%	100%			0	0	
JBIC Green I Draw II	19-09-2023	17-03-2024	0.95966%	0.00000%		Act/360	2023-24	0.959660%	100%			0	0	
JBIC Green I Draw II	18-03-2024	31-03-2024	1.07223%	0.00000%		Act/360	2023-24	1.072230%	100%			1	0.01090101	
JBIC Green I Draw II Weighted Average rate														1.09010%
JBIC Green I Draw III	11-01-2022	16-03-2022	0.92000%	0.00000%		Act/360	2021-22	0.920000%	100%			0	0	
JBIC Green I Draw III	17-03-2022	31-03-2022	0.96017%	0.00000%		Act/360	2021-22	0.960170%	100%			0	0	
JBIC Green I Draw III	01-04-2022	19-09-2022	0.96017%	0.00000%		Act/360	2022-23	0.960170%	100%			0	0	
JBIC Green I Draw III	20-09-2022	16-03-2023	0.93264%	0.00000%		Act/360	2022-23	0.932640%	100%			0	0	
JBIC Green I Draw III	17-03-2023	31-03-2023	0.93557%	0.00000%		Act/360	2022-23	0.935570%	100%			0	0	
JBIC Green I Draw III	01-04-2023	18-09-2023	0.93557%	0.00000%		Act/360	2023-24	0.935570%	100%			0	0	
JBIC Green I Draw III	19-09-2023	17-03-2024	0.95966%	0.00000%		Act/360	2023-24	0.959660%	100%			0	0	
JBIC Green I Draw III	18-03-2024	31-03-2024	1.07223%	0.00000%		Act/360	2023-24	1.072230%	100%			1	0.01090101	
JBIC Green I Draw III Weighted Average rate														1.09010%
JBIC Green I Draw IV	28-04-2022	19-09-2022	0.95702%	0.00000%		Act/360	2022-23	0.957020%	100%			0	0	
JBIC Green I Draw IV	20-09-2022	16-03-2023	0.93264%	0.00000%		Act/360	2022-23	0.932640%	100%			0	0	
JBIC Green I Draw IV	17-03-2023	31-03-2023	0.93557%	0.00000%		Act/360	2022-23	0.935570%	100%			0	0	
JBIC Green I Draw IV	01-04-2023	18-09-2023	0.93557%	0.00000%		Act/360	2023-24	0.935570%	100%			0	0	
JBIC Green I Draw IV	19-09-2023	17-03-2024	0.95966%	0.00000%		Act/360	2023-24	0.959660%	100%			0	0	
JBIC Green I Draw IV	18-03-2024	31-03-2024	1.07223%	0.00000%		Act/360	2023-24	1.072230%	100%			1	0.01090101	
JBIC Green I Draw IV Weighted Average rate														1.09010%

Details of Refinancing in respect of Nabinagar Station

Sr. No.	Bank	ROI on refinancing date	Date of refinancing	Refinanced / Restructured with Bank	Restructured / Refinanced Amount (Rs. In crore)	New Loan Amount (Rs. In crore)	ROI of replaced Loan	savings	saving to be retained (Percent)	Remarks
1	Rural Electrification Corporation (Tranche 63A to Tranche 77 and Tranche 86 to Tranche 103)	9.70%	19-Dec-22	Rural Electrification Corporation	3,401.18	3,401.18	8.56%	1.14%	0.5700%	Loan availed by M/s Nabinagar Power Generation Corporation Ltd restructured based on credit rating of NTPC Limited - from 9.70% to 8.56% in respect of some Tranches and from 9.95% to 8.56% in respect of the remaining Tranches on 19.12.2022 and hence gain is retained by NTPC through weighted average interest on Loan.
2	Rural Electrification Corporation (Tranche 78 to Tranche 85)	9.95%	19-Dec-22	Rural Electrification Corporation	1,294.24	1,294.24	8.56%	1.39%	0.6950%	
3	UCO Bank-NPGCL	8.40%	02-Dec-22	UCO Bank-V	170.00	170.00	7.20%	1.20%	0.6000%	On 2.12.2022, an amount of Rs.169.99 crore was prepaid to Loan availed by M/s NPGCL by availing loan from UCO Bank V. The interest gain works out to 1.20% (from 8.40% to 7.20%), out of which one-half is added to the Rate of interest on loan annualised.
4	Canara Bank (e-Syndicate)-NPGCL	8.15%	27-Apr-23	HDFC-X	47,413.76	73,273.76	8.01%	0.14%	0.0700%	On 27.4.2023, the loan amount of Rs.732.73 crore availed from HDFC Bank X towards refinancing of loan of Rs.474.13 crore from Canara Bank (e-syndicate) . The transaction resulted in a savings in interest rate of 0.07% (from 8.15% to 8.01%) out of which one-half is added to interest on loan.

Drawl Ref No.	Drawl Amount	Drawl Date	w.e.f.	Applicable ROI	Loan Outstanding on date of restructuring	Outstanding 19-12.2022
REC-Tranche 63A	1,53,50,00,000	07-Mar-16	7-Mar-16	9.70%	-28,69,16,667.00	1,24,80,83,333.00
REC-Tranche 64	2,60,00,00,000	21-Mar-16	21-Mar-16	9.70%		2,60,00,00,000.00
REC-Tranche 65	1,11,50,33,775	31-Mar-16	31-Mar-16	9.70%		1,11,50,33,775.00
REC-Tranche 66	18,49,66,225	31-Mar-16	31-Mar-16	9.70%		18,49,66,225.00
REC-Tranche 67	2,00,00,00,000	17-Jun-16	17-Jun-16	9.70%		2,00,00,00,000.00
REC-Tranche 68	8,31,11,614	30-Jun-16	30-Jun-16	9.70%		8,31,11,614.00
REC-Tranche 69	1,31,68,88,386	30-Jun-16	30-Jun-16	9.70%		1,31,68,88,386.00
REC-Tranche 70	1,00,00,00,000	16-Aug-16	16-Aug-16	9.70%		1,00,00,00,000.00
REC-Tranche 71	1,00,00,00,000	02-Aug-16	02-Aug-16	9.70%		1,00,00,00,000.00
REC-Tranche 72	1,00,00,00,000	15-Sep-16	15-Sep-16	9.70%		1,00,00,00,000.00
REC-Tranche 73	88,00,00,000	27-Sep-16	27-Sep-16	9.70%		88,00,00,000.00
REC-Tranche 74	1,00,00,00,000	13-Oct-16	13-Oct-16	9.70%		1,00,00,00,000.00
REC-Tranche 75	1,00,00,00,000	25-Nov-16	25-Nov-16	9.70%		1,00,00,00,000.00
REC-Tranche 76	1,00,00,00,000	13-Dec-16	13-Dec-16	9.70%		1,00,00,00,000.00
REC-Tranche 77	1,50,00,00,000	29-Dec-16	29-Dec-16	9.70%		1,50,00,00,000.00
REC-Tranche 86	1,00,00,00,000	10-Oct-17	10-Oct-17	9.70%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 87	1,74,27,23,452	31-Dec-17	31-Dec-17	9.70%	-1,67,92,405.00	1,72,59,31,047.00
REC-Tranche 88	1,00,75,44,306	30-Dec-17	30-Dec-17	9.70%	-2,90,45,391.00	97,84,98,915.00
REC-Tranche 89	1,00,00,00,000	31-Jan-18	31-Jan-18	9.70%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 90	1,00,00,00,000	22-Feb-18	22-Feb-18	9.70%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 91	1,79,84,68,678	31-Mar-18	31-Mar-18	9.70%	-2,00,25,522.00	1,77,84,43,156.00
REC-Tranche 92	1,20,15,31,322	31-Mar-18	31-Mar-18	9.70%	-2,99,74,478.00	1,17,15,56,844.00
REC-Tranche 93	58,64,26,322	27-Jun-18	27-Jun-18	9.70%	-97,73,772.00	57,66,52,550.00
REC-Tranche 94	1,91,35,73,678	30-Jun-18	30-Jun-18	9.70%	-3,18,92,895.00	1,88,16,80,783.00
REC-Tranche 95	50,00,00,000	31-Jul-18	31-Jul-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 96	50,00,00,000	11-Sep-18	11-Sep-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 97	49,31,77,075	27-Sep-18	27-Sep-18	9.70%	-82,19,618.00	48,49,57,457.00
REC-Tranche 98	2,00,72,16,115	30-Sep-18	30-Sep-18	9.70%	-3,34,53,602.00	1,97,37,62,513.00
REC-Tranche 99	50,00,00,000	06-Nov-18	06-Nov-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 100	50,00,00,000	20-Nov-18	20-Nov-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 101	50,00,00,000	27-Dec-18	27-Dec-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 102	50,00,00,000	28-Dec-18	28-Dec-18	9.70%	-83,33,333.00	49,16,66,667.00
REC-Tranche 103	62,25,65,614	11-Jan-19	11-Jan-19	9.70%	-1,03,76,094.00	61,21,89,520.00
	34,58,82,26,562.00				-57,64,70,443.00	34,01,17,56,119.00
REC-Tranche 78	1,00,00,00,000	04-Jan-17	04-Jan-17	9.95%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 79	1,00,00,00,000	07-Feb-17	07-Feb-17	9.95%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 80	1,00,00,00,000	22-Feb-17	22-Feb-17	9.95%	-1,66,66,667.00	98,33,33,333.00
REC-Tranche 81	2,00,00,00,000	06-Mar-17	06-Mar-17	9.95%	-3,33,33,333.00	1,96,66,66,667.00
REC-Tranche 82	2,00,00,00,000	24-Mar-17	24-Mar-17	9.95%	-3,33,33,333.00	1,96,66,66,667.00
REC-Tranche 83	3,07,17,48,085	31-Mar-17	31-Mar-17	9.95%	-5,11,95,801.00	3,02,05,52,284.00
REC-Tranche 84	1,42,82,51,915	31-Mar-17	31-Mar-17	9.95%	-2,38,04,199.00	1,40,44,47,716.00
REC-Tranche 85	1,66,17,73,438	30-Jun-17	30-Jun-17	9.95%	-2,76,96,224.00	1,63,40,77,214.00
						12,94,24,10,547.00

Annexure-A



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
सूचना प्रौद्योगिकी एवं साइबर सुरक्षा प्रभाग
Information Technology & Cyber Security Division

विषय : CEA (Cyber Security in Power Sector) Guidelines, 2021.

CEA is mandated to prepare 'Guidelines on Cyber Security' in Power Sector under the provision of regulation (10) of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019. Guidelines on Cyber Security in Power Sector incorporating the cardinal principles has been prepared by CEA. In compliance to the provision of the above regulation, CEA (Cyber Security in Power Sector) Guidelines, 2021 are issued for compliance by all entities listed in the clause 2.3 (Applicability of the Guidelines) of the guidelines.

Encl: Guidelines on Cyber Security


07/10/21
(V.K. Mishra)
Secretary CEA

CEA (Cyber Security in Power Sector) Guidelines, 2021

1.0 Background

- 1.1 Cyber intrusion attempts and Cyber-attacks in any critical sector are carried out with a malicious intent. In Power Sector it's either to compromise the Power Supply System or to render the grid operation in-secure. Any such compromise, may result in mal-operations of equipments, equipment damages or even in a cascading grid brownout/blackout. The much hyped air gap myth between IT and OT Systems now stands shattered. The artificial air gap created by deploying firewalls between any IT and OT System can be jumped by any insider or an outsider through social engineering. Cyber-attacks are staged through tactics & techniques of Initial Access, Execution, Persistence, Privilege Escalation, Defence Evasion, Command and Control, Exfiltration. After gaining the entry inside the system through privilege escalation, the control of IT network and operations of OT systems can be taken over even remotely by any cyber adversary. The gain of sensitive operational data through such intrusions may help the Nation/State sponsored or non-sponsored adversaries and cyber attackers to design more sinister and advanced cyber-attacks.
- 1.2 Government of India has set up the Indian Computer Emergency Response Team (CERT-In) for Early Warning and Response to cyber security incidents and to have collaboration at National and International level for information sharing on mitigation of cyber threats. CERT-In regularly issues advisories on safeguarding computer systems and publishes Security Guidelines which are widely circulated for compliances. All Central Government Ministries/ Departments and State/Union Territory Governments have been advised to conduct cyber security audit of their entire Cyber Infrastructure including websites at regular interval through CERT-In empanelled Auditors so as to identify gaps and appropriate corrective actions to be taken in cyber security practices. CERT-In extends supports to enable Responsible Entity in conducting cyber security mock drills and in assessment of their preparation to withstand cyber-attacks. The Responsible Entity must submit Reports of Cyber Audit of cyber security controls, architecture, vulnerability management, network security and periodic cyber security drills to sectoral CERT as well as CERT-In. Team of experts shall review these reports and shortcomings if any in the compliances shall be flagged by them. CERT-In on regular basis also conducts workshops and training programs to enhance Cyber awareness of all Stakeholders.
- 1.3 Ministry of Power has created 6(six) sectoral CERTs namely Thermal, Hydro, Transmission, Grid Operation, RE and Distribution for ensuring cyber security in Indian Power Sector. Each Sectoral CERT has prepared their sub-sector specific model Cyber Crisis Management Plan(C-CMP) for countering cyber-attacks and cyber terrorism. Each Sectoral CERT has circulated their model C-CMPs for preparation and implementation of organization specific C-CMP by each of their Constituent Utility.
- 1.4 All Responsible Entities, Service Providers, Equipment Suppliers/Vendors and Consultants engaged in Power Sector are equally responsible for ensuring cyber security of the Indian Power Supply System. They are to act timely upon each threat intelligence,

advisories and other inputs received from authenticated sources, for continuous improvement in their cyber security posture.

- 1.5 In the current Indian scenario though many cyber security directives and guidelines exists, but none of them are power sector specific. Ministry of Power has directed CEA to prepare Regulation on Cyber Security in Power Sector. And as an interim measures CEA has been directed to issue Guideline on Cyber Security in Power Sector, under the provision of Regulation 10 on Cyber Security in the “Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019”.
- 1.6 The Guidelines on Cyber Security, in the form of Articles written below, requires mandatory Compliance by all Responsible Entities. The Guidelines shall come into effect from the date of issue by Central Electricity Authority, New Delhi.
- 2.0 Hereby the Guidelines on Cyber Security are drawn in the form of Articles for compliance by the Requester as well as User under the following provision of Regulation 10 on Cyber Security, in the “Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019”.

“The requester and the user shall comply with cyber security guidelines issued by the Central Government, from time to time, and the technical standards for communication system in Power Sector laid down by the Authority.”

2.1 **Objective of issuing Guideline:**

- a) Creating cyber security awareness
- b) Creating a secure cyber ecosystem,
- c) Creating a cyber-assurance framework,
- d) Strengthening the regulatory framework,
- e) Creating mechanisms for security threat early warning, vulnerability management and response to security threats,
- f) Securing remote operations and services,
- g) Protection and resilience of critical information infrastructure,
- h) Reducing cyber supply chain risks,
- i) Encouraging use of open standards,
- j) Promotion of research and development in cyber security,
- k) Human resource development in the domain of Cyber Security,
- l) Developing effective public private partnerships,
- m) Information sharing and cooperation
- n) Operationalization of the National Cyber Security Policy

2.2 Within the text of these Articles, ‘**Responsible Entity**’ shall mean all:

- a) Transmission Utilities as well as Transmission Licensees,
- b) Load despatch centres (State, Regional and National),
- c) Generation utilities (Hydro, Thermal, Nuclear, RE),
- d) Distribution Utilities
- e) Generation Aggregators,
- f) Trading Exchanges,
- g) Regional Power Committees, and
- h) Regulatory Commissions.

2.3 **Applicability:**

All Responsible Entities as well as System Integrators, Equipment Manufacturers, Suppliers/Vendors, Service Providers, IT Hardware and Software OEMs engaged in the Indian Power Supply System.

2.4 **Scope:**

2.4.1 **Control Systems for System Operation and Operation Management.**

- a) Grid Control and Management Systems,
- b) Power Plant Control Systems,
- c) Central Systems used to monitor and control of distributed generation and loads e.g. virtual power plants, storage management, central control rooms for hydroelectric plants, photovoltaic/wind power installations,
- d) Systems for fault management and work force management,
- e) Metering and measurement management systems,
- f) Data archiving systems,
- g) Parameterisation, configuration and programming systems,
- h) Supporting systems required for operation of the above mentioned systems,

2.4.2 **Communication System.**

- a) Routers switches and firewalls,
- b) Communication technology-related network components,
- c) Wireless digital systems.
- d) Control Centre to Control Centre Communications for data exchange on ICCP. (IEC 61850/60850-5/TASE.2/)

2.4.3 **Secondary, Automation and Tele control technologies**

- a) Control and Automation components,
- b) Control and field devices,
- c) Tele control devices,
- d) Programmable logic controllers / Remote Terminal Units, including digital sensor and actuators elements,
- e) Protection devices,
- f) Safety components,
- g) Digital measurement and metering installations,
- h) Synchronisation devices,
- i) Excitation Systems,

3.0 **Definition of Terms:**

1. **Access Management:** shall mean set of policies and procedures of the Responsible Entity for allowing Personnel, devices and IoT to securely perform a broad range of operational, maintenance, and asset management tasks either on site or remotely as laid down in Clause 5.2.5 of IS 16335.
2. **Accreditation:** shall mean the process of verifying that an organisation is capable of conducting the tests and assessments against a product/process that are required to be certified.

3. **Accreditation Body:** shall mean an organisation that has been accredited to verify the credentials and capabilities of the organisations that wish to become a certification body.
4. **Act:** shall mean the Information Technology Act, 2000 (21 of 2000)
5. **Asset:** shall mean anything that has value to the organization.
6. **Certification:** shall mean the process of verifying that a product has been manufactured in conformance with a set of predefined standards and/or regulations by an organisation, that is accredited to conduct the certification process
7. **Certification Body:** shall mean an organisation that has been accredited by an accreditation body to certify products / process against a certification scheme.
8. **Certification Scheme:** shall mean the processes, paperwork, tools, and documentation that define how a product or manufacturer is certified
9. **Chief Information Security Officer:** shall mean the designated employee of Senior management level directly reporting to Managing Director/Chief Executive Officer/Secretary of the Responsible Entity, having knowledge of Information Security and related issues, responsible for cyber security efforts and initiatives including planning, developing, maintaining, reviewing and implementation of Information Security Policies
10. **Critical Assets:** shall mean the facilities, systems and equipment which, if destroyed, degraded or otherwise declared unavailable, would affect the reliability or operability of the Power Supply System.
11. **Critical System:** shall mean cyber assets essential to the reliable operation of critical asset. Critical System consists of those cyber assets that have at least one of the following characteristics:
 - a) The cyber asset uses a routable protocol to communicate outside the electronic security perimeter.
 - b) The cyber asset uses a routable protocol within a control centre.
 - c) The cyber asset is dial-up accessible.
12. **Critical Information Infrastructure:** shall mean Critical Information Infrastructure as defined in explanation of sub-section (1) of Section 70 of the Act.
13. **Cyber Assets:** shall mean the programmable electronic devices, including the hardware, software and data in those devices that are connected over a network, such as LAN, WAN and HAN.
14. **Cyber Crisis Management Plan:** shall mean a framework for dealing with cyber related incidents for a coordinated, multi-disciplinary and broad-based approach for rapid identification, information exchange, swift response and remedial actions to mitigate and recover from malicious cyber related incidents impacting critical processes.
15. **Cyber Security Breach:** shall mean any cyber incident or cyber security violation that results in unauthorized or illegitimate access or use by a person as well as an entity, of data, applications, services, networks and/or devices through bypass of the underlying cyber security protocols, policies and mechanisms resulting in the compromise of the confidentiality, integrity or availability of data/information maintained in a computer resource or cyber asset.
16. **Cyber Security Incident:** shall mean any real or suspected adverse cyber security event that violates, explicitly or implicitly, cyber security policy of Responsible Entity resulting in unauthorized access, denial of service or disruption, unauthorized use of computer resource for processing or storage of information or changes to data or information

without authorization, leading to harm to the power grid or its critical sub-sectoral elements Generation, Transmission and Distribution.

17. **Cyber Security Policy:** shall mean documented set of business rules and processes for protecting information, computer resources, networks, devices, Industrial Control Systems and other OT resources.
18. **Electronic Security Perimeter:** shall mean the logical border surrounding a network to which the Cyber Systems of Power Supply System are connected using a routable protocol.
19. **Information Security Division:** shall mean a division accountable for cyber security and protection of the Critical System of the Responsible Entity.
20. **Protected System:** shall mean any computer, computer system or computer network of the Responsible Entity notified under section 70 of the Act, in the official gazette by appropriate Government.
21. **Security Architecture:** shall mean a framework and guidance to implement and operate a system using the appropriate security controls with the goal to maintain the system's quality attributes like confidentiality, integrity, availability, accountability and assurance.
22. **Vulnerability:** shall mean intrinsic properties of something resulting in susceptibility to a risk source that can lead to an event with a consequence
23. **Vulnerability Assessment:** shall mean a process of identifying and quantifying vulnerabilities

4.0 Standards

Reference	Description
ISO/IEC 15408	Common Criteria Certification Standard
ISO/IEC 17011	General requirements for accreditation bodies accrediting conformity assessment bodies
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
ISO/IEC 21827	Systems Security Engineering - Capability Maturity Model (SSE-CMM)
ISO/IEC 24748-1	Systems and software engineering — Life cycle management — Part 1: Guidelines for life cycle management.
ISO 27001/2	Information Security Management
ISO/ IEC 27019	Information technology — Security techniques — Information Security controls for the energy utility industry
ISO/IEC 61508	Functional Safety of Electrical / Electronic / Programmable Electronic Safety-related Systems
IEC 61850	Communication networks and systems for power utility automation
IEC 62351	Standards for Securing Power System Communications
IEC 62443	Cyber Security for Industrial Control Systems
IS 16335	Power Control Systems – Security Requirements.

5.0 Abbreviations

Abbreviations	Description
a) BES	Bulk Electric System

b)	CDAC	Centre for Development of Advanced Computing
c)	CEA	Central Electricity Authority
d)	CERC	Central Electricity Regulatory Commission
e)	CERT	Computer Emergency Response Team
f)	CERT-In	Indian Computer Emergency Response Team
g)	CII	Critical Information Infrastructure
h)	CISO	Chief Information Security Officer
i)	CSK	Cyber Swachhta Kendra
j)	COTS	Commercial off-the Shelf
k)	ESP	Electronic Security perimeter
l)	ICS	Industrial Control Systems
m)	ICT	Information and Communications Technology
n)	IEC	International Electro Technical Commission
o)	ISAC	Information Sharing and Analysis Centre
p)	ISD	Information Security Division
q)	ISO	International Organization for Standardization
r)	ISMS	Information Security Management System
s)	IT	Information Technology
t)	FAT	Factory Acceptance Test
u)	NABL	National Accreditation Board for Testing and Calibration Laboratories
v)	NCIIPC	National Critical Information Infrastructure Protection Centre
w)	NLDC	National Load Dispatch Centre
x)	NPTI	National Power Training Institute
y)	NSCS	National Security Council Secretariat
z)	OEM	Original Equipment Manufacturer
aa)	OT	Operational Technology
bb)	RLDC	Regional Load Dispatch Centres
cc)	SAT	Site Acceptance Test
dd)	SERC	State Electricity Regulatory Commission
ee)	SCADA	Supervisory Control and Data Acquisition Systems
ff)	SIEM	Security Information and Event Management
gg)	SLA	Service Level Agreement
hh)	SLDC	State Load Dispatch Centre
ii)	QCI	Quality Council of India

CEA (Cyber Security in Power Sector) Guidelines, 2021

Article 1. Cyber Security Policy.

a. Cardinal Principles: The Responsible entity will strictly adhere to following cardinal principles while framing cyber security policy:

- i. There is hard isolation of their OT Systems from any internet facing IT system.
 - ii. May keep only one of their IT systems with internet facing at any of their site/location if required which is isolated from all OT zones and kept in a separate room under the security and control of CISO.
 - iii. Downloading/Uploading of any data/information from their internet facing IT system is done only through an identifiable whitelisted device followed by scanning of both for any vulnerability/malware as per the SOP laid down and for all such activities digital logs are maintained and retained under the custody of CISO for at least 6 months. The log shall be readily to carry out the forensic analysis if asked by investigation agency.
 - iv. List of whitelisted IP addresses for each firewall is maintained by CISO and each firewall is configured for allowing communication with the whitelisted IP addresses only.
 - v. Communication between OT equipment/systems is done through the secure channel preferably of POWERTEL through the fibre optic cable. Security configuration of the communication channel is also to be ensured.
 - vi. All ICT based equipment/system deployed in infrastructure/system mandatorily CII are sourced from the list of the “Trusted Sources” as and when drawn by MoP/CEA.
- b. The Responsible Entity shall be ISO/IEC 27001 certified (including sector specific controls as per ISO/IEC 27019).
 - c. The Responsible Entity shall have a Cyber Security Policy drawn upon the guidelines issued by NCIIPC.
 - d. The Responsible Entity shall ensure annual review of their Cyber Security Policy by subject matter expert and changes shall be made therein only after obtaining the due approval from Board of Directors.
 - e. The process of Access Management for all Cyber Assets owned or under control of the Responsible Entity shall be detailed in the Cyber Security Policy.
 - f. The Cyber Security Policy shall leverage state-of-art cyber security technologies and relevant processes at multiple layers to mitigate the cyber security risks.
 - g. The Responsible Entity shall be solely responsible to get Cyber Security Policy implemented through its Information Security Division (ISD).
 - h. The CISO shall record the reason(s) for exemption required, if any, in case, unable to comply with any of the provision(s) of the Cyber Security Policy. Any exception shall be allowed only after an approval of provisions of compensatory control(s) to mitigate residual cyber security risks.

- i. The CISO shall record the exemptions sought in statement of applicability controls, while getting the ISO 27001 certified. All exemptions and its justification need to be in conformance with Cyber Security Policy of the Responsible Entity.
- j. The Responsible Entity shall allocate sufficient Annual budget for enhancing cyber security posture, enhanced year over year.
- k. The Responsible Entity shall work in collaboration with other Industry Stakeholders as well as Academia to promote R&D activity in the domain of cyber security.
- l. The Responsible Entity shall ensure that cyber security issues are taken up as agenda items in their Board meetings once in every three months.

Article 2 Appointment of CISO.

- a) The Responsible Entity shall mandatorily appoint a CISO and shall confirm to qualification, if any, **laid** by Quality Council of India (QCI). In absence, the work of CISO shall be looked upon by Alternate CISO. In case qualification for appointment of Alternate CISO has been relaxed for reasons recorded thereof, Alternate CISO has to mandatorily acquire the minimum required cyber security skill sets within six months from the date of his appointment.
- b) The Responsible Entity shall regularly update details of CISO and Alternate CISO, with the Sectoral CERT, as well as on ISAC-Power Portal.
- c) Roles and Responsibility of CISOs shall be as laid by CERT-In and ring-fenced to ensure cyber security of the Cyber Assets of the Responsible Entity.

Article 3: Identification of Critical Information Infrastructure (CII).

- a) The Responsible Entity shall submit to NCIIPC through Sectoral CERT, details of Cyber Assets which uses a routable protocol to communicate outside the Electronic Security Perimeter drawn by the Responsible Entity or a routable protocol within a control centre and dial-up accessible Cyber Assets, within 30 days from the date of their commissioning in the System.
- b) The Responsible Entity shall submit details of Critical Business Processes and underlying information infrastructure along with mapped impact and Risk Profile to NCIIPC and shall get their CIIs identified in consultation with NCIIPC. The process of the notification/declaration by Appropriate Government shall follow thereafter.
- c) The Responsible Entity shall review their declared/notified CIIs at least once a year to examine changes if any in the functional dependencies, protocols and technologies or upon any change in security architecture. The Responsible Entity shall review their declared/notified CIIs once in every 6 months, in case if NCIIPC has directed them to constitute an Information Security Steering Committee.
- d) The Responsible Entity shall ensure that all cyber assets of their identified/notified CIIs are recorded in the asset register and considered for risk assessment as well as for finalization of controls in statement of applicability.

Article 4. Electronic Security Perimeter

- a) The Responsible Entity shall identify and document the Electronic Security Perimeter(s) and all Access Points to the perimeter(s).

- b) The Responsible Entity shall follow procedure of identifying “Electronic Security Perimeter” in case of distributed and/or hybrid information infrastructure, as per IEC 62443 / IS16335 (as amended from time to time).
- c) The Responsible Entity shall ensure that every Critical System resides within an Electronic Security Perimeter.
- d) The Responsible Entity shall perform a cyber-Vulnerability Assessment of each electronic Access Points to the Electronic Security Perimeter(s) at least once in every 6 (six) months and/or after any change in Security Architecture.
- e) The Responsible Entity shall ensure that all critical, high and medium vulnerabilities identified as a result of cyber Vulnerability Assessment shall be closed and verified for the effective closure.

Article 5. Cyber Security Requirements

- a) The Responsible Entity shall have an Information Security Division (ISD), headed by CISO.
- b) The Responsible Entity shall ensure that the ISD must be functional on 24x7x365 basis and is manned by sufficient numbers of Engineers having valid certificate of successful completion of course on cyber security of Power Sector from the Training Institutes designated by CEA.
- c) The Responsible Entity shall ensure that ISD
 - 1) has on-boarded Cyber Swachhta Kendra(CSK) of CERT-In, if they have public IPs.
 - 2) has timely acted upon the advisories, guidelines and directive of NCIIPC, CSK, CERT-In and Sectoral CERTs,
 - 3) has deployed an Intrusion Detection System and Intrusion Prevention System capable of identifying behavioural anomaly in both IT as well as OT Systems.
 - 4) shares reports on incident response and targeted malware samples with CERT-In,
 - 5) updates the firmware/software with the digitally signed OEM validated patches only.
 - 6) enables only those ports and services that are required for normal operations. In case of any emergency the procedure as laid in Access management be followed.
 - 7) maintains firewall logs for the last 6 months duration. Firewall logs shall be analysed and all critical and high severity comments shall be addressed for effective closure.
 - 8) retains document of FAT, SAT test results and report/ certificate of cyber tests carried out for compliance of Government Orders and Cyber Security Audit.*
 - 9) maintains all cyber logs and cyber forensic records of any incident for at least** 90 days.
 - * FAT, SAT must include comprehensive cyber security tests of the component/equipment/system to be delivered/delivered at site.
 - ** 90 days from date of the commissioning of the system/recovery from any incident, whichever is later.
- d) The Responsible Entity shall routinely audit and test security properties of the Critical System and must act upon, in case if any new vulnerabilities is identified through testing or by the equipment manufacturer.

- e) The Responsible Entity shall design a secure architecture for control system appropriate for their process control environment*.
- f) All State Load Dispatch Centres(SLDCs) shall comply with the directions issued by the National Load Dispatch Centre(NLDC) as well as Regional Load Dispatch Centres(RLDCs) U/s 29 (1) of the Electricity Act, 2003 to ensure stability and cyber security of grid operation and achieve efficiency in the grid operation. In case of any non-compliance, the Head of SLDC shall be responsible and shall be liable for Penalty as per the provision of CERC/SERC.

*There are so many different types of systems in existence and so many possible solutions, it is important that the selection process ensures that the level of protection is commensurate with the business risk and the Responsible Entity shall not rely on one single security measure for its defence. *(Reference IEC/TR62351-10 Edition 1.0 2012-10 Power systems management and associated information exchange –Data and communications security – Part 10: Security architecture guidelines).*

Article 6 Cyber Risk Assessment and Mitigation Plan

- a) The Responsible Entity shall document in their Cyber Security Policy a Cyber Risk Assessment and Mitigation Plans drawn upon the best practises being followed in the Power Sector, and the same shall be approved by Board of Directors.
- b) The Cyber Risk Assessment and Mitigation Plans shall clearly define the matrix for assessing the cyber risk of both IT and OT environment and risk acceptance criteria.
- c) The Cyber Risk Assessment Plan shall be capable to demonstrate that repeated cyber security risk assessment delivers consistent, valid and comparable results.
- d) The review of cyber risk assessment shall be carried out at least once in a Quarter. The actionable of risk treatment and mitigation shall be tracked in this review for their effectiveness.
- e) The CISO shall be responsible for implementation and regular review, on the basis of internal and external feedbacks, of the Cyber Risk Assessment and Mitigation Plans.

Article 7 Phasing out of Legacy System

- a) As the life cycle of the Power System Equipment/System is longer than that of IT Systems deployed therein, the Responsible Entity shall ensure that all IT technologies in the Power System Equipment/System should have the ability to be upgraded.
- b) The Responsible Entity shall ensure that the Information Security Division shall draw the list of all communicable equipments/systems nearing end life or are left without support from OEM. Thereafter CISO shall identify equipment/systems to be phased out from the list drawn, firm up their replacement plan and put up the replacement plan for approval before the Board of Directors.
- c) The CISO shall ensure that till equipments/systems nearing end life or left without support from OEM are not replaced, their cyber security is hardened and ensured through additional controls provisioned in consultation with the OEM or alternate Supplier(s)*.
*e.g. Use of CDAC developed AppSamvid and whitelisting of applications installed may be explored across all legacy systems.
- d) The Responsible Entity shall document in their Cyber Security Policy a Standard Operating Procedure for safe and secure disposal of outlived or legacy devices.

Article 8. Cyber Security Training.

- a) The Responsible Entity shall establish, document, implement, and maintain an annual cyber security training program for personnel having authorized cyber or authorized physical access (unescorted or escorted) to their Critical Systems.
- b) The Responsible Entity shall review annually their cyber security training program and shall update it whenever necessary. Annual Review shall record evaluation of the effectiveness of the trainings held.
- c) The Responsible Entity shall ensure that Cyber Security training program designed for their IT as well as OT O&M Personnel must include following topics and as per their functional requirements and security concerns additional topics shall be added:
 - 1) User authentication and authorization.
 - 2) Cyber Security and Protection mechanisms of IT/OT/ICS Systems.
 - 3) Introduction to various standards i.e. ISO/IEC:15408, ISO/IEC:24748-1, ISO: 27001, ISO: 27002, ISO 27019, IS 16335, IEC/ISO:62443.
 - 4) Training on implementation of ISO/IEC 27001 and awareness on IEC 62443.
 - 5) Vulnerability Assessment in the Critical System.
 - 6) Monitoring and preserving of electronic logs of access of Critical Assets.
 - 7) Detecting cyber-attacks on SCADA and ICS systems
 - 8) The handling of Critical System during cyber crisis.
 - 9) Action plans and procedures to recover or re-establish normal functioning of Critical Assets and access thereto following a Cyber Security Incident.
 - 10) Hands on SCADA operation at any of the Regional Load Dispatch Centre.
 - 11) Handling of risks involved in the procurement of COTS Products.
- d) All Personnel engaged in O&M of IT & OT Systems shall mandatorily undergo courses on cyber security of Power Sector from any of the training institute designated by CEA, immediately within 90 days from the notification of CEA Guidelines on Cyber Security in Power Sector.
- e) The Responsible Entity shall ensure that none of their newly hired or the current Personnel have access to the Critical System, prior to the satisfactory completion of cyber security training programme from the Training Institutes designated in India, except in specified circumstances such as cyber crisis or an emergency.
- f) NPTI in consultation with CEA shall identify and design domain specific courses on Cyber Security for different target groups. The “Governing Board for PSO Training and Certification” shall approve the content, duration etc of these courses and shall review it Annually. NPTI shall conduct these courses at all of their branches on regular basis and shall maintain the list of the Participants successfully completing the course.

Article 9 Cyber Supply Chain Risk Management

- a) The Responsible Entity shall ensure that, as and when Ministry of Power, Government of India notifies the Model Contractual Clauses on cyber security, these clauses are included in their every Bid invited for procurement of any ICT based components/equipments/System to be used for Power System.
- b) The Responsible Entity shall ensure that all the Communicable Intelligent Equipments and the Service Level Agreements (SLAs) for their Critical Systems shall be sourced from the list of the “Trusted Sources” as and when drawn by MoP/CEA.

- c) The Responsible Entity shall ensure that, in case, for the any Communicable Intelligent Devices, if no Trusted Source has been identified, then the successful bidder in compliance with the provisions made in MoP order dated 2.7.2020 and any other relevant MoP order has got the product cyber tested for any kind of embedded malware/Trojan/cyber threat and for adherence to Indian Standards at the designated lab.
- d) The Responsible Entity shall ensure that the essential cyber security tests are carried out successfully during FAT, SAT as detailed in **Annexure A**. The equipment/System besides for functionality shall also be tested in the factory for vulnerabilities, design flaws, parts being counterfeit or tainted, so as to minimize problems during on-site-testing and installation. Cyber Security Conformance Testing are to be carried out in the designated Lab as listed in **Annexure-I of MoP Order No. 12/13/2020-T&R dt. 8th June, 2021(Order at Annexure-B)**.
- e) The Responsible Entity shall ensure that the Equipment/System supplied by the successful bidder shall accompany with a certificate^{§, #} obtained by OEM from a certification body accredited to assess devices and process for conformance to IEC 62443-4 standards during design and manufacture. The Responsible Entity shall accept the certificate submitted along with the supplied Equipment/System only if it's in line with the Testing Protocol as notified by Ministry of Power, Government of India, from time to time.
- f) The Responsible Entity in compliance to the requirement of Article 9(e) shall also accept, till the setting up of an adequate certification facility in the India, a digitally signed self-declaration of conformance to the IEC 62443-4 standards during design and manufacture of the equipment/system, if submitted by the OEM.
- g) The Responsible Entity shall dispose all unserviceable or obsolete Communicable Intelligent Devices as per the procedure laid in their Cyber Risk Assessment and Mitigation Plans which shall be in line with the prevailing best practices.

§ The National & International certification may be specified in the tender for critical systems/sub-systems being procured by the Responsible Entity.

Certification Schemes:

Embedded Device Security Assurance Certification is for an individual product,
System Security Assurance Certification is for a set of products in a system (possibly from different vendors)

Security Development Lifecycle Assurance Certification is for the development processes that a manufacturer uses for developing products.

Article 10 Cyber Security Incident Report and Response Plan

- a) The CISO of the Responsible Entity shall report in the formats prescribed by CERT-In, all Cyber Security Incidents, classified as reportable events.
- b) Root cause analysis for all reportable events shall be carried out and corrective action taken, so as to ensure that any re-occurrence of such event can be managed with ease.
- c) The Responsible Entity shall mandatorily define in their Cyber Security Policy, criteria(s) identified on the basis of impact analysis, for declaring the occurrence of

Cyber Security Incident(s) as a Cyber Crisis in the System owned or controlled by them.

- d) The Responsible Entity shall mandatorily designate an Officer along with his/her standby by name and designation and empower them to declare an occurrence of the incident(s) as “Cyber Crisis”. The contact details of these Officers shall be updated in the C-CMP within 15 days of changes if any due to transfer or superannuation etc.
- e) The CISO shall ensure that during any Cyber Security Incident, ISD monitors and minutely records every details of cyber security events and incidents in both IT as well as the OT System owned or controlled by the Responsible Entity.
- f) The CISO shall ensure that each cyber incident is handled strictly as per Cyber Security Incident Response Plan detailed in the latest C-CMP approved by the Board of Directors.
- g) The Responsible Entity shall ensure that the efficacy of the Cyber Security Incident Response Plan is tested annually through mock drill(s) carried out, if feasible, as simulation exercise(s) or as table top exercise(s) with wider participation of their employees, in consultation with CERT-In and sectoral CERT. In case if any shortcoming is observed in the Cyber Security Incident Response Plan suitable changes shall be made in it.
- h) The Responsible Entity shall ensure that the CISO compiles details of incident detection, incident handling, learnings from each incident and damage claims made if any and shall report to CERT-In as well as upload information on ISAC-Power Portal.

Article 11 Cyber Crisis Management Plan(C-CMP)

- a) The Responsible Entity shall prepare a Cyber Crisis Management Plan and submit to their sectoral-CERT for review with intimation to Ministry of Power/CISO-MoP. Responsible Entity shall update their C-CMP on the basis of comments made by sectoral-CERT and then submit for vetting to CERT-In. The C-CMP shall be updated once again to include the observations made by CERT-In before seeking approval of Board of Directors for implementation of C-CMP.
- b) The Responsible Entity shall ensure that the C-CMP is reviewed at least annually. The CISO shall ensure that all changes are made in C-CMP only with the due approval of Board of Directors and the changes made in C-CMP have been communicated through a verifiable means to all the concerned Personnel of the Responsible Entity.
- c) The CISOs shall be the custodian of all the cyber security related documents including Cyber Crisis Management Plan, Risk Treatment Plan, Statement of Applicability of controls, and compliance to regulator’s requirement.
- d) The CISO shall be accountable for ensuring enforcement of C-CMP by Information Security Division of the Responsible Entity, during a cyber-crisis, as and when declared by the designated Officer. (refer Article 10(d))

Article 12: Sabotage Reporting%

- a) The Responsible Entity shall incorporate procedure for identifying and reporting of sabotage in their Cyber Security Policy within 30 days from issue of the Guidelines, or grant of licence under the appropriate legal provisions to the Responsible Entity.
- b) The CISO shall be held liable for non-reporting of identified sabotage(s) as per procedure laid for identifying and reporting of sabotage in the Cyber Security Policy of the Responsible Entity.

- c) The CISO shall prepare a detailed report on disturbances or unusual occurrences, identified, suspected or determined to be caused by sabotage in the Critical System of the Responsible Entity, and shall submit the report to the Sectoral CERT as well as to CERT-In within 24 hours of its occurrence.
- d) The CISO shall submit to NCIIPC within 24 hours of occurrence the report on every sabotage classified as cyber incidents(s) on "Protected System".
- e) The CISO upon occurrence on every sabotage shall take custody of all log records as well as digital forensic records of affected Cyber Assets, Intrusion Detection System, Intrusion Protection System, SIEM and shall preserve them for at least 90 days and shall make them available as and when called upon for investigation by the concerned Agencies.

%Disturbances or unusual occurrences, suspected or determined to be caused by sabotage.

Sabotage e.g. can be a forced intrusion in un-manned/manned facility and taking control of operation of Critical System through a communicating device.

Article 13 Security and Testing of Cyber Assets

- a) The Responsible Entity shall ensure security of all in-service phase as well as standby Cyber Assets through regular firmware/Software updates and patching, Vulnerability management, Penetration testing (of combined installations), securing configuration, supplementing security controls. CISO shall maintain details of update version of each firmware and software and their certification if received from OEMs.
- b) The Responsible Entity shall carry out regularly Vulnerability Assessment of all Cyber Assets owned or under their control. If a Cyber Asset is found vulnerable to any exploits or upon any patch updates or major configuration changes, then further Penetration Testing may be carried out offline or in a suitably configured laboratory test-bed to determine other vulnerabilities that may have not been identified so far.
- c) The Responsible Entity shall specify security requirement and evaluation criteria during each phase of their procurement Process.
- d) The Responsible Entity shall ensure that all Cyber Assets being procured shall conform to the type tests as mentioned in the specification for type testing listed in the bid document. Type test reports of tests conducted in NABL accredited Labs or internationally accredited labs (with in last 5 years from the date of bid opening) shall be mandated to be submitted along with bid. In case, the submitted Type Test reports are not as per specification, the re-tests shall be conducted without any cost implication to the Responsible Entity.
- e) The Responsible Entity shall ensure that all Communicable devices are tested for communication protocol as per the ISO/IEC/IS standards listed in **MoP Order No. 12/13/2020-T&R dated 8th June, 2021(Annexure-B).**
- f) The Responsible Entity shall ensure that all Critical Systems designed with Open Source Software are adequately cyber secured.
- g) The Responsible Entity as a best practise upon any incidence of Cyber Security Breach shall carry out cyber security tests at any lab designated for cyber testing by Ministry of Power. These tests shall be similar to Pre Commissioning Security Test and those essential for carrying out Post Incident Forensics Analysis.

Article 14 Cyber Security Audit

- a) The Responsible Entity shall implement Information Security Management System (ISMS) covering all its Critical Systems.
- b) The Responsible Entity shall through a CERT-In Empanelled Cyber Security OT Auditor shall get their IT as well as OT System audited at least once in every 6 (six) months and shall close all critical and high vulnerabilities within a period of one month and medium as well as low non-conformity before the next audit. Effective closure of all non-conformities shall be verified during the next audit.
- c) The Cyber Security Audit shall be as per ISO/IEC 27001 along with sector specific standard ISO/IEC 27019, IS 16335 and other guidelines issued by appropriate Authority if any. These mentioned standards shall be current with all amendments if any and in case if any standard is superseded, the new standard shall be applicable. CISO shall ensure immediate closure of non-conformance, based on the criticality and by means all non-conformances are to be closed before the next audit.
- d) The Responsible Entity shall ensure that CISO has all the required systems and documents in place, as mandated by NSCS for base line cyber security audit.

FAT & SAT

1. During FAT stage, the customer has to verify all types test reports / certificates including Communication protocol and security conformance tests of the devices offered for FAT.
2. FAT of SCADA involves testing as a whole system in the integrated scale down set up. For SCADA, Indian standard IS 15953: 2011 “SCADA System for Power System Applications” provides definition and guidelines for the specification, performance analysis and application of SCADA systems for use in electrical utilities (for transmission & Distribution) including guidance on Tests and inspections.
3. The SAT will be done at customer site as per the SAT document mutually agreed by buyer and supplier. For SAT also, guidance from IS 15953: 2011 need to be applied.
4. IEC 61850-10-3 Communication Networks and Systems For Power Utility Automation- Functional testing of IEC 61850 systems (in draft stage - CDTR) covers testing of applications within substations covering
 - a. A methodical approach to the verification and validation of a substation solution
 - b. The use of IEC 61850 resources for testing in Edition 2.1
 - c. Recommended testing practices for different use cases
 - d. Definition of the process for testing of IEC 61850 based devices and systems using communications instead of hard wired system interfaces (ex. GOOSE and SV instead of hardwired interfaces)
 - e. Use cases related to protection and control functions verification and testing.

This standard may be used as a guidelines for FAT & SAT for Substation Automation System (SAS) based on IEC 61850.

Annexure - B**Annexure – 1****List of designated laboratories for cyber security conformance testing****Table -A. Field Equipment /Operational Technology (OT)**

Sl. No.	Equipment	Communication Protocol Conformance Standards	Protocol Security Conformance Standards	Designated Laboratories
1	Remote Terminal Units (RTUs) & PLCs with IEC communications protocols	IEC 60870-5 -101 / IEC 60870-5 -104 (Test Details Annexure 2)	IEC 60870-5- 7 Security extension & IEC 62351 series (specifically IEC 62351-100 parts 1 & 3) (Test Details Annexure-2	Central Power Research Institute (CPRI), Prof Sir C V Raman Road, Sadashivanagar P O, Bengaluru – 560080, Karnataka
2	Intelligent Electronic Equipment / Numerical Protection Relays / Bay Control Units / Bay Protection Units, Gateways, Transformer Tap controller/ changer, etc. with IEC 61850 communication protocol	IEC 61850 – 5 to IEC 61850 – 10 (Test Details Annexure 2)		CPRI
3	Smart meters with IEC 62056 communication protocols	IEC 62056 series / DLMS & IS 15959 series and IS 16444 series (Test details Annexure 2)	IEC 62056 series / DLMS & IS 15959 series and IS 16444 series (Test Details Annexure 2)	1. CPRI 2. Electrical Research and Development Association (ERDA), ERDA Road, GIDC, Makarpura, Vadodara - 390 010 Gujarat 3. Yadav Measurements Pvt. Ltd. (YMPL) 373-375, RIICO Bhamashah Industrial Area Kaladwas 313003 Udaipur – Rajasthan

Information Technology (IT) Equipment (Main / Backup / Disaster recovery (DR) Control Centre / Substation control centre IT equipment)

All IT products procured /supplied shall have a valid Certificate of Common Criteria as per ISO/IEC 15408 issued by signatories of the Common Criteria Recognition Agreement (CCRA) (www.commoncriteriaportal.org).

Import/procurement/supplied from vendors sourcing from prior reference countries, the Certificate for Common Criteria shall be from Government Laboratories in India according to the IC3S scheme operated by Ministry of Electronics and Information Technology, which is a signatory to CCRA.

<https://www.commoncriteria-india.gov.in/>

Details of tests for various identified products

Remote Terminal Units (RTUs) (Sl. No. 1 of Table – A of Annexure – 1)

Test protocol:

Utilities / manufacturers will submit the sample along with all the required technical documentation for taking up testing to the designated laboratory.

Reference standards

- 1) IEC 60870-5-101 & IEC 60870-5-104 as applicable
- 2) IEC 60870-5-7 Telecontrol equipment and systems - Part 5-7: Transmission protocols - Security extensions to IEC 60870-5-101 and IEC 60870-5-104 protocols (applying IEC 62351)
- 3) IEC 62351-100-1 & IEC 62351-100-3 and other cross referenced standards.

Test cases

Extract from standard (IEC 62351-100-1)

The conformance test cases are divided into four clauses:

- Clause 5: Verification of configuration parameters. This clause contains the configuration parameters affecting the message contents and/or the protocol behaviour.
- Clause 6: Verification of communication. The goal of this clause is to verify that Device Under Test (DUT) is able to implement the security extension messages as described in IEC TS 60870-5-7.
- Clause 7: Verification of procedures. The goal of this clause is to verify that DUT is able to execute the security extension procedures as described in IEC TS 62351-5.
- Clause 8: Test result chart. This clause contains the results of the test cases listed in Clauses 6 and 7 for each supported value of the configuration parameters listed in Clause 5.

The test cases are organized in tables. They are numbered; their numbering syntax is: Subclause number (where the Table is located) + test case number.

In the column ‘reference’ each test case has a direct reference to IEC TS 62351-5 or IEC TS 60870-5-7 where the clause under test is defined.

Test cases are mandatory depending on the description in the column ‘Required’. The following situations are possible:

M= Mandatory test case. The test is referencing a clause that is mandatory in IEC TS 62351-5 or IEC TS 60870-5-7.

Protocol Information Conformance Statement (PICS) x, x = Mandatory test case if the functionality is enabled in the PICS (by marking the applicable check box), with a reference to the section number of the PICS (x.x).

Conformance testing of security extension procedures

The security extension procedures can be summarized as follows:

- User management
- Update key maintenance
- Session key maintenance
- Challenge/Reply authentication
- Aggressive Mode authentication

Extract from standard (IEC 62351-100-3)

IEC 62351-3 defines the requirements related to the authentication/encryption protocol, procedures and methods to be implemented at TCP/IP (transport) level.

The conformance test cases are divided into three clauses:

- Clause 5: Verification of configuration parameters. This clause contains the parameters specified by the standards referencing IEC 62351-3 (see IEC 62351-3:2014/AMD1:2018, Clause 7) and affecting the protocol behaviour.
- Clause 6: Verification of IEC 62351-3 requirements. The goal of this clause is to verify that DUT is conformant to the requirements of the IEC 62351-3.
- Clause 7: Test result chart. This clause contains the results of the test cases listed in Clause 6 for each supported value of the configuration parameters listed in Clause 5.

The test cases are organized in tables. They are numbered, their numbering syntax is: Subclause number (where the table is located) + test case number.

In the column 'Reference' each test case has a direct reference to IEC 62351-3 where the clause under test is defined. PICS or Protocol Implementation eXtra Information for Testing (PIXIT) could be found in the "Reference" column for some test cases whenever the execution of the test case shall take into account specific parameter values declared in the PICS or PIXIT of the DUT.

Test cases are mandatory depending on the description in the column 'Required'. The following situations are possible:

M = Mandatory test case. The test is referencing to a clause that is mandatory in IEC 62351-3.

PICS

or

PIXIT = Mandatory test case if the functionality is enabled in the PICS or PIXIT by marking the applicable check box or declaring the applicable value.

Intelligent Electronic Devices (IEDs) (Sl. No. 2 of Table – A of Annexure – 1)

Utilities / manufacturers will submit the sample along with all the required technical documentation for taking up testing to the designated laboratory.

Reference standards

IEC 61850 series

Specifically IEC 61850-5, IEC 61850-6, IEC 61850-7, IEC 61850-8, IEC 61850-9 and IEC 61850-10

Test cases

Communication protocol conformance as per IEC 61850 -10. This part of standard defines methods and abstract test cases for conformance testing of client, server and sampled values devices used in power utility automation systems, the methods and abstract test cases for conformance testing of engineering tools used in power utility automation systems, and the metrics to be measured within devices according to the requirements defined in IEC 61850-5. Further this part of standard specifies standard techniques for testing of conformance of client, server and sampled value devices and engineering tools, as well as specific measurement techniques to be applied when declaring performance parameters. The use of these techniques will enhance the ability of the system integrator to integrate IEDs easily, operate IEDs correctly, and support the applications as intended.

Smart Meters (Sl. No. 3 of Table – A of Annexure – 1)

Utilities / manufacturers will submit the sample along with all the required technical documentation for taking up testing to the designated laboratory.

IEC 62056 series of standards (Electricity metering data exchange – The DLMS/COSEM suite) specifies details of communication protocol requirements, conformance testing and security requirements. The Part 5-3 (DLMS/COSEM application layer) specifies the DLMS/COSEM application layer in terms of structure, services and protocols for DLMS/COSEM clients and servers, and defines rules to specify the DLMS/COSEM communication profiles. It defines services for establishing and releasing application associations, and data communication services for accessing the methods and attributes of COSEM interface objects, defined in IEC 62056-6-2 using either logical name (LN) or short name (SN) referencing.

Clause 5 and sub clauses specifies security requirements. It cover security concepts, Identification and authentication, Cryptographic algorithms, Cryptographic keys – overview, Key used with symmetric key algorithms, Keys used with public key algorithms and Applying cryptographic protection.

Note: All above referred standards shall be latest with amendments if any at the time of submission of sample(s) for testing.

Testing Criteria

1) Supply from Trusted Sources

The sample size shall be as specified by CEA as per the approved criteria for Trusted Vendors

2) Supply from other than trusted vendors

The sample size shall be shall be 5% of the supply lot / ordered quantity (minimum one). The manufacturer shall submit request to the Nodal agency along with vendor's / manufacturer's certifications for supply chain management system practices and secure product development process implementations based on any one or more of standards ISO / IEC 27036, ISO / IEC 20243, IEC 62443 for verification.

After scrutiny of vendor's / manufacturer's certifications the supplier / utilities shall be asked to submit product to the designated laboratory for communication and cyber security conformance testing.

The supply lot shall stand rejected on failure to comply with the test requirements.

3) Supply from prior reference countries

The utility shall obtain prior permission from the Government of India for importing the product / system from prior reference countries.

The sample size shall be shall be 10 % of the supply lot / ordered quantity (minimum one). The manufacturer shall submit request to the Nodal agency along with vendor's / manufacturer's certifications for supply chain management system practices and secure product development process implementations based on any one or more of standards ISO / IEC 27036, ISO / IEC 20243, IEC 62443 for verification.

After scrutiny of vendor's / manufacturer's certifications the supplier / utilities shall be asked to submit product to the designated Government / Government controlled Autonomous laboratory for type tests (Annexure – 4) and communication & cyber security conformance testing.

The supply lot shall stand rejected on failure to comply with the test requirements.

Type Tests

Products imported from prior reference countries shall also undergo type testing as per following standards in addition to communication protocol and security conformance testing at the designated Government / Government controlled Autonomous laboratory:

Type test standards for RTUs

1. IEC 60870-1-2:1989 Telecontrol equipment and systems. Part 1: General considerations. Section Two: Guide for specifications.
2. IEC 60870-2-1:1995 Telecontrol equipment and systems - Part 2: Operating conditions - Section 1: Power supply and electromagnetic compatibility.
3. EC 60870-2-2:1996 Telecontrol equipment and systems - Part 2: Operating conditions -Section 2: Environmental conditions (climatic, mechanical and other non-electrical influences).
4. IEC 60870-3:1989 Telecontrol equipment and systems. Part 3: Interfaces (electrical characteristics)

Type test standard for IEDs / Numerical Protection Relays / Bay controls units

1. IEC 61850-3: 2013, Ed. 2 Communication networks and systems for power utility automation – Part 3: General requirements.

Type test standards for Smart meters

1. IS 16444: 2015 AC static direct connected watthour smart meter class 1 and 2 – Specification.
2. IS 16444 Part 2: 2017 AC static transformer operated watthour and var - Hour smart meters, class 0.2 S, 0.5 S and 1.0 S: Part 2 specification transformer operated smart meters.

Note:

1. All above referred standards shall be latest with amendments if any at the time of submission of sample(s) for testing.
2. Type tests generally covers functionality, environmental, mechanical, EMI/ EMC and electrical safety related tests.

ANNEXURE-B

Ref: GM-NTPC/404/CE-HMI-02

Dated 21/09/2022

Sub: Recommendation for HMI Upgrade

The Windows XP/ Windows 7 based workstation hardware and Microsoft Operating System available at sites (projects listed in annexure-1) is out of mainstream support from OEM and Microsoft respectively. Also the support for Symantec Antivirus version 10.0 has been withdrawn by the OEM and no more security updates / virus definitions are available for that version. Hence the HMIs-maxStations are prone to vulnerabilities which can tamper the operation of plant.

HMI Upgrade for the projects mentioned in Annexure-1 is proposed due to various obsolescence in the DCS components as detailed below.

DCS Component		Existing version / model / Specification	Obsolescence
Workstation / Engineering server / Historian server	Hardware	Workstation: Intel Core 2 Duo processor, 1GB RAM, 146 GB SAS disk, 10 Mbps Ethernet port. Server: Intel Xeon dual core processor, 2 GB RAM, 3x76GB HDD, 10 Mbps Ethernet port.	Lower Processor cores and speed, lower HDD capacity and RAM requirements incompatible for latest software requirements; Lower network bandwidth of 10Mbps restricting communication speed capability of latest DCS components and attributing to latency.
	Operating System	Windows 7 SP1 / Windows XP / Windows Server 2008 R2	Operating Systems were declared End of Support by the OEM- Microsoft as mentioned below: Windows XP - April' 2014 Windows 7 - Jan' 2020 Windows Server 2008 R2 - Jan' 2020
	maxDNA software	maxDNA 4.2.1 / 4.5 / 4.5.1 / 6.0.x	These versions are not compatible with latest Operating Systems; more improved version of maxDNA- release 7.x is available suiting the latest OS.
	Antivirus Software	Symantec 10.x / Symantec 11.x / Symantec 12.x	Declared obsolete by the OEM- Broadcom and no longer updates or virus definitions are available.

Network	Switch	10 Mbps backbone	Lower network bandwidth of 10Mbps restricting communication speed capability of latest DCS components.
	Network Hardening settings	No validated Network hardening settings	Not suitable for latest network requirements with hardening features.

Prakash D
AGM (CE-Engg-I)

Annexure-1 List of upgrade projects	
Sl No	Project Name
1	Barauni_Stage-2
2	Bongaigaon_Stage-1
3	Dadri-Thermal_Stage-1
4	Dadri-Thermal_Stage-2
5	Darlipalli_Stage-1
6	Farakka_Stage-2
7	Farakka_Stage-3
8	Gadarwara_Stage-1
9	KoldamHydro
10	Korba_Stage-1
11	Korba_Stage-3
12	Mauda_Stage-1
13	Mauda_Stage-2
14	NorthKaranpura_Stage-1
15	Rihand_Stage-2
16	Rihand_Stage-3
17	Simhadri_Stage-2
18	TANDA_Stage-1
19	TANDA_Stage-2
20	Unchahar_Stage-4
21	Vindhyachal_Stage-4
22	Vindhyachal_Stage-5
23	BRBCL Stage-I
24	Jhajjar Stage-I
25	KBUNL Stage-I
26	KBUNL Stage-II
27	NPGCL Stage-I
28	NSPCL Bhilai Stage-I
29	NTECL Stage-I

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List of abbreviations:

1.	APTEL	-	Appellate Tribunal for Electricity
2.	CEA	-	Central Electricity Authority
3.	CERC	-	Central Electricity Regulatory Commission
4.	CIL	-	Coal India Limited
5.	COD	-	Commercial Operation Date
6.	CSA	-	Coal Supply Agreement
7.	DISCOMS	-	Distribution Companies
8.	ECL	-	Eastern Coalfield Limited
9.	EFC	-	Evacuation Facility Charges
10.	FSA	-	Fuel Supply Agreement
11.	GCV	-	Gross Calorific Value
12.	LoA	-	Letter of Assurance
13.	LPS	-	Late Payment Surcharge
14.	MAT	-	Minimum Alternate Tax
15.	MCL	-	Mahanadi Coalfield Limited
16.	MERC	-	Maharashtra Electricity Regulatory Commission
17.	MoC	-	Ministry of Coal
18.	MoP	-	Ministry of Power
19.	MSEDCL	-	Maharashtra State Electricity Distribution Company Limited
20.	NCDP	-	New Coal Distribution Policy
21.	PPAs	-	Power Purchase Agreements
22.	RFP	-	Request for Proposal
23.	SBAR	-	State Bank Advance Rate
24.	SECL	-	South Eastern Coal Limited
25.	SHAKTI	-	Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India
26.	SHR	-	Station Heat Rate
27.	TANGEDCO-	-	Tamil Nadu Generation and Distribution Corporation
28.	UHV	-	Useful Heat Value

J U D G M E N T

B.R. GAVAI, J.

I. INTRODUCTION

1. When we heard this batch of Electricity appeals, it was agreed between all the parties that this Court should first decide Civil Appeal No. 684 of 2021 (**Maharashtra State Electricity Distribution Company Limited v. Adani Power Maharashtra Limited & Ors.**¹) [*“MSEDCL v. APML & Ors.”* for short] and Civil Appeal No. 6927 of 2021 (**Maharashtra State Electricity Distribution Company Limited v. GMR Warora Energy Ltd. & ors.**), inasmuch as three of the issues involved in all the appeals in the batch were common. It was submitted that those two appeals could be decided by deciding the three common issues. However, insofar as the other appeals are concerned, it was submitted that, in addition to the three common issues, certain

¹ 2023 SCC OnLine 233

additional issues were also involved and it was agreed that after those two appeals are decided, the other appeals should be heard for considering these additional issues.

2. The said three common issues are thus:

- (i) Whether 'Change in Law' relief on account of New Coal Distribution Policy, 2013 ("NCDP 2013" for short) should be on 'actuals' viz. as against 100% of normative coal requirement assured in terms of New Coal Distribution Policy, 2007 ("NCDP 2007" for short) OR restricted to trigger levels in NCDP 2013 viz. 65%, 65%, 67% and 75% of ACQ?
- (ii) Whether for computing 'Change in Law' relief, the operating parameters should be considered on 'actuals' OR as per technical information submitted in bid?
- (iii) Whether 'Change in Law' relief compensation is to be granted from 1st April 2013 (start of Financial Year) or 31st July 2013 (date of NCDP 2013)?

3. After extensively hearing all the learned counsel for the parties, vide the judgment and order dated 3rd March 2023 in the case of **MSEDCL v. APML & Ors.** (supra), this Court decided those two appeals after considering the aforesaid three issues.

4. The first issue was answered by this Court, holding that the 'Change in Law' relief for domestic coal shortfall should be on 'actuals', i.e. as against 100% of normative coal requirement assured in terms of the NCDP, 2007. Insofar as the second issue is concerned, it was held that the Station Heat Rate ("SHR" for short) and Auxiliary consumption should be considered as per the Regulations or actuals, whichever is lower. The third issue was answered holding that the Start date for the 'Change in Law' event for the NCDP, 2013 is 1st April 2013.

5. After we decided those appeals, we have heard the present appeals in which some of the issues which were decided by us vide the said judgment in the case of **MSEDCL v. APML & Ors.** (supra) also arose for consideration along with other issues. However, most of the issues in all these appeals are overlapping

and, therefore, we propose to decide these appeals by this common judgment.

II. BRIEF FACTS AND SUBMISSIONS

Civil Appeal No. 11095 of 2018 and Civil Appeal Nos. 11910-11911 of 2018

6. These cross appeals challenge the common judgment and order dated 14th August 2018 passed by the learned Appellate Tribunal for Electricity, New Delhi (hereinafter referred to as “APTEL”) in Appeal No. 111 of 2017 & I.A. No.450 of 2018 and in Appeal No.290 of 2017 & I.A. No.519 of 2017.

7. Civil Appeal No.11095 of 2018 is filed by GMR Warora Energy Ltd. (hereinafter referred to as “GWEL”/”Generator”) to the extent it was denied compensatory benefits on certain components on the ground of ‘Change in Law’.

8. Civil Appeal Nos. 11910-11911 of 2018 have been filed by DNH Power Distribution Co. Ltd. (DPDCL) (hereinafter referred to as “DNH-DISCOM”), being aggrieved by the order of the learned

APTEL accepting the claim of GWEL on certain issues and holding the same to be 'Change in Law'.

9. The facts, in brief, giving rise to these appeals are as under:

10. GWEL had set up a Thermal Power Station at Warora, District Chandrapur in the State of Maharashtra with an installed capacity of 600 MW (2 x 300 MW). The Commercial Operation Date ("COD" for short) of Unit 1 was 19th March 2013 and that of Unit 2 was 1st September 2013.

11. GWEL had entered into long term Power Purchase Agreements ("PPAs" for short) with DNH-DISCOM for supply of 200 MW power to Maharashtra State Electricity Distribution Company Limited ("MSEDCL" for short) on 17th March 2010 ["MSEDCL PPA"] and for supply of 200 MW power on 21st March 2013 ("DNH PPA"), after it emerged as the successful bidder for supply of power to MSEDCL/ DNH-DISCOM. The Scheduled delivery date under the MSEDCL PPA was 17th March 2014, whereas under the DNH PPA, it was 1st April 2013. GWEL is also supplying 150 MW power from its power plant to Tamil Nadu

Generation and Distribution Corporation (“TANGEDCO” for short) by way of back-to-back arrangement with trading company GMR Energy Trading Limited, for which purpose, a PPA was signed on 27th November 2013 (“TANGEDCO PPA”).

12. In terms of the PPAs, the cut-off date, which is 7 days prior to the bid deadline, is to be considered for the purpose of claims under ‘Change in Law’. Following are the cut-off dates under the said PPAs.

	DNH PPA	MSEDCL PPA	TANGEDCO PPA
Cut-off date	1.6.2012	31.7.2009	27.2.2013

13. Certain ‘Change in Law’ events occurred with regard to MSEDCL PPA and DNH PPA after the cut-off date. The same were notified by GWEL to MSEDCL/ DNH-DISCOM.

14. GWEL filed Petition No. 8/MP/2014 before the Central Electricity Regulatory Commission (hereinafter referred to as “CERC”) seeking relief for ‘Change in Law’.

15. Vide Order dated 1st February 2017, certain claims were allowed and certain claims were disallowed by the CERC.

16. The claims which were allowed by the CERC are thus:

- “i. Increase in CVD from 8% to 10% and 10% to 12%;
- ii. Increase in Excise Duty;
- iii. Increase in Service Tax;
- iv. Increase in other taxes [Work Contract Tax (WCT), VAT, CST];
- v. Change in Excise Duty on coal;
- vi. Increase in the rate of Royalty on coal;
- vii. Levy of Clean Energy Cess by Government of India (Gol);
- viii. Increase in service tax on transportation of goods by IR;
- ix. Levy of Swachh Bharat Cess.”

17. The claims which were disallowed by the CERC are thus:

- “i. Withdrawal of deemed export benefit by DGFT;

- ii. Design changes in Coal Handling Plant (CHP);
- iii. Increase in the rate of Minimum Alternate Tax (MAT);
- iv. Increase in Busy Season Surcharge and Development surcharge on transportation of coal by Indian Railways (IR);
- v. Increase in sizing charges and surface transportation charges by Coal India Ltd. (CIL);
- vi. Increase in operating cost on account of specification of coal quality to be used for the TPS;
- vii. Change from UHV to GCV based pricing of coal;
- viii. Incremental increase in Interest on Working Capital (IWC) on account of increase in Project costs.”

18. Being aggrieved by the judgment and order passed by the CERC, cross-appeals were filed by both GWEL and DNH-DISCOM.

19. Vide the impugned judgment, the learned APTEL, while concurring with the view of CERC on the claims allowed by it,

further allowed the claims on the ground of 'Change in Law' on the following components:

- (i) Busy Season Surcharge and Development Surcharge;
- (ii) Ministry of Environment and Forest ("MoEF") Notification on coal quality; and
- (iii) Change in NCDP and Carrying Cost.

20. However, the rest of the claims were disallowed by the learned APTEL, concurring with the view taken by the CERC. Insofar as the appeal filed by DNH-DISCOM is concerned, the same was dismissed by the learned APTEL. Hence, these cross-appeals.

21. We have heard Mr. Vishrov Mukherjee, learned counsel appearing on behalf of the GWEL and Mr. Samir Malik, learned counsel appearing on behalf of MSEDCL and Mr. M.G. Ramachandran, learned Senior Counsel appearing on behalf of the DNH-DISCOM.

22. Mr. Vishrov Mukherjee submits that the learned APTEL has erred in disallowing the claim on the following items:

- (i) Withdrawal of Deemed Export Benefit by way of Circular dated 28th December 2011 and Notification dated 28th December 2011 issued by the Directorate General of Foreign Trade (“DGFT”) and amendment to the Foreign Trade Policy dated 21st March 2012;
- (ii) Imposition of Crushing/Sizing charges and Surface Transportation Charges by Notification dated 15th October 2009;
- (iii) Change in system of classification of coal by Coal India Limited (“CIL” for short) from Useful Heat Value (“UHV” for short) to Gross Calorific Value (“GCV” for short) system of pricing by way of Notification dated 30th December 2011;
- (iv) Increase in levy of Minimum Alternate Tax (“MAT” for short) pursuant to amendment of Section 115JB of the Income Tax Act, 2012;

- (v) Design changes in Coal Handling Plant in terms of letter issued by the Central Electricity Authority (“CEA” for short) dated 19th April 2011;
- (vi) Increase in working capital.

23. It is submitted that all these changes have taken place on account of the Notifications/Orders/Circulars issued by the instrumentalities of the State and as such, the learned APTEL ought to have allowed the claim for compensation on account of ‘Change in Law’ on the aforesaid items also.

24. It is submitted that the compensation on account of the ‘Change in Law’ is based on the principle of restitution so as to put back the party to the same economic position it was in, had the ‘Change in Law’ event not taken place. However, this has not been considered in the correct perspective by the learned APTEL.

25. Learned counsel appearing on behalf of the DNH-DISCOM and MSEDCL, on the contrary, submit that the learned APTEL has erred in considering the Busy Season Surcharge and

Development Surcharge, MoEF Notification on coal quality, Change in NCDP and Carrying Cost as 'Change in Law' events. He submits that when the Generator had submitted its bid, it was aware that there was a likelihood of variations on certain payments to be made and the same were factored in while submitting the bid. It is, therefore, submitted that the learned APTEL erred in granting 'Change in Law' benefits on the said issues.

Civil Appeal Nos. 4628-4629 of 2021

26. These appeals have been filed by Uttar Haryana Bijli Vitran Nigam Limited and Dakshin Haryana Bijli Vitran Nigam Limited (hereinafter referred to as "Haryana Discoms") challenging the common judgment and order dated 7th June 2021 passed by the learned APTEL in Appeal No.158 of 2017 & I.A. No.575 of 2018 and Appeal No. 316 of 2017. Appeal No.158 of 2017 & I.A. No.575 of 2018 were filed by Adani Power (Mundra) Limited (hereinafter referred to as "AP(M)L"), being aggrieved by the order passed by the CERC dated 6th February 2017, whereby the CERC

had denied certain claims for compensation on certain components on account of ‘Change in Law’, whereas Appeal No.316 of 2017 was filed by Haryana Discoms challenging grant of claim of compensation on certain components on the ground of ‘Change in Law’.

27. The Chart of claims which were allowed and disallowed by the CERC is as under:

“107. Based on the above analysis and decisions, the summary of our decision under the Change in Law during the operating period of the project is as under:

Components	Change in Law Event
Change in Rate of Royalty	Allowed
Levy of Central Excise Duty subject to directions in para 32 of the order	Allowed
Levy of Clean Energy Cess	Allowed
Levy of Customs Duty on energy removed from SEZ to DTA	Allowed
Increase in Busy Season Surcharge on transportation of coal	Not Allowed

Increase in Development Surcharge on transportation of coal	Not Allowed
Levy of Service Tax on transportation of coal	Allowed
Levy of Green Energy Cess in Gujarat	Liberty granted to approach after Hon`ble Supreme Court's Decision
Increase in Sizing Charges of coal	Not Allowed
Increase in Surface Transportation	Not Allowed
Change in pricing of coal from UHV to GCV basis	Not Allowed
Change in class from 140 to 150 for Railway freight for coal for trainload movement	Not Allowed
Levy of Minimum Alternate Tax on plants situated in SEZ	Not Allowed
Linking railway tariff revision with movement in cost of fuel	Not Allowed
Imposition of Swachh Bharat Cess	Allowed
Payment to National Mineral Exploration Trust	Allowed

Payment to District Mineral Foundation	Allowed
Installation of FGD as per Environmental clearance dated 20.5.2010 Auxiliary consumption due to FGD installation affecting capacity charges Additional operating expenditure on FGD	Not decided and liberty granted
Carrying cost	Not Allowed

”

28. Being aggrieved by the order of the CERC, cross-appeals were filed by AP(M)L so also by Haryana Discoms before the learned APTEL. The Haryana Discoms challenged that part of the order of the CERC which allowed claim on components on the ground of ‘Change in Law’, whereas AP(M)L challenged that part of the order of the CERC which disallowed its claim on various components.

29. Though AP(M)L had sought 'Change in Law' compensation on various components, the same was allowed by the learned APTEL by the impugned order only on the ground of:

- (i) 'Busy Season Surcharge and Developmental Surcharge on transportation of coal', and
- (ii) 'Carrying Cost'.

30. The claim of AP(M)L pertaining to increase in Surface Transportation Charges so also Sizing Charges of coal were denied by the learned APTEL, concurring with the view taken by the CERC.

31. Being aggrieved by the orders passed by the CERC and the learned APTEL allowing 'Change in Law' on certain components, the Haryana Discoms have approached this Court.

32. We have heard Ms. Poorva Saigal, learned counsel appearing on behalf of the Haryana Discoms and Dr. A.M. Singhvi, learned Senior Counsel appearing on behalf of AP(M)L.

33. Ms. Poorva Saigal submits that the learned APTEL grossly erred in reversing the well-reasoned findings of the CERC on the issue of Busy Season Surcharge and Developmental Surcharge on transportation of coal. She, therefore, submits that the finding of the learned APTEL with regard to the same needs to be set aside.

34. Dr. A.M. Singhvi, on the contrary, submits that the Busy Season Surcharge as well as the Developmental Surcharge are revised as per the Notifications/Circulars issued by the Ministry of Railways and as such, they would come within the definition of 'Change in Law'.

Civil Appeal Nos. 12055-12056 of 2018

35. These appeals, filed by Jaipur Vidyut Vitran Nigam Ltd., Ajmer Vidyut Vitaran Nigam Ltd. and Jodhpur Vidhyut Vitaran Nigam Ltd. (hereafter referred to as "Rajasthan Discoms"), challenge the common judgment and order dated 14th August 2018, passed by the learned APTEL in Appeal No. 119 of 2016 &

I.A. Nos. 668 and 674 of 2016 and in Appeal No.277 of 2016 & I.A. No.572 of 2016.

36. Appeal No. 119 of 2016 & I.A. Nos. 668 & 674 of 2016 were filed by M/s Adani Power Rajasthan Ltd. (“APRL” for short), being aggrieved by the judgment and order dated 15th March 2016, passed by the Rajasthan Electricity Regulatory Commission (hereinafter referred to as “State Commission”) thereby disallowing some of its claims on account of ‘Change in Law’, whereas Appeal No. 277 of 2016 and I.A. No.572 of 2016 were filed by the Rajasthan Discoms, being aggrieved by the order of the State Commission of the same date vide which some of the ‘Change in Law’ claims were allowed by the CERC.

37. The ‘Change in Law’ claims which were allowed by the State Commission are as under:

- i. Change in Rate of Royalty Payable on Domestic Coal;
- ii. Levy of Service Tax on Transportation of Goods by Indian Railways (IR); and
- iii. Increase in Fee for ‘Consent to Operate’.

38. The ‘Change in Law’ claims which were not allowed by the State Commission are thus:

1.	Change in Pricing Mechanism of Coal from Useful Heat Value (UHV) Basis to Gross Calorific Value Basis (GCV)
2.	Increase in Sizing Charges for coal charged by Coal India Ltd. (CIL)
3.	Increase in Surface Transportation Charges
4.	Increase in Busy Season Surcharge on Transportation of Coal by Indian Railways
5.	Increase in Development Surcharge levied on Transportation of Coal by Railways
6.	Levy of Fuel Adjustment Component
7.	Levy of Port Congestion Surcharge
8.	Levy of Forest Tax
9.	Change in Classification of Coal for Train Load Movement

39. Vide the impugned judgment, the learned APTEL dismissed the appeal of the Rajasthan Discoms and partly allowed the appeal of APRL allowing its claims on the ground of ‘Busy Season

Surcharge’, ‘Development Surcharge’, ‘Port Congestion Surcharge, ‘Forest Tax’ and ‘Carrying Cost’. Being aggrieved thereby, the Rajasthan Discoms have approached this Court.

40. We have heard Mr. V. Giri, learned Senior Counsel appearing on behalf of the Rajasthan Discoms and Dr. A.M. Singhvi, learned Senior Counsel appearing on behalf of the APRL.

41. Mr. V. Giri submits that clause 10 in the PPA is referable only to taxes under Article 268 of the Constitution of India. He submits that the learned APTEL has, therefore, erred in allowing ‘Change in Law’ benefits on the issues related to Busy Season Surcharge, Development Surcharge, Port Congestion Charges, Forest Tax and Carrying Cost which are not taxes referable to Article 268 of the Constitution.

42. Dr. Singhvi made arguments on similar lines as have been made in the other appeals.

Civil Appeal Nos. 2935-2936 of 2020

43. These appeals have been filed by the Rajasthan Discoms and Rajasthan Urja Vikas Nigam Ltd. challenging the common

judgment and order dated 29th January 2020, passed by the learned APTEL in Appeal no.284 of 2017 and Appeal No. 09 of 2018.

44. Appeal No. 284 of 2017 was filed by APRL challenging the order dated 8th June 2017 passed by the State Commission, being aggrieved by the disallowance of its claim on some components on the ground of ‘Change in Law’ and carrying cost, whereas Appeal No.9 of 2018 was filed by Rajasthan Discoms being aggrieved by the claims which were allowed by the State Commission.

45. The list of the components which were allowed and which were not allowed on the ground of ‘Change in Law’ is thus:

“Sr. No.	Change in Law's items	Decision of the Commission
A	Levies on Royalty (i) National Mineral Exploration Trust effective from 14.08.2015 (ii) District Mineral Foundation effective from 12.01.2015	Allowed
B	Levy of Swachh Bharat Cess (SBC) along with Service Tax for rail	Allowed

	transportation effective from 15.11.2015	
C	Levy of Swachh Bharat Cess @0.5% along with Service Tax - Operation Period effective from 15.11.2015	Not Allowed
D	Levy of Krishi Kalyan Cess (KKC) along with Service Tax and Swachh Bharat Cess for rail transportation from 1st June 2016	Allowed
E	Levy of Krishi Kalyan Cess @0.5% along with Service Tax and Swachh Bharat Cess - Operation Period from 1 st June 2016.	Not Allowed
F	Amendment to Environmental (Protection) Rules 1986	Not Allowed
G	Levy of Coal Terminal Surcharge (CTS) effective from 22.08.2016	Not Allowed
H	Utilization of Fly Ash generated from coal and lignite based thermal power projects	Not Allowed
I	CG Paryavaran Upkar	Not Allowed
J	CG Vikas Upkar	Not Allowed
K	Service Tax on transportation of goods by a vessel from a place outside India up to the custom station of clearance in India	Not Allowed

L	Carrying Cost	Not Allowed”

46. As stated above, being aggrieved by that part of the order which disallowed its claim, APRL preferred the aforesaid Appeal before the learned APTEL, whereas the Rajasthan Discoms, being aggrieved by that part of the order which allowed claims on certain components, also filed an Appeal before the learned APTEL.

47. The learned APTEL, while dismissing the appeal of the Rajasthan Discoms, partly allowed the appeal of the APRL by allowing compensation on certain other components on the ground of ‘Change in Law’.

48. The components on which ‘Change in Law’ benefits were granted by the learned APTEL are thus:

- (i) Coal Terminal Surcharge;
- (ii) Chhattisgarh Paryavaran Upkar;
- (iii) Chhattisgarh Vikas Upkar;

- (iv) Change in Swacch Bharat Cess at the rate of 0.5% on Service Tax for Operation Period;
- (v) Change in Krishi Kalyan Cess at the rate 5% on Service Tax for Operation Period;

49. In addition to grant of relief on the ground of ‘Change in Law’, the learned APTEL also granted ‘Carrying Cost’.

50. Arguments similar to the ones advanced in Civil Appeal No. 12055-12056 of 2018 were advanced by Mr. V. Giri, learned Senior Counsel appearing on behalf of the Rajasthan Discoms, as well as by the learned counsel for the respondents.

Civil Appeal No. 3123 of 2019 and Civil Appeal No.5372 of 2019

51. These are cross appeals. Civil Appeal No.3123 of 2019 has been filed by Bihar State Power (Holding) Company Ltd. (hereinafter referred to as “Bihar Discoms”) and Civil Appeal No.5372 of 2019 has been filed by GMR Kamalanga Energy Limited and GMR Energy Limited (hereinafter referred to as “GKEL”), challenging the judgment and order dated 21st

December 2018 passed by the learned APTEL in Appeal No.193 of 2017 & I.A. No. 449 of 2018.

52. Appeal No.193 of 2017 & I.A. No.449 of 2018 were filed by GKEL challenging the order of the CERC dated 7th April 2017, aggrieved by the denial of its claims on certain components on the ground of 'Change in Law'. The Bihar Discoms have challenged that part of the order of the learned APTEL which allowed claims of GKEL on the ground of 'Change in Law'.

53. By the impugned order, the learned APTEL granted claims on the ground of:

- (i) Change in NCDP (cancellation of Captive Block vis-à-vis tapering linkage),
- (ii) busy season surcharge and developmental surcharge,
- (iii) carrying cost; and
- (iv) add on premium price.

54. We have heard Mr. Vishrov Mukerjee, learned counsel appearing on behalf of the GKEL/Generator and Ms. Anushree

Bardhan, learned Counsel appearing on behalf of the Bihar Discoms.

55. Mr. Vishrov Mukerjee submits that the learned APTEL as well as the CERC have grossly erred in rejecting the claim for compensation on the ground of:

- (i) change in source of coal from Mahanadi Coalfields Ltd. (“MCL” for short) to Eastern Coalfields Ltd. (“ECL” for short) vide Notification dated 26th February 2014 issued by the CIL;
- (ii) change in mode of transportation from rail to road vide Notification dated 29th September 2014 issued by MCL;
- (iii) increase in levy of Minimum Alternate Tax (“MAT” for short); and
- (iv) interest on working capital.

56. Learned counsel submitted that change in source of coal from MCL to ECL was on account of the notification issued by the CIL, which is an instrumentality of the State. Similarly, he

submitted that the change in mode of transportation from rail to road was on account of the notification issued by the MCL. Learned counsel submits that, since, on account of these notifications, the cost of transportation of coal increased, applying the restitutionary principle, the CERC as well as the learned APTEL ought to have granted claims on the basis of 'Change in Law'. He further submits that increase in levy of MAT has also been increased by the Union of India and, as such, the same would also amount to 'Change in Law'. It is further submitted that interest on working capital was also increased on account of the orders of the instrumentalities of the State and, as such, compensation also ought to have been granted for the same.

57. Learned counsel for the Bihar Discoms submits that the CERC as well as the learned APTEL have grossly erred in allowing claims on certain components on the ground of 'Change in Law'.

Civil Appeal No. 6641 of 2019

58. This appeal filed by GKEL arises out of the judgment and order dated 27th May 2019, passed by the learned APTEL in Appeal No.195 of 2016, thereby partly allowing the appeal.

59. GKEL filed Petition No.79/MP/2013 before the CERC claiming compensation on various component on the ground of 'Change in Law' events.

60. The CERC, vide order dated 3rd February 2016, disallowed compensation for the following components:

- (a) Change from UHV to GCV based pricing of coal pursuant to notification issued by the Government of India;
- (b) Increase/revision in the railway freight charges pursuant to notifications issued by Ministry of Railways and Ministry of Finance;
- (c) Increase in the rate of Minimum Alternate Tax ("MAT") rates;

- (d) Increase in Value Added Tax in the State of Odisha;
- (e) Increase in water charges pursuant to notifications issued by the Government of Odisha;
- (f) Incremental increase in interest on working capital on account of increase in costs during the operating period.

61. Being aggrieved thereby, Appeal No.195 of 2016. was preferred by GKEL. As stated above, the learned APTEL partly allowed the appeal and held that GKEL was entitled to compensation on following grounds.

- (i) Increase/revision in the railway freight charges in terms of notifications issued by the Ministry of Railways and Ministry of Finance on account of imposition of development surcharge, busy season surcharge and service tax;
- (ii) VAT rate enhancement from 4% to 5% from 30.03.2012 onwards;

(iii) Carrying cost/interest on compensation on the above items after ascertainment of the same by computation, which shall be assessed from the date of respective notification/circular/order from the concerned Ministry/Department/Governmental instrumentality till payment is made.

62. Appellant-GKEL, being unsatisfied with the same, has approached this Court praying for a direction that it is also entitled to compensation on various other components, viz.,

- (i) Increase in Water Charges;
- (ii) Shift from UHV to GCV methodology of pricing of coal;
- (iii) Increase in rate of MAT; and
- (iv) Interest on working capital.

63. Arguments similar to the ones advanced in Civil Appeal No. 3123 of 2019 and Civil Appeal No.5372 of 2019 were advanced by the learned counsel for the parties.

Civil Appeal Nos. 5583-5584 of 2021

64. These appeals, filed by Bihar Discoms, arise out of the judgment and order dated 6th August 2021, passed by the learned APTEL in Appeal No. 423 of 2019 and in Appeal No.173 of 2021.

65. In the said case, the learned APTEL, vide order dated 21st December 2018, had allowed the following claims as ‘Change in Law’ and remanded the matter back to the CERC to determine compensation due to GKEL:

- (a) Shortfall in linkage coal and deviation in NCDP;
- (b) Cancellation of captive coal block;
- (c) Imposition of Busy Season Surcharge and Development Surcharge;
- (d) Levy of Add-On Premium over and above the notified price of coal; and
- (e) Carrying Cost.

66. Upon remand, the CERC passed order dated 16th September 2019, thereby granting compensation on certain components on the ground of 'Change in Law' including carrying cost.

67. Contending that the order passed by the CERC did not give effect to the 'Change in Law' components as directed by the learned APTEL, an appeal being Appeal No. 423 of 2019 came to be preferred by GKEL before the learned APTEL.

68. Bihar Discoms had also filed an appeal being Appeal No.173 of 2021, before the learned APTEL, being aggrieved by the benefits which were granted by the CERC.

69. By the impugned order, the learned APTEL held that the GKEL was entitled to recover expenditure involved in procurement of alternate coal due to shortfall in domestic coal supply corresponding to scheduled generation pertaining to the obligations under the Bihar PPA. The learned APTEL held that this was required to be done in order to restore the appellant-GKEL to the same economic position as before as if no 'Change in Law' event had occurred.

70. We have heard Ms. Anushree Bardhan, learned counsel appearing on behalf of the appellant-Bihar Discoms and Mr. Maninder Singh, learned Senior Counsel appearing on behalf of GKEL.

71. Ms. Anushree Bardhan submits that the learned APTEL ought to have granted benefit of 'Change in Law' restricting it to shortfall for only 894.5 MW, which was the amount specified in the PPA, and not for the entire 1050 MW, which is the installed capacity. She further submits that the learned APTEL had also erred in granting add on premium on account of extension of tapering linkage by three years.

72. Shri Maninder Singh, learned Senior Counsel submits that insofar as the first issue with regard to shortfall of coal supply is concerned, the same is squarely covered by the judgments of this Court in the cases of ***Energy Watchdog v. Central Electricity Regulatory Commission and others***², ***Jaipur Vidyut Vitaran***

² (2017) 14 SCC 80

Nigam Ltd. and others v. Adani Power Rajasthan Limited and another³ (hereinafter referred to as “**Adani Rajasthan case**”) and ***MSEDCL v. APML & Ors.*** (supra).

73. He further submits that the delay in operationalization of the captive mines was not on account of any reason attributable to GKEL. He submits that, since the allotment of coal blocks was cancelled on account of the judgment of this Court in the case of ***Manohar Lal Sharma v. The Principal Secretary & Ors.***⁴, GKEL was also entitled for the benefit for the said period.

74. Insofar as Busy Season Surcharge is concerned, he submits that there is a concurrent finding of fact. He submits that, in any case, the said charges are issued by the Railway Board by issuing Notifications/Circulars. He submits that since the Railway is an instrumentality of the State, both the CERC and the learned APTEL have concurrently held that the Generator would be entitled to compensation on the ground of ‘Change in Law’.

³ 2020 SCC Online SC 697

⁴ (2014) 9 SCC 516 and 2014 (9) SCC 614

Civil Appeal No. 39 of 2021

75. This appeal filed by the DNH-DISCOM arises out of the judgment and order dated 13th October 2020, passed by the learned APTEL in Appeal No.283 of 2019 & I.A. Nos. 2188 & 1229 of 2019, thereby dismissing the said appeal arising out of the judgment and order passed by the CERC dated 16th May 2019.

76. The DNH-DISCOM had initiated a competitive bidding process through issuance of a Request for Proposal (“RFP” for short) in March 2012 for procurement of power on Long Term Basis under Case-1 bidding procedure. As per the RFP, the cut-off date was 1st June 2012.

77. The respondent-GWEL emerged as the successful bidder for supplying Aggregated Contracted Capacity of 200 MW at a levelized tariff of Rs.4.618 per Unit.

78. Accordingly, Letter of Intent (LoI) was issued by DNH-DISCOM on 14th August 2012. An application/petition being Petition No.87/2012 came to be filed before the Joint Electricity Regulatory Commission (hereinafter referred to as “Joint

Commission”) for approval of the PPA and adoption of tariff. GWEL was also joined as a co-petitioner in the said Petition. The Joint Commission, vide order dated 19th February 2013, approved the PPA. Accordingly, the PPA came to be executed on 21st March 2013.

79. GWEL filed Petition No. 8/MP/2014 before the CERC seeking compensation on certain components on the ground of ‘Change in Law’. The same was decided by the CERC vide order dated 1st February 2017. Aggrieved thereby, both the appellant-DNH-DISCOM and the respondent-GWEL filed appeals before the learned APTEL. In appeal, the learned APTEL remanded the matter to the CERC vide order dated 14th August 2018 for considering certain issues. Being aggrieved by the order dated 14th August 2018, the appellant-DNH-DISCOM filed an appeal, being Civil Appeal No.11910 of 2018, before this Court. The said appeal is also being decided in the present batch of appeals, by this common judgment.

80. On remand, the CERC passed an order dated 16th May 2019 and allowed the claim of GWEL/Generator on the ground of 'Change in Law' occurring on account of the enforcement of the 'Scheme for Harnessing and Allocating Koyala (Coal) Transparently in India' ("SHAKTI Policy" for short). Being aggrieved thereby, DNH-DISCOM had filed an appeal before the learned APTEL. As stated herein above, the same was dismissed by the learned APTEL vide the impugned judgment.

81. We have heard Mr. C.A. Sundaram, learned Senior Counsel appearing on behalf of the DNH-DISCOM and Mr. Niranjan Reddy, learned Senior Counsel appearing on behalf of the respondent-GWEL.

82. Mr. C.A. Sundaram submits that, from the presentation which was given by the GWEL, it was apparent that it was given on the basis that coal supply would be restricted only to 65%. He submits that, as such, the grant of benefit on account of 'Change in Law' on the ground that there was 100% assurance by CIL is

not permissible. He, therefore, submits that the judgment and order of the learned APTEL deserves to be set aside to that extent.

83. Mr. Niranjan Reddy, on the contrary, submits that the bid of GWEL was submitted on 8th June 2012, on which date NCDP 2007 was in force. He submits that, subsequently, the NCDP 2007 was modified on 31st July 2013 and thereafter SHAKTI Policy has come into effect on 22nd May 2017 and, as such, judgment and order of the learned APTEL warrants no interference.

Civil Appeal No. 5005 of 2022 and Civil Appeal No. 4089 of 2022

84. These appeals challenge the common judgment and order dated 22nd March 2022 passed by the learned APTEL in Appeal No. 118 of 2021 and 40 of 2022, filed by Rattan India Power Limited (hereinafter referred to as “Rattan India”) and Adani Power Maharashtra Limited (for short, “APML”) respectively, thereby challenging the orders dated 1st January 2019 and 3rd August 2018, passed by Maharashtra Electricity Regulatory

Commission (hereinafter referred to as 'MERC') in Case No. 227 of 2018 and Case No. 124 of 2018 respectively.

85. The facts in brief giving rise to the present appeals are as under:

Rattan India has entered into PPAs dated 22nd April 2010 and 5th June 2010 with MSEDCL for supply of 1200 MW aggregate power at levelized tariff of Rs.3.260 KWH for a period of 25 years. It filed a petition before MERC, being Case No. 227 of 2018, claiming compensation on the ground of 'Change in Law' occurring on account of the circular dated 19th December 2017 issued by CIL, vide which it levied the Evacuation Facility Charges (for short, "EFC"). The same was rejected by MERC, vide order dated 1st January 2019. A similar petition being Case No. 124 of 2018 was also filed by APML, raising a similar claim before MERC, which was also rejected by MERC, vide its earlier order dated 3rd August 2018.

86. Being aggrieved thereby, Rattan India had filed an Appeal No. 118 of 2021 and APML had preferred an Appeal No. 40 of

2022. By the impugned order, the learned APTEL had held EFC imposed by CIL vide Circular dated 19th December 2017 to be a 'Change in Law' event and, accordingly, held the Generators to be entitled to compensation on the said ground. Being aggrieved thereby, the MSEDCL has preferred these appeals.

87. We have heard Shri Balbir Singh, learned Additional Solicitor General (for short, "ASG") and Shri G. Saikumar, learned counsel appearing on behalf of the appellant and Shri Sajan Poovayya, learned Senior Counsel for the respondents in Civil Appeal No. 5005 of 2022 and Shri Vishrov Mukherjee, learned counsel appearing on behalf of the respondents in Civil Appeal No. 4089 of 2022.

88. Shri Balbir Singh, relying on Clause 9.1 of the Coal Supply Agreement (for short, "CSA") dated 28th December 2012 entered into between Southeastern Coalfields Limited and APML, submitted that CSA defines as to what shall be the base price of coal. He submitted that Clause 9.2 of the said CSA specifically provides for other charges which are permissible. Relying on

Clause 9.4 of the CSA, he submitted that in all cases, the entire freight charges, irrespective of the mode of transportation of coal supplied, shall be borne by the purchaser. The learned ASG submitted that the EFC does not partake the character of a statutory levy. However, he submitted that, in any case, it does not have the force of law. He, therefore, submitted that APTEL has grossly erred in holding the circular of CIL dated 19th December 2017 to qualify as 'Change in Law'.

89. Shri Singh further submitted that the direction to pay the carrying cost at the rate provided for Late Payment Surcharge (for short, "LPS") is also not permissible in law. He submitted that this Court, in ***Adani Rajasthan case*** (supra), has directed the carrying cost to be paid at the rate of 9% and as such, in the present case, it ought to have been directed to be paid at the same rate.

90. Shri Singh also relies on the judgment of this Court in the case of ***Ashoka Smokeless Coal India (P) Limited and Others***

v. Union of India and Others⁵ in support of the proposition that CIL is free to fix the price of coal and that the Union of India has no control over it.

91. Shri Poovayya, on the contrary, submitted that the levy is mandatory in nature. Unless the said levies are paid, the coal would not be supplied. He further submitted that since the CIL is an instrumentality of the Government, the order issued by it would amount to a law within the definition of “Law” as defined in the PPA. He further submitted that insofar as the carrying cost is concerned, there is a specific provision in the PPA in Article 11.8.3, which is binding on the parties. He submitted that on account of non-payment of the dues of the generating companies by DISCOMS, the generating companies are required to borrow the funds at the market rate and as such, applying the restitutionary principle, it is entitled to carrying cost as provided under the agreement.

⁵ (2007) 2 SCC 640

III. ADDITIONAL ISSUES

92. After hearing the learned counsel for the parties at length, we find that, apart from the three issues that were already decided by this Court in the case of *MSEDCL v. APML & Ors.* (supra), the issues as to whether the following components could be considered as 'Change in Law' events fall for consideration herein:

- (i) Busy Season Surcharge & Development Surcharge and Port Congestion Surcharge;
- (ii) MoEF Notification on coal quality;
- (iii) Shortfall in linkage coal due to Change in NCDP;
- (iv) Forest Tax;
- (v) Add on Premium price.
- (vi) Evacuation Facility Charges (EFC).

Apart from that, another question that requires consideration is, as to whether various taxes/charges imposed

by various State Governments would also fall under ‘Change in Law’ events or not.

The other question that requires considerations is, as to whether at what rate the Generators would be entitled to ‘carrying cost’.

IV. CONSIDERATION

93. For appreciating the rival submissions, we will have to construe the term “Law”, which has been defined in the PPAs, which reads thus:

““Law” means, in relation to this Agreement, all laws including Electricity Laws in force in India and any statute, ordinance, regulation, Notification or code, rule, or any interpretation of any of them by an Indian Governmental Instrumentality and having force of law and shall further include all applicable rules, regulations, orders, Notifications by an Indian Governmental Instrumentality pursuant to or under any of them and shall include all rules, regulations, decisions and orders of the CERC and the MERC.”

94. Perusal of the definition of the term “Law” itself would clearly show that the term “Law” would mean all laws including

Electricity Laws in force in India and any statute, ordinance, regulation, Notification or code, rule, or any interpretation of any of them by an Indian Governmental Instrumentality and having force of law. It would further reveal that the term “Law” shall also include all applicable rules, regulations, orders, Notifications by an Indian Governmental Instrumentality and shall also include all rules, regulations, decisions and orders of the CERC and the MERC.

95. In any case, the issue as to what would amount to “Law” is no more *res integra*. This Court, in the case of ***Energy Watchdog*** (supra), has observed thus:

“57. Both the letter dated 31-7-2013 and the revised Tariff Policy are statutory documents being issued under Section 3 of the Act and have the force of law. This being so, it is clear that so far as the procurement of Indian coal is concerned, to the extent that the supply from Coal India and other Indian sources is cut down, the PPA read with these documents provides in Clause 13.2 that while determining the consequences of change in law, parties shall have due regard to the principle that the purpose of compensating the party affected by such

change in law is to restore, through monthly tariff payments, the affected party to the economic position as if such change in law has not occurred. Further, for the operation period of the PPA, compensation for any increase/decrease in cost to the seller shall be determined and be effective from such date as decided by the Central Electricity Regulation Commission. This being the case, we are of the view that though change in Indonesian law would not qualify as a change in law under the guidelines read with the PPA, change in Indian law certainly would.”

96. The aforesaid view of this Court taken in the case of ***Energy Watchdog*** (supra) has been approved by a Bench of three learned Judges of this Court in ***Adani Rajasthan case*** (supra) and also followed by this Court when the two linked matters out of this batch of appeals were decided by this Court in the case of ***MSEDCL v. APML & Ors.*** (supra). It cannot be denied that CIL is an instrumentality of the Government of India and its orders, insofar as price of fuel are concerned, are binding on all its subsidiaries.

97. It will further be relevant to refer to Clause 9.0 of the CSA, which reads thus:

“9.0 PRICE OF COAL:

The “As Delivered Price of Coal” for the Coal supplies pursuant to this Agreement shall be the sum of Base Price, Other Charges and Statutory Charges, as applicable at the time of delivery of Coal.”

It is thus clear that price of coal includes the sum of base price, other charges and statutory charges as applicable at the time of delivery of coal.

98. As discussed herein above, the term ‘Law’ would also include all applicable rules, regulations, orders, Notifications issued by an Indian Governmental Instrumentality.

99. It would thus be clear that all such additional charges which are payable on account of orders, directions, Notifications, Regulations, etc., issued by the instrumentalities of the State, after the cut-off date, will have to be considered to be ‘Change in Law’ events. The Generators would be entitled to compensation on the restitutionary principle on such changes occurring after the cut-off date.

100. Having held thus, we will now consider some of the components which are common in most of these appeals.

Busy Season Surcharge, Development Surcharge And Port Congestion Surcharge

101. Insofar as increase in Busy Season Surcharge, Development Surcharge on transportation of coal, and Port Congestion Surcharge by the Indian Railways are concerned, the learned APTEL had found that the Indian Railways is an instrumentality of the State. It has been found that the Busy Season Surcharge, Development Surcharge and Port Congestion Surcharge were increased from time to time vide Circulars/Notifications issued by the Ministry of Railways, through the Railway Board.

102. A Constitution Bench of this Court, in the case of ***Railway Board, Government of India v. M/s Observer Publications (P) Ltd.***⁶, has held the Railway Board to be a State within the meaning of Article 12 of the Constitution of India.

⁶ (1972) 2 SCC 266

103. As such, no error could be found in the finding of the learned APTEL that the revision of charges to be paid on Busy Season Surcharge, Development Surcharge and Port Congestion Charges from time to time by the 'Railway Board' would come within the ambit of 'Change in Law'.

MoEF Notification on Coal Quality

104. Insofar as MoEF notification on coal quality is concerned, the MoEF, vide Notification dated 2nd January 2014, i.e. subsequent to the particular cut-off date, i.e. 1st June 2012, has mandated power projects to use beneficiated coal with ash content lower than 34%. The draft notification of MoEF dated 11th July 2012 culminated into the final Notification dated 2nd January 2014. By no stretch of imagination, can it be said that MoEF is not an instrumentality of the State.

105. By the said Notification, MoEF has mandated power projects to use beneficiated coal with ash content lower than 34%. Admittedly, prior to the cut-off date, the same was not a requirement. It is thus clear that the said Notifications dated 11th

July 2012 and 2nd January 2014 would amount to “Change in Law’. As such, no fault can be found with the finding of the learned APTEL that the same would amount to ‘Change in Law’.

Shortfall in Linkage Coal due to Change in NCDP

106. Insofar as shortfall in linkage coal due to changes in the NCDP issued by the Ministry of Coal (“MoC” for short) is concerned, the issue is no more *res integra*. This Court in the case of ***Energy Watchdog*** (supra) so also in ***Adani Rajasthan case*** (supra) and recently in ***MSEDCL v. APML & Ors.*** (Supra) has held that the change in NCDP would amount to ‘Change in Law’.

Forest Tax

107. Insofar as Forest Tax is concerned, perusal of the material placed on record would reveal that, as on the cut-off date, there was no Forest Tax applicable on coal mined and transported from South Eastern Coalfields Limited (“SECL” for short) mines located in Forest area. For the first time, vide Notification of the Chhattisgarh State Government, Department of Forest, under

the provisions of Chhattisgarh Transit (Forest Produce Rule) 2001, a fee at the rate of Rs.7 per ton was levied. Undisputedly, the said Notification is issued by the Forest Department of the Government of Chhattisgarh, which is an instrumentality of the State. As such, no error can be found with the finding of the learned APTEL in that regard.

Add on Premium Price

108. Insofar as 'Add on premium price' is concerned, undisputedly, 'add on premium' was required to be paid on account of cancellation of captive coal blocks and inordinate delay on account of Go-No-Go policy. As such, it cannot be said that the reasoning adopted by the learned APTEL is perverse and arbitrary.

Evacuation Facility Charges (EFC)

109. Undisputedly, EFC was imposed by CIL vide its Circular dated 19th December 2017.

110. As already discussed herein above, CIL is an instrumentality of the State. It is thus clear that, on the cut-off

date, there was no requirement of EFC, which has been brought into effect only on 19th December 2017. As such, the circular of CIL dated 19th December 2017 would also amount to ‘Change in Law’.

111. As discussed herein above, it is also not in dispute that EFC has been paid by the generators while paying the base price, other charges and statutory charges at the time of delivery of coal. As such, no interference would be warranted with the said finding.

112. That leaves us with the issue with regard to carrying cost.

Carrying Cost

113. This is the issue on which there is a serious contest between the DISCOMS and the Generators.

114. On one hand, it is the submission of the DISCOMS that since there is no description of the same in the PPAs, the rate for granting carrying cost should be a reasonable rate. On the contrary, it is the submission of the Generators that there is a specific provision in the PPAs, which provides that the carrying

cost has to be paid at the rate as per the rate specified for late payment surcharge. It is submitted that this is provided in the PPA so as to give effect to the restitutionary principle.

115. For considering the rival submissions, it will be apposite to refer to the following Articles, which are almost common in most of the PPAs.

“11. *Billing and payment.*—

11.3. *Payment of monthly bills.*—

11.3.4. In the event of delay in payment of a monthly bill by any procurer beyond its due date, a late payment surcharge shall be payable by the procurer to the seller at the rate of two (2) per cent in excess of the applicable SBAR per annum, on the amount of outstanding payment, calculated on a day to day basis (and compounded with monthly rest), for each day of the delay.

11.8. *Payment of supplementary bill.*—

11.8.1. Either party may raise a bill on the other party (“supplementary bill”) for payment on account of:

- (i) Adjustments required by the Regional Energy Account (if applicable);
- (ii) Tariff payment for change in parameters, pursuant to provisions in Schedule 5; or

(iii) Change in law as provided in Article 13 and such Bill shall be paid by the other party.

11.8.3. In the event of delay in payment of a supplementary bill by either party beyond one month from the date of billing, a late payment surcharge shall be payable at same terms applicable to the monthly bill in Article 11.3.4.”

116. A perusal of Article 11.3.4 of the PPA would reveal that in the event of delay in payment of a monthly bill by any procurer beyond its due date, a late payment surcharge shall be payable by the procurer to the seller at the rate of 2% in excess of the applicable State Bank Advance Rate (“SBAR” for short) per annum, on the amount of outstanding payment, calculated on a day to day basis (and compounded with monthly rest), for each day of the delay. Article 11.8 of the PPA deals with Payment of Supplementary Bill. It enables either party to raise a supplementary bill on the other party for payment on account of certain events. Clause (iii) of Article 11.8.1 of the PPA deals with ‘Change in Law’ as provided in Article 13. It requires the bill to

be paid by the other party. Article 11.8.3 of the PPA also provides that in the event of delay in payment of a supplementary bill by either party beyond one month from the date of billing, a late payment surcharge shall be payable at same terms applicable to the monthly bill in Article 11.3.4.

117. This Court in the case of ***Uttar Haryana Bijli Vitran Nigam Limited (UNHVNL) and another v. Adani Power Limited and others***⁷, after considering the provisions of Article 11, which deals with ‘Billing’ and Article 13, which deals with ‘Change in Law’, has observed thus:

“**9.** It will be seen that Article 13.4.1 makes it clear that adjustment in monthly tariff payment on account of change in law shall be effected from the date of the change in law [see sub-clause (i) of clause 4.1], in case the change in law happens to be by way of adoption, promulgation, *amendment*, re-enactment or repeal of the law or change in law. As opposed to this, if the change in law is on account of a *change in interpretation of law* by a judgment of a Court or Tribunal

⁷ (2019) 5 SCC 325

or governmental instrumentality, the case would fall under sub-clause (ii) of clause 4.1, in which case, the monthly tariff payment shall be effected from the date of the said order/judgment of the competent authority/Tribunal or the governmental instrumentality. What is important to notice is that Article 13.4.1 is subject to Article 13.2 of the PPAs.

10. Article 13.2 is an in-built restitutionary principle which compensates the party affected by such change in law and which must restore, through monthly tariff payments, the affected party to the same economic position as if such change in law has not occurred. This would mean that by this clause a fiction is created, and the party has to be put in the same economic position as if such change in law has not occurred i.e. the party must be given the benefit of restitution as understood in civil law. Article 13.2, however, goes on to divide such restitution into two separate periods. The first period is the “construction period” in which increase/decrease of capital cost of the project in the tariff is to be governed by a certain formula. However, the seller has to provide to the procurer documentary proof of such increase/decrease in capital

cost for establishing the impact of such change in law and in the case of dispute as to the same, a dispute resolution mechanism as per Article 17 of the PPA is to be resorted to. It is also made clear that compensation is only payable to either party only with effect from the date on which the total increase/decrease exceeds the amount stated therein.

11. So far as the “operation period” is concerned, compensation for any increase/decrease in revenues or costs to the seller is to be determined and effected from such date as is decided by the appropriate Commission. Here again, this compensation is only payable for increase/decrease in revenue or cost to the seller if it is in excess of an amount equivalent to 1% of the Letter of Credit in aggregate for a contract year. What is clear, therefore, from a reading of Article 13.2, is that restitutionary principles apply in case a certain threshold limit is crossed in both sub-clauses (a) and (b). There is no dispute that the present case is covered by sub-clause (b) and that the aforesaid threshold has been crossed. The mechanism for claiming a change in law is then set out by Article 13.3 of the PPA.”

118. It could thus be seen that this Court has held that insofar as the “operation period” is concerned, compensation for any increase/decrease in revenues or costs to the seller is to be determined and effected from such date as is decided by the appropriate Commission. It has further been held that the compensation is only payable for increase/decrease in revenue or cost to the seller if it is in excess of an amount equivalent to 1% of the Letter of Credit in aggregate for a contract year. It has been held that restitutionary principles apply in case a certain threshold limit is crossed. It has been held that an in-built restitutionary principle compensates the party affected by such ‘Change in Law’ and the affected party must be restored through monthly tariff payment to the same economic position as if such ‘Change in Law’ had not occurred.

119. From the perusal of paragraph 9, it would also be clear that in case the ‘Change in Law’ happens to be by way of adoption, promulgation, amendment, re-enactment or repeal of the law or

‘Change in Law’, it has to be effected from the date on which such change occurs.

120. In this respect, it will also be apposite to refer to the following observations of this Court in the case of ***Maharashtra State Electricity Distribution Company Limited v. Maharashtra Electricity Regulatory Commission and Others***⁸:

“173. The APTEL correctly found that:
(*Maharashtra Pradesh Electricity Regulatory Commission case [Maharashtra State Electricity Distribution Co. Ltd. v. Maharashtra Pradesh Electricity Regulatory Commission, 2021 SCC OnLine APTEL 13] , SCC OnLine APTEL para 13)*)

“13. ... On the contrary, there is a *conscious exclusion regarding any suo motu change in the rate to be applied while calculating LPS*, it being incorrect to argue on the assumption that the contract permits automatic change in system.”

(emphasis supplied)

⁸ (2022) 4 SCC 657

174. This Court is unable to accept Mr Singh's submission that the conclusion of APTEL that LPS is not tariff is erroneous. The meaning of the expression tariff has to be considered, and has rightly been considered by APTEL in the context of the relevant provision of the power purchase agreements. The dictionary meaning of tariff may be charge. However, in Article 13 of the Stage 1 and Article 10 of the Stage 2 power purchase agreements, tariff means monthly tariff and tariff adjustment consequential to change in law, is of monthly tariff in respect of supply of electricity.

175. As argued by the respondent power generating companies appearing through Mr Rohatgi, Mr Singhvi, Mr Mukherjee and Ms Anand respectively, LPS is only payable when payment against monthly bills is delayed and not otherwise.

176. The object of LPS is to enforce and/or encourage timely payment of charges by the procurer i.e. the appellant. In other words, LPS dissuades the procurer from delaying payment of charges. The rate of LPS has no bearing or impact on tariff. Changes in the basis of the rates of LPS do not affect the rate at which power was agreed to be sold and purchased under the power purchase agreements. The principle of restitution

under the change in law provisions of the power purchase agreements are attracted in respect of tariff.

177. LPS cannot be equated with carrying cost or actual cost incurred for the supply of power. The appellant has a contractual obligation to make timely payment of the invoices raised by the power generating companies, subject, of course, to scrutiny and verification of the same. Mr Mukul Rohatgi has a point that if the funding cost was so much lesser than the rate of LPS, as contended by the appellant, the appellant could have raised funds at a lower rate of interest, made timely payment of the invoices raised by the power generating companies, and avoided LPS.

178. The proposition that courts cannot rewrite a contract mutually executed between the parties, is well settled. The Court cannot, through its interpretative process, rewrite or create a new contract between the parties. The Court has to simply apply the terms and conditions of the agreement as agreed between the parties, as observed by this Court in *Shree Ambica Medical Stores v. Surat People's Coop. Bank* [*Shree Ambica Medical Stores v. Surat People's Coop. Bank Ltd.*, (2020) 13 SCC 564, para 20] , cited by Ms Divya Anand. This

appeal is an attempt to renegotiate the terms of the PPA, as argued by Ms Divya Anand as also other counsel. It is well settled that courts cannot substitute their own view of the presumed understanding of commercial terms by the parties, if the terms are explicitly expressed. The explicit terms of a contract are always the final word with regard to the intention of the parties, as held by this Court in *Nabha Power Ltd. v. Punjab SPCL* [*Nabha Power Ltd. v. Punjab SPCL*, (2018) 11 SCC 508, paras 45 and 72 : (2018) 5 SCC (Civ) 1], cited by Ms Anand.”

121. This Court has clearly held that the DISCOMS have a contractual obligation to make timely payment of the invoices raised by the power generating companies, subject to scrutiny and verification of the same. This Court has rejected the contention that the funding cost was much lesser than the rate of LPS. This Court has reiterated the proposition that the courts cannot rewrite a contract which is executed between the parties. This Court has emphasized that it cannot substitute its own view of the presumed understanding of commercial terms by the parties, if the terms are explicitly expressed. It has been held that

the explicit terms of a contract are always the final word with regard to the intention of the parties.

122. As already discussed hereinabove, Article 11.8 of the PPA entitles either party to raise a supplementary bill on the other party on account of 'Change in Law' as provided in Article 13 and such bills are required to be paid by the either party. Article 11.8.3 of the PPA specifically provides that in the event of delay in payment of a supplementary bill by either party beyond one month from the date of billing, a late payment surcharge shall be payable at the same terms applicable to the monthly bill in Article 11.3.4. Article 11.3.4 of the PPA specifically provides a late payment surcharge to be paid by the procurer to the seller at the rate of 2% in excess of the applicable SBAR per annum on the amount of outstanding payment calculated on day to day basis (and compounded with monthly rest), for each day of the delay.

123. Recently, this Court, in the case of ***Uttar Haryana Bijli Vitran Nigam Limited and Another v. Adani Power (Mundra)***

Limited and Another⁹, had an occasion to consider the similar issue. The Court observed thus:

“**20.** It is clear that the restitutionary principles encapsulated in Article 13.2 would take effect for computing the impact of change in law. We see no reason to interfere with the impugned judgment [*Adani Power (Mundra) Ltd. v. CERC*, 2021 SCC OnLine APTEL 67] , wherein it has been held by the Appellate Tribunal that Respondent 1 Adani Power had started claiming change in law event compensation in respect of installation of FGD unit along with carrying cost, right from the year 2012 and that it has approached several fora to get this claim settled. Respondent 1 Adani Power finally succeeded in getting compensation towards FGD unit only on 28-3-2018, but the carrying cost claim was denied. The relief relating to carrying cost was granted to Respondent 1 Adani Power by the Appellate Tribunal vide order dated 13-4-2018 [*Adani Power Ltd. v. CERC*, 2018 SCC OnLine APTEL 5] which was duly tested by this Court and upheld on 25-2-2019 [*Uttar Haryana Bijli Vitran Nigam Ltd. v. Adani Power Ltd.*, (2019) 5 SCC 325 : (2019) 2 SCC (Civ) 657] . Once carrying cost has been granted in favour of Respondent 1 Adani Power, it cannot be urged by the appellants that interest on carrying cost should be calculated on simple interest basis instead of

⁹ (2023) 2 SCC 624

compound interest basis. Grant of compound interest on carrying cost and that too from the date of the occurrence of the change in law event is based on sound logic. The idea behind granting interest on carrying cost is not far to see, it is aimed at restituting a party that is adversely affected by a change in law event and restore it to its original economic position as if such a change in law event had not taken place.

xxx xxx xxx

23. We are not persuaded by the submission made on behalf of the appellants that since no fault is attributable to them for the delay caused in determination of the amount, they cannot be saddled with the liability to pay interest on carrying cost; nor is there any substance in the argument sought to be advanced that there is no provision in the PPAs for payment of compound interest from the date when the change in law event had occurred.

24. The entire concept of restitutionary principles engrained in Article 13 of the PPAs has to be read in the correct perspective. The said principle that governs compensating a party for the time value for money, is the very same principle that would be invoked and applied for grant of interest on carrying cost on account of a change in law event. Therefore, reliance on Article 11.3.4 read with Article 11.8.3 on the part of the

appellants cannot take their case further. Nor does the decision in *Priya Vart* case [*Priya Vart v. Union of India*, (1995) 5 SCC 437] have any application to the facts of the present case as the said case relates to payment of compensation under the Land Acquisition Act and the interest that would be payable in case of delayed payment of compensation.”

124. It is thus clear that this Court has reiterated that once carrying cost has been granted, it cannot be urged that interest on carrying cost should be calculated on simple interest basis instead of compound interest basis. It has been held that grant of compound interest on carrying cost and that too from the date of the occurrence of the ‘Change in Law’ event is based on sound logic. It has been held that it is aimed at restituting a party that is adversely affected by a ‘Change in Law’ event and restore it to its original economic position as if such a ‘Change in Law’ event had not taken place.

125. The argument that there is no provision in the PPAs for payment of compound interest from the date when the ‘Change

in Law' event had occurred, has been specifically rejected by this Court.

126. In view of this consistent position of law and application of restitutionary principles and privity of contractual obligations between the parties as contained in the PPAs, we do not find that the view taken by the learned APTEL with regard to carrying cost warrants interference.

Concurrent Finding of Fact

127. Apart from the aforesaid issues, there is one another common thread in all these appeals. Many of these appeals arise out of concurrent findings recorded by the Central/State Electricity Regulatory Commissions and the learned APTEL.

128. This Court, in the case of **MSEDCL v. APML & Ors.** (supra), after considering the statutory provisions in the Electricity Act, 2003, held that the CERC, SERCs and the learned APTEL are bodies consisting of experts in the field.

129. This Court, in the said case, observed thus:

“120. It could thus be seen that two expert bodies i.e. the CERC and the learned APTEL have concurrently held, after examining the material on record, that the factors of SHR and GCV should be considered as per the Regulations or actuals, whichever is lower. The CERC as well as the State Regulatory bodies, after extensive consultation with the stakeholders, had specified the SHR norms in respective Tariff Regulations. In addition, insofar as GCV is concerned, the CEA has opined that the margin of 85-100 kcal/kg for a non-pit head station may be considered as a loss of GCV measured at wagon top till the point of firing of coal in boiler.

121. In this respect, we may refer to the following observations of this Court in the case of *Reliance Infrastructure Limited v. State of Maharashtra* [(2019) 3 SCC 352].

“38. MERC is an expert body which is entrusted with the duty and function to frame regulations, including the terms and conditions for the determination of tariff. The Court, while exercising its power of judicial review, can step in where a case of manifest unreasonableness or arbitrariness is made out. Similarly, where the delegate of the legislature has

failed to follow statutory procedures or to take into account factors which it is mandated by the statute to consider or has founded its determination of tariffs on extraneous considerations, the Court in the exercise of its power of judicial review will ensure that the statute is not breached. However, it is no part of the function of the Court to substitute its own determination for a determination which was made by an expert body after due consideration of material circumstances.

39. In *Assn. of Industrial Electricity Users v. State of A.P.* [*Assn. of Industrial Electricity Users v. State of A.P.*, (2002) 3 SCC 711] a three-Judge Bench of this Court dealt with the fixation of tariffs and held thus : (SCC p. 717, para 11)

“11. We also agree with the High Court [*S. Bharat Kumar v. State of A.P.*, 2000 SCC OnLine AP 565 : (2000) 6 ALD 217] that the judicial review in a matter with regard to fixation of tariff has not to be as that of an appellate authority in exercise of its jurisdiction under Article 226 of the Constitution. All that the High Court has to be satisfied with is that the Commission has followed the proper procedure and

unless it can be demonstrated that its decision is on the face of it arbitrary or illegal or contrary to the Act, the court will not interfere. Fixing a tariff and providing for cross-subsidy is essentially a matter of policy and normally a court would refrain from interfering with a policy decision unless the power exercised is arbitrary or *ex facie* bad in law.”

xxx xxx xxx

123. Recently, the Constitution Bench of this Court in the case of *Vivek Narayan Sharma v. Union of India* [2023 SCC OnLine SC 1] has held that the Courts should be slow in interfering with the decisions taken by the experts in the field and unless it is found that the expert bodies have failed to take into consideration the mandatory statutory provisions or the decisions taken are based on extraneous considerations or they are *ex facie* arbitrary and illegal, it will not be appropriate for this Court to substitute its views with that of the expert bodies.”

130. As is indicated in the aforesaid judgments, this Court should be slow in interfering with the concurrent findings of fact

unless they are found to be perverse, arbitrary and either in ignorance of or contrary to the statutory provisions.

V. CONCLUSION

131. In the light of our aforesaid findings, we will now consider each of the appeals independently.

Civil Appeal No. 11095 of 2018 and Civil Appeal Nos. 11910-11911 of 2018

132. In these batch of appeals, insofar as the appeal of DNH-DISCOM is concerned, they are aggrieved by the order of the learned APTEL allowing Busy Season Surcharge and Development Surcharge, MoEF Notification on coal quality and Change in NCDP. They are also aggrieved by the finding of the learned APTEL with regard to carrying cost.

133. Insofar as the compensation on the ground of Change in NCDP is concerned, as already discussed, the same is squarely covered by the judgment of this Court in the case of **MSEDCL v. APML & Ors.** (supra)

134. Insofar as the Busy Season Surcharge and Development Surcharge are concerned, they are issued under the Circulars/Notifications of Indian Railways. The notification on coal quality is issued by MoEF. All these are the instrumentalities of the State, and these would, therefore, amount to 'Change in Law'.

135. Insofar as rest of the claims, which are concurrently allowed and disallowed by both the CERC and the learned APTEL, are concerned, in view of the judgments of this Court on this issue, as stated above, we do not find any reason to interfere with the same, not noticing any perversity, arbitrariness and/or any contravention of the statutory provisions. The appeals of both the Generator and the DNH-DISCOM are, therefore, liable to be dismissed.

Civil Appeal Nos.4628-4629 of 2021

136. The learned APTEL allowed the claim of the Generator only on the ground of Busy Season Surcharge and Development Surcharge on transportation of coal, and the Carrying Cost.

137. In view of our finding on the issues as above, no error can be found with the finding of the learned APTEL in that regard. We find no merit in the appeals. The appeals are, accordingly, liable to be dismissed.

Civil Appeal Nos. 12055-12056 of 2018

138. The issue of Busy Season Surcharge, Development Surcharge and Port Congestion Surcharge have already been considered by us herein above. All these are charges under the Notifications issued by the Indian Railways, through the Railway Board. As such, no error can be found with the finding of the learned APTEL that they would amount to 'Change in Law' events.

139. Insofar as levy of 'Forest Tax' is concerned, the same is levied by the State Government under the statutory provisions.

140. The issue with regard to 'Carrying Cost' has also been discussed by us herein above.

141. In that view of the matter, we do not find any reason to interfere with the order of the learned APTEL. The appeals are, accordingly, liable to be dismissed.

Civil Appeal Nos. 2935-2936 of 2020

142. In addition to the 'Change in Law' benefits granted by the State Commission, 'Coal Terminal Surcharge', 'Chhattisgarh Paryavaran Upkar' and 'Chhattisgarh Vikas Upkar' were also considered to be 'Change in Law' events by the learned APTEL.

143. The 'Coal Terminal Surcharge' was levied by the Indian Railways subsequent to the cut-off date. Similarly, the Government of Chhattisgarh, under Section 8 of the Chhattisgarh Adhosanrachna Vikas Evam Paryavaran Upkar Adhiniyam, 2005, vide Notification dated 16th June 2015, which is admittedly after the cut-off date, introduced 'Chhattisgarh Paryavaran Upkar' and 'Chhattisgarh Vikas Upkar'. Even the Change in Swacch Bharat Cess at the rate of 0.5% on Service Tax for Operation Period and Change in Krishi Kalyan Cess at the rate of 5% on Service Tax for Operation Period, which had been

granted concurrently by the State Commission and the learned APTEL, were notified by the Union of India after the cut-off date.

144. It could thus be seen that all these additional taxes or cesses were introduced by the instrumentalities of the Government of India or by the Government of Chhattisgarh. The same are issued under the provisions of the concerned statutes, rules, notifications, orders, etc. It is thus clear that they would amount to 'Law' within the meaning of the term 'Law' as defined in the PPAs. As such, no error can be found with the order of the learned APTEL.

145. We, therefore, find no merit in the appeals. The appeals are, accordingly, liable to be dismissed.

Civil Appeal No. 3123 of 2019 and Civil Appeal No.5372 of 2019

146. In the present matter, in addition to the claims granted by the CERC, the learned APTEL also granted the following claims:

- (i) Change in NCDP (cancellation of Captive Block vis-à-vis tapering linkage),

- (ii) Busy Season Surcharge and Developmental Surcharge,
- (iii) Carrying Cost; and
- (iv) Add on Premium Price.

147. Insofar as the issue with regard to change in NCDP is concerned, this Court in the case of ***Energy Watchdog*** (*supra*) so also in **Adani Rajasthan case** (*supra*) and recently in ***MSEDCL v. APML & Ors.*** (*Supra*) has held that the change in NCDP would amount to 'Change in Law'. As such, the finding in that regard warrants no interference.

148. Insofar as Busy Season Surcharge and Development Surcharge are concerned, we have already discussed hereinabove as to how it would amount to 'Change in Law'.

149. Insofar as 'Add on premium price' is concerned, undisputedly, 'add on premium' was required to be paid on account of cancellation of captive coal blocks and inordinate delay on account of Go-No-Go policy. As such, it cannot be said that the reasoning adopted by the learned APTEL is perverse and arbitrary.

150. Insofar as the issue with regard to 'carrying cost' is concerned, we have already discussed the issue at length in the foregoing paragraphs. As such, no interference is warranted on that finding also.

151. Insofar as other claims which were concurrently allowed and disallowed by the CERC and the learned APTEL are concerned, in view of the concurrent findings, we are not inclined to interfere with the same.

152. The appeals of both DISCOMS as well as Generating Companies are, therefore, liable to be dismissed.

Civil Appeal No. 6641 of 2019

153. This appeal is filed by GKEL, being aggrieved by the concurrent denial of benefits on certain components.

154. As already discussed herein above by us, in view of the concurrent findings recorded by the CERC as well as the learned APTEL for disallowing the claims, we are not inclined to interfere with the same. The appeal is, accordingly, liable to be dismissed.

Civil Appeal Nos. 5583-5584 of 2021

155. In the present case, the benefit is granted on following grounds:

- (i) Shortfall in domestic coal on account of Change in NCDP;
- (ii) Add on premium on account of existing tapering linkage by three years;
- (iii) Busy Season Surcharge

156. The first issue stands covered by the judgments of this Court in the cases of ***Energy Watchdog*** (supra), ***Adani Rajasthan case*** (supra) and ***MSEDCL v. APML & Ors.*** (supra) and as such, no interference is warranted.

157. Insofar as Busy Season Surcharge is concerned, apart from there being concurrent findings of facts, we have already given reasons herein above as to how the same would amount to 'Change in Law'.

158. We do not find any merit in the appeals. The same are, accordingly, liable to be dismissed.

Civil Appeal No. 39 of 2021

159. The CERC has granted benefit on the following grounds.

- i. Shortfall in linkage coal on account of NCDP 2013 and SHAKTI Policy;
- ii. Change in coal quality pursuant to amendment of the Environment (Protection) Rules, 1986;
- iii. Increase in Busy Season Surcharge and Development Surcharge on transportation of coal by Indian Railways; and
- iv. Carrying cost on allowed 'Change in Law' claims.

160. The view taken by the CERC has been affirmed by the learned APTEL. As such, the appeal arises out of the concurrent findings of fact.

161. Insofar as first issue with regard to benefit of 'Change in Law' event on account of NCDP 2013 is concerned, the same is squarely covered by the judgments of this Court in the cases of

Energy Watchdog (supra), ***Adani Rajasthan case*** (supra) and ***MSEDCL v. APML & Ors.*** (supra).

162. Insofar as the benefit of ‘Change in Law’ on account of SHAKTI Policy is concerned, it is covered by the judgment and order of the even date of this Court in the case of Civil Appeal No. 5684 of 2021¹⁰ and in the case of Civil Appeal Nos. 677-678 of 2021¹¹.

163. The other components, i.e. change in coal quality pursuant to amendment of the Environment (Protection) Rules, 1986, and increase in Busy Season Surcharge and Development Surcharge on transportation of coal by Indian Railways, have already been considered by us herein to amount to ‘Change in Law’ events. We have also considered the issue regarding ‘Carrying Cost’. As such, no interference is warranted in the concurrent findings by the learned APTEL, especially in view of the judgments of this Court. The appeal is, accordingly, liable to be dismissed.

¹⁰ Uttar Haryana Bijli Vitran Nigam Limited and another v. Adana Power (Mundra) Limited and another

¹¹ Maharashtra State Electricity Distribution Company Limited v. Adani Power Maharashtra Limited and another

Civil Appeal No. 5005 of 2022 and Civil Appeal No. 4089 of 2022

164. The appeals are filed being aggrieved by the order of the learned APTEL granting compensation on account of 'EFC' and 'carrying cost'.

165. Undisputedly, the EFC was imposed by CIL vide its Circular dated 19th December 2017.

166. As discussed herein above, it is not in dispute that EFC has been paid by the Generators while paying the base price, other charges and statutory charges at the time of delivery of coal. As such, no interference is warranted with the said finding.

167. Insofar as 'carrying cost' is concerned, we have elaborately discussed the said issue herein above. As such, no interference, therefore, is warranted on the said issue also.

168. We do not find any merit in the appeals. The same are, accordingly, liable to be dismissed.

VI. EPILOGUE

169. Before we part with the judgment, we must note that we have come across several appeals in the present batch which arise out of concurrent findings of fact arrived at by two statutory bodies having expertise in the field. We have also found that in some of the matters, the appeals have been filed only for the sake of filing the same. We also find that several rounds of litigation have taken place in some of the proceedings.

170. Recently, this Court, in the case of ***MSEDCL v. APML & Ors.*** (supra), has noted that one of the reasons for enacting the Electricity Act, 2003 was that the performance of the Electricity Boards had deteriorated on account of various factors. The Statement of Objects and Reasons of the Electricity Act, 2003 would reveal that one of the main features for enactment of the Electricity Act was delicensing of generation and freely permitting captive generation. In the said judgment, we have recorded the statement of the learned Attorney General made in the case of ***Energy Watchdog*** (supra) that the electricity sector, having been

privatized, had largely fulfilled the object sought to be achieved by the Electricity Act. He had stated that delicensed electricity generation resulted in production of far greater electricity than was earlier produced. The learned Attorney General had further urged the Court not to disturb the delicate balance sought to be achieved by the Electricity Act, i.e. that the producers or generators of electricity, in order that they set up power plants, be entitled to a reasonable margin of profit and a reasonable return on their capital, so that they are induced to set up more and more power plants. At the same time, the interests of the end consumers also need to be protected.

171. However, we find that, in spite of this position, litigations after litigations are pursued. Though the concurrent orders of statutory expert bodies cannot be said to be perverse, arbitrary or in violation of the statutory provisions, the same are challenged.

172. It will be relevant to note the following observations of the CERC in its judgment and order dated 16th May 2019, passed in

Petition No. 8/MP/2014, which falls for consideration in Civil Appeal No. 39 of 2021 before this Court:

“(d) Approaching the Commission every year for allowance of compensation for such Change in Law is a time-consuming process. Accordingly, the mechanism prescribed above may be adopted for payment of compensation due to Change in Law events allowed as per PPA for the subsequent period as well.”

173. It will also be relevant to refer to some of the observations of the learned APTEL in its order dated 21st December 2021, which falls for consideration in Civil Appeal No.2908 of 2022 before this Court, which read thus:

“115. The Standing Committee of Parliament in its Report (dated 07.03.2018) on Energy titled ‘*Stressed/ Non-Performing Assets in Electricity Sector*’ has recognized the financial stress faced by generating companies on account of delay in recovery of Change in Law compensations and has recommended thus:

*“The Committee, therefore, recommend that appropriate steps should be taken to ensure that **there should be consistency and uniformity with***

regard to orders emanating from the status of change in law. Provisions should also be made for certain percentage of payments of regulatory dues to be paid by Discoms in case the orders of regulators are being taken to APTEL/ higher judiciary for their consideration and decision”

116. The Report lays stress on the obligation of the distribution companies to pay the approved Change in Law compensation even while Regulatory Commission's orders are challenged. ***The Policy directive dated 27.08.2018 issued in terms of Section 107 of the Electricity Act, 2003 by the Ministry of Power (MoP) to the CERC emphasized on the need to ensure expeditious recovery of Change in Law compensation. The desirability of this was recognized by this tribunal in its judgment dated 14.09.2019 in Jaipur Vidyut Vitran Nigam Limited vs. RERC & Ors, 2019 SCC Online APTEL 98. It is against such backdrop that Electricity (Timely Recovery of Costs due to Change in Law) Rules, 2021, notified by MoP on 22.10.2021, providing for timely recovery of compensation on account of occurrence of Change in Law events have been framed.*** The MoP, vide notification dated 09.11.2021, put in public domain the policy directive

on “*Automatic pass through of the fuel and power procurement cost in tariff for ensuring the viability of the power*” recognizing that in order to ensure that the power sector does not face any constraints in maintaining assured power supply to meet the demand, all the stakeholders in the value chain of power sector must ensure that there is timely recovery of cost. This involves the cost *pass through* by the generating companies to the distribution companies.

117. In sharp contrast, it is seen from the factual narrative of the events leading to the appeal at hand that the appellants (Haryana Utilities) have been adopting dilatory tactics which not only defeats the public policy but also has the undesirable fall-out of adding to the burden of the end-consumers they profess to serve on account of increasing Carrying Cost.
118. Concededly, in compliance with the Taxes and Duties Order dated 06.02.2017, the appellants paid to the generator the taxes and duties for certain period but, thereafter, unilaterally withheld such claims, raising issues (found merit-less) regarding IPT of coal for first time in January 2018. It is after the impugned order was passed that the appellants are stated to have started complying, to an

extent, by making payments. It is the case of the first respondent that the appellants have withheld past payments including towards taxes and duties its entitlement to recover corresponding Late Payment Surcharge (“LPS”) being over and above the same to be computed after discharge of the former liability. **We agree that such withholding is in violation of Articles 11.3.2 and 11.6.9 of the PPAs (quoted earlier) which cast a specific mandate on the procurer (Haryana Utilities) to honor the invoices raised, irrespective of dispute, and impose a specific bar against unilateral deductions/setting off.**

119. We find the dilatory conduct of the Haryana Utilities, to delay the implementation of the binding orders concerning compensation on account of coal shortfall and corresponding taxes and duties, detrimental to the interest of end consumers since it burdens the consumers with incremental LPS for delay in making payments to the generator. This cannot be countenanced, given the earlier dispensation on the subject by the statutory regulator and appellate forum(s), since it smacks of approach that is designed to frustrate the legislative command, and extant State policy, as indeed constitutes abject indiscipline infringing the rule of law.

Borrowing THE WORDS OF Hon'ble Supreme Court in SEBI vs. *Sahara India Real Estate Corpn. Ltd.*, (2014) 5 SCC 429 “*non-compliance with the orders passed ... shakes the very foundation of our judicial system and undermines the rule of law*” which this tribunal is also duty-bound to “*honour and protect*”, so essential “*to maintain faith and confidence of the people of this country in the judiciary*”.”

[emphasis supplied]

174. It could thus be seen that even the Standing Committee of Parliament, in its report, has recommended that there should be consistency and uniformity with regard to orders emanating from the status of ‘Change in Law’. It has also recommended that the provisions should also be made for certain percentage of payments of regulatory dues to be paid by DISCOMS in case the orders of regulators are being taken to learned APTEL/higher judiciary for their consideration and decision. The learned APTEL has also referred to the Policy Directive dated 27th August 2018 issued in terms of Section 107 of the Electricity Act, 2003 by the MoP to the CERC, where it emphasized the need to ensure

expeditious recovery of 'Change in Law' compensation. The learned APTEL has also referred to the Electricity (Timely Recovery of Costs due to Change in Law) Rules, 2021, notified by MoP on 22nd October 2021, which provide for timely recovery of compensation on account of occurrence of 'Change in Law' events. The learned APTEL found that the Haryana Utilities have been adopting dilatory tactics, which not only defeat the public policy but also have the undesirable fallout of adding to the burden of the end-consumers they profess to serve on account of increasing 'Carrying Cost'. The learned APTEL further found that withholding of past payments, including towards taxes and duties by the DISCOMS, is in violation of the provisions of the PPAs, which casts a specific mandate on the procurer to honour the invoices raised, irrespective of dispute, and impose a specific bar against unilateral deductions/setting off.

175. It is further to be noted that this Court, in the case of ***Uttar Haryana Bijli Vitran Nigam Limited (UNHVNL) and another***

v. Adani Power Limited and others¹², has specifically observed that the ‘Change in Law’ events will have to accrue from the date on which Rules, Orders, Notifications are issued by the instrumentalities of the State. Even in spite of this finding, the DISCOMS are pursuing litigations after litigations.

176. We find that, when the PPA itself provides a mechanism for payment of compensation on the ground of ‘Change in Law’, unwarranted litigation, which wastes the time of the Court as well as adds to the ultimate cost of electricity consumed by the end consumer, ought to be avoided. Ultimately, the huge cost of litigation on the part of DISCOMS as well as the Generators adds to the cost of electricity that is supplied to the end consumers.

177. We further find that non-quantification of the dues by the Electricity Regulatory Commissions and the untimely payment of the dues by the DISCOMS is also detrimental to the interests of the end consumers. If timely payment is not made by DISCOMS,

¹² (2019) 5 SCC 325

under the clauses in the PPA, they are required to pay late payment surcharges, which are much higher. Even in case of 'Change in Law' claims, the same procedure is required to be followed.

178. Ultimately, these late payment surcharges are added to the cost of electricity supplied to the end consumers. It is, thus, the end consumers who suffer by paying higher charges on account of the DISCOMS not making timely payment to the Generators.

179. It is further to be noted that the appeal to this Court under Section 125 of the Electricity Act, 2003 is only permissible on any of the grounds as specified in Section 100 of the Code of Civil Procedure, 1908. As such, the appeal to this Court would be permissible only on substantial questions of law. However, as already observed herein, even in cases where well-reasoned concurrent orders are passed by the Electricity Regulatory Commissions and the learned APTEL, the same are challenged by the DISCOMS as well as the Generators. On account of pendency of litigation, which in some of the cases in this batch

has been more than 5 years, non-payment of dues would entail paying of heavy carrying cost to the Generators by the DISCOMS, which, in turn, will be passed over to the end consumer. As a result, it will be the end consumer who would be at sufferance. We are of the opinion that such unnecessary and unwarranted litigation needs to be curbed.

180. To a pointed query, the learned counsel for the DISCOMS fairly conceded the position that the prices at which the electricity is purchased from the 'Independent Power Producers' is substantially lesser than the power purchased from the 'State Generating Companies'.

181. We, therefore, appeal to the Union of India through Ministry of Power ("MoP" for short) to evolve a mechanism so as to ensure timely payment by the DISCOMS to the Generating Companies, which would avoid huge carrying cost to be passed over to the end consumers.

182. The Union of India, through MoP, may also evolve a mechanism to avoid unnecessary and unwarranted litigation, the cost of which is also passed on to the ultimate consumer.

183. Before we part with the judgment, we place on record our appreciation for the valuable assistance rendered by Mr. Balbir Singh, learned Additional Solicitor General, Dr. A. M. Singhvi, Mr. V. Giri, Mr. M.G. Ramachandran, Mr. C.A. Sundaram, Mr. Maninder Singh, Mr. Sajan Poovayya and Mr. Niranjan Reddy, learned Senior Counsel, and Mr. Vishrov Mukerjee, Ms. Poorva Saigal, Ms. Anushree Bardhan, and Ms. Poonam Sengupta, learned counsel.

184. In view of the above, all the appeals are dismissed. No costs.

.....**J.**
[B.R. GAVAI]

.....**J.**
[VIKRAM NATH]

NEW DELHI;
APRIL 20, 2023

Annexure-D

THE ENVIRONMENT (PROTECTION) RULES, 1986

(As amended to date)

THE ENVIRONMENT (PROTECTION) RULES, 1986
MINISTRY OF ENVIRONMENT AND FORESTS

(Department of Environment, Forest and Wildlife)

NOTIFICATION

New Delhi, the 19th November, 1986

¹**S.O. 844(E)** - In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules, namely:-

1. SHORT TITLE AND COMMENCEMENT

- (i) These rules may be called the Environment (Protection) Rules, 1986.
- (ii) They shall come into force on the date of their publication in the Official Gazette.

2. DEFINITIONS

In these rules, unless the context otherwise requires,-

- (a) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);
- ² [(aa) "areas" means all areas where the hazardous substances are handled;]
- (b) "Central Board" means the Central Pollution Control Board constituted under section 3 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974);
- (c) "Form" means a form set forth in Appendix A to these rules;
- (d) "Government Analyst" means a person appointed or recognized as such under section 13;
- (e) "person" in relation to any factory or premises means a person or occupier or his agent who has control over the affairs of the factory or premises and includes in relation to any substance, the person in possession of the substance.

¹ As published in Gazette of India, Extraordinary, Part II 3(ii), dt.19.11.1986.

² Clauses (aa), (ee) and (ff) inserted by Notification NO. G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89. These rules are referred to as Principal Rules in all Notifications beginning with S.O. 32(E) published in the Gazette No. 66 dated 16.2.87.

¹[(ee) "prohibited substance" means the substance prohibited for handling;]

(f) "recipient system" means the part of the environment such as soil, water, air or other which receives the pollutants;

¹[(ff) "restricted substance" means the substance restricted for handling;]

(g) "section" means a section of the Act;

(h) "Schedule" means a Schedule appended to these rules;

(i) "Standards" means standards prescribed under these rules;

(j) "State Board" means a State Pollution Control Board constituted under section 4 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or a State Pollution Control Board constituted under section 5 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981);

3. STANDARDS FOR EMISSION OR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

(1) For the purpose of protecting and improving the quality of the environment and preventing and abating environmental pollution, the standards for emission or discharge of environmental pollutants from the industries, operations or processes shall be as specified in ²[Schedule I to IV].

(2) Notwithstanding anything contained in sub-rule (1), the Central Board or a State Board may specify more stringent standards from those provided in ³[Schedule I to IV] in respect of any specific industry, operation or process depending upon the quality of the recipient system and after recording reasons therefore in writing.

⁴(3) The standards for emission or discharge of environmental pollutants specified under sub-rule (1) or sub-rule (2) shall be complied with by an industry, operation or process within a period of one year of being so specified.]

¹ Clauses (aa), (ee) and (ff) inserted by Notification NO. G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89. These rules are referred to as Principal Rules in all Notifications beginning with S.O. 32(E) published in the Gazette No. 66 dated 16.2.87.

² Substituted by notification G.S.R 422(E) dated 19.5.1993, published in the Gazette No. 174 dated 19.5.1993.

³ Substituted *ibid*

⁴ The sub-rule (3) of rule 3 inserted vide S.O.23(E), dt.16.01.1991.

¹[(3A) (i) Notwithstanding anything contained in sub-rules (1) and (2), on and from the 1st day of January, 1994, emission or discharge of environmental pollutants from the ²[industries, operations or processes other than those industries, operations or processes for which standards have been specified in Schedule-I] shall not exceed the relevant parameters and standards specified in schedule VI.

Provided that the State Boards may specify more stringent standards for the relevant parameters with respect to specific industry or locations after recording reasons therefore in writing.

(ii) The State Board shall while enforcing the standards specified in Schedule VI follow the guidelines specified in Annexure I and II in that Schedule.]

³[(3B)] The combined effect of emission or discharge of environmental pollutants in an area, from industries, operations, processes, automobiles and domestic sources, shall not be permitted to exceed the relevant concentration in ambient air as specified against each pollutant ⁴[in columns (4) and (5) of Schedule VII.]

(4) Notwithstanding anything contained in sub-rule (3)-

(a) the Central Board or a State Board, depending on the local conditions or nature of discharge of environmental pollutants, may, by order, specify a lesser period than a period specified under sub-rule (3) within which the compliance of standards shall be made by an industry, operation or process.

(b) the Central Government in respect of any specific industry, operation or process, by order, may specify any period other than a period specified under sub-rule (3) within which the compliance of standards shall be made by such industry, operation or process.

(5) Notwithstanding anything contained in sub-rule (3) the standards for emission or discharge of environmental pollutants specified under sub-rule (1) or sub-rule (2) in respect of an industry, operation or process before the commencement of the Environment (Protection) Amendment Rules, 1991, shall be complied by such industry, operation or process by the 31st day of December 1991.

¹ The sub-rule (3A) of rule 3 inserted by rule 2(a)(iii) of the Environment (Protection) Second Amendment Rules, 1993 notified vide GSR 422(E) dt.19.05.1993, published in the Gazette No.174 dated 19.05.1993.

² Substituted by rule 2(a) of the Environment (Protection) Third Amendment Rules, 1993 notified vide Notification G.S.R 801(E), dt.31.12.1993, published in Gazette No.463 dt.31.12.1993.

³ Substituted by Rule 2(a) of the Environment (Protection) Second (Amendment) Rules, 1998 notified by notification GSR 7, dated 22.12.1998.

⁴ Substituted by Rule 2 of the Environment (Protection) Seventh Amendment Rules, 2009 notified by GSR 826(E), dated 16.11.2009.

¹[(6) Notwithstanding anything contained in sub-rule (3), an industry, operation or process which has commenced production on or before 16th May, 1981 and has shown adequate proof of atleast commencement of physical work for establishment of facilities to meet the specified standards within a time-bound programme, to the satisfaction of the concerned State Pollution Control Board, shall comply with such standards latest by the 31st day of December, 1993.

(7) Notwithstanding anything contained in sub-rule (3) or sub-rule (6) an industry, operation or process which has commenced production after the 16th day of May, 1981 but before the 31st day of December 1991 and has shown adequate proof of at least commencement of physical work for establishment of facilities to meet the specified standards within a time-bound programme, to the satisfaction of the concerned State Pollution Control Board, shall comply with such standards latest by the 31st day of December, 1992.]

²[(8) On and from the 1st day of ³[June, 2002], the following coal based thermal power plants shall use ⁴[raw or blended or beneficiated coal with an ash content not exceeding thirty four per cent on an annual average basis.], namely:-

- (a) any thermal power plant located beyond one thousand kilometers from the pit-head; and
- (b) any thermal power plant located in urban area or sensitive area or critically polluted area irrespective of their distance from pit-head except any pit-head power plant.

⁵[Provided that any thermal power plant using Circulating Fluidised Bed Combustion or Atmosphere Fluidised Bed Combustion or Pressurized Fluidised Bed Combustion or integrated Gasification Combined Cycle technologies or any other clean technologies as may be notified by the Central Government in the Official Gazette shall be exempted from Clauses (a) and (b)]

Explanation: For the purpose of this Rule :-

- (a) 'beneficiated coal' means coal containing higher calorific value but lower ash than the original ash content in the raw coal obtained through physical separation or washing process.

¹ Sub-rule (6) and (7) of rule 3 were added by the Environment (Protection) Amendment Rule, 1992 vide G.S.R. 95(E) dated 12.02.1992.

² Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 1997 vide G.S.R.560(E), dated 19.9.1997.

³ Substituted vide G.S.R.407(E), dated 31.5.2001.

⁴ Substituted vide G.S.R.378 (E), dated 30.6.1998.

⁵ Inserted vide G.S.R. 378 (E), dated 30.6.1998.

- (b) 'pit-head power plant' means power stations having captive transportation system for its exclusive use for transportation of coal from the loading point at the mining end upto the uploading point at the power station without using the normal public transportation system.;
- (c) 'sensitive area' means an area whose ecological balance is prone to be easily disturbed.
- (d) 'critically polluted area' means the area where pollution level has reached or likely to reach to the critical level and which has been identified as such by the Central Government or Central Pollution Control Board or a State Pollution Control Board.
- ¹[(e) 'urban area' means an area limit of a city having a population of more than 1 million according to 1991 census.]

4. DIRECTIONS

(1) Any direction issued under section 5 shall be in writing.

(2) The direction shall specify the nature of action to be taken and the time within which it shall be complied with by the person, officer or the authority to whom such direction is given.

²[(3) (a) The person, officer or authority to whom any direction is sought to be issued shall be served with a copy of the proposed direction and shall be given an opportunity of not less than fifteen days from the date of service of a notice to file with an officer designated in this behalf the objections, if any, to the issue of the proposed direction.

(b) Where the proposed direction is for the stoppage or regulation of electricity or water or any other service affecting the carrying on any industry, operation or process and is sought to be issued to an officer or an authority, a copy of the proposed direction shall also be endorsed to the occupier of the industry, operation or process, as the case may be and objections, if any, filed by the occupier with an officer designated in this behalf shall be dealt with in accordance with the procedures under sub-rules (3a) and (4) of this rule:

Provided that no opportunity of being heard shall be given to the occupier if he had already been heard earlier and the proposed direction referred to in sub-rule (3b) above for the stoppage or regulation of electricity or

¹ Inserted vide G.S.R.378(E), dated 30.6.1998.

² Sub-rule (3) of rule 4 of the Principal Rules was re-numbered as sub-rule 3(a) and sub-rule 3(b) inserted vide Notification No. S.O. 64(E) published in the Gazette No. 42 dated 18.1.88.

water or any other service was the resultant decision of the Central Government after such earlier hearing]

(4) The Central Government shall within a period of 45 days from the date of receipt of the objections, if any or from the date up to which an opportunity is given to the person, officer or authority to file objections whichever is earlier, after considering the objections, if any, received from the person, officer or authority sought to be directed and for reasons to be recorded in writing, confirm, modify or decide not to issue the proposed direction.

(5) In case where the Central Government is of the opinion that in view of the likelihood of a grave injury to the environment it is not expedient to provide an opportunity to file objections against the proposed direction, it may, for reasons to be recorded in writing, issue directions without providing such an opportunity.

(6) Every notice or direction required to be issued under this rule shall be deemed to be duly served

(a) where the person to be served is a company, if the document is addressed in the name of the company at its registered office or at its principal office or place of business and is either-

(i) sent by registered post, or

(ii) delivered at its registered office or at the principal office or place of business;

(b) where the person to be served is an officer serving Government, if the document is addressed to the person and a copy thereof is endorsed to this Head of the Department and also to the Secretary to the Government, as the case may be, in-charge of the Department in which for the time being the business relating to the Department in which the officer is employed is transacted and is either-

(i) sent by registered post, or

(ii) is given or tendered to him;

(c) in any other case, if the document is addressed to the person to be served and-

(i) is given or tendered to him, or

(ii) if such person cannot be found, is affixed on some conspicuous part of his last known place of residence or business or is given or tendered to some adult member of his family or is affixed on some conspicuous part of the land or building, if any, to which it relates, or

(iii) is sent by registered post to that person;

Explanation.-For the purpose of this sub-rule:-

(a) "company" means any body corporate and includes a firm or other association of individuals;

(b) "a servant" is not a member of the family.

5. PROHIBITION AND RESTRICTION ON THE LOCATION OF INDUSTRIES AND THE CARRYING ON PROCESSES AND OPERATIONS IN DIFFERENT AREAS

(1) The Central government may take into consideration the following factors while prohibiting or restricting the location of industries and carrying on of processes and operations in different areas-

(i) Standards for quality of environment in its various aspects laid down for an area.

(ii) The maximum allowable limits of concentration of various environmental pollutants (including noise) for an area.

(iii) The likely emission or discharge of environmental pollutants from an industry, process or operation proposed to be prohibited or restricted.

(iv) The topographic and climatic features of an area.

(v) The biological diversity of the area which, in the opinion of the Central Government needs to be preserved.

(vi) Environmentally compatible land use.

(vii) Net adverse environmental impact likely to be caused by an industry, process or operation proposed to be prohibited or restricted.

(viii) Proximity to a protected area under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 or a sanctuary, National Park, game reserve or closed area notified as such under the Wild Life (Protection) Act, 1972 or places protected under any treaty, agreement or convention with any other country or countries or in pursuance of any decision made in any international conference, association or other body.

(ix) Proximity to human settlements.

(x) Any other factor as may be considered by the Central Government to be relevant to the protection of the environment in an area.

(2) While prohibiting or restricting the location of industries and carrying on of processes and operations in an area, the Central Government shall follow the procedure hereinafter laid down.

(3) (a) Whenever it appears to the Central Government that it is expedient to impose prohibition or restrictions on the locations of an industry or the carrying on of processes and operations in an area, it may by notification in the Official Gazette and in such other manner as the Central Government may deem necessary from time to time, give notice of its intention to do so.

(b) Every notification under clause (a) shall give a brief description of the area, the industries, operations, processes in that area about which such notification pertains and also specify the reasons for the imposition of prohibition or restrictions on the locations of the industries and carrying on of process or operations in that area.

(c) Any person interested in filing an objection against the imposition of prohibition or restrictions on carrying on of processes or operations as notified under clause (a) may do so in writing to the Central Government within sixty days from the date of publication of the notification in the Official Gazette.

(d) The Central Government shall within a period of one hundred and twenty days from the date of publication of the notification in the Official Gazette consider all the objections received against such notification and may within ¹[three hundred and sixty five days] from such day of publication] impose prohibition or restrictions on location of such industries and the carrying on of any process or operation in an area.

²[(4) Notwithstanding anything contained in sub-rule (3), whenever it appears to the Central Government that it is in public interest to do so, it may dispense with the requirement of notice under clause (a) of sub-rule (3).]

³**6. PROCEDURE FOR TAKING SAMPLES**

The Central Government or the officer empowered to take samples under section 11 shall collect the sample in sufficient quantity to be divided into two uniform parts and effectively seal and suitably mark the same and permit to the person from whom the sample is taken to add his own seal or mark to all or any of the portions so sealed and marked. In case where the sample is made up in containers or small volumes and is likely to deteriorate or be otherwise damaged if exposed, the Central Government or the officer

¹ Substituted for the words "one hundred and eight days" the words "three hundred and sixty five days" by Rule 2 of the Environment (Protection) Eighth Amendment Rules, 1992

² Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 1994 notified by G.S.R.320(E), dated 16.3.1994.

³ For rule 6 of the principal rules this rule was substitute vide S.O. 64(E) published in the Gazette No. 42 dated 18.1.88.

empowered shall take two of the said samples without opening the containers and suitably seal and mark the same. The Central Government or the officer empowered shall dispose of the samples so collected as follows:-

(i) One portion shall be handed over to the person from whom the sample is taken under acknowledgement; and

(ii) The other portion shall be sent forthwith to the environmental laboratory or analysts.]

7. SERVICE OF NOTICE

The Central Government or the officer empowered shall serve on the occupier or his agent or person in charge of the place a notice then and there in Form I of his intention to have the sample analysed.

8. PROCEDURE FOR SUBMISSION OF SAMPLES FOR ANALYSIS, AND THE FORM OF LABORATORY REPORT THEREON

(1) Sample taken for analysis shall be sent by the Central Government or the officer empowered to the environmental laboratory by registered post or through special messenger along with Form II.

(2) Another copy of Form II together with specimen impression of seals of the officer empowered to take samples along with the seals/marks, if any, of the person from whom the sample is taken shall be sent separately in a sealed cover by registered post or through a special messenger to the environmental laboratory.

(3) The findings shall be recorded in Form III in triplicate and signed by the Government Analyst and sent to the officer from whom the sample is received for analysis.

(4) On receipt of the report of the findings of the Government Analyst, the officer shall send one copy of the report to the person from whom the sample was taken for analysis, the second copy shall be retained by him for his record and the third copy shall be kept by him to be produced in the Court before which proceedings, if any, are instituted.

9. FUNCTIONS OF ENVIRONMENTAL LABORATORIES

The following shall be the functions of environmental laboratories:-

(i) to evolve standardized methods for sampling and analysis of various types of environmental pollutants;

(ii) to analyze samples sent by the Central Government or the officers empowered under sub-section (1) of section 11.

(iii) to carry out such investigations as may be directed by the Central Government to lay down standards for the quality of environment and discharge of environmental pollutants, to monitor and to enforce the standards laid down;

(iv) to send periodical reports regarding its activities to the Central Government;

(v) to carry out such other functions as may be entrusted to it by the Central Government from time to time.

10. QUALIFICATIONS OF GOVERNMENT ANALYST

A person shall not be qualified for appointment or recognized as a Government Analyst unless he is a:-

(a) graduate in science from a recognized university with five years experience in laboratory engaged in environmental investigation, testing or analysis; or

(b) post-graduate in science or a graduate in engineering or a graduate in medicine or equivalent with two years experience in a laboratory engaged in environmental investigations testing or analysis; or

(c) post-graduate in environmental science from a recognized university with two years experience in a laboratory engaged in environmental investigations, testing or analysis.

11. MANNER OF GIVING NOTICE

The manner of giving notice under clause (b) of section 19 shall be as follows, namely:-

(1) The notice shall be in writing in Form IV.

(2) The person giving notice may send notice to-

(a) if the alleged offence has taken place in a Union territory

(A) the Central Board and

(B) Ministry of Environment and Forests (represented by the Secretary to Government of India);

(b) if the alleged offence has taken place in a State:

(A) the State Board; and

(B) the Government of the State (represented by the Secretary to the State Government in-charge of environment); and

(C) the Ministry of Environment and Forests (represented by the Secretary to the Government of India);

(3) The notice shall be sent by registered post acknowledgement due; and

(4) The period of sixty days mentioned in clause (b) of section 19 of the Environment (Protection) Act, 1986 shall be reckoned from the date it is first received by one of the authorities mentioned above.

¹[12. FURNISHING OF INFORMATION TO AUTHORITIES AND AGENCIES IN CERTAIN CASES

Where the discharge of environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person in charge of the place at which such discharge occurs or is apprehended to occur shall forth with intimate the fact of such occurrence or apprehension of such occurrence to all the following authorities or agencies, namely:-

(i) The officer-in-charge of emergency or disaster relief operation in a district or other region of a state or Union territory specified by whatever designation by the Government of the said State or Union territory, and in whose jurisdiction the industry, process or operation is located.

(ii) Central Board or a State Board as the case may be and its regional officer having local jurisdiction who have been delegated powers under section 20, 21, 23 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and section 24 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981).

(iii) The statutory authorities or agencies specified in column 3 in relation to places mentioned in column 2 against thereof of the Schedule II.]

¹ Rule 12 inserted vide Notification No. S.O. 32(E) dated 16.2.87 published in the Gazette No. 66 dated 16.2.87.

¹[13. PROHIBITION AND RESTRICTION ON THE HANDLING OF HAZARDOUS SUBSTANCES IN DIFFERENT AREAS

(1) The Central Government may take into consideration the following factors while prohibiting or restricting the handling of hazardous substances in different areas-

(i) The hazardous nature of the substance (either in qualitative or quantitative terms as far as may be) in terms of its damage causing potential to the environment, human beings, other living creatures, plants and property;

(ii) the substances that may be or likely to be readily available as substitutes for the substances proposed to be prohibited or restricted;

(iii) the indigenous availability of the substitute, or the state of technology available in the country for developing a safe substitute;

(iv) the gestation period that may be necessary for gradual introduction of a new substitute with a view to bringing about a total prohibition of the hazardous substance in question; and

(v) any other factor as may be considered by the Central Government to be relevant to the protection of environment.

(2) While prohibiting or restricting the handling of hazardous substances in an area including their imports and exports the Central Government shall follow the procedure hereinafter laid down-

(i) Whenever it appears to the Central Government that it is expedient to impose prohibition or restriction on the handling of hazardous substances in an area, it may, by notification in the Official Gazette and in such other manner as the Central Government may deem necessary from time to time, give notice of its intention to do so.

(ii) Every notification under clause (i) shall give a brief description of the hazardous substances and the geographical region or the area to which such notification pertains, and also specify the reasons for the imposition of prohibition or restriction on the handling of such hazardous substances in that region or area.

(iii) Any person interested in filing an objection against the imposition of prohibition or restrictions on the handling of hazardous substances as notified under clause (i) may do so in writing to the Central Government within sixty days from the date of publication of the notification in the Official Gazette.

¹ Rule 13 inserted vide Notification No G.S.R. 931(E) dated 27.10.89 published in the Gazette No. 564 dated 27.10.89.

(iv) The Central Government shall within a period of ninety days from the date of publication of the notification in the official Gazette consider all the objections received against such notification and may impose prohibition or restrictions on the handling of hazardous substances in a region or an area.]

¹[14. SUBMISSION OF ENVIRONMENTAL ²[STATEMENT]

Every person carrying on an industry, operation or process requiring consent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environment (Protection) Act, 1986 (29 of 1986) shall submit an environmental ²[statement] for the financial year ending the 31st March in Form V to the concerned State Pollution Control Board on or before the ³[thirtieth day of September] every year, beginning 1993.]

¹ Inserted by Rule 2 of the Environment (Protection) (second amendment) Rules, 1992 vide notification G.S.R. 329(E), dated 13.3.1992.

² Substituted by Rule 2(a) (i) of the Environment (Protection) Amendment Rules, 1993 vide notification G.S.R. 386(E), dated 22.4.1993

³ Substituted by Rule 2(a) (ii), *ibid*

**STANDARDS FOR EMISSION OR DISCHARGE OF
ENVIRONMENTAL POLLUTANTS**

¹**SCHEDULE – I** (See rule 3)

Sr. No.	Industry	Parameter	Standards
1	2	3	4
1.	CAUSTIC SODA INDUSTRY		Concentration not to exceed, miligramme per lit. (except for pH and flow)
		Total concentration of mercury in the final effluent*	0.01
		Mercury bearing waste-water generation (flow)	10 kilolitres/ tonne of caustic soda produced.
		pH	5.5 to 9.0
		*Final effluent is the combined effluent from (a) cell house, (b) brine plant, (c) chlorine handling (d) hydrogen handling (e) hydrochloric acid plant.	
**2.	MAN-MADE FIBRES (SYNTHETIC)		Concentration not to exceed miligramme per litre (except for pH)
		Suspended solids	100
		Bio-chemical oxygen demand ² [BOD 3 days at 27°C]	30
		pH	5.5 to 9.0
³ [3.	PETROLEUM OIL REFINERY	A. EFFLUENT	
		1. pH	6.0-8.5
		2. Oil & Grease	5.0
		3. BOD _{3 days, 27°C}	15.0
		4. COD	125.0
		5. Suspended Solids	20.0
		6. Phenols	0.35
		7. Sulphides	0.5
		8. CN	0.20
		9. Ammonia as N	15.0
		10. TKN	40.0
		11. P	3.0

¹ The Environment (Protection) Rules, 1986 are referred to as principal rules in all subsequent Notifications beginning with S.O. 32(E), dated 16.2.1987 published in the Gazette no. 66, dated 16.2.1987. The Schedule to be principal rules was renumbered as Schedule-I vide S.O. 32(E) supra.

** Standards notified at Sl. No. 60 may also be referred.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

³ Substituted by Rule 2 (i) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R.186(E), dated 18.3.2008.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		12. Cr (Hexavalent)	0.1
		13. Cr (Total)	2.0
		14. Pb	0.1
		15. Hg	0.01
		16. Zn	5.0
		17. Ni	1.0
		18. Cu	1.0
		19. V	0.2
		20. Benzene	0.1
		21. Benzo (a) – Pyrene	0.2

Notes:-

- (i) Concentration limits shall be complied with at the outlet, discharging effluent (excluding discharge from sea water cooling systems) to receiving environment (surface water Bodies, marine systems or public sewers). In case of application of treated effluent directly for irrigation/horticulture purposes (within or outside the premises of refinery), make-up water for cooling systems, fire fighting, etc., the concentration limits shall also be complied with at the outlet before taking the effluent for such application. However, any use in the process such as use of sour water in desalter is excluded for the purpose of compliance.
- (ii) In case of circulating seawater cooling, the blow-down from cooling systems shall be monitored for pH and oil & grease (also hexavalent & total chromium, if chromate treatment is given to cooling water) and shall conform to the concentration limits for these parameters. In case of reuse of treated effluent as cooling water make-up, all the parameters (as applicable for treated effluent) shall be monitored and conform to the prescribed standards.
- (iii) In case of once through cooling with seawater, the oil & grease content in the effluent from cooling water shall not exceed 1.0 mg/l.

B. EMISSIONS**Limiting concentration in mg/Nm³, unless stated**

(Furnace, Boiler and Captive Power Plant)	Fuel Type	Existing refineries	New Refinery/ Furnace/ Boiler
		Sulphur Dioxide (SO ₂)	Gas
	Liquid	1700	850
Oxides of Nitrogen (NO _x)	Gas	350	250
	Liquid	450	350
Particulate Matter (PM)	Gas	10	5
	Liquid	100	50

Sr. No.	Industry	Parameter	Standards		
1	2	3	4		
		Carbon Monoxide (CO)	Gas	150	100
			Liquid	200	150
		Nickel and Vanadium (Ni+v)	Liquid	5	5
		Hydrogen Sulphide (H ₂ S) in fuel gas	Liquid / Gas	150	150
		Sulphur content in liquid fuel, weight%	Liquid / Gas	1.0	0.5

Notes:-

- (i) In case of mixed fuel (gas and liquid) use, the limit shall be computed based on heat supplied by gas and liquid fuels.
- (ii) All the furnaces/boilers with heat input of 10 million kilo calories/hour or more shall have continuous systems for monitoring of SO₂ and NO₂. Manual monitoring for all the emission parameters in such furnaces or boilers shall be carried out once in two months.
- (iii) All the emission parameters in furnaces/boilers having heat input less than 10 million kilo calories/hour will be monitored once in three months.
- (iv) In case of continuous monitoring, one hourly average concentration values shall be complied with 98% of the time in a month. Any concentration value obtained through manual monitoring, if exceeds the limiting concentration value, shall be considered as non-compliance.
- (v) Data on Nickel and Vanadium content in the liquid fuel (in ppm) shall be reported. Nickel and Vanadium in the liquid fuel shall be monitored at least once in six months, if liquid fuel source & quality are not changed. In case of changes, measurement is necessary after every change.

(FCC
Regenerators)

**Limiting concentration in mg/Nm³,
unless stated**

	Existing refineries		New Refinery /FCC Commissioned
	Hydro processed FCC feed	Other than Hydro processed FCC feed	
Sulphur Dioxide (SO ₂)	500	1700	500 (for hydro-processed feed) 850 for other feed)
Oxides of Nitrogen (NO _x)	400	450	350
Particulate Matter (PM)	100	100	50
Carbon Monoxide (CO)	400	400	300
Nickel and Vanadium (Ni+V)	2	5	2
Opacity, %	30	30	30

Sr. No.	Industry	Parameter	Standards
1	2	3	4

Notes:-

- (i) In case part feed is hydro-processed, the emission values shall be calculated proportional to the feed rates of untreated and treated feeds.
- (ii) FCC regenerators shall have continuous systems for monitoring of SO₂ and NO_x. One hourly average concentration values shall be complied with 98% of the time in a month, in case of continuous monitoring. Manual monitoring for all the emission parameters shall be carried out once in two months.
- (iii) Any concentration value obtained through manual monitoring, if exceeds the limiting concentration value, shall be considered as non-compliance.
- (iv) Data on Sulphur (weight in %), Nickel (PPM) and Vanadium (PPM) content in the feed to FCC shall be separated regularly.
- (v) Limit of Carbon Monoxide emissions shall be complied with except during annual shut down of CO boiler for statutory maintenance.

		Plant Capacity (Tonnes/day)	Existing SRU	New SRU or Refinery Commissioned
{ Sulphur, Recovery Units (SRU) }	Sulphur recovery, %	Above 20	98.7	99.5
	H ₂ S, mg/Nm ³		15	10
	Sulphur recovery, %	5-20	96	98
	Sulphur recovery, %	1-5	94	96
	Oxides of Nitrogen (NO _x), mg/Nm ³	All capacity	350	250
	Carbon Monoxide (CO), mg/Nm ³	All capacity	150	100

Notes:-

- (i) Sulphur recovery units having capacity above 20 tonnes per day shall have continuous systems for monitoring of SO₂. Manual monitoring for all the emission parameters shall be carried out once in a month.
- (ii) Data on Sulphur Dioxide emissions (mg/Nm³) shall be reported regularly.
- (iii) Sulphur recovery efficiency shall be calculated on monthly basis, using quantity of sulphur in the feed to SRU and quantity of sulphur recovered.

C- FUGITIVE EMISSION

Storage of Volatile Liquids : General Petroleum Products

- (1) Storage tanks with capacity between 4 to 75m³ and total vapour Pressure (TVP) of more than 10 kpa should have Fixed Roof Tank (FRT) with pressure valve vent.
- (2) Storage tank with the capacity between 75 to 500 m³ and total vapour Pressure (TVP) of 10 to 76 kpa should have Internal Floating Root Tank (IFRT) or External Floating Root Tank (EFRT) or Fixed Roof Tank with vapour control or vapour balancing system.
- (3) Storage tanks with the capacity of more than 500 m³ and total vapour Pressure (TVP) of 10 to 76 kpa should have Internal Floating Roof Tank or External Floating Roof Tank or Fixed Roof Tank with vapour control system.
- (4) The tanks with the capacity of more than 75 m³ and total vapour Pressure (TVP) of more than 76 kpa should have Fixed Root Tank with vapour control system.
- (5) Requirement for seals in Floating Roof Tanks:
 - (i)
 - (a) IFRT and EFRT shall be provided with double seals with minimum vapour recovery of 96%.
 - (b) Primary seal shall be liquid or shoe mounted for EFRT and vapour mounted for IFRT. Maximum seal gap width will be 4 cm and maximum gap area will be 200 cm²/m of tank diameter.
 - (c) Secondary seal shall be rim mounted. Maximum seal gap width will be 1.3 cm and maximum gap area will be 20 cm²/m of tank diameter.
 - (d) Material of seal and construction shall ensure high performance and durability.
 - (ii) Fixed Roof Tanks shall have vapour control efficiency of 95% and vapour balancing efficiency of 90%
 - (iii) Inspection and maintenance of storage tanks shall be carried out under strict control. For the inspection, API RP 575 may be adopted, In-service inspection with regard seal gap should be carried out once in every six months and repair to be implemented in short time. In future, possibility of on-stream repair of both seals shall be examined.

Storage of Volatile Liquids : Benzene Storage

- (1) FRT with vapour to incineration with 99.9% of removal efficiency for volatile organic compounds (VOC) shall be provided.
- (2) IFRT/EFRT with double seals, emission-reducing roof fitting and fitted with fixed roof with vapour removal efficiency of at least 99% shall be provided.

Solvents for Lube-Base Oil production (Furfural, NMP, MEK, Toluene and MIBK)

IFRT with double seals and inert gas blanketing with vapour removal efficiency of at least 97% shall be provided.

Emission control for Road tank truck/Rail tank wagon loading			
Loading of Volatile Products	Gasoline and Naphtha:		
	(i) VOC reduction, %.		(i) 99.5
	(ii) Emission, gm/m ³		(ii) 5
	Benzene:		
(i) VOC reduction, %		(i) 99.99	
(ii) Emission, mg/m ³		(ii) 20	
Toluene/Xylene:			
(i) VOC reduction, %		(i) 99.98	
(ii) Emission, mg/m ³		(ii) 150	
Note:			
(i) It shall be applicable for Gasoline, Naphtha, Benzene, Toluene and Xylene loading.			
(ii) Road tank Truck shall have Bottom loading and Roll tank wagon shall have Top submerged loading.			
(iii) Annual leak testing for vapour collection shall be done.			

Standards for Equipment Leaks

- (1) Approach: Approach for controlling fugitive emissions from equipment leaks shall have proper selection, installation and maintenance of non-leaking or leak-tight equipment. Following initial testing after commissioning, the monitoring for leak detection is to be carried out as a permanent on-going Leak Detection and Repair (LDAR) programme. Finally detected leaks are to be repaired within allowable time frame.

- (2) **Components to be Covered:** Components that shall be covered under LDAR programme include (i) Block valves; (ii) Control valves; (iii) Pump seals; (iv) Compressor seals; (v) Pressure relief valves; (vi) Flanges – Heat Exchangers; (vii) Flanges – Piping; (viii) Connectors – Piping; (ix) Open ended lines; and (x) Sampling connections, Equipment and line sizes more than 1.875 cm or ¾ inch are to be covered.
- (3) **Applicability:** LDAR programme would be applicable to components (given at 2 above) for following products/compounds: (i) hydrocarbon gases; (ii) Light liquid with vapour pressure @ 20° C > 1.0 kPa; and (iii) Heavy liquid with vapour pressure @ 20° C between 0.3 to 1.0 kPa.
- (4) While LDAR will not be applicable for heavy liquids with vapour pressure < 0.3 kPa, it will be desirable to check for liquid dripping as indication of leak.
- (5) **Definition of leak:** A leak is defined as the detection of VOC concentration more than the values (in ppm) specified below at the emission source using a hydrocarbon analyzer according to measurement protocol (US EPA – 453/R-95-017, 1995 Protocol for equipment leak emission estimates may be referred to:

Component	General Hydrocarbon (ppm)		Benzene (ppm)	
	Till 31 st Dec. 2008	w.e.f. January 01, 2009	Till 31 st Dec., 2008	w.e.f January 01, 2009
Pump/Compressor	10000	5000	3000	2000
Valves/Flanges	10000	3000	2000	1000
Other components	10000	3000	2000	1000

- (6) In addition, any component observe to be leaking by sight, sound or smell, regardless of concentration (liquid dripping, visible vapor leak) or presence of bubbles using soap solution should be considered as leak.
- (7) **Monitoring Requirements and Repair Schedule:** Following frequency of monitoring of leaks and schedule for repair of leaks shall be followed:

Component	Frequency of monitoring	Repair schedule
	Quarterly (semiannual after two consecutive periods with < 2% leaks and annual after 5 periods with < 2% leaks)	Repair will be started within 5 working days and shall be completed within 15 working days after detection of leak for general hydrocarbons. In case of benzene, the leak shall be attended immediately for repair.
Pump seals	Quarterly	
Compressor seals	Quarterly	
Pressure relief devices	Quarterly	
Pressure relief devices (after venting)	Within 24 hours	
Heat Exchangers	Quarterly	
Process drains	Annually	
Components that are difficult to monitor	Annually	
Pump seals with visible liquid dripping	Immediately	
Any component with visible leaks	Immediately	Immediately
Any component after repair/ replacement	Within five days	-

- (8) The percentage leaking components should not be more than 2% for any group of components monitored excluding pumps/compressors. In case of pumps/compressors it should be less than 10% of the total number of pumps/compressors or three pumps and compressors, whichever is greater.
- (9) Emission inventory: Refinery shall prepare an inventory of equipment components in the plant. After the instrumental measurement of leaks, emission from the components will be calculated using stratified emission factor (USEPA) or any other superior factors. The total fugitive emission will be established.

- (10) Monitoring following types of monitoring methods may be judiciously employed for detection of leaks: (i) instrumental method of measurement of leaks; (ii) Audio, visual and olfactory (AVO) leak detection; and (iii) Soap bubble method.
- (11) Data on time of measurement and concentration value for leak detection; time of repair of leak; and time of measurement & concentration value after repair of leak should be documented for all the components.
- (12) Pressure relief and blow down systems should discharge to a vapour collection and recovery system or to flare.
- (13) Open-ended lines should be closed by a blind flange or plugged.
- (14) Totally closed-loop should be used in all routine samples.
- (15) Low emission packing should be used for valves.
- (16) High integrity sealing materials should be used for flanges.

D. Emission Standards for VOC from Wastewater Collection and Treatment

- (1) All contaminated and odorous wastewater streams shall be handled in closed systems from the source to the primary treatment stages (oil-water separator and equalization tanks).
- (2) The collection system shall be covered with water seals (traps) on sewers and drains and gas tight covers on junction boxes.
- (3) Oil-water separators and equalization tanks shall be provided with floating/fixed covers. The off-gas generated shall be treated to remove at least 90% of VOC and eliminate odour. The system design shall ensure safety (prevention of formation of explosive mixture, possible detonation and reduce the impact) by dilution with air/inert gas, installing LEL detector including control devices, seal drums, detonation arrestors etc. The system shall be designed and operated for safe maintenance of the collection and primary treatment systems.
- (4) Wastewater from aromatics plants (benzene and xylene plants) shall be treated to remove benzene & total aromatics to a level of 10, 20 ppm respectively before discharge to effluent treatment system without dilution].

Sr. No.	Industry	Parameter	Standards
1	2	3	4
4.	SUGAR INDUSTRY		Concentration not exceed, milligramme per litre
		Bio-chemical oxygen demand, ¹ [3 days at 27°C]	100 for disposal on land 30 for disposal in surface water
		Suspended solids	100 for disposal on land. 30 for disposal in surface waters.
5.	THERMAL POWER PLANTS		Maximum limiting concentration, milligrammes per litre (except for pH and temperature)
	Condenser Cooling waters (once through cooling system)	pH	6.5 – 8.5
		Temperature	Not more than 5°C higher than the intake water temperature
		Free available chlorine	0.5
	Boiler blowdowns	Suspended solids	100
		Oil and Grease	20
		Copper (total)	1.0
		Iron (total)	1.0
	Cooling tower blowdown	Free available chlorine	0.5
		Zinc	1.0
		Chromium (total)	0.2
		Phosphatate	5.0
		Other corrosion inhibiting material	Limit to be established on case by case basis by Central Board in case of Union territories and State Board in case of States.
	Ash pond effluent	pH	6.5 – 8.5
		Suspended solids	100
		Oil and Grease	20

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
6.	COTTON TEXTILE INDUSTRIES (COMPOSITE AND PROCESSING)	Common	Concentration not to exceed, milligramme per litre (except for pH and bioassay)
		pH	5.5 to 9
		Suspended solids	100
		Bio-Chemical Oxygen Demand ¹ [3days at 27°C]	150
		Oil and grease	10
		Bio-assay test	90% survival of fish of after 96 hours
		Special:	
		Total chromium as (Cr)	2
		Sulphide (as S)	2
		Phenolic compounds (as C ₄ H ₂ OH)	5

The special parameters are to be stipulated by the Central Board in case of Union territories and State Boards in case of States depending upon the dye used in the industry. Where the industry uses chrome dyes, sulphur dyes and/or phenolic compounds in the dyeing/printing process, the limits on chromium of 2 mg/litre, sulphides of 2 mg/litre and phenolic compounds of 5 mg/litre respectively shall be imposed.

Where the quality requirement of the recipient system so warrants, the limit of BOD should be lowered upto 30 according to the requirement by the State Boards for the States and the Central Board for the union territories.

A limit on sodium absorption ratio of 26 should be imposed by the State Boards for the States and the Central Board for the Union territories if the disposal of effluent is to be made on land.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
7.	COMPOSITE WOOLLEN MILLS		Concentration not to exceed, milligramme per litre (except for pH and bioassay)
	Common :	Suspended Solids	100
		pH	5.5 to 9.0
		Bio-chemical oxygen demand ¹ [3days at 27°C]	100
		Oil and grease	10
		Bio-assay	90% survival of fish after 96 hrs.
	Special :	Total chromium (as Cr)	2
		Sulphide (as S)	2
		Phenolic Compounds (as C ₆ H ₅ OH)	5

The special parameters are to be stipulated by the Central Board in case of Union territories and State Boards in case of State depending upon the dye used in the industry. Where the industry uses chrome dyes, sulphur dyes and or/phenolic compounds in the dyeing/printing process, the limits on chromium of 2 mg/litre, sulphides of 2 mg./litre and phenolic compounds of 5 mg/litre respectively shall be imposed.

Where the quality requirement of the recipient system so warrants, the limit of BOD should be lowered upto 30 according to the requirement by the State Boards for the States and the Central Board for the Union territories.

A limit on sodium absorption ratio of 26 should be imposed by the State Boards for the States and the Central Board for the Union Territories if the disposal of the effluent is to be made on land.

#18	DYE AND DYE INTERMEDIATE INDUSTRY		Concentration not to exceed milligrammes per litre (except for pH, temperature and bio-assay)
		Suspended Solids	100
		pH	6 to 8.5
		Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.

Standards notified at Sl. No. 45 may also be referred.

¹ Sl. No. 8,9 and 10 and entries relating thereto inserted vide S.O. 393(E) dt. 16.4.87 published in the Gazette No. 185 dt. 16.4.87.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Mercury (as Hg)	0.01
		Hexavalent (as Cr)	0.1
		Chromium (Total Chromium (as Cr)	2.0
		Copper (as Cu)	3.0
		Zinc (as Zn)	5.0
		Nickel (as Ni)	3.0
		Cadmium (as Cd)	2.0
		Chloride (as Cl)	1000
		Sulphate (as SO ₄)	1000
		Phenolic Compounds (as C ₆ H ₅ OH)	1.0
		Oil and Grease	10
		Bio-assay Test (with 1:8 dilution of effluents)	90% survival of Test animals after 96 hours.

The standards for chlorides and sulphates are applicable or discharge into inland and surface water courses. However, when discharged on land for irrigation, the limit for chloride shall not be more than 600 milligrammes per litre and the sodium absorption ratio shall not exceed 26.

9.	ELECTROPLATING INDUSTRIES	Concentration not to exceed milligrammes per litre (except for pH and temperature)
	pH	0.6 to 9.0
	Temperature	Shall not exceed 5°C above the ambient temperature of the receiving body.
	Oil and Grease	10
	Suspended Solids	100
	Cynides (as CN)	0.2
	Ammonical	50
	Nitrogen (as N)	
	Total Residual Chlorides (as Cl)	1.0

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Cadmium (as Cd)	2.0
		Nickei (as Ni)	3.0
		Zinc (as Zn)	5.0
		Hexavalent	0.1
		Chromium as (Cr)	2.0
		Total Chromium (as Cr)	
		Copper (as Cu)	3.0
		Lead (as Pb)	0.1
		Iron (as Fe)	3.0
		Total Metal	10.0
¹ [10.	CEMENT PLANTS		not to exceed mg/Nm ³
		A. TOTAL DUST	
		Plant Capacity	
		(i) 200 tonnes/day (all sections)	400
		(ii) Greater than 200 tonnes/day (all sections)	250
		B. EMISSIONS	
		(i) For Cement Plants, including Grinding Units, located in critically polluted* or urban areas with a population of one lakh and above (including 5 Km distance outside urban boundary):	
		Particulate Matter	100mg/Nm ³
		(ii) New Cement Kilns, including Grinding Units to be installed after the date of notification:	
		Particulate Matter	50 mg/Nm ³
		* As per the guidelines of the Central Pollution Control Board]	

¹ Substituted by Rule 2(I) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R.46(E), dated 3.2.2006.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
# ¹ 11.	STONE CRUSHING UNIT	Suspended Particulate Matter	The suspended particulate matter measured between 3 metres and 10 metres from any process equipment of a stone crushing unit shall not exceed 600 microgrammes per cubic metre.
² 12.	COKE OVENS		Concentration in the effluents when discharged into inland surface waters not be exceed milligramme per litre (except for pH)
		pH	5.5 – 9.0
		Biochemical Oxygen Demand (27°C for 3 days)	30
		Suspended Solids	100
		Phenolic Compounds (as C ₆ H ₅ OH)	5
		Cynides (as CN)	0.2
		Oil & Grease	10
		Ammonical Nitrogen (as N)	50
13.	SYNTHETIC RUBBER		Concentration in the effluents when discharged into inland surface waters not be exceed milligramme per litre (except for colour and pH)
		Colour	Absent
		pH	5.5 – 9.0
		Biochemical Oxygen Demand ¹ [BOD (3 days at 27°C)]	50
		Chemical Oxygen Demand	250
		Oil and grease	10.0

¹ S.No.11 and entries relating thereto inserted vide SO 443(E)dt.18.4.87 published in the Gazette no. 206 dt. 18.4.87.
Standards notified at Sl. No. 37 may also be referred.

² S.Nos. 12 to 24 and entries relating thereto inserted vide S.O. 64(E) published in the Gazette No. 42 dt. 18.1.88.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
14.	SMALL PULP AND PAPER INDUSTRY		Concentration not be exceed mg/l (except for pH and sodium absorption ratio)
	*Discharge into inland surface water	pH	5.5 – 9.0
		Suspended Solids	100
		BOD	30
	Disposal on land	pH	5.5 – 9.0
		Suspended Solids	100
		BOD	100
		Sodium Absorption Ratio	26
		¹ [Absorbable Organic Halogens (AOX) in effluent discharge	3.00 kg/ton of paper produced with effect from the date of publication of this notification. 2.00 kg/ton of paper produced with effect from the 1 st day of March, 2006.

Explanation.- These standards shall apply to all small scale Pulp and Paper Mills having capacity below 24,000 MT per annum]

² 15.	FERMENTATION INDUSTRY (DISTILLERIES, MALTRIES AND BREWERIES)		Concentration in the effluents not to exceed milligramme per litre (except for pH and colour & odour)
		pH	5.5 – 9.0
		Colour & Odour	All efforts should be made to remove colour and unpleasant odour as far as practicable.
		Suspended Solids	100
		³ [BOD (3 days at 27°C)]	
		⁴ [-disposal into inland surface waters or river/ streams]	30
		- disposal on land or for irrigation]	100
		**[(2)...(7)]	

¹ Inserted by Rule 2 (i) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification G.S.R.546(E), dated 30.8.2005.

² Entries relating to S.No. 15 corrected in terms of SO 12(E), dt. 8.1.90 published in the Gazette no. 10 dt. 8.1.90.

³ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

⁴ Substituted vide Rule 3(a) of the Environment (Protection) (Amendments) Rules, 1996 notified vide G.S.R.186(E), dated 2.4.1996

Sr. No.	Industry	Parameter	Standards			
1	2	3	4			
	Note :	¹ [(1)] *Wastewater generation shall not exceed 250 metre cube per tonne of paper produced. ² [(2).....(7)]				
16.	LEATHER TANNERIES		Concentration in the effluent not to exceed milligramme per litre (except for pH and per cent sodium)			
			Inland Surface Waters	Public Sewers	Land for Irrigation	Marine Coastal areas
			(a)	(b)	(c)	(d)
	Suspended Solids		100	00	200	100
	³ [BOD 3 days at 27°C]		30	350	100	100
	pH		6.0 – 9.0	6.0 – 9.0	6.0 – 9.0	6.0 – 9.0
	Chlorides (as Cl)		1000	1000	200	-
	Hexavalent Chromium (Cr+6)		0.1	0.2	0.1	1.0
	Total Chromium (as Cr)		2.0	2.0	2.0	2.0
	Sulphides (as S)		2.0	5.0	-	5.0
	Sodium percent		-	60	60	-
	Boron (as B)		2.0	2.0	2.0	-
	Oil & Grease		10	20	10	20

¹ Renumbered as (1) by Notification No.S.O.12(E), dated 8.1.1990

² Notes 2 to 7 inserted by Notification S.O.12(E), dated 8.1.1990 and omitted by G.S.R.176(E), dated 2.4.1996 w.e.f. 3.4.1996

³ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
17.	FERTILIZER INDUSTRY		Concentration in the effluent not to exceed milligramme per litre (except for pH)	
		<u>EFFLUENTS</u>	Plants	Plants
		- Straight Nitrogenous Fertilizers, Excluding the Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers	Commissioned January 1, 1982 onwards	Commissioned Prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Total Kjeldahl Nitrogen	100	150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	10	10
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Suspended solids	100	100
		Oil and Grease	10	10
		*Hexavalent Chromium as Cr.	0.1	0.1
		*Total Chromium as Cr.	2.0	2.0
		Straight Nitrogenous Fertilizers, including Calcium Ammonium Nitrate and Ammonium Nitrate Fertilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982

* To be complied with at the outlet of Chromate removal unit.

Sr. No.	Industry	Parameter	Standards	
			(a)	(b)
1	2	3	4	
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Total Kjeidahl Nitrogen		150
		Free Ammonical Nitrogen	4	4
		Nitrate Nitrogen	20	20
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Suspended solids	100	100
		Oil and Grease	10	10
		*Hexavalent Chromium as Cr	0.1	0.1
		*Total Chromium as Cr	2.0	2.0
		Complex Fertilizers excluding Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Fertilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Free Ammonical Nitrogen	4	4
		Total Kjeldahl Nitrogen	100	100
		Nitrate Nitrogen	10	10

* To be complied with at the outlet of Chromate removal unit.

Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2
		Phosphate as P	5	5
		Suspended solids	100	100
		Oil and Grease	10	10
		* Fluoride as F	10	10
		** Hexavalent Chromium as Cr	0.1	0.1
		** Total Chromium as Cr	2.0	2.0
		Complex Fertilizers including Calcium Ammonium Nitrate, Ammonium Nitrate & Ammonium Nitrophosphate Fertilizers	Plants Commissioned January 1, 1982 onwards	Plants Commissioned prior to January 1, 1982
			(a)	(b)
		pH	6.5 – 8.0	6.5 – 8.0
		Ammonical Nitrogen	50	75
		Free Ammonical Nitrogen	100	100
		Nitrate Nitrogen	20	20
		Cynide as CN	0.2	0.2
		Vanadium as V	0.2	0.2
		Arsenic as As	0.2	0.2

* To be complied with at the outlet of fluoride removal unit. If the recipient system so demand, fluoride as F shall be limited to 1.5 mg/l.

** To be complied with at the outlet of Chromate removal unit.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Phosphate as P	5
		Oil and Grease	10
		Suspended Solids	10
		* Fluoride as F	10
		** Hexavalent Chromium as Cr.	0.1
		**Total Chromium as Cr	2.0
		Straight Phosphate Fertilizers	
		pH	7.0 –9.0
		Phosphate as P	5
		Oil and Grease	10
		Suspended Solids	100
		*Fluoride as F	10
		**Hexavalent Chromium as Cr	0.1
		**Total Chromium as Cr	2.0
	Emissions		
	Phosphatic Fertilizers (Fluorides and Particulate matter emission)	Phosphorice acid manufacturing unit Granulation mixing and grinding of rock phosphate	25 milligramme per normal cubic metre as total Fluoride 150 milligramme per normal cubic metre of particulate matter.
	Urea (Particulate matter emission)	Pricing tower Commissioned prior to 01.01.1982 Commissioned after 1.1.1982	150 milligramme per normal cubic metre of 2 kilogramme per tone of product. 50 milligramme per normal cubic metre or 0.5 kilogramme per tonne of product

* To be complied with at the outlet of fluoride removal unit. If the recipient system so demand, fluoride as F shall be limited to 1.5 mg/l.

** To be complied with at the outlet of Chromate removal unit.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
¹ [18.	OMITTED		
19.	CALCIUM CARBIDE	Particulate Matter Emission - Kiln - Arc Furnace	250 milligramme per normal cubic metre. 150 milligramme per normal cubic metre.
20.	CARBON BLACK	Particulate matter Emission	150 milligramme per normal cubic metre.
21.	COPPER, LEAD AND ZINC SMELTING	Particulate Matter Emission in Concentrator Emission of Oxides of Sulphur in Smelter & convertor	150 milligramme per normal cubic metre. Off-gases must be utilized for sulphuric acid manufacture. The limits of sulphur dioxide emission from stock shall not exceed 4 kilogramme per tonne of concentrated (one hundred per cent acide produced).
22.	NITRIC ACID (EMISSION OXIDES OF NITROGEN)	Emission of Oxides of Nitrogen	3 kilogramme of oxides of nitrogen per tonne of weak acid (before concentration) produced.
² [23.	SULPHURIC ACID PLANT	Emission standards Limiting concentration in mg/Nm ³ , unless stated Plant capacity for 100% concentration of Sulphuric Acid (tonne/day)	

¹ Sr. No.18 relating to "Aluminum" and entries relating thereto omitted by Rule 2(II) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R. 46(E), dated 3.2.2006.

² Substituted by Rule 2(I) of the Environment (Protection) Third Amendment Rules, 2008 notified by G.S.R. 344(E), dated 7.5.2008.

Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
			<u>Existing Unit</u>	<u>New Unit</u>
	Sulphur dioxide	(SO ₂) upto 300	1370	1250
		Above 300	1250	950
	Acid Mist/Sulphur Trioxide	Up to 300	90	70
		Above 300	70	50

Note:

- (i) Scrubbing units shall have on-line pH meters with auto recording facility.
- (ii) The height of the stack emitting sulphur-dioxide or acid mist shall be of minimum of 30 metre or as per the formula $H=14(Q)^{0.3}$ (whichever is more). Where "H" is the height of stack in metre; and "Q" is the maximum quantity of SO₂ expected to be emitted through the stack at 110 per cent rated capacity of the plants and calculated as per the norms of gaseous emission.
- (iii) Plants having more than one stream or unit of sulphuric acid at one location, the combined capacity of all the streams and units shall be taken into consideration for determining the stack height and applicability of emission standards.
- (iv) Plants having separate stack for gaseous emission for the scrubbing unit, the height of this stack shall be equal to main stack].

24.	IRON & STEEL (INTEGRATED)	Particulate Matter Emission	
		- Sintering Plant	150 milligramme per normal cubic metre
		- Steel making	
		-- during normal operations	150 milligramme per normal cubic metre.
		--during oxygen lancing	400 milligramme per normal cubic metre.
		- Rolling Mill	150 milligramme per normal cubic metre.
		- Carbon monoxide from coke oven	3 kilogramme per tonne of coke produced.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
¹ 25.	THERMAL POWER PLANTS	*Particulate Matter Emissions :	
		- generation capacity 210 MW or more	150 milligramme per normal cubic metre.
		- generation capacity less than 210 MW	350 milligramme per normal cubic metre.
26.	NATURAL RUBBER INDUSTRY		Concentrations in the effluents not to exceed milligramme per litre (except for pH) 44°C
	- Discharge into inland surface water	Colour & odour	Absent
		pH	6.0 – 9.0
		BOD	50
		COD	250
		Oil and Grease	10
		Sulphides	2
		Total Kjeldahl Nitrogen	100
		Dissolved phosphate (as P)	5
		Suspended Solids	100
		Dissolved solids (inorganic)	2100
		Ammonical Nitrogen as N	50
		Free ammonia (as NH ₃)	5
	-Disposal on land for irrigation	Colour and Odour	Absent
		pH	6.0 – 8.0
		BOD	100
		COD	250
		Oil & Grease	10
		Suspended Solids	200
		Dissolved solids	2100

¹ S. No. 25 and 26 and entries relating thereto inserted vide S.O. 8(E) dt. 3.1.89 published in the Gazette No. 7 dated. 3.1.89.
Corrections in rule 2 against S.No. 26 made vide corrigendum No. S.O. 190 (E) dt. 15.3.89 published in the Gazette no. 126 dt. 15.3.89.

* Depending upon the requirement of local situation, such as protected area, the State Pollution Control Board and other implementation agencies under the Environment (Protection) Act, 1986 may prescribed a limit of 150 milligramme per normal cubic meter, irrespective of generation capacity of the plant.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
¹ [² 27.	ASBESTOS MANUFACTURING UNITS (INCLUDING ALL PROCESSES INVOLVING THE USE OF ASBESTOS)	- Pure Asbestos material	0.5 fibre */cc for one year from the date of notification 0.2 fibre */cc after one year from the date of notification]
		- Total Dust	2 mg/m ³ (normal)
28.	CALOR ALKALI (CAUSTIC SODA)	EMISSIONS	Concentration in mg/m ³ (normal)
	(a) Mercury Cell	Mercury (from hydrogen gas holder stack)	0.2
	(b) All processes	Chlorine (from hypo tower)	15.0
	(c) All processes	Hydro chloric acid vapours and mist (from hydro chloric acid plant)	35.0
29.	LARGE PULP AND PAPER	EMISSIONS	Concentration in mg/m ³ (normal)
		Particulate matter	250**
		H ₂ S	10
30.	INTEGRATED IRON AND STEEL PLANTS:	I. EMISSIONS	
	(a) Coke Oven	Particulate mater	50
	(b) Refractory material plant	Particulate matter	150
		II. EFFLUENTS	Concentration in mg/l except for pH.
	(a) Coke oven		
	By product plant.	pH	6.0 – 8.0
		Suspended Solids	100

¹ Standards mentioned at Sl. No.27 amended by Rule 2(III) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

² S.No. 27 to 31 and entries relating thereto inserted vide GSR 913(E) dt. 24.10.89 published in the Gazette No. 554 dt. 24.10.89.

** This standard of 250 mg/m³ (normal) shall apply only for a period of 3 years with effect from the date on which the Environment (protection) Second Amendment Rules, 1989 came into force. After three years the standard to be applicable is 15 mg/m³ (normal).

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Phenol	1.0
		Cynide	0.2
		BOD ¹ [(3 days at 27°C)]	30
		COD	250
		Ammonical Nitrogen	50
		Oil and Grease	10
	(b)Other plants such as sintering plant, blast furnace, steel melting and rolling mill:	pH	6.0 – 9.0
		Suspended Solids	100
		Oil and Grease	10
31.	RE-HEATING (REVERBERATORY) FURNACES: Capacity : All sizes	EMISSIONS	Concentration in mg/m ³ (normal)
	Sensitive area	Particulate matter	150
	Other area	Particulate matter	450
² [32.	FOUNDRIES	EMISSIONS	
	(a) Cupola Capacity (Melting Rate) :		
	Less than 3 mt./hr.	Particulate Matter	450
	3 mt/hr. and above	Particulate Matter	150
	Note : It is essential that stack is constructed over the cupola beyond the charging door and emissions are directed through the stack which should be at least six times the diameter of cupola.		
	(b) Arc Furnaces :		
	Capacity: All sizes	Particulate Matter	150

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

² S.No. 32 to 47 and entries relating thereon inserted vide GSR 742(E) dt. 30.8.90 published in the Gazette No. 365 dated 30.8.90.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	(c) Induction Furnace		
	Capacity: All sizes	Particulate Matter	150
	Note : In respect of Arc Furnaces and Induction Furnaces provision has to be made for collecting the fumes before discharging the emissions through the stack.		
33.	THERMAL POWER PLANTS	STACK HEIGHT/LIMIT IN METERS*	
		Power generation capacity :	
		- 500 MW and above	275
		- 200 MW/210 MW and above to less than 500 MW	220
		- Less than 200 MW/210 MW	$H-14(Q)^{0.3}$ where Q is emission rate of SO ₂ in *kg/hr. and *H Stack height in metres.
		Steam generation capacity:	
		- Less than 2 ton/hr.	½ times the neighbouring building height or 9 metres (whichever is more)
		- More than 2 ton/hr. to 5 ton/hr.	12
		- More than 5 ton/hr. to 10 ton/hr.	15
		- More than 10 ton./hr.	18
		- More than 15 ton/hr. to 20 ton/hr.	*21
		- More than 20 ton/hr. to 25 ton/hr	24
		- More than 25 ton/hr. to 30 ton/hr.	27
		- More than 30 ton/hr.	30 or using formula $H-14(Q)^{0.3}$ (whichever is more) Q is emission rate of SO ₂ in kg/hr and *H-Stack height in meters.

* Correction have been made as per Corrigendum Notification no. S.O. 8(E) dt. 31.12.1990.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
34.	SMALL BOILERS Capacity of Boiler	EMISSIONS* Particulate matter	
	- Less than 2 ton/hr.		1600
	- 2 to 5 ton/hr		1200
	More than 15 ton/hr.		150
¹ [² 35.	COFFEE INDUSTRY		
		Instant/Dry Processing	
			Limiting value for concentration in mg/l except for pH
		pH	6.5-8.5
		BOD _{3 day, 27° C}	100
		Total Dissolved Solids	2100
		Wet/Parchment Coffee Processing	
		pH	6.5-8.5
		BOD _{3 day, 27° C}	1000

Notes:

- (i) Coffee growers having plantation area less than 10 ha with wet processing shall store primary treated effluent in lined lagoons for solar evaporation with a non-permeable system at the base and sides of lagoon.
- (ii) Coffee growers having plantation area between 10-25 ha with wet processing shall store primary (equalization and neutralization) treated effluent in lined lagoons for solar evaporation with a non-permeable system at the base and sides of lagoon.
- (iii) Coffee growers having plantation area 25 ha or above with wet processing shall store secondary treated effluent in conformity with above norms in lined lagoons with a non-permeable lining system at the base and side of lagoon and use the effluent for irrigation after dilution so as BOD of diluted effluent for land application is less than 100 mg/l.
- (iv) The minimum liner specifications for a non-permeably lining system shall be a composite barrier having 1.5 mm High Density Polyethylene (HDPE) geomembrane or equivalent, overlying 90 cm of soil (clay or amended soil) having permeability coefficient not more than 1×10^{-5} cm/sec.
- (v) The effluent storage facilities/lagoons/solar evaporation ponds shall be located above high flood level mark of the nearby stream, rivulet etc. with below mentioned free board and away from any water body/stream at a distance.

* All emissions normalized to 12 per cent carbon dioxide.
¹ Omitted entry relating to **Oil Refineries (Sulphur Dioxide)** by Rule 2 (i) (b) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R. 186 (E), dated 18.3.2008.
² Inserted by Rule 2 of the Environment (Protection) Sixth Amendment Rules, 2008 notified by G.S.R.579(E), dated 6.8.2008

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Grower	Small (<10ha) Medium (10-25ha) Large (>25ha)
		Free Based (cm)	30 60 90
		Distance (m)	50 100 150
		(vi) Raw, Treated and/or diluted effluent shall be discharged into surface water body or used for recharging groundwater under any circumstances what so ever].	
36.	ALUMINIUM PLANTS:	EMISSIONS	
	(a)Alumina Plant:		
	(i) Raw Material Handling	Primary and Secondary Crusher Particulate Matter	150
	(ii) Precipitation Area		
	- Calcination	Particulate matter	250
		Carbon Monoxide	1% max.
		Stack Height	$H=14 (Q)^{0.3}$ Where Q is emission rate of SO ₂ in kg/hr and H-Stack height in meters.
	(b)Smelter Plant	Particulate Matter	
	(i)Green Anode Shop	Particulate Matter	150
	¹ [(ii)Anode Bake Oven	Particulate Matter	50 mg/Nm ³
		Total Fluoride (F)	0.3 kg/MT of Aluminium.
	(iii)Pot room	Particulate matter	150
		Total Fluoride For Soderberg* Technology	2.8 Kg/ton by 31 st December 2006
		For Pre-baked Technology	0.8 kg/t by 31 st December 2006

¹ Substituted by Rule 2(iv) (a) amended by Rule 2 (IV) (a) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

Sr. No.	Industry	Parameter	Standards
1	2	3	4

* Separate standards for VSS, HSS, PBSW & PBCW as given in column 4 stands abolished

¹[(c) Standards for forage fluoride

- Twelve consecutive months average - 40 ppm
- Two consecutive months average - 60 ppm
- One month average - 80 ppm]

*37.	STONE CRUSHING UNIT	Suspended Particulate Matter (SPM)	<p>The Standards consist of two paras :</p> <p>(i) Implementation of the following Pollution Control measures:</p> <p>(a) Dust containment cum suppression system for the equipment.</p> <p>(b) Construction of wind breaking walls.</p> <p>(c) Construction of the metalled roads within the premises.</p> <p>(d) Regular cleaning and wetting of the ground within the premises.</p> <p>(e) Growing of a green belt along the periphery.</p>
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¹ Inserted by Rule 2(IV)(b) of the Environment (Protection) First Amendment Rules, 2006 notified by G.S.R.46(E), dated 3.2.2006.

* Standards notified at Sl. No. 11 may also be referred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
			(ii) Quantitative standard for SPM :
			** [measured between three meters and ten metres from any processes equipment of a stone crushing unit shall not exceed 600 microgrammes per cubic metre] from a controlled isolated as well as from a unit located in a cluster should be less than 600 mg/Nm ³ [xxx....]
38.	PETROCHEMICALS (BASIC & INTERMEDIATES)	EFFLUENTS	
		Ph	6.5 – 8.5
		*BOD ² [(3days at 27°C)]	50
		**Phenol	5
		Sulphide (as S)	2
		COD	
		Cynide (as CN)	250
		*** Fluoride (as F)	
		Total suspended Solids	³ [100]
		Hexavalent Chromium ³ [(as Cr)]	0.1
		**** Total Chromium ³ [(as Cr)]	2.0

** Corrections have been made as per CORRIGENDUM Notification No. S.O. 8(E) dated 31.12.1990.

¹ The sentence 'The measurements are to be conducted at least twice a month for all the 12 month in a year' deleted as per CORRIGENDUM Notification S.O 8(E) dated 31.12.90.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

³ Corrected as per CORRIGENDUM Notification S.O. 8(E) dated 31.12.1990.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
*		State Board may prescribed the BOD value of 30 mg/l if the recipient system so demands.	
**		The limit for phenol shall be conformed to at the outlet of effluent treatment of phenol plant. However, at the final disposal point, the limit shall be less than 1 mg/l.	
***		The limit for fluoride shall be confirmed to at the outlet of the chrome removal unit. However, at the disposal point fluoride concentration shall be lower than 5mg/l.	
****		The limits for total and hexavalent chromium shall be conformed to at the outlet of the chromate removal. This implies that in the final treated effluent, total and hexavalent chromium shall be lower than prescribed herein.	

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HOTEL INDUSTRY

EFFLUENT STANDARDS

(i)Hotel with atleast 20 bedrooms

	limiting concentration in mg/l,	except for pH
	Inland Surface Water	On land for Irrigation
PH	5.5-9.0	5.5-9.0
BOD3 days, 27°C	30	100
Total Suspended Solids	50	100
Oil & Grease	10	10
Phosphate as P	1.0	-

(ii)Hotel with less than 20 bedrooms or a Banquet Hall with minimum floor area of 100m² or a Restaurant with minimum seating capacity of 36

pH	5.5-9.0	5.5-9.0
BOD3 days, 27°C	100	100
Total Suspended Solids	100	100
Oil & Grease	10	10

¹ Omitted entry relating to **Pharmaceutical Manufacturing and Formulation Industry** by Rule 2(a) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009.

² Inserted by Rule of the Environment (Protection) Sixth Amendment Rules, 2009 notified by G.S.R.794(E), dated 4.11.2009.

Sr. No.	Industry	Parameter	Standards
1	2	3	4

Notes:

- i. Hotels, banquet halls, restaurants, etc. located in coastal area shall also comply with the provisions of the Coastal Regulation Zone, as applicable.
- ii. If, the effluent is discharged into a municipal sewer leading to a Sewage Treatment Plant, the hotel or restaurant or banquet hall, as the case may be, shall provide a proper Oil and Grease Trap for effluent arising from its kitchen and laundry and shall have to comply with the 'General Standards for Discharge of Environmental Pollutants Part-A: Effluents' notified under Schedule-VI].

40. **PESTICIDE
MANUFACTURING
AND FORMULATION
INDUSTRY.**

EFFLUENTS

1. Temperature	Shall not exceed 5°C above the receiving water temperature
2. pH	6.5 – 8.5
3. Oil and Grease	10
4. BOD ¹ [(3 days at 27°C)]	30
5. Total Suspended Solids	100
6. Bio-assay test	90% survival of fish after 96 hours in 100% effluent.
7. (a) Specific Pesticides :	
Benzene Hexachloride	10
Carbonyl	10
DDT	10
Endosulfan	10
Diamethoate	450
Fenitrothion	10
Malathion	10

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Phorate	10
		Methyl Parathion	10
		Phenathoate	10
		Pyrethrums	10
		Copper Oxyghloride	9600
		Copper Sulphate	50
		Ziram	1000
		Sulphur	30
		Paraquat	2300
		Proponil	7300
		Nitrogen	780
		(b) Heavy Metals	
		Copper	1.00
		Managanese	1.00
		Zinc	1.00
		Mercury	0.01
		Tin	0.10
		Any other metal like Nickel etc.	Shall not exceed 5 times the drinking water standards of BIS.
		(c) Organics	
		Phenol and Phenolic compounds as C ₆ H ₅ OH	1.0
		(d) Inorganics	
		Arsenics (As As)	0.2
		Cyanide (as CN)	0.2
		Nitrate (as NO ₃)	50.0
		Phosphate (as P)	5.0

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		¹ [EMISSIONS	Not to exceed
			mg/Nm³
		HCl	20
		Cl ₂	5
		H ₂ S	5
		P ₂ O ₅ (as H ₃ PO ₄)	10
		NH ₃	30
		Particulate matter with pesticides compounds	20
		CH ₃ Cl	20
		HBr	5]

- Note :**
- Limits should be complied with the end of the treatment plant before any dilution.
 - Bio-assay test should be carried out with available species of fish in receiving water.
 - State Boards may prescribe limits of total dissolved solids (TDS) sulphates and chlorides depending on the uses of recipient water body.
 - State Board may prescribe COD limit correlated with BOD limit.
 - Pesticides are known to have metabolites and isomers. If they are found insignificant concentration, standards may be prescribed for those in the list by Central or State Board.
 - Industries are required to analyse pesticides in waste water by advanced analytical method such as GLC/HPLC.
 - All the parameters will be compulsory for formulators, for others, the 7th will be optional.

¹ Inserted entries relating to emissions by Rule 2(V) of the Environment (Protection) First Amendment Rules, 2006 notified vide G.S.R.46(E), dated 3.2.2006.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
41.	TANNERY (AFTER PRIMARY TREATMENT) Disposal : Channel/ conduit Carrying waste waters to Secondary Treatment Plants Type of Tanners :	EFFLUENT	
	- chrome tanneries/ combined chrome & Vegetable tanneries.	pH	6.5 – 9.0
		SS	Not to exceed 600
		Chromium Concentration after treatment in the chrome waste water stream	45
	- Vegetable tanneries	pH	6.5 – 9.0
		SS	Not to exceed 600
	Note : The above standards will apply to those tannery units which have made full contribution to a Common Effluent Treatment Plant (CETP) Comprising secondary treatment. Those who have not contributed will be governed by earlier Notification No. S.O.* 61 (E), dated January 18, 1988.		
42.	PAINT INDUSTRY WASTE WATER DISCHARGE	EFFLUENTS	
		pH	6.0 – 8.5
		Suspended Solids	100
		BOD ₅ ¹ [(3 days at 27°C)]	50
		Phenolics as C ₆ H ₅ OH	1.0
		Oil and Grease	10.0
		Bio-assay test	90% survival in 96 hours
		Lead as Pb	0.1

* Corrected as per Notification No. S.O. 8(E) dated 31.12.1990.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

Sr. No.	Industry	Parameter	Standards
1	2	3	4
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Copper as Cu	2.0
		Nickle as Ni	2.0
		Zinc as Zn	5.0
		Total heavy metals	7.0
43.	INORGANIC CHEMICAL INDUSTRY (WASTE WATER DISCHARGE)	EFFLUENTS	
	part I (metal compounds of Chromium, Manganese, Nickel, Copper, Zinc, Cadmium, Lead and Mercury)	pH	6.0 – 8.5
		Chromium as Cr Hexavalent	0.1
		Total	2.0
		Manganese as Mn	2.0
		Nickel as Ni	2.0
		Copper as Cu	2.0
		Zinc as Zn	5.0
		Cadmium as Cd	0.2
		Lead as Pb	0.1
		Mercury as Hg	.01
		Cynide as CN	0.2
		Oil & Grease	10.0
		Suspended Solids	30.0
		In addition to the above, total heavy metals are to be limited to 7 mg/l.	

Sr. No.	Industry	Parameter	Standards
1	2	3	4
44.	BULLION REFINING (WASTE WATER DISCHARGE)	EFFLUENTS	
		pH	6.5 – 8.5
		Cynide as CN	0.2
		Sulphide as S	0.2
		Nitrate as N	10.0
		Free Cl ₂ as Cl	1.0
		Zinc as Zn	5.0
		Copper as Cu	2.0
		Nickel as Ni	2.0
		Arsenic as As	0.1
		Cadmium as Cd	0.2
		Oil and Grease	10.0
		Suspended Solids	100
* 45.	DYE & DYE INTERMEDIATE INDUSTRY (WASTE WATER DISCHARGE)	EFFLUENTS	
		pH	6.0 – 8.5
		Colour Hazen Unit	400.0
		Suspended Solids	100.0
		BOD ¹ [(3 days at 27°C)]	100.0
		Oil and Grease	10.0
		Phenolics as C ₆ H ₅ OH	1.00
		Cadmium as Cd	0.2
		Copper as Cu	2.0
		Manganese as Mn	2.0
		Lead as Pb	0.1
		Mercury as Hg	0.01
		Nickel as Ni	2.0
		Zinc as Zn	5.0
		Chromium as Cr ⁶⁺	0.1
		Total Chromium	2.0
		Bio-assay test	90% survival in 96 hours.

* Standards Notified as Sl. No. 8 may also be referred.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

Sl.No.	Category	Standards dB(A)
1	2	3
46.	NOISE LIMITS FOR AUTOMOBILES (FREE FIELD) AT ONE METER IN dB(A) AT THE MANUFACTURING STAGE TO BE ACHIEVED BY THE YEAR 1992.	
	(a) Motorcycle, Scooters & Three wheelers	80
	(b) Passenger Cars	82
	(c) Passenger or Commercial Vehicles upto 4 MT	85
	(d) Passenger or Commercial Vehicles above 4 MT and upto 12 MT	89
	(e) Passenger or Commercial Vehicles exceeding 12 MT	91
47.	DOMESTIC APPLIANCES AND CONSTRUCTION EQUIPMENTS AT THE MANUFACTURING STAGE TO BE ACHIEVED BY THE YEAR, 1993	
	(a) Window Air Conditioner of 1 ton to 1.5 tons	68
	(b) Air Coolers	60
	(c) Refrigerators	46
	¹ [(d) ***	-]
	(e) Compactors (rollers) Front loaders, Concrete mixers, Cranes (movable), Vibrators and Saws.	75

¹ The words and figures 'Diesel generators for domestic purposes ... 85-90' omitted by Rule 2(a) of the Environment (Protection) Second Amendments Rules, 2002 published vide Notification No.G.S.R.371(E), dated 17.5.2005

Sr. No.	Industry	Parameter	Standards
1	2	3	4
¹ 48.	GLASS INDUSTRY	EMISSIONS	
	A. Sodalime & Borosilicate and other special Glass (other than Lead)		
	(a)Furnace : Capacity		
	(i) Upto a product draw capacity of 60 MT/Day	Particulate Matter	2.0 kg/hr.
	(ii) Product draw capacity more than 6 MT/Day	Particulate Matter	0.8 kg/MT of product drawn
	(iii) For all capacities	Stack height	$H=14(Q)^{0.3}$ where Q is the emission rate of SO ₂ in Kg/hr. & H is Stack height in meters.
		Total Fluorides	5.0 mg/NM ³
		Nox	Use of low Nox burners in new plants
	(b) Implementation of the following measures for fugitive emission control from other sections :		
	(i) Raw materials should be transported in leak proof containers.		
	(ii) Cullet preparation should be dustfree using water spraying.		
	(iii) Batch preparation section should be covered.		
	B. Lead Glass		
	(a) Furnaces :		
	All capacities	Particulate Matter	50 mg/NM ³
		Lead	20 mg/NM ³
	(b) Implementation of the following measures for fugitive emission control from other sections:		
	(i) Batch mixing, proportioning section and transfer points should be covered and it should be connected to control equipments to meet the following standards :		
		Particulate matter	50 mg/NM ³
		Lead	20 mg/NM ³
	(ii)Minimum Stack height should be 30 metres in lead glass units.		
	(c) Pot furnace at Firozabad Furnace :	Particulate matter	1200 mg/NM ³

Note : Depending upon local environmental conditions, State/Central Pollution Control Board can prescribe more stringent standards than those prescribed above.

¹ S.No. 48 to 55 and entries relating thereto inserted vide GSR 93(E) dt. 21.2.91 published in the Gazette No. 79 dated 27.2.91.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	Glass Industries (for all categories)	EFFLUENTS:	
		pH	6.5 – 8.5
		Total Suspended Solids	100 mg/l
		Oil & Grease	10 mg/l
49.	LIME KILN	Stack Height	
	Capacity :		
	Upto 5 T/day	Stack Height	A hood should be provided with a stack of 30 meter height from ground level (including kiln height).
	Above 5T/day	Stack height	$H=14(Q)^{0.3}$ where Q is emission rate of SO ₂ in kg/hr and H=Stack Height in meters.
	More than 5T/day and up to 40 T/Day	Particulate matter	500 mg/Nm ³
	Above 40T/day	Particulate matter	150 mg/Nm ³
50.	*SLAUGHTER HOUSE, MEAT & SEA FOOD INDUSTRY	EFFLUENTS	Concentration in mg/l
	Category		
	A.Slaughter House		
	(a) Above 70 TLWK/day	BOD ¹ [3 days at 27°C]	100
		Suspended Solids	100
		Oil and Grease	10
	(b) 70 TLWK/day below	BOD ¹ [3 days at 27°C]	500
	B.Meat Processing		
	(a) Frozen Meat	BOD ¹ [3 days at 27°C]	30
		Suspended Solids	50
		Oil & Grease	10
	(b) Raw Meat from own Slaughter House.	BOD ¹ [3 days at 27°C]	30
		Suspended Solids	50
		Oil & Grease	10
	(c) Raw Meat from other sources		Disposal via Screen and Septic Tank.
	C.Sea Food Industry	BOD ¹ [3 days at 27°C]	30
		Suspended Solids	50
		Oil and Grease	10

* The emission standards from Boiler House shall conform to the standards already prescribed under E(P) Act, 1986 vide notification No.G.S.R.742(E), dated 30.8.90.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	(ii) Non-continuous process (less than 20 MT/day)	-	Disposal via Septic tank
	(b) Biscuit Production		
	(i) 10 T/day & above	pH	6.5 – 8.5
		BOD ¹ [3days at 27°C]	300 35
	D. Confectioneries	EFFLUENTS	
	(a) 4 T/day and above	pH	6.5 – 8.5 -
		Suspended Solids	50
		Oil and Grease	10
		BOD ¹ [3days at 27°C]	30
	(b) Below 4 T/day		Disposal via Septic Tank

Note : To ascertain the category of 'unit fails' the average of daily production and waste water discharge for the preceding 30 operating days from the date of sampling shall be considered.

* The emission from the boiler house shall conform to the standards already prescribed under E(P) Act, 1986 vide Notification No. GSR 742(E) dated 30.8.90.

52.	*JUTE PROCESSING INDUSTRY :	EFFLUENTS	Concentration in mg/l except pH and Water consumption
		pH	5.5 – 9.0
		BOD ¹ [3days at 27°C]	30
		Suspended Solids	100
		Oil and Grease	10
		Water Consumption	1.60 Cum/Ton of product produced.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	Note :	1. Water Consumption for the Jute processing industry will be 1.5 Cum/Ton of product from January, 1992.	
		2. At the present no limit for colour is given for liquid effluent. However, as far as possible colour should be removed.	
		* Stack emissions from boiler house shall conform to the standards already prescribed under Environment (Protection) Act, 1986, vide Notification No. GSR 742(E), dated 30.08.90.	
53.	LARGE PULP & PAPER NEWS PRINT/ RAYON GRADE PLANTS OF ¹[CAPACITY ABOVE 24000 MT PER ANNUM]	EFFLUENTS	Concentration in mg/l except pH and TOCL
		pH	7.0 – 8.5
		BOD ² [3 days at 27°C]	30
		COD	350
		Suspended Solids	500
		³ [Absorbable Organic Halogens (AOX) in effluent discharge	1.5 kg/ton of product with effect from the date of publication of this notification.1.0 kg/ton of product with effect from the 1 st day of March,2008.]
		Flow (Total Waste Water Discharge)	
		** (i) Large Pulp & Paper	200 Cum/Ton of Paper produced
		(ii) Large Rayon Grade Newsprint	150 Cum/Ton of Paper produced.
54.	SMALL PULP AND PAPER Paper Plant of Capacity upto 24000 MT/Annum :	EFFLUENT	
	Category :		
	A. *Agrobased	Total waste water discharge	200 cum/Ton of paper produced
	B. **Waste paper based	Total waste water discharge	75 cum/Ton of paper produced

¹ Substituted by Rule 2(ii) (a) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred

³ Substituted by Rule 2(ii) (b) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005

** The Standards with respect of total wastewater discharge for the large pulp and paper mills be established from 1992, will meet the standards of 100 cum/Ton of paper produced.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	* The agro based mills to be established from January, 1992 will meet the standards of 150 cum/Ton of paper produced.		
	** The waste-paper mills to be established from January, 1992 will meet the standards of 50 cum/Tom of paper produced.		
55.	COMMON EFFLUENT TREATMENT PLANTS:	EFFLUENTS (Inlet effluent quality for CETP)	(Concentration in mg/l)
	A. Primary Treatment	pH	5.5 – 9.0
		Temperature °C	45
		Oil & Grease	20
		Phenolic Compounds (as C ₆ H ₅ OH)	5.0
		Ammonical Nitrogen (as N)	50
		Cynide (as CN)	2.0
		Chromium hexavalent (as Cr+6)	2.0
		Chromium (total)(as Cr)	2.0
		Copper (as Cu)	3.0
		Lead (as Pb)	1.0
		Nickel (as Ni)	3.0
		Zinc (as Zn)	15
		Arsenic (as As)	0.2
		Mercury (as Hg)	0.01
		Cadmium (as Cd)	1.0
		Selenium (as Se)	0.05
		Fluoride (as F)	15
		Boron (as B)	2.0
		Radioactive Materials	
		Alpha emitters, Hc/ml	10-7
		Beta emitters, He/ml	10-8

Sr. No.	Industry	Parameter	Standards
1	2	3	4

Note : 1. These Standards apply to the small scale industries, i.e. total discharge upto 25 KL/Day.

2. For each CETP and its constituent units, the State Board will prescribe standards as per the local needs and conditions; these can be more stringent than those prescribed above. However, in case of clusters of units, the State Board with the concurrence of CPCB in writing, may prescribe suitable limits.

B. Treated Effluent Quality of Common Effluent Treatment Plant Concentration in mg/l except pH & Temperature

	Into inland surface waters	On land for Irrigation	Into Marine Coastal areas
	(a)	(b)	(c)
pH	5.5 - 9.0	5.5 - 9.0	5.5 - 9.0
BOD ¹ [3days at 27°C]	30	100	100
Oil & Grease	10	10	20
Temperature	Shall not exceed 40°C in any section of the stream within 15 metres down stream from the effluent outlet	-	45°C at the point of discharge.
Suspended Solids	100	200	(a) For process waste water - 100 (b) For cooling water effluents 10 percent above total suspended matter of effluent cooling water
Dissolved Solids (inorganic)	2100	2100	-

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter		Standards
1	2	3		4
	Total residual chlorine	1.0	-	1.0
	Ammonical nitrogen(as N)	50	-	50
	Kjeldahl nitrogen (asN)	100	-	100
	Chemical Oxygen Demand	250	-	250
	Arsenic (as As)	0.2	0.2	0.2
	Mercury (as Hg)	0.01	-	0.01
	Lead (as Pb)	0.1	-	1.0
	Cadmium (as Cd)	1.0	-	2.0
	Total Chromium (asCr)	2.0	-	2.0
	Copper (as Cu)	3.0	-	3.0
	Zinc (as Zn)	5.0	-	15
	Selenium (as Se)	0.05	-	0.05
	Nickel (as Ni)	3.0	-	5.0
	Boron (as B)	2.0	2.0	-
	Percent Sodium	-	60	-
	Cynide (as CN)	0.2	0.2	0.2
	Chloride (as Cl)	1000	600	-
	Fluoride (as F)	2.0	-	15
	Sulphate (as SO ₄)	1000	1000	-
	Sulphide (as S)	2.8	-	5.0
	Pesticides	Absent	Absent	Absent
	Phenolic compounds (as C ₆ H ₅ OH)	1.0	-	5.0

Note :All efforts should be made to remove colour and unpleasant odour as far as possible.

Sr. No.	Industry	Parameter	Standards	
1	2	3	4	
156.	DAIRY	EFFLUENTS	Concentration in mg/l except pH	Quantum per product processed
		pH	6.5 – 8.5	-
		*BOD ² [3 days at 27°C]	100	-
		** Suspended Solids	150	-
		Oil and Grease	10	-
		Waste Water generation	-	3m ³ /Kl of milk
57.	TANNERIES	EFFLUENTS	Concentration in mg/l except pH	Quantum per raw hide processed
		pH	6.5 – 9.0	-
		*BOD ² [3 days at 27°C]	100	-
		Suspended Solids	100	-
		Sulphides (as S)	1	-
		Tototal Chromium (as Cr)	2	-
		Oil and Grease	10	-
		Waste Water generation	-	28 m ³ /T

Note :*BOD may be made stringent upto 30 mg/l if the recipient fresh water body is a source for drinking water supply. BOD shall be upto 350 mg/l for the chilling plant effluent for applying on land provided the land is designed and operated as a secondary treatment system with suitable monitoring facilities. The drainage water from the land after secondary treatment has to satisfy a limit of 30 mg/l of BOD and 10 mg/l of nitrate expressed as 'N'. The net addition to the groundwater quality should not be more than 3 mg/l of BOD and 3 mg/l of nitrate expressed as 'N'. This limit for applying on land is allowed subject to the availability of adequate land for discharge under the control of industry, BOD value is relaxable upto 350 mg/l, provided the wastewater is discharged into a town sewer leading to secondary treatment of the sewage.

** Suspended solids limit is relaxable upto 450 mg/l, provided the wastewater is discharged into town sewer leading to secondary treatment of the sewage.

* For effluent discharge into inland surface waters BOD limit shall be made stricter to 30 mg/l by the concerned State Pollution Control Board.

¹ Sl. No. 56 to 61 and entries relating thereto inserted vide GSR 475(E) dated 5.5.92 published in the Gazette No. 202 dated. 5.5.92.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter		Standards	
1	2	3		4	
****58.	NATURAL RUBBER PROCESSING INDUSTRY	Centrifuging and creaming units		Crape and crumb units	
		for disposal into inland surface water	for disposal on land for irrigation	for disposal into inland surface water	for disposal on land for irrigation
		(a)	(b)	(a)	(b)
		(Concentration in mg/l, except pH & quantum of waste water generation)		(Concentration in mg/l except pH & quantum of waste water generation)	
	pH	6 – 9	6 – 8	6 – 8	6 – 8
	Total Kjeldahl nitrogen (as N)	200(100*)	***	50	***
	Ammonical Nitrogen as (N)	100 (50*)	***	25	***
	BOD ¹ [3 days at 27°C]	20°C	100	30	100
	COD	250	***	250	***
	Oil & Grease	10	20	10	20
	Sulphide (as S)	2	***	2	***
	TDS	2100	NP**	2100	NP**
	SS	100	200	100	20
	Quantum of waste water generation	5 lit/kg of product processed	8 lit./kg of product processed	40 lit/kg of product processed	40 lit./kg of product processed

* To be achieved in three years.

** Not prescribed in case effluent is used for rubber plantation of their own. In other cases suitable limit, as necessary may be prescribed by the State Board.

*** Not specified.

**** These standards supersede the standards notified as serial no. 26 vide Notification No. S.O. 8(E), dated 3rd June, 1989.

59.	BAGASSE-FIRED BOILERS	EMISSIONS	(Concentration in mg/l)
(a)	Step Grate	Particulate Matter	250
(b)	Horse shoe/pulsating grate	Particulate Matter	500 (12% CO ₂)
(c)	Spreader Stroker	Particulate Matter	800 (12% CO ₂)

Note : In the case of horse shoe and spreader stroker boilers, if more than one boiler is attached to a single stack, the Standard shall be fixed based on added capacity of all the boilers connected with the stack.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
*60.	MAN-MADE FIBRE INDUSTRY (SEMI-SYNTHETIC)	EFFLUENTS	(Concentration in mg/l except for pH)
		pH	5.5 - 9.0
		Suspended Solids	100
		BOD ¹ [3 days at 27°C]	30
		Zinc (as Zn)	1
61	CERAMIC INDUSTRY	EMISSIONS	(Concentration in mg/Nm ³)
	A. Kilns		
	(a) Tunnel, Top Hat, Chamber	Particulate Matter	150
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(b) Down-draft	Particulate Matter	1200
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(c) Shuttle	Particulate Matter	150
		Fluoride	10
		Chloride	100
		Sulphur dioxide	**
	(d) Vertical Shaft Kiln	Particulate Matter	250
		Fluoride	10
		Sulphur dioxide	**
	(e) Tank furnace	Particulate Matter	150
		Fluoride	10
		Sulphur dioxide	**
	B. Raw material handling, Processing and operations		
	(a) Dry raw materials handling and processing operations	Particulate Matter	150
	(b) Basic raw material and processing operations	Particulate Matter	*
	(c) Other sources of air pollution Generation	Particulate Matter	*
	C. Automatic Spray Unit		
	(a) Dryers		
	(i) Fuel fired dryers	Particulate matter	150
	(ii) For heat recovery dryer	Particulate matter	*
	(b) Mechanical finishing operation	Particulate matter	*
	(c) Lime/Plasters of Paris manufacture		

* Standards notified at Sr. No.2 may also be referred.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

Sr. No.	Industry	Parameter	Standards
1	2	3	4
	Capacity :		
	Upto 5T/day	Stack Height	A. Hood should be provided with a stack of 30 meter height from ground level (including Kiln height)
	Above 5T/day	- do -	$H=14(Q)^{0.3}$ Where Q is emission rate of SO ₂ in kg/hr and H=Stack in meters
	More than 5T/day	Particulate matter	500 mg/NM ³
	and utp 40 T/day	Particulate matter	150 mg/NM ³

Note : Oxygen reference level for particulate matter concentration calculations for kilns mentioned at A(c) is 18% and for those at A(b), A(d) and A(c) is 8%.

* All possible preventive measures should be taken to control pollution as far as practicable.

** The standard for sulphur dioxide in terms of stack height limits for kilns with various capacities of coal consumption shall be as indicated below :

Coal consumed per day	Stack height
Less than 8.5 MT	9 m
More than 8.5 to 21 MT	12 m
More than 21 to 42 MT	15 m
More than 42 to 64 MT	18 m
More than 64 to 104 MT	21 m
More than 104 to 105 MT	24 m
More than 105 to 126 MT	27 m
More than 126 MT	30 m or using formula

$$H=14 (Q_g)^{0.3} \text{ (whichever is more)}$$

Note : In this notification

H—Physical height of the stack

Q_g—Emission of sulphurdioxide in Kg/hr.

MT—Metric tones

m—meters

S. No.	Industry	Parameter	Standards
1.	2.	3.	4.
¹ [62.	VISCOSE FILAMENT YARN (Sub-sector of manmade fibre semi- Synthetic Industry)	EFFLUENTS	(Concentration in mg/l except for pH)
		pH	5.5-9.0
		Suspended solids	100
		BOD(3 days at 27°C)	30
		Zinc (as Zn)	5
² [63.	STARCH INDUSTRY (Maize products)	EFFLUENTS:	Concentration not to exceed mg/l (except pH and waste water discharge)
		pH	6.5-8.5
		BOD (3 days at 27°C)	
		Suspended Solids	150
		Wastewater discharge	8 m ³ /tonne of maize Processed

Note : The prescribed limits for BOD and suspended solids shall be made more stringent or less stringent depending upon the conditions and local requirements as mentioned below :

- (i) BOD shall be made stringent upto 30mg/l if the recipient fresh water body is a source for drinking water supply.
- (ii) BOD shall be allowed upto 350 mg/l for applying on land provided the land is designed and operated as a secondary treatment system with the requisite monitoring facilities. The drainage water

¹ Sl. No. 62 and entries relating thereto inserted by Rule 2(b) of the Environment (Protection) Third Amendment Rules, 1993 by G.S.R. No. 801 (E), dated 31.12.1993.

² Sl.No.63 to 78 and entries relating thereto inserted by Rule 3 (a) of the Environment (Protection) (Amendment) Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996.

* Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176(E), dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

from the land after secondary treatment has to satisfy a limit of 30mg/l of BOD and 10mg/l of nitrate expressed as "N". The net addition to ground water quality should not be more than 3 mg/l of BOD and 10mg/l of nitrate expressed as "N".

- (iii) BOD shall be allowed upto 350 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.
- (iv) Suspended solids shall be allowed upto 450 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.
- (v) In the event of bulking of sludge, the industry shall immediately apprise the respective State Pollution Control Board.

64. BEEHIVE HARD COKE OVEN

EMISSION :

(i) New unit	Particulate matter (corrected to 6% CO ₂)	150 mg/Nm ³
	Hydrocarbons	25 ppm
(ii) Existing units	Particulate matter (corrected to 6% CO ₂)	350 mg/Nm ³

Note : For control of emissions and proper dispensation of pollutants the following guidelines shall be followed:

- (i) Units set up after the publication of this notification shall be treated as new units.
- (ii) A minimum stack height of 20 meters shall be provide by each unit.
- (iii) Emissions from coke ovens shall be channelised through a tunnel and finally omitted through a stack. Damper adjustment techniques shall be used to have optimum heat utilization and also to control the emission of unburnt carbon particles and combustible flue gases.
- (iv) Wet scrubbing system or waste heat utilization for power generation or byproduct recovery systems should be installed preferably to achieve the prescribed standards.

- (v) After four years from the date of this notification, all the existing units shall comply with the standards prescribed for the new units.

**65. BRIQUETTE INDUSTRY
(COAL)**

EMISSIONS :

(i) Units having capacity less than 10 tonnes	Particulate matter (corrected to 6% CO ₂)	350 mg/Nm ³
(ii) Units having capacity 10 tonnes or more	Particulate matter (corrected to 6% CO ₂)	150 mg/Nm ³

Note: For control of emissions/and proper dispersal of pollutants, the following guidelines shall be followed by the industry :-

- (i) A minimum stack height of 20 metres shall be provided.
- (ii) All ovens shall be modified to single chimney multi-oven systems.
- (iii) Emissions from ovens shall be channelised through inbuilt draft stack. Optimum heat utilization technique shall be used.
- (iv) In case of units having capacity 10 tonnes and above, wet scrubbing system shall be provided to control air pollution.

66. SOFT COKE INDUSTRY

Particulate matter (Corrected to 6% CO ₂)	350 mg/Nm ³
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Note: Wet scrubbing systems alongwith byproduct recovery system shall be provided.

GUIDELINES FOR EMISSION CONTROL TO IMPROVE WORK ZONE ENVIRONMENT (APPLICABLE FOR INDUSTRIES AT SERIAL NUMBERS 64, 65 AND 66):

- (a) Water used for quenching and wet scrubbing shall be recalculated and reused through catch-pits.
- (b) Leakages in the oven shall be sealed by bentonite or by any suitable paste and by proper maintenance to avoid fugitive emission.

GUIDELINES FOR COAL HANDLING AND CRUSHING PLANT (APPLICABLE TO INDUSTRIES AT SERIAL NUMBERS 64,65 AND 66)

- (a) Unloading of coal trucks shall be carried out with proper care avoiding dropping of the materials from height. It is advisable to moist the material by sprinkling water while unloading.
- (b) Pulverisation of coal shall be carried out in an enclosed place and water sprinkling arrangement shall be provided at coal heaps, crushing area and on land around the crushing unit.
- (c) Work area surrounding the plant shall be asphalted or concreted.
- (d) Green belt shall be developed along the boundary of the industry.
- (e) Open burning of coal to manufacture soft coke shall be stopped.

67. EDIBLE OIL & VANASPATI INDUSTRY

EFFLUENTS :

Temperature ambient temperature	Not more than 5°C above of the recipient waterbody
pH	6.5—8.5
Suspended solids	150 mg/l
Oil & grease	20 mg/l
BOD(3 days at 27°C)	100 mg/l
COD	200 mg/l
Wastewater Discharge	
(i) Solvent extraction	2.0 cum/tonne of product (oil)
(ii) Refinery/Vanaspati	2.0 cum/tonne of product (refined oil/Vanaspati)
(iii) Integrated unit of extraction & refinery/ Vanaspati	4.0 cum/tonne of refined Vanaspati product
(iv) Barometric cooling water/De-odoriser water	15.0 cum/tonne of refined oil/vanaspati

Note :

- (i) The above standards shall be applicable to waste water from processes and cooling.
- (ii) BOD shall be made stringent upto 30 mg/l if the recipient fresh water body is source of drinking water supply
- (iii) The standards for boiler emissions shall be applicable as prescribed under Schedule I of these rules.

68. ORGANIC CHEMICALS MANUFACTURING INDUSTRY**EFFLUENTS :**

(a) Compulsory parameters	pH	6.5—8.5
	BOD(3 days at 27°C)	100 mg/l
	Oil & Grease	10mg/l
	Bioassay test	Minimum 90% survival after 96 hours with at 100% effluent
(b) Additional parameters		(mg/l)
	Nitrate(as N)	10
	Arsenic	0.2
	Hexavalent Chormium	0.1
	Total Chormium	1.0
	Lead	0.1
	Cyanide as CN	0.2
	Zinc	0.5
	Mercury	0.01
	Copper	2.0
	Nickel	2.0
	Phenolies as C ₆ H ₃ OH	5.0
	Sulphide	2.0

Note :

- (i) No limit for COD is prescribed but it shall be monitored. If the COD in a treated effluent is persistently greater than 250 mg/l, such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in Hazardous

Chemicals Rules, 1989 in Part I of Schedule-I, the State Boards in such cases may direct the industries to install tertiary treatment system stipulated time limit. This may be done on case to case basis.

- (ii) These standards are not applicable to small scale detergent (formulating units).
- (iii) The standards for boiler emissions shall be applicable as per the existing emission regulations.
- (iv) Industry covered under this group are halo-aliphatics, plasticizers, aromatics (alcohols, phenols, esters, acids and salts, aldehydes and ketone), substituted aromatics, aliphatic (alcohols, esters, acids, aldehydes, ketones, amines and amides) and detergents.

69. FLOUR MILLS

EFFLUENTS :

pH	6.5—8.5
BOD (3 days at 27°C)	100 mg/l
Total Suspended Solids	100mg/l
Oil & Grease	10mg/l
Waste water discharge	2 cubic metre per tonne of wheat processed

Note :

- (i) BOD shall be stringent upto 30 mg/l if the recipient freshwater body is a source for drinking water supply.
- (ii) BOD shall be allowed upto 350 mg/l for applying on land, provided the land is designed and operated as a secondary treatment system with the requisite monitoring facilities. The drainage water from the land after secondary treatment has to satisfy a limit of 30 mg/l of BOD and 10 mg/l of nitrate expressed as "N". The net addition to ground water quality should not be more than 3mg/l of BOD and 10 mg/l of nitrate expressed as "N".

- (iii) BOD shall be allowed upto 350 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.
- (iv) Suspended solids shall be allowed upto 450 mg/l for discharge into a town sewer, if such sewer leads to a secondary biological treatment system.

70. BOILERS(SMALL)

Steam generation capacity (ton/hour)	Particulate matters emission (mg/Nm ³)
less than 2	1200*
2 to less than 10	800*
10 to less than 15	600*
15 and above	150**

* to meet the respective standards, cyclone/multicyclone is recommended as control equipment with the boiler.

** to meet the standard, bag filter/ESP is recommended as control equipment with the boiler.

Note :

(i) 12% of CO₂ correction shall be the reference value for particulate matter emission standards for all categories of boilers.

(ii) These limits shall supercede the earlier limits notified under Schedule I at serial number 34 of Environment (Protection) Act, 1986 vide notification GSR 742(E), dated 30th August, 1990.

(iii) Stack Height for small Boilers.
For the small boilers using coal or liquid fuels, the required stack height with the boiler shall be calculated by using the formula.

$$H=14 Q^{0.3}$$

Where H—Total stack height in metres from the ground level.

Q=SO₂ emission rate in kg/hr.

In no case the stack height shall be less than 11 metres.

Where providing all stacks are not feasible using above formula the limit of 400 mg/Nm³ for SO₂ emission shall be met by providing necessary control equipment with a minimum stack height of 11 metres.

71. PESTICIDES INDUSTRY

(i) Compulsory Parameters	mg/l except pH
pH	6.5—8.5
BOD (3 days at 27°C)	100
Oil & Grease	10
Suspended solids	100
Bioassay test	Minimum 90% survival of fish after 96 hours with 90% effluent and 10% dilution water. Test shall be carried out as per IS : 6502-1971.
(ii) Additional Parameters	mg/l
(a) Heavy metal	
Copper	1.0
Manganese	1.0
Zinc	1.0
Mercury	0.01
Tin	0.1
Any other like Nickel	shall not exceed 5 times the drinking water standards (BIS) individually.
(b) Organics	
Phenol & Phenolic Compounds as C ₆ H ₅ OH	1.0
(c) Inorganics	
Arsenic as AS	0.2
Cyanide as CN	0.2
Nitrate as NO ₃	50
Phosphate as P	5.0

		(d) Specific pesticide	(microgram/litre)
		Benzene	
		Hexachloride	10
		DDT	10
		Dimethoate	450
		Copper oxychloride	9600
		Ziram	1000
		2,4D	400
		Paraquat	23000
		Propanil	7300
		Nitrofen	780
		Other/below mentioned	
		Pesticides individually	100
Other pesticides :			
(i)	Insecticides :		
	Aluminium Phosphide	Lindane	Phrethrum extract
	Dichloroves	Malathion	Quinalphos
	EDTC Mixer	Methyl-Bromide	Monocrotophos
	Ethylene Dibromide	Nicotine Sulphate	Carbaryl
	Ethion	Oxydemeton Methyl	Endosulfan
	Fenitrothoron	Methyl Parathion	Fenvalerate
	Lime-sulphur	Phosphamidon	Phorate
	Temephos		
(ii)	Fungicides :		
	Aureofungin	Organomercurials (MEMC & PMA)	
	Barium Polysulphide	Sulphur (Collodal), Wettable & Dust)	
	Cuprous Oxide	Streptocycline	
	Ferbam	Thiram	
	Mancozeb	Zenib	
	Manab	Carbendazim	
	Nickel Chloride	Tridemorph	
(iii)	Rodenticides :	(iv) Nematicides :	(v) Weedicides
	Comafuryl	Metham N-Sodium	Fluchloralin
	Warfarin		Isoproturon
	Zinc Phosphide		Butachlor
			Anilphos
(vi)	Plant Growth Regulants :		
	Chloromequat Chloride		
	Nemphalene Acetic Acid		
(vii)	Any other pesticide not specified above		

Note :

- (1) Limits shall be complied with at the end of the treatment plant before any dilution.
- (2) From the 'Additional Parameters' specified in 71(ii), only the relevant (based on the raw-materials used and products manufactured) may be prescribed by the concerned State Board on a case to case basis.
- (3) No limit for COD is prescribed. If the COD in a treated effluent is persistently more than 250 mg/l, such industrial units are required to identify the chemicals causing the same. In case, there are found to be toxic as defined in Schedule I of the Hazardous Chemicals Rules, 1989, the State Boards in such cases may direct the industries to install tertiary treatment, stipulating time limit. This may be done on a case to case basis.
- (4) Solar evaporation followed by incineration is a recognized practice, provide the guidelines of solar evaporation as given below are followed.

GUIDELINES ON SOLAR EVAPORATION SYSTEM OR WASTEWATER FROM PESTICIDE INDUSTRY.

- (i) Solar evaporation pans shall be constructed in such a way that the bottom is atleast one metre above the ground level.
- (ii) Solar evaporation pans shall be leak proof and of impervious construction and designed as per IS:7290.
- (iii) The solar evaporation pans shall be designed on the basis of evaporation rate matching to the out put of wastewater.
- (iv) Wastewater must be pre-treated as below before subjecting to solar evaporation :
 - (a) Oil and grease and floating organics shall be removed so that the rate of evaporation is not affected.
 - (b) Acidic/Alkaline waste must be neutralised before solar evaporation to maintain pH in the range of 6.5 to 8.5.
 - (c) Toxic volatile matter shall be removed so as not to cause air pollution.'
- (v) During the rainy season, storm water shall not be allowed to mix with process waste and enter the pans. The wastewater shall in no case outflow from the evaporation pans. Alternative arrangements shall be made to hold the wastewater in proper impervious tanks and if necessary, force evaporated.

- (vi) In no circumstances, the liquid effluent shall be discharged without conforming to the minimal national standards or stored in a holding arrangement which is likely to cause pollution.
- (vii) The sludge from the solar evaporation pans shall be incinerated or disposed as per the guidelines for management and handling of hazardous waste, published by the Ministry of Environment & Forests, Government of India, after obtaining authorization from the State Pollution Control Board under the hazardous Waste (Handling and Management) Rules, 1989.
- (viii) The facility shall be protected from flood and storm to prevent embankments from erosion or any other damage which may render any portion inoperable.
- (ix) Facilities shall be protective enclosure to keep wildlife, domestic animals, unauthorized persons, etc. away.

72. OIL DRILLING AND GAS EXTRACTION INDUSTRY

A. STANDARDS FOR LIQUID EFFLUENT

1.0 On-Shore facilities (For Marine Disposal)

pH	5.5—9.0
Oil & Grease	10 mg/l
Suspended solids	100 mg/l
BOD(3 days at 27°C)	30 mg/l

Note :

- (i) For on-shore discharge of effluents, in addition to the standards prescribed above, proper marine outfall has to be provided to achieve the individual pollutant concentration level in sea water below their toxicity limits as given below, within a distance of 50 metre from the discharge point, in order to protect the marine aquatic life :

Parameter	Toxicity limit,mg/l
Chromium as Cr	0.1
Copper, as Cu	0.05
Cyanide, as CN	0.005
Fluoride, as F	1.5
Lead, as Pb	0.05
Mercury, as Hg	0.01
Nickel, as Ni	0.1
Zinc, as Zn	0.1

- (ii) Oil and gas drilling and processing facilities, situated on land and away from saline water sink, may opt either for disposal of treated water by on-shore disposal or by re-injection in abandoned well, which is allowed only below a depth of 1000 metres from the ground level. In case of re-injection in abandoned well the effluent have to comply only with respect to suspended solids and oil and grease 100 mg/l and 10 mg/l, respectively. For on-shore disposal, the permissible limits are given below.

S.No.	Parameter	On-shore discharge standards (Not to exceed)
1.	2.	3.
1.	pH	5.5—9.0
2.	Temperature	40°C
3.	Suspended Solids	100 mg/l
4.	Zinc	2 mg/l
5.	BOD	30 mg/l
6.	COD	100mg/l
7.	Chlorides	600 mg/l
8.	Sulphates	1000 mg/l
9.	TDS	2100 mg/l
10.	%Sodium	60 mg/l
11.	Oil and Grease	10 mg/l
12.	Phenolics	1.2 mg/l
13.	Cyanides	0.2 mg/l
14.	Fluorides	1.5 mg/l
15.	Sulphides	2.0 mg/l
16.	Chromium(Cr+6)	0.1 mg/l
17.	Chromium (Total)	1.0 mg/l
18.	Copper	0.2 mg/l
19.	Lead	0.1 mg/l
20.	Mercury	0.01 mg/l
21.	Nickel	3.0 mg/l

2.0 Off-shore facilities :

For off-shore discharge of effluents, the oil content of the treated effluent without dilution shall not exceed 40 mg/l for 95% of the observation and shall never exceed 100 mg/l. Three 8-hourly grab samples are required to be collected daily and the average value of oil and grease content of the three samples shall comply with these standards.

B. GUIDELINES FOR DISCHARGE OF GASEOUS EMISSION :

- 1.0 DG Sets
- 1.1 DG Sets at drill site as well as production station shall conform with the norm notified under the Environment (Protection) Act, 1986.
- 2.0 Elevated/ground flares
- 2.1 Cold Venting of gases shall never be resorted to and all the gaseous emissions are to be flared.
- 2.2 All flaring shall be done by elevated flares except where there is any effect on crop production in adjoining areas due to the flaring. In such cases, one may adopt ground flaring.
- 2.3 In case of ground flare, to minimize the effects of flaring, the flare pit at Group Gathering Station(GGS)/Oil Collecting Station(OCS) and Group Collection Station(GCS) shall be made of RCC surrounded by a permanent wall (made of refractory brick) of minimum 5m height, to reduce the radiation and glaring effects in the adjoining areas.
- 2.4 A green belt of 100 m width may be developed around the flare after the refractory wall in case of ground flaring.
- 2.5 If the ground flaring with provision of green belt is not feasible, enclosed ground flare system shall be adopted, and be designed with proper enclosure height, to meet the ground level concentration(GLC) requirement.
- 2.6 In case of elevated flaring, the minimum stack height shall be 30m. Height of the stack shall be such that the max. GLC never exceeds the prescribed ambient air quality limit.
- 3.0 Burning of effluent in the pits shall not be carried out at any stage.

¹[C. GUIDELINES FOR DISPOSAL OF SOLID WASTE, DRILL CUTTING AND DRILLING FLUIDS FOR OFFSHORE AND ONSHORE DRILLING OPERATION-

1. Disposal of Drill Cutting and Drilling Fluids for On-shore Installations:

¹ Substituted "paragraph C", for "paragraph C relating to Guidelines For Disposal of Solid Waste" by Rule 2(iii) of the Environment (Protection) Third Amendments Rules, 2005 notified vide Notification No.G.S.R.546(E), dated 30.8.2005.

- (a) Drill Cuttings (DC) originating from on-shore or locations close to shore line and separated from Water Base Mud (WBM) should be properly washed and unusable drilling fluids (DF) such as WBM, Oil Base Mud (OBM), Synthetic Base Mud (SBM) should be disposed off in a well designed pit lined with impervious liner located off-site or on-site. The disposal pit should be provided additionally with leachate collection system.

Design aspects of the impervious waste disposal pit; capping of disposal pit should be informed by the oil industry to State Pollution Control Board (SPCB) at the time of obtaining consent.

- (b) Use of diesel base mud is prohibited. Only WBM should be used for on-shore oil drilling operations.
- (c) In case of any problem due to geological formation for drilling, low toxicity OBM having aromatic content < 1% should be used. If the operators intend to use such OBM to mitigate specific whole problem/ SBM it should be intimated to Ministry of Environment and Forests/State Pollution Control Board.
- (d) The chemical additives used for the preparation of DF should have low toxicity i.e. 96 hr $LC_{50} > 30,000$ mg/l as per mysid toxicity or toxicity test conducted on locally available sensitive sea species. The chemicals used (mainly organic constituents) should be biodegradable.
- (e) DC separated from OBM after washing should have oil content at < 10 gm/kg for disposal into disposal pit.
- (f) The waste pit after it is filled up shall be covered with impervious liner, over which, a thick layer of native soil with proper top slope is provided.
- (g) Low toxicity OBM should be made available at installation during drilling operation.
- (h) Drilling wastewater including DC wash water should be collected in the disposal pit evaporated or treated and should comply with the notified standards for on-shore disposal.
- (i) Barite used in preparation of DF shall not contain Hg > 1 mg/kg & Cd > 3mg/kg.

- (j) Total material acquired for preparation of drill site must be restored after completion of drilling operation leaving no waste material at site. SPCB should be informed about the restoration work.
- (k) In case, environmentally acceptable methods for disposal of drill waste such as (a) injection to a formation through casing annulars, if conditions allow (b) land farming at suitable location (c) bio-remediation (d) incineration or (e) solidification can be considered, in such cases oil industry is required to submit proposal to Ministry of Environment and Forests/State Pollution Control Board (MoEF/SPCB) for approval.

2. Disposal of Drill Cutting and Drilling Fluids for Off-shore Installations:

- (a) Use of diesel base mud is prohibited. Only WBM is permitted for offshore drilling. If the operator intend to use low toxicity OBM or SBM to mitigate specific hole problems in the formation, it should be intimated to MoEF/SPCB. The low toxicity OBM should have aromatic content < 1%.
- (b) The toxicity of chemical additives used in the DF (WBM or OBM or SBM) should be biodegradable (mainly organic constituents) and should have toxicity of 96 hr LC₅₀ Value > 30,000 mg /l as per mysid toxicity or toxicity test conducted on locally available sensitive sea species.
- (c) Hexavalent chromium compound should not be used in DF. Alternative chemical in place of chrome lignosulfonate should be used in DF. In case, chrome compound is used, the DF/ DC should not be disposed offshore.
- (d) Bulk discharge of DF in offshore is prohibited except in emergency situations.
- (e) WBM/OBM /SBM should be recycled to a maximum extent. Unusable portion of OBM should not be discharged into sea and shall be brought to on-shore for treatment & disposal in an impervious waste disposal pit.
- (f) Thoroughly washed DC separated from WBM/SBM & unusable portion of WBM/SBM having toxicity of 96 hr LC₅₀ > 30,000 mg/l shall be discharged off-shore into sea intermittently, at an average rate of 50 bbl/hr/well from a platform so as to have proper dilution & dispersion without any adverse impact on marine environment.

- (g) Drill cutting of any composition should not be discharged in sensitive areas notified by the Ministry of Environment and Forests.
- (h) In case of specific hole problem, use of OBM will be restricted with zero discharge of DC. Zero discharge would include re-injection of the DC into a suitable formation or to bring to shore for proper disposal. In such a case, use of OBM for re-injection should be recorded and made available to the regulatory agency. Such low toxic OBM having aromatic content < 1% should be made available at the installation.
- (i) In case, DC is associated with high oil content from hydrocarbon bearing formation, then disposal of DC should not have oil content > 10 gm/kg.
- (j) The DC wash water should be treated to confirm limits notified under EPA, before disposal into Sea. The treated effluent should be monitored regularly.
- (k) Discharge of DC from the installation located within 5 km away from shore should ensure that there is no adverse impact on marine Eco-system and on the shore. If, adverse impact is observed, then the industries have to bring the DC on-shore for disposal in an impervious waste disposal pit.
- (l) If any, environmental friendly technology emerges for substitution of DF and disposal technology, it may be brought to the notice of MoEF and regulatory agencies. If the operator desires to adopt such environment friendly technology a prior approval from Ministry of Environment and Forests is required.
- (m) Barite used in preparation of DF shall not contain Hg > 1 mg/kg & Cd > 3 mg/kg.
- (n) Oil drilling operators are required to record daily discharge of DC & DF to offshore and also to monitor daily the effluent quality, and submit the compliance report once in every six-month to Ministry of Environment and Forests.]

73. ¹[PHARMACEUTICAL (MANUFACTURING AND FORMULATION) INDUSTRY]

S. No.	Industry	Parameter	Standards
1	2	3	4
		² [Effluent Standards	Limiting concentration in
		i. Compulsory Paramters	mg/l, expect for pH
		pH	6.0-8.5
		Oil & grease	10
		BOD (3 days 27°C)	100*
		Total suspended Solids	100
		Bioassay test	90% survival of fish after first 96 hours in 100% effluent **
		ii. Additional Paramters	
		Mercury	0.01
		Arsenic	0.20
		Chromium (Cr ⁶⁺)	0.10
		Lead	0.10
		Cyanide	0.10
		Phenolics (C ₆ H ₅ OH)	1.0
		Sulphides (as S)	2.0
		Phosphate (as P)	5.0

Note:

* The BOD and COD limits shall be 30mg/l and 250 mg/l respectively, if treated effluent is discharged directly into a fresh water body i.e., stream, canal, river or lake.

** The Bioassay Test shall be conducted as per IS:6582-1971.

(i) Parameters listed as 'Additional Parameters' shall be prescribed depending upon the process and product.

(ii) Limits for total dissolved solids in effluent shall be prescribed by the concerned pollution control board/pollution control committee depending upon the recipient water body].

¹ Substituted by Rule 2(b)(i) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009

² Substituted by Rule 2(b)(ii) of the Environment (Protection) Third Amendment Rules, 2009 notified by G.S.R.512(E), dated 9.7.2009

¹[A. Emission from Incinerator

		Limiting concentration in mg/Nm ³ , unless stated	Sampling duration in (minutes) unless stated
Particulate Matter		50	30 or more (for sampling about 300 litre emission)
HCl		50	30
SO ₂		200	30
CO		100	Daily average
Total Organic Carbon		20	30
Total Dioxins and Furans *	Existing Incinerator	0.2 ngTEQ/Nm ³	8 hours
	New Incinerator	0.1 ngTEQ/Nm ³	8 hours
Sb+As+Pb+Cr+Co+Cu+Mn+ Ni+V+Cd+Th+Hg and their compounds		1.5	2 hours

* The existing plant shall comply with norms for dioxins and furans-as 0.1 ng/TEQ/Nm³ within 5 years from the date of notification.

Notes:

- i. All monitored values shall be corrected to 11 % oxygen on dry basis.
- ii. The CO₂ concentration In tail gas shall not be less than 7% ,.
- iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in twin chamber incinerator shall be designed so as to achieve a minimum temperature of 850+25^oC in primary chamber and 950^oC in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds,
or
all the facilities in single chamber incinerator for gaseous hazardous waste shall be designed so as to achieve a minimum temperature of 950^oC in the combustion chamber with a gas residence time not less than 2 (two) seconds.

¹ Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2009 notified by G.S.R.149 (E), dated 4.3.2009.

- iv. In case halogenated organic waste is more than 1% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 850+25°C in primary chamber and 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than 2 (two seconds).
- v. Scrubber meant for scrubbing emissions shall not be used as quencher.
- vi. Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the incineration ash and residue less than 3%, and their loss on ignition is less than 5% of the dry weight. In case of non-conformity, ash and/or residue shall be re-incinerated.
- vii. The incinerator shall have a chimney of atleast thirty metre height.

B. Effluent from Incinerator

- i. Effluent from scrubber(s) and floor washing shall flow through closed conduit/pipe network.
- ii. Storm water shall not be allowed to mix with scrubber water and/or floor washings.
- iii. Storm water shall be channelized through separate drains passing through a HDPE lined pit having holding capacity of 10 minutes (hourly average) of rainfall.
- iv. The built up in Total Dissolved Solids (TDS) in wastewater of floor washings shall not exceed 1000 mg/l over and above the TDS of raw water used.
- v. Effluent shall not be stored in holding tank(s) in such manner which may cause pollution to groundwater.

- vi. Effluent (scrubber water and floor washings) shall be discharged into receiving water conforming to the norms prescribed under Schedule VI:

General Standards for Discharge of Environment Pollutions (Part A: Effluents) notified under the Environment (Protection) Rules, 1986].

¹ [74	BRICK KILNS	Emission Standards	
		(i)	Bull's Trench Kiln (BTK) Category*
			Limiting concentration in mg/Nm ³
	Particulate matter	small medium large	1000 750 750
	Stack height	Small	minium (metre) 22 or induced draft fan operating with minimum draft of 50 mm WG with 12 metre stack height.
		Medium	27 or induced draft fan operating with minimum draft of 50 mm WG with 15 metre stack height.
		Large	30 or induced draft fan operating with minimum draft 50 mm WG with 17 metre stack height.
	*Category	Trench withdh (m)	Production (bricks/day)
	Small BTK	<4.50	Less than 15,000
	Medium BTK	4.50-6.75	15,000-30,000
	Large BTK	Above 6.75	Above 30,000

¹ Substituted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 2009 notified by G.S.R.543(E), dated 22.7.2009.

(ii) Down-Draft Kiln (DDK)

	Category++	Limiting concentration in mg/Nm ³
Particulate matter	small/large/medium	1200
Stack height	small	12
	medium	15
	large	18
++Category	<i>Production (bricks/day)</i>	
small DDK	Less than 15,000	
medium DDK	15,000-30,000	
large DDK	Above 30,000	

(iii) Vertical Shaft Kiln (VSK)

	Category**	Limiting concentration in mg/l Nm ³
Particulate matter	small/large/medium	250
Stack height	small	11 (at least 5.5m from loading platform)
	medium	14 (at least 7.5 m from loading platform)
	large	16 (at least 8.5 m from loading platform)
**Category	<i>No. of Shafts</i>	
small VSK	1-3	Less than 15,000
medium VSK	4-6	15,000-30,000
large VSK	7 or more	above 30,000

Notes:

1. Gravitational Settling Chamber along with fixed chimney of appropriate height shall be provided for all Bull's Trench kilns.
2. One chimney per shaft in Vertical Shaft Kiln shall be provided. The two chimneys emanating from a shaft shall either be joined (at the loading platform in case of brick chimney or at appropriate level in case of metal chimney) to from a single chimney.
3. The above standards shall be applicable for different kilns if coal, firewood and/or agricultural residues are used as fuel].

75. SODA ASH INDUSTRY (SOLVAY PROCESS)

PARAMETER	MINAS (Recipient body specified)		
	Marine	Brackish	Inland surface
pH	6.5—9	6.5—9	6.5—9
Temperature	45°C or less	45°C or less	45°C or less
Oil & Grease	2 mg/l	20 mg/l	10 mg/l
Suspended Solids(SS)	500 mg/l	200 mg/l	100 mg/l
Ammoniacal nitrogen	5 mg/l	50 mg/l	30 mg/l
Bio-assay	96 hours 30% survival	96 hours 90% survival	96 hours 90% survival

Note :- MINAS for disposal in brackish and inland surface water are without any dilution.

Standards for Dual Process Soda Ash Plants :

Parameter	MINAS
	(Inland Surface Water)
pH	6.5—8.0
Ammoniacal nitrogen, as N(mg/l)	50
Nitrate nitrogen, as N(mg/l)	10
Cyanide, as CN(mg/l)	0.2
Hexavalent chromium(mg/l)	0.1
Total chromium(mg/l)	2.0
Suspended solids(mg/l)	100
Oil and Grease (mg/l)	10

Note : The Standards are to be implemented by the industry in a time targeted schedule¹[by December, 1999]. The progress on the time targeted implementation schedule shall be periodically submitted by the industry to the State Pollution Control Board and Central Pollution Control Board.

¹ Substituted by Rule 2 (ii) of the Environment (Protection) (Second Amendment) Rules, 1999 notified by Notification G.S.R.682(E), dated 5.10.1999.

76. EMISSION STANDARD FOR SO₂ FROM CUPOLA FURNACE :

Standard for Sulphur Dioxide emission from Cupola Furnace :

Characteristics	Emission limit
Sulphur dioxide (SO ₂) emission	300 mg/Nm ³ at 12% CO ₂ corrections

To achieve the standard, foundries may install scrubber, followed by a stack six times the diameter of the Cupola beyond the charging door.

Note : In case due to some technical reasons, installation of scrubber is not possible, then value of SO₂ to the ambient air has to be effected through the stack height.

77. SPECIFICATIONS OF MOTOR GASOLINE FOR EMISSION RELATED PARAMETERS :

Sl. No.	Characteristics	Requirement	Method of test ref.to P:of IS:1448
(i)	Reid Vapour Pressure at 38°C,Kpa	35 to 70	P : 39
(ii)	Benzeno, Percent by volume,Max	5.0 ⁽¹⁾	P : 104
(iii)	Lead Content(as Pb)g/l,Max	0.15(low leaded)(2) 0.013 (unleaded)	P : 38
(iv)	Sulphur, percent by mass, Max	0.10 (unleaded) 0.20 (leaded)	P : 34
(v)	Potential Gum, g/m3, Max	50	ASTM 873 : 8
(vi)	Gum (Solvent Washed)g/m3 Max	40	P : 29
(vii)	Oxygenates Content Ether (MTBE, ETBE) Alcohol, percent by volume, Max	15	
(viii)	Phosphorus	See Foot Note ⁽³⁾	ASTMD 3231

(1) 3.0 percent by volume maximum in metro cities by 2000 AD.

(2) 0.15 g/l by 31st December, 1996 (for entries country).
0.013 g/l by 1st April 1995 (in four metrocities);

by 1st December,1998(for all State capitals/UTs and major metro cities) and
by 1st April,2000 for the entire country.

(3) Phosphorous containing additives shall be absent.

Note :

- (a) Above specifications applied to leaded as well as unleaded petrol except lead content.
- (b) For new refineries coming up during or after 1997 the specification applicable by 2000 for existing refineries shall be applicable by 1997.

78. SPECIFICATION OF DIESEL FUEL FOR EMISSION RELATED PARAMETERS :

Sl.No.	Characteristics	Requirement	Method of Test Ref. To P : of IS : 1448
(i)	Density at 15° C, Kg/m ³	820 to 880 ⁽¹⁾	P : 32
(ii)	Cetane Number, Min	45° ⁽²⁾	P : 9
(iii)	Distillation 85 percent by volume recovery at °C Max 95 percent by volume recovery at °C,Max	350 370	P : 18
(iv)	Sulphur, percent by mass	0.50 ⁽³⁾	P : 33

- (1) 820 to 860 by 2000 AD
- (2) 48 by 31st December,1998(except in the refineries- Digboi, Gauhati and Bongaigaon Refineries & Petrochemicals Ltd.)
- (3) (i) 0.50 percent by mass by 1st April 1996 in four metros and Taj Trapezium;
(ii) 0.25 percent by mass by 1st October,1996 in Taj Trapezium;
(iii) 0.25 percent by mass by 1st April,1996 throughout the country.

Note :

- (a) Above specifications apply to HSD only.
- (b) For new refineries coming during or after 1997 specification applicable by 2000 for existing refineries shall be applicable by 1997.
- (c) 'P' refers to parts of IS : 1448.

Sl. No.	Industry	Parameter	Standard		
			New Batteries (at Green Field Site)	Rebuild Batteries	Existing Batteries
Fugitive Visible Emissions					
¹ [² 79	COKE OVEN PLANTS (by product recovery type)	(a) Leakage from door (b) Leakage from charging lids (c) Leakage from AP Covers (d) Charging emission (Second/charge)	5(PLD)* 1(PLL)* 4(PLO)* 16(with HPLA)*	10(PLD)* 1(PLL)* 4(PLO)* 50 (with HPLA)*	10(PLD)* 1 (PLL)* 4(PLO)* 75
Stack Emission of Coke Oven					
	(a) SO ₂ (mg/Nm ³)		800	800	800
	(b) NO _x ,(mg/ Nm ³)		500	500	500
	(c) SPM,(mg/Nm ³)		50	50	50
	(d) SPM emission during charging – for stamp charging batteries (stack emission) mg/Nm ³		25	25	25
	(e) SPM emission during coke pushing (stack emission) gm/ton of coke		5	5 (applicable to stationary land based system)	-
	(f) Sulphur in Coke Oven gas used for heating (mg/Nm ³)		800	-	-
Emission for quenching operation					
	(a) Particulate matter gm/tonne of coke produced		50	50	-
Benzo-Pyrene (BaP) concentration in work zone air (µg/m³)					
	(a) Battery area (top of the battery)		5	5	5
	(b) Other units in coke oven plant		2	2	2
	(c) Ambient standards (mg/Nm ³)		10	10	10

¹ Substituted by Rule 2(vi) by Rule 2(VI) of the Environment (Protection) First Amendment Rules, 2006 notified vide Notification G.S.R.46(E), dated 3.2.2006.

² Sl. No. 79 and entries relating thereto inserted by the Environment (Protection) Second Amendment Rules, 1997 vide G.S.R. 631(E), dated 31.10.1997.

For control of emissions and to maintain environmental quality in work zone area, the following guidelines shall be followed, namely:-

- (i) New coke oven units shall follow any of the low-emission procedures, such as, coke dry cooling, non-recovery coke-ovens. Indirect Quenching Process, Jumbo coke oven reactor, Modified Wet Quenching System with appropriate environmental controls (e.g. baffles, filtering media, collection and treatment of residual water from quench tower and recycling; Use of process water as quenching water shall not be permissible).
- (ii) Effective pollution control measures (for e.g. Extensive maintenance and cleaning of oven doors and frame seals, ascension pipes, charging holes and lids and other equipment; On-main charging system(HPLA); Luting charging holes with clay-suspension; Modified guide/transfer car with emission control system etc. shall be used to reduce coal charging and coke pushing emissions.
- (iii) During rebuilding or installing new coke oven batteries, the following clean technology and pollution control measures be adopted:
 - (a) air-cooled self-sealing doors;
 - (b) the hydro-jet cleaning system shall be provided for the door and door frame cleaning with a facility of hydro jet pressure of 600 kg/cm²;
 - (c) the charging should be accomplished with hermetically sealed charging sleeves and screw feeder in charging car. The charging car should also be equipped with magnetic lid lifter and lid and frame cleaning mechanism (applicable to top charging batteries);
 - (d) to provide aspiration through high-pressure ammonia liquor (HPLA) injection in goose neck and emission should be transferred directly to gas collecting mains;
 - (e) water sealed AP covers should be provided;
 - (f) computerized combustion control and moisture control systems.
- (iv) In addition to the above the new coke oven batteries, which will be installed after the date of publication of this notification at green field site and rebuild batteries wherever technically feasible should also be equipped to treat their pushing emissions with stationary land-based system with collection hood and wet scrubbing units for gas cleaning.

- (v) In the case of existing coke ovens with wet quenching, the new procedures as in (i) and (ii) shall be adopted.
- (vi) The fugitive visible emission standards i.e. PLD*, PLL* and PLO*, charging emission (second/charge).

Note: Units set up after the publication of this notification shall be treated as new units.

- *HPLA - Aspiration through high pressure liquor injection in gooseneck;
- *PLD - Percent leaking doors;
- * PLL - Percent leaking lids; and
- * PLO - Percent leaking off takes].

¹[80. SPECIFICATIONS OF TWO-STROKE ENGINE OIL :

Specification	Standard	Test Procedure
Two-stroke engine oil grade JASO-FC as per JASO M-345-93 specification And API TC as per specification No.ASTM D 4859	Minimum smoke Index of 85.	JASO-M342-92 for JASO-FC and ASTM D-4857 for API TC

The above specification shall be effective from the 1st day of April,1999.]

²[81. BATTERY MANUFACTURING INDUSTRY

(i) Lead Acid Battery Manufacturing Industries. Emission Standards.

Source	Pollutant	Concentration based Standards (mg/Nm ³)
Grid casting	Lead	10
	Particulate matter	25
Oxide manufacturing	Lead	10
	Particulate matter	25
Paste mixing	Lead	10
	Particulate matter	25
Assembling	Lead	10
	Particulate matter	25
PVC Section	Particulate matter	150

¹ Sl. No. 80 and entries relating thereto inserted by the Environment (Protection) Amendment Rules, 1998 vide G.S.R. 504 (E), dated 20.8.1998.

² Sl. No. 81 to 87 and entries relating thereto inserted by the Environment (Protection) Amendment Rules, 1998 vide G.S.R. 7 (E), dated 22.12.1998.

- To comply with the respective standards, all the emissions from above-mentioned sources shall be routed through stack connected with hood and fan in addition to above, installation of control equipment viz. Bag filter/ventury scrubber, is also recommended.
- The minimum stack height shall be 30 m.

Liquid Effluent Discharge Standards

Pollutant	Concentration based standards
pH	6.5—8.5
Suspended solids	50 mg/l
Lead	0.1 mg/l

(ii) Dry Cell Manufacturing Industry : Emission Standards

Pollutant	Concentration based Standards (mg/Nm ³)
Particulate matter	50
Manganese as Mn	5

- To Comply with the respective standards, all the emissions from above-mentioned sources shall be routed through stack connected with hood and fan. In addition to above, installation of control equipment viz. bag filter/ventury scrubber, is also recommended.
- The minimum stack height shall be 30m.

Effluent Standards

Pollutant	Concentration based standards
pH	6.5---8.5
Total suspended solids	100 mg/l
Manganese as Mn	2 mg/l
Mercury as Hg	0.02 mg/l
Zinc as Zn	5 mg/l

(iii) Secondary Lead Smelters

Pollutant	Concentration based standards
Lead as Pb	10 mg/Nm ³
Particulate matter	50 mg/Nm ³
Minimum stack height	30 m

82. ENVIRONMENTAL STANDARDS FOR GAS/NAPHTHA-BASED THERMAL POWER PLANTS

- (i) Limit for emissions of NOx
 - (a) For existing units---150ppm (v/v) at 15% excess oxygen.
 - (b) For new units with effect from 1.6.1999.

Total generation of gas turbine	Limit for Stack NOx emission [v/v],at 15% excess oxygen]
(a) 400 MW and above	(i) 50 ppm for the units burning natural gas. (ii) 100 ppm for the units burning naphtha.
(b) Less than 400 MW but Upto 100 MW	(i) 75 ppm for the units burning natural gas. (ii) 100 ppm for the units burning naphtha
(c) Less than 100 MW	100 ppm for units burning natural gas or naphtha as fuel
(d) For the plants burning gas in a conventional boiler.	100 ppm

- (ii) Stack height H in m should be calculated using the formula $H=14 Q^{0.3}$, where Q is the emission rate of SO₂ in kg/hr, subject to a minimum of 30 mts.
- (iii) Liquid waste discharge limit.

Parameter	Maximum limit of concentration (mg/l except for pH and temperature)
pH	6.5-8.5
Temperature	As applicable for other thermal power Plants
Free available chlorine	0.5
Suspended solids	100.0
Oil and grease	20.0
Copper (total)	1.0
Iron (total)	1.0
Zinc	1.0
Chromium (total)	0.2
Phosphate	5.0

¹[83. **STANDARDS/GUIDELINES FOR CONTROL OF NOISE POLLUTION FROM STATIONARY DIESEL GENERATOR(DG) SETS**

* * *]

84. TEMPERATURE LIMIT FOR DISCHARGE OF CONDENSER COOLING WATER FROM THERMAL POWER PLANT

A . New thermal power plants commissioned after June 1,1999.

New thermal power plants, which will be using water from rivers/lakes./ reservoirs shall install cooling towers-irrespective location and capacity. Thermal power plants which will use sea water for cooling purposes, the condition below will apply.

B. New projects in coastal areas using sea water.

The thermal power plants using sea water should adopt suitable system to reduce water temperature at the final discharge point so that the resultant rise in the temperature of receiving water does not exceed 7°C over and above the ambient temperature of the receiving water bodies.

C. Existing thermal power plants.

Rise in temperature of condenser cooling water from inlet to the outlet of condenser shall not be more than 10°C.

D. Guidelines for discharge point :

1. The discharge point shall preferably be located at the bottom of the water body at mid-stream for proper dispersion of thermal discharge.
2. In case of discharge of cooling water into sea, proper marine outfall shall be designed to achieve the prescribed standards. The point of discharge may be selected in consultation with concerned State Authorities/NOI.
3. No cooling water discharge shall be permitted in estuaries or near ecologically sensitive areas such as mangroves, coral reefs/spawning and breeding grounds of aquatic flora and fauna.

85. ENVIRONMENTAL STANDARDS FOR COAL WASHERIES

1. Fugitive emission standards.
 - The difference in the value of suspended particulate matter, delta (Δ), measured between 25 and 30 metre from the enclosure of coal crushing plant in the downward and leeward wind direction shall not exceed 150 microgram per cubic meter. Method of measurement shall be High Volume Sampling and Average flow rate, not less than 1.1 m³ per minute, using upwind downwind method of measurement :

¹ Serial No..83 and entries relating thereto omitted by Rule 2 (b) of the Environment (Protection) Second Amendment Rules, 2002 notified vide notification G.S.R. 371(E), dated 17.5.2002.

2. Effluent discharge standards

- The coal washeries shall maintain the close circuit operation with zero effluent discharge.
- If in case due to some genuine problems like periodic cleaning of the system, heavy rainfall etc. it become necessary to discharge the effluent to sewer land stream then the effluent shall conform to the following standards at the final outlet of the coal washery.

S.No.	Parameter	Limits
1.	pH	5.5—9.0
2.	Total suspended solids	100 mg/l
3.	Oil & Grease	10 mg/l
4.	B.O.D (3 days 27°C)	30 mg/l
5.	COD	250 mg/l
6.	Phenolics	1.0 mg/l

3. Noise level standards

- Operational/Working zone—not to exceed 85 dB(A) Leq for 8 hours exposure.
- The ambient air quality standards in respect of noise as notified under Environmental (Protection)Rules,1986 shall be followed at the boundary line of the coal washery.

4. Code of practice for Coal Washery.

- Water or Water mixed chemical shall be sprayed at all strategic coal transfer points such as conveyors, loading/unloading points etc. As far as practically possible conveyors, transfer points etc. shall be provided with enclosures.
- The crushers/pulverisers of the coal washeries shall be provided with enclosures, fitted with suitable air pollution control measures and finally emitted through a stack of minimum height of 30m. conforming particulate matter emission standard of 150 mg/Nm³ or provided with adequate water sprinkling arrangement.
- Water sprinkling by using fine atomizer nozzles arrangement shall be provided on the coal heaps and on around the crushers/pulverisers.
- Area, in and around the coal washery shall be pucca either asphalted or concreted.

- Water consumption in the coal washery shall not exceed 1.5 cubic meter per tonne of coal.
- The efficiency of the setting ponds of the waste water treatment system of the coal washery shall not be less than 90%.
- Green belt shall be developed along the road side, coal handling plants, residential complex, office building and all around the boundary line of the coal washery.
- Storage bunkers, hoppers, rubber decks in chutes and centrifugal chutes shall be provided with proper rubber linings.
- Vehicles movement in the coal washery area shall be regulated effectively to avoid traffic congestion. High pressure horn shall be prohibited. Smoke emission from heavy duty vehicle operating in the coal washeries should conform the standards prescribed under Motor Vehicle Rules, 1989.

86. WATER QUALITY STANDARDS FOR COASTAL WATERS MARINE OUTFALLS

In a coastal segment marine water is subjected to several types of uses. Depending of the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of uses there is one use that demands highest level of water quality/purity and that is termed a “designated best use” in that stretch of the coastal segment. Based on this, primary water quality criteria have been specified for following five designated best uses :-

Class	Designated best use
SW-1(See Table 1.1.)	Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone
SW-II (See Table 1.2)	Bathing, Contact Water Sports and Commercial fishing.
SW-III (See Table 1.3)	Industrial cooling, Recreation(non-contact) and Aesthetics
SW-IV (See Table 1.4)	Harbour
SW-V (See Table 1.5)	Navigation and Controlled Waste Disposal

The Standards alongwith rationale/remarks for various parameters for different designated best uses, given in Table 1.1 to 1.5

TABLE 1.1
PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-1 WATERS
(For Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone)

S. No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	General broad range, conducive for propagation of aquatic lives is given. Value largely dependant upon soil-water interaction.
2.	Dissolved Oxygen	5.0 mg/l or 60 per cent saturation value whichever is higher	Not less than 3.5 mg/l at any time of the year for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour.	Specially caused by chemical compound like creosols, phenols, naphtha pyridine benzene, toluene etc. causing visible colouration of salt crystal and fainting fish flesh.
4.	Floating Matters	Nothing obnoxious or detrimental for use purpose	Surfactants should not exceed an upper limit of 1.0 mg/l and the concentration not to cause any visible foam.
5.	Suspended Solids	None from sewage or industrial waste origin	Settleable inert matters not in such concentration that would impair any usages specially assigned to this class.
6.	Oil and Grease (including Petroleum Products)	0.1 mg/l	Concentration should not exceed 0.1 mg/l as because it has effect on fish eggs and larvae.
¹ [7.	Heavy Metals : Mercury (as Hg) Lead (as Pb) Cadmium (as Cd)	0.001 mg/l 0.001 mg/l 0.01 mg/l]	Values depend on : (i) Concentration in salt, fish and shell fish. (ii) Average per capita consumption per day. (iii) Minimum ingestion rate that induces symptoms of resulting diseases.

Note : SW-1 is desirable to be safe and relatively free from hazardous chemicals like pesticides, heavy metals and radionuclide concentrations. Their combined (synergistic or antagonistic) effects on health and aquatic lives are not yet clearly known. These chemicals undergo bio-accumulation, magnification and transfer to human and other animals through food chain. In areas where fisheries, salt pans are the governing considerations, and presence of such chemicals apprehended/reported, bioassay test should be performed following appropriate methods for the purpose of setting case specific limits.

¹ Substituted by Rule 2(iii) of the Environment (Protection) (Second Amendment) Rules, 1999 published in the Notification G.S.R.682(E), dated 5.10.1999.

TABLE 1.2**PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-II WATERS****(For Bathing, Contact Water Sports and Commercial Fishing)**

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	Range does not cause skin or eye irritation and is also conducive for propagation of aquatic lives.
2.	Dissolved Oxygen	4.0 mg/l or 50 per cent saturation value whichever is higher.	Not less than 3.5 mg/l at anytime for protection of aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	Specially caused by chemical compound like creosols phenols, naphtha, benzene, pyridine toluene etc. causing visible colouration of water and tainting of and odour in fish flesh.
4.	Floating Matters	Nothing obnoxious or detrimental for use purposes.	None in such concentration that would impair usages specially assigned to this class.
5.	Turbidity	30 NTU (Nephelo Turbidity Unit)	Measured at 0.9 depth
6.	Fecal Coliform	100/100 ml(MPN)	The average value not exceeding 200/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.
7.	Biochemical Oxygen Demand (BOD) (3 days at 27°C)	3 mg/l	Restricted for bathing (aesthetic quality of water). Also prescribed by IS : 2296-1974.

TABLE 1.3
PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-III WATERS
[For Industrial Cooling, Recreation (non-contact) and Aesthetics]

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.5---8.5	The range is conducive for propagation of aquatic species and restoring natural system.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	To protect aquatic lives.
3.	Colour and Odour	No noticeable colour or offensive odour	None in such concentration that would impair usages specifically assigned to this class.
4.	Floating Matters	No visible, obnoxious floating debris, oil slick, scum.	As in (3) above.
5.	Fecal Coliform	500/100 ml(MPN)	Not exceeding 1000/100 ml in 20 percent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Turbidity	30 NTU	Reasonably clear water for Recreation Aesthetic appreciation and Industrial cooling purposes.
*7.	Dissolved Iron (as Fe)	0.5 mg/l or less	It is desirable to have the collective concentration dissolved Fe and Mn less or equal to 0.5 mg/l to avoid scaling effect.
*8.	Dissolved Manganese (as Mn)	0.5 mg/l or less	

* Standards included exclusively for Industrial Cooling purpose. Other parameters same.

TABLE 1.4

PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-IV WATERS

(For Harbour Waters)

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.0---9.0	To minimize corrosive and scaling effect.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	Considering bio-degradation of oil and inhibition to oxygen production thorough photosynthesis.
3.	Colour and Odour	No visible colour or offensive odour	None from reactive chemicals which may corrode paints/ metallic surfaces.
4.	Floating materials, Oil, grease and scum (including Petroleum products)	10 mg/l	Floating matter should be free from excessive living organisms which may clog or coat operative parts of marine vessels/equipment.
5.	Fecal Coliform	500/100 ml(MPN)	Not exceeding 1000/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.
6.	Biochemical Oxygen Demand (3 days at 27°C)	5mg/l	To maintain water relatively free from pollution caused by sewage and other decomposable wastes.

TABLE 1.5
PRIMARY WATER QUALITY CRITERIA FOR CLASS SW-V WATERS
(For Navigation and Controlled Waste Disposal)

S.No.	Parameter	Standards	Rationale/Remarks
1.	2.	3.	4.
1.	pH range	6.0---9.0	As specified by New England Interstate Water Pollution Control Commission.
2.	Dissolved Oxygen	3.0 mg/l or 40 per cent saturation value whichever is higher.	To protect aquatic lives.
3.	Colour and Odour	None in such concentrations that would impair any usages specifically assigned to this class.	As in (i) above.
4.	Sludge deposits, Solid refuse floating solids, oil grease and scum.	None except for such small amount that may result from discharge of appropriately treated sewage and or industrial waste effluents.	As in (i) above.
5.	Fecal Coliform	500/100 ml (MPN)	Not exceeding 1000/100 ml in 20 per cent of samples in the year and in 3 consecutive samples in monsoon months.

87. EMISSION REGULATIONS FOR RAYON INDUSTRY

- A. Existing Plants
 Estimation of Uncontrolled Emission Quantity (EQ) of CS₂ :
 For VSF,
 EQ = 125 kg of CS₂/t of fibre
 For VFY,
 EQ = 225 kg of CS₂/t of fibre

Stack Height (H) requirement, m	Remarks
11 Q 0.41-3Vs D/u	A minimum of 80% of total emission shall pass through stack. If the calculated stack height is less than 30m, a minimum of height 30 m shall be provided

Where Q ---CS₂ emission rate, kg/hr

VS---stack exit velocity, m/sec.

D ---diameter of stack, m.

U ----annual average wind speed at top of stack, m/sec.

Multiple Stacks

1. If there are more than one stack existing in the plant, the required height of all stacks shall be based on the maximum emission rate in any of the stacks. In other words, all the stacks carrying CS₂ emission shall be of same heights (based on the maximum emission rate).
2. Number of stacks shall not be increased from the existing number. However, the number of stacks may be reduced. The existing stacks may be rebuilt and if stacks are to be relocated condition 3 below applies.
3. Spacing among the stacks (x) at the minimum shall be 3.0 H (in m). If distance, x, between two stacks is less than 3.0 H (in m), emission shall be considered as single point source and height of both the stacks shall be calculated considering all emission is going through one stack.

B. Ambient Air Quality Monitoring

The industry shall install three air quality monitoring stations for CS₂ and H₂S measurements in consultation with State Pollution Control Board (SPCB) to ensure attainment of WHO recommended ambient air quality norms (CS₂ = 100 ug/m³ and H₂S = 150 ug/m³, 24 = hr. average).

¹[C. For new plants/expansion projects being commissioned on or after 1.6.1999

For new plants or expansion projects, the emission standards for existing plants covered in (a) above shall apply subject to compliance of the ambient air quality norms for CS₂ and H₂S indicated in (b) above. The new plants or expansion projects shall provide adequate space for undertaking retrofittings.

(Note : a and b above also apply to new plants or expansion projects.)]

²[88. EMISSION STANDARDS FOR NEW GENERATOR SETS (UPTO 19 KILOWATT) RUN ON PETROL AND KEROSENE WITH IMPLEMENTATION SCHEDULE.

The emission standards for portable generator sets run on petrol and kerosene shall be follows :-

A. From June 1,2000

Class	Displacement (CC)	CO(g/kw-hr)		HC+NO _x (g/kw-hr)	
		2-stroke engine	4-stroke engine	2-stroke engine	4-stroke engine
1.	≤65	603	623	166	65
2.	>65 ≤ 99	-	623	-	36
3.	>99 ≤225	-	623	-	19.3
4.	>225	-	623	-	16.1

¹ Substituted by Rule 2(i) of the Environment (Protection) Second Amendment Rules, 2006 notified by G.S.R.640(E), dated 16.10.2006.

² Sl. No. 88 and 89 and entries relating thereto inserted by the Environment (Protection) (Second Amendment) Rules, 1999 vide G.S.R. 682 (E), dated 5.10.1999.

B. From June 1,2001

Class	Displacement (CC)	CO(g/kw-hr)	HC+NOx(g/kw-hr)
1.	≤65	519	54
2.	>65 ≤99	519	30
3.	>99 ≤225	519	16.1
4.	>225	519	13.4

C. Test method shall be as specified in SAE J 1088. Measurement mode shall be D1 cycle specified under ISO 8178 (Weighting Factor of 0.3 for 100 % load, 0.5 for 75% load and 0.2 for 50% load).

D. Following organizations shall test and certify the generator sets :-

- ¹[(i) Automotive Research Association of India, Pune.
(ii) Indian Institute of Petroleum, Dehradun.
(iii) Indian Oil Corporation, R&D Centre, Faridabad.
(iv)]Vehicle Research Development Establishment, Ahmedbagar.
²[(v)]International Centre for Automotive Technology, Manesar (Haryana)]

These organizations shall submit the testing and certification details to the Central Pollution Control Board, annually. The Central Pollution Control Board may send the experts in the field to oversee the testing.

89 . NOISE STANDARDS FOR FIRE-CRACKERS

- A. (i) The manufacture, sale or of fire-crackers generating noise level exceeding 125 dB(AI) of 145dB(C) at 4 metres distance from the point of bursting shall be prohibited.
- (ii) For individual fire-cracker constituting the series (joined fire-crackers), the above mentioned limit be reduced by $5 \log_{10} (N)$ dB, where N= number of crackers joined together.

¹ Renumbered as (i), (ii), (iii) and (iv) respectively by Rule 2(a) of the Environment (Protection) Second Amendment Rules, 2008 notified by G.S.R.280(E), dated 11.4.2008.

² Inserted by Rule 2(a), *ibid*.

B. The broad requirements for measurement of noise from fire-crackers shall be-

- (i) The measurements shall be made on hard concrete surface of minimum 5 metre diameter or equivalent.
- (ii) The measurements shall be made in free field conditions i.e., there shall not be any reflecting surface upto 15 metre distance from the point of bursting.
- (iii) The measurement shall be made with an approved sound level metre.

C. The Department of Explosive shall ensure implementation of these standards.

¹[D. The fire crackers for the purpose of export shall be exempted from the sub-paragraphs A, B and C above subject to the compliance of the following conditions, namely :-

- (i) the manufacturer shall have an export order;
- (ii) the fire crackers shall conform to the level prescribed in the country to which it is exported;
- (iii) they shall have a different packing colour code, and
- (iv) there shall be a declaration on the box "not for sale in India" or "only for export in other countries".]

Note : dB(A1) : A-weighted impulse sound pressure level in decibel.

dB(C)_{pk} : C – weighted peak sound pressure level in decibel.]

Footnote : The Principal Rules were published in the Gazette of India vide Notification No.S.O.844 (E), dated the 19th November, 1986 and subsequently amended vide :

(1) S.O.82(E), dt. 16 th February, 1987	(13) S.O.136(E),dt.9 th February, 1990
(2) S.O.393 (E), dt 16 th April, 1987;	(14) G.S.R.742(E),dt.13 th August, 1990
(3) S.O.443(E),dt 18 th April, 1987	(15) S.O.23(E),dt.16 th January, 1991
(4) S.O.64(E),dt. 18 th January, 1988	(16) S.O.80(E),dt. 8 th February, 1991
(5) G.S.R.919(E),dt.12 th Sept., 1988	(17) S.O.114(E),dt.19 th February,1991
(6) S.O.8(E),dt. 3 rd January 1989	(18) G.S.R.85(E),dt.20 th February, 1991
(7) G.S.R.913(E),dt. 24 th October 1989	(19) G.S.R.93(E),dt 21 st February, 1991
(8) S.O.914(E),dt. 24 th October, 1989	(20) S.O.190(E),dt.18 th March, 1991
(9) G.S.R.931(E),dt.27 th October, 1989	(21) S.O.416(E),dt. 20 th June, 1991
(10) G.S.R.103(E),dt. 25 th Dec.,1989	(22) S.O.479(E), dt. 25 th July, 1991
(11) S.O.12(E),dt. 8 th January, 1999	(23) S.O.23(E),dt 9 th January, 1992
(12) G.S.R.54(E),dt.5 th February, 1990	

¹ Inserted sub paragraph D by Rule 2(ii) of the Environment (Protection) Second Amendment Rules, 2006 notified by G.S.R.640(E), dated 16.10.2006.

1¹90. STANDARDS FOR COAL MINES

1. AIR QUALITY STANDARDS

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generating sources shall not exceed the standards specified in the Tables I, II and III given below:

Dust Generating Sources

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway siding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

Table-I

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
I New Coal Mines (Coal Mines commenced operation after the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	360 µg/m ³ 500 µg/m ³	- High Volume Sampling (Average flow rate not less than 1.1 m ³ /min)
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	180 µg/m ³ 250 µg/m ³	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO ₂)	Annual Average * 24 hours **	80 µg/m ³ 120 µg/m ³	- Improved west and Gaeke method - Ultraviolet fluorescense
	Oxide of Nitrogen as NO ₂	Annual Average * 24 hours **	80 µg/m ³ 120 µg/m ³	- Jacob & Hochheiser Modified (Na-Arsenic) Method - Gas phase Chemiluminescence

¹ Serial No.90 to 93 and entries relating thereto were inserted by Rule 2(1) of the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

Table-II

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
II Existing coal fields/mines given below: Karanpura, Ramgarh, Giridih, Rajhara, Wardha, Nagpur, Silewara, Pench Kanhan, Patharkhera, Umrer, Korba, Chirimiri, Central India Coalfields, (including Baikunthpur, Bistrampur), Singrauli, Ib Valley, Talcher, Godavary Valley and any other	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	430 $\mu\text{g}/\text{m}^3$ 600 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average * 24 hours **	215 $\mu\text{g}/\text{m}^3$ 300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Improved west and Gaeke method 2. Ultraviolet fluorescence
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence

Table-III

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
III Coal mines located in the coal fields of <ul style="list-style-type: none"> • Jharia • Raniganj • Bokaro 	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 $\mu\text{g}/\text{m}^3$ 700 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average * 24 hours **	250 $\mu\text{g}/\text{m}^3$ 300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1.Improved west and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

Unauthorised construction shall not be taken as a reference of nearest residential or commercial place for monitoring.

In case any residential or commercial or industrial place falls within 500 metres of any dust generating sources, the National Ambient Air Quality Standards notified under schedule VII shall be applicable.

2. FREQUENCY OF SAMPLING

- Air quality monitoring at a frequency of once in a fortnight at the dust generating sources given in clause 1 shall be carried out.
- As a result of monthly monitoring, if it is found that the value of the pollutant is less than 50% of the specified standards for three consecutive months, then the sampling frequency may be shifted to two days in a quarter year (3 months).
- In case, the value has exceeded the specified standards, the air quality sampling shall be done twice a week. If the results of four consecutive weeks indicate that the concentration of pollutants is within the specified standards, then fortnight monitoring may be reverted to.

3. EFFLUENT STANDARDS

The standards for effluent discharge into sewer or stream or land, are given below:

pH	-	5.5 to 9.0
Chemical Oxygen Demand (COD)	-	250 mg/l
Total Suspended Solids (TSS)	-	100 mg/l
		200 mg/l (Land for irrigation)
Oil & Grease (O & G)	-	10 mg/l

(Monitoring frequency of these parameters shall be once in a fortnight)

Optional parameters : All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under clause 3. (Monitoring frequency shall be once in a year for the optional parameters)

4. NOISE LEVEL STANDARDS

	6.00 AM – 10.00 PM	10.00 PM – 6.00 AM
Noise level	Leq 75 dB(A)	Leq 70 dB(A)

(Monitoring frequency for noise level shall be once in a fortnight)
Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the local mines.

91. NOISE LIMIT FOR GENERATOR SETS RUN WITH PETROL OR KEROSENE

1. Noise limit

Noise limit for new generator sets run with petrol or kerosene shall be as given below:

	Noise Limit from	
	¹ [September 1, 2002]	² [September 1, 2003]
Sound Power level L _{wa}	90 dBA	86 dBA

2. Applicability

These rules shall apply to all new generator sets using petrol or kerosene as fuel, manufactured in or imported into India:

Provided that these rules shall not apply to:

- a) any genset manufactured or imported for the purpose of exports outside India, or
- b) the genset is intended for the purpose of sample only and not for sale in India.

3. Requirement of certification

Every manufacturer or importer (hereinafter referred to as "supplier") of genset (hereinafter referred to as "product") to which these rules apply must have a valid certificate of type approval for all the product models being manufactured or imported after the specified dates.

4. Verification of conformity of production (COP)

Every supplier shall subject its products to the verification for conformity of production, by certification body specified in clause 8, every year.

5. Sale of generator sets not complying with these rules

The sale of product model, not having valid type approval certificate, or not complying with the noise limits, as determined by the verification for conformity of production, shall be prohibited, in India.

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2001 published vide Notification No.G.S.R.628(E), dated 30.8.2001 from 'September 1, 2001 to September 1, 2002'.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2001 published vide Notification No.G.S.R.628(E), dated 30.8.2001 from 'September 1, 2002 to September 1, 2003'.

6. Requirement of conformance labelling

- 6(1) The supplier of the 'product' must affix a conformance label on the product meeting the following requirements:
- a) the label shall be durable and legible
 - b) the label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.
- 6(2) The conformance label must contain the following information:
- a) name & address of the supplier (if the address is described in the owners manual, it may not be included in the label)
 - b) statement that "this product conforms to the Environment (Protection) Rules, 1986
 - c) type approval certificate number and time phase (i.e. Sept 2001 or Sept 2002)

7. Nodal agency

- (1) The Central Pollution Control Board shall be the nodal agency for implementation of these rules.
- (2) In case of any dispute or difficulty in implementation of these rules the matter shall be referred to the nodal agency.
- (3) The nodal agency shall constitute a Standing Committee to advise it on all matters; including the disputed matters, related to the implementation of these rules.

8. Certification body

The following agencies are authorised for type approval and for verification of conformity of production.

- (1) Automative Research Association of India, Pune;
- (2) National Physical Laboratory, New Delhi;
- (3) Naval Science & Technology Laboratory, Visakhapatnam;
- (4) Fluid Control Research Institute, Palghat; and
- (5) National Aerospace Laboratory, Bangalore.

9. Compliance and testing procedure

The compliance and testing procedure shall be prepared and published by Central Pollution Control Board, with the help of the certification agencies.

92. STANDARDS FOR EFFLUENTS FROM TEXTILE INDUSTRY

Parameter	Concentration not to exceed, milligram per litre (mg/l), except pH
pH	5.5 – 9.0
Total suspended solids	100
Bio-chemical oxygen demand (BOD)	30
Chemical oxygen demand (COD)	250
Total residual chlorine	1
Oil and grease	10
Total chromium as Cr	2
Sulphide as S	2
Phenolic compounds as C ₆ H ₅ OH	1

Note:

1. Where the treated effluent is discharged into municipal sewer leading to terminal treatment plant, the BOD may be relaxed to 100 mg/l and COD to 400 mg/l
2. The quantity of effluent (litre per kilogram of product) shall not exceed 100, 250 and 80 in composite cotton textile industry, composite woollen textile industry and textile processing industry, respectively.

93. PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER

In a water body or its part, water is subjected to several types of uses. Depending on the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various types of users there is one use that demands highest level of water quality or purity and that is termed as "Designated Best Use" in that stretch of water body. Based on this, water quality requirements have been specified for different uses in terms of primary water quality criteria. The primary water quality criteria for bathing water are specified along with the rationale in Table 1.

Table 1
PRIMARY WATER QUALITY CRITERIA FOR BATHING WATER
(Water used for organised outdoor bathing)

CRITERIA		RATIONALE
1.Fecal Coliform MPN/100 ml:	500 (desirable) 2500 (Maximum Permissible)	To ensure low sewage contamination Fecal coliform and fecal streptococci are considered as they reflect the bacterial pathogenicity.
2.Fecal Streptococci MPN/100 ml:	100 (desirable) 500 (Maximum Permissible)	The desirable and permissible limits are suggested to allow for fluctuation in environmental conditions such as seasonal change, changes in flow conditions etc.
2. pH:	Between 6.5 – 8.5	The range provides protection to the skin and delicate organs like eyes, nose, ears etc. which are directly exposed during outdoor bathing.
3.Dissolved Oxygen:	5 mg/l or more	The minimum dissolved oxygen concentration of 5 mg/l ensures reasonable freedom from oxygen consuming organic pollution immediately upstream which is necessary for preventing production of anaerobic gases (obnoxious gases) from sediment.
4.Biochemical Oxygen Demand 3 day, 27 ⁰ C:	3 mg/l or less	The Biochemical Oxygen Demand of 3 mg/l or less of the water ensures reasonable freedom from oxygen demanding pollutants and prevent production of obnoxious gases.]

¹[94. NOISE LIMIT FOR GENERATOR SETS RUN WITH DIESEL

1. Noise limit for diesel generator sets (upto 1000 KVA) manufactured on or after the ²[1st January, 2005].

The maximum permissible sound pressure level for new diesel generator (DG) sets with rated capacity up to 1000 KVA, manufactured on or after the ²[1st January, 2005] shall be 75 dB(A) at 1 metre from the enclosure surface.

¹ Serial No.94 and 95 and entries relating thereto were inserted by Rule 2(c) of the Environment (Protection) Second Amendment Rules, 2002 notified vide Notification G.S.R.371(E), dated 17.5.2002.

² Substituted by Rule 2(a) (i) of the Environment (Protection) Second Amendment Rules, 2004 notified vide Notification No. G.S.R.448 (E), dated 12.7.2004 (Earlier it was 1st July 2003 as per the Environment (Protection) Second Amendment, Rules, 2002 notified vide G.S.R. 371 (E), dated 17.5.2002. Subsequently, substituted as 1st July, 2004 by the Environment (Protection) Amendment Rules, 2003 notified by G.S.R.520 (E), dated 1.7.2003 and later substituted as 1st January, 2005 by the Environment (Protection) Second Amendment Rules, 2004 notified by G.S.R. 448, dated 12.7.2004).

The diesel generator sets should be provided with integral acoustic enclosure at the manufacturing stage itself.

The implementation of noise limit for these diesel generator sets shall be regulated as given in paragraph 3 below.

2. Noise limit for DG sets not covered by paragraph 1.

Noise limits for diesel generator sets not covered by paragraph 1, shall be as follows:

- 2.1 Noise from DG set shall be controlled by providing an acoustic enclosure or by treating the room acoustically, at the users end.
- 2.2 The acoustic enclosure or acoustic treatment of the room shall be designed for minimum 25 dB (A) insertion loss or for meeting the ambient noise standards, whichever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under such circumstances the performance may be checked for noise reduction upto actual ambient noise level, preferably, in the night time). The measurement for Insertion Loss may be done at different points at 0.5 m from the acoustic enclosure/room, and then averaged.
- 2.3 The DG set shall be provided with proper exhaust muffler with insertion loss of minimum 25 dB(A).
- 2.4 These limits shall be regulated by the State Pollution Control Boards and the State Pollution Control Committees.
- 2.5. Guidelines for the manufacturers/users of Diesel Generator sets shall be as under:
 1. The manufacturer shall offer to the user a standard acoustic enclosure of 25 dB(A) insertion loss and also a suitable exhaust muffler with insertion loss of 25 dB(A).
 2. The user shall make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper siting and control measures.
 3. Installation of a DG set must be strictly in compliance with the recommendations of the DG set manufacturer.

4. A proper routine and preventive maintenance procedure for the DG set should be set and followed in consultation with the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

3. LIMITS OF NOISE FOR DG SETS (UPTO 1000 KVA) MANUFACTURED ON OR AFTER THE ¹[1ST JANUARY, 2005].

3.1 Applicability

1. These rules apply to DG sets upto 1000 KVA rated output, manufactured or imported in India, on or after ¹[1st January, 2005].
2. These rules shall not apply to:
 - (a) DG sets manufactured or imported for the purpose of exports outside India; and
 - (b) DG sets intended for the purpose of sample and not for sale in India.

3.2 Requirement of Certification

²[Every manufacturer or assembler or importer (hereinafter referred to as "manufacturer")] of DG set (hereinafter referred to as "product") to which these regulations apply must have valid certificates of Type Approval and also valid certificates of Conformity of Production for each year, for all the product models being ³[manufactured or assembled or imported] from ¹[1st January, 2005] with the noise limit specified in paragraph 1.

3.3 Sale, import or use of DG sets not complying with the rules prohibited

No person shall sell, import or use of a product model, which is not having a valid Type Approval certificate and Conformity of Production certificate.

¹ Substituted by Rule 2(a) (i) of the Environment (Protection) Second Amendment Rules, 2004 notified vide Notification No. G.S.R.448 (E), dated 12.7.2004 (Earlier it was 1st July 2003 as per the Environment (Protection) Second Amendment, Rules, 2002 notified vide G.S.R. 371 (E), dated 17.5.2002. Subsequently, substituted as 1st July, 2004 by the Environment (Protection) Amendment Rules, 2003 notified by G.S.R.520 (E), dated 1.7.2003 and later substituted as 1st January, 2005 by the Environment (Protection) Second Amendment Rules, 2004 notified by G.S.R. 448, dated 12.7.2004).

² Substituted by Rule 2(a) (i) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

³ Substituted by Rule 2(a) (ii) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

3.4 Requirement of Conformance Labelling

- (i) The ¹[manufacturer] of the 'product' must affix a conformance label on the product meeting the following requirements:
 - (a) The label shall be durable and legible.
 - (b) The label shall be affixed on a part necessary for normal operation of the 'product' and not normally requiring replacement during the 'product' life.
- (ii) The conformance label must contain the following information:
 - (a) Name and address of the ²[manufacturer] (if the address is described in the owner's manual, it may not be included in the label.)
 - (b) Statement "This product conforms to the Environment (Protection) Rules, 1986".
 - (c) Noise limit viz. 75 dB(A) at 1 m.
 - (d) Type approval certificate number.
 - (e) Date of manufacture of the product.

3.5 Nodal Agency

- (i) The Central Pollution Control Board shall be the nodal agency for implementation of these regulations.
- (ii) In case of any dispute or difficulty in implementation of these regulations, the matter shall be referred to the nodal agency.
- (iii) The nodal agency shall constitute a Committee to advise it on all matters; including the disputed matters, related to the implementation of these regulations.

3.6 Authorised agencies for certification

The following agencies are authorized to carry out such tests as they deem necessary for giving certificates for Type Approval and Conformity of Production testings of DG sets and to give such certificates:-

¹ Substituted by Rule 2(b) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

² Substituted *ibid.*

- (i) Automotive Research Association of India, Pune
- (ii) National Physical Laboratory, New Delhi
- (iii) Naval Science & Technology Laboratory, Visakhapatnam
- (iv) Fluid Control Research Institute, Palghat
- (v) National Aerospace Laboratory, Bangalore

3.7 Compliance and Testing Procedure

The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board, with the help of the certification agencies.

¹[4.0 Exemption from the provisions of paragraph 1 and 3, for the products (diesel generator sets upto 30 KVA) purchased by the Ministry of Defence, Govt. of India

The products manufactured in or imported into India till ²[30th April, 2007] for the purpose of supplying to the Ministry of Defence, shall be exempted from the regulations given in paragraph 1 to 3 above, subject to the following conditions, namely:-

- (i) The ³[manufacturer] shall manufacture or import the products only after getting purchase order from the ministry of Defence and shall maintain the record of receipts, production/import, dispatch, etc. for inspection by the Central Pollution Control Board.
- (ii) The special dispensation for noise norms shall be only for the mobile Defence vehicles which, with the present design/configuration, cannot carry the gensets with acoustic enclosures.
- (iii) Director, Ministry of Defence shall ensure and maintain the serial number of all gensets for the Army and he shall also direct the manufacturers of these gensets to emboss on the engine and the main body of the gensets, the words '**For the use of Army only**'.³
- (iv) The genset serial number shall be specially assigned by Ministry of Defence with the request for proposal and contract purchase order and this information shall be forwarded to the Central Pollution Control Board for inspection as and when required.

¹ Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2005 notified vide Notification G.S.R.315(E), dated 16.5.2005.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2006 notified by G.S.R.464(E), dated 7.8.2006.

³ Substituted by Rule 2(c) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

- (v) Registers shall be maintained at the manufacturers premises and in the Ministry of Defence to ensure that the number of gensets manufactured under special dispensation are not misused.
- (vi) The gensets procured under this dispensation shall be operated in the remote areas and not in the cities.
- (vii) This shall be a one time exemption during which the Army shall remodel its vehicles to contain the new gensets and also obtain the necessary Type Approval of the gensets.]

¹[5.0 Exemption from the provisions of paragraph 1 and 3 for sixteen Diesel Generator sets of 45 KVA purchased by the Ministry of Defence, Government of India

The 45 KVA DG sets manufactured in India for the purpose of their use in Mobile Decontamination System for use by the Ministry of Defence shall be exempted from the regulations given in paragraph 1 to 3 above subject to the following conditions, namely:-

- (i) The special dispensation for the noise norms shall be only for the DG sets to be used in Mobile Decontamination System (MDS) by Army which, with the present design/configuration cannot carry the gensets with acoustic enclosures.
- (ii) The Director, Ministry of Defence shall ensure and maintain the serial number for sixteen gensets and he shall also direct the manufacturers of these generator sets to emboss on the engine and main body of the gensets, the words "For the use of Army only in Mobile Decontamination System (MDS)".
- (iii) A register shall be maintained at the manufacturers premises and in the Ministry of Defence to ensure that only sixteen numbers of 45 KVA gensets are manufactured under special dispensation and are not misused elsewhere.]

²[6.0 Transportation of Diesel Generator Sets (above 250 KVA)

- (i) Diesel Generator set shall be transported after fulfilling the requirement of certification specified in paragraph 3.2 as a complete unit with acoustic enclosure, or dismantled, with relevant genset number specified on acoustic enclosure and silencer for reassembling of the site of its operation.

¹ Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2007 notified by G.S.R. 566(E), dated 29.8.2007.

² Inserted by Rule 2(d) of the Environment (Protection) Eighth Amendment Rules, 2008 notified by G.S.R.752 (E), dated 24.10.2008.

- (ii) Compliance with the noise norms shall be monitored after reassembling the D.G. set at the location of the installation by the concerned State Pollution Control Board or, as the case may be, the Union Territory Pollution Control Committee.]

95. EMISSION LIMITS FOR NEW DIESEL ENGINES (UP TO 800 KW) FOR GENERATOR SETS (GENSETS) APPLICATIONS

¹**1. Emission Limits**

The emission limits for new diesel engines upto 800 kW for gensets applications shall be as given in the Table below:

²**[TABLE**

Capacity of diesel engines	Date of implementation	Emission Limits (g/kw-hr) for				Smoke Limit (light absorption coefficient, m ⁻¹) (at full load)	Test Cycle	
		NO _x	HC	CO	PM		Torque %	Weighting Factor
Upto 19 kW	1.7.2005	9.2	1.3	3.5	0.3	0.7	100	0.05
							75	0.25
>19 kW upto 176 kW	1.1.2004	9.2	1.3	5.0	0.5	0.7	50	0.30
	1.7.2004	9.2	1.3	3.5	0.3	0.7	25	0.30
>176 kW upto 800 kW	1.11.2004	9.2	1.3	3.5	0.3	0.7	10	0.10

Explanation: This extension ³[for engines upto 19 kW] shall be applicable only to those suppliers:

¹ Substituted by Rule 2(b) (i) of the Environment (Protection) Amendment Rules, 2003 notified vide Notification G.S.R. 520 (E), dated 1.7.2003.

² Substituted by Rule 2(b) of the Environment (Protection) Second Amendment Rule, 2004 notified vide Notification G.S.R.448(E), dated 12.7.2004.

³ For the word 'this extension', the word 'this extension for engines upto 19 kW added by Corrigendum notified vide Notification G.S.R.520(E), dated 12.8.2004.

- (I) Who have obtained Type Approval Certificate for atleast one of their engine models in this range upto 30th June, 2004. ¹[or]
- (II) Who have submitted the bank guarantee and also contributed towards the study being carried out by the Union Institute of Science, Bangalore, for development of gentset diesel engines to comply with emission limits.]

Note I:- The diesel engine ²[suppliers] in the category of engines upto 19 kW, who are unable to meet the emission limits fixed for such diesel engines for genstes applications vide the notification of the Government of India, in the Ministry of Environment and Forests number G.S.R. 371 (E) dated 17th May, 2002 (herein referred to as the said notification), may avail the benefit of extension of time provided under this notification subject to the condition that every such ¹[supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Board or Committees where they are located to the effect that the specified emission limits shall be compiled with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee of Rs. 50,000 (Rupees Fifty Thousand) which in case of non compliance shall stand forfeited.

Note II:- The diesel engine ¹[supplier] in the category of engines more than 19 kW and upto 800 kW, who are unable to meet the emission limits fixed for such diesel engines for gensets applications vide the said notification may avail the benefit of extension of time provided under this notification subject to the condition that every such ¹[supplier] shall submit (i) an affidavit to the Central Pollution Control Board or the respective State Pollution Control Board or Committees where they are located to the effect that the specified emission limits shall be compiled with by them as per the extended date of implementation given hereinabove for that category of engines without seeking further extension of time and (ii) a bank guarantee of Rs 10,00,000/- (Rupees ten lakhs) per parent engine model which in case of non compliance shall stand forfeited.

Note III:- The diesel engine ¹[supplier] in the category of engines of more than 176 kW and upto 800 kW shall, in addition to the conditions specified in Note II above, also give an affidavit to the Central Pollution Control Board or to the respective State Pollution Control Boards or Committees where they are located to the effect that they shall develop either individual or a common test facility and get the same approved by the certification agencies mentioned in paragraph 8 of serial number 95 of Schedule I.]

¹ The word 'or' added by Corrigendum notified vide Notification G.S.R.520(E), dated 12.8.2004 .

² For the word 'manufacturers' or 'manufacturer' , the word 'supplier' substituted by Rule 2 of the Environment (Protection) Amendment Rules, 2004 notified vide Notification G.S.R.92(E), dated 29.1.2004.

¹[**Explanation:** - For the purposes of this paragraph, 'supplier' means manufacturer of new diesel engines for genset applications in India and importer of such diesel engines for gensets applications and diesel gensets imported into India.]

2. Applicability

These rules shall apply to all new diesel engines for genset applications (herein after referred to as 'engine') manufactured in India and all diesel engines for genset applications and diesel gensets (herein after referred to as 'product'), imported into India, after the effective date:

Provided that these rules shall not apply to:

- (i) any engine manufactured or engine or product imported for the purpose of export outside India, or;
- (ii) any engine or product intended for the purpose of sample only and not for sale in India.

3. Requirement of certification

Every manufacturer of engine or every importer of engine or product must have valid certificates of Type Approval and certificates of Conformity of Production for each year, for all engine models being manufactured or for all engine or product models being imported, after the effective date with the emission limit as specified in paragraph 1.

4. Sale, Import or use of engine or product not complying with these rules

No person shall sell, import or use of an engine or a product which is not having a valid Type Approval certificate and Conformity of Production certificate as per paragraph 3.

5. Requirement of conformance labelling

- (i) All the engines (individually or as part of the product) shall be clearly engraved 'Genset Engine' on the cylinder block.
- (ii) The engine or the product must be affixed with a conformance label meeting the following requirements:-

¹ Inserted by Rule 2 (ii) of the Environment (Protection) Amendment Rules, 2004 notified vide Notification G.S.R.92(E), dated 29.1.2004.

- (a) the label shall be durable and legible;
- (b) the label shall be affixed on a part necessary for normal operation of the engine or the product and not normally requiring replacement during the life of the engine or the product.
- (iii) The conformance label must contain the following information:
 - (a) name and address of the engine manufacturer or the engine or product importer (if the address is given in the owner's manual, it may not be included in the label);
 - (b) statement that 'this engine or product conforms to the Environment (protection) Rules, 1986';
 - (c) type approval certificate number;
 - (d) date of manufacture of engine or in case of import, the date of import of the engine or the product.

6. Compliance with BIS specifications

All engines up to ¹[19 kw] (individually or as part of the product) shall carry ISI mark and meet relevant BIS specifications (IS 10001).

7. Nodal agency

- (i) The Central Pollution Control Board shall be the, nodal agency for implementation of these rules.
- (ii) In case of any dispute or difficulty in implementation of these rules the matter shall be referred to the nodal agency.
- (iii) The nodal agency shall constitute a Committee to advise it on all matters, including the disputed matters, related to the implementation of these rules.

8. Authorized agencies for certification

The following agencies are authorized to carry out such tests as they deem necessary for giving certificates of Type Approval and Conformity of Production tests for Diesel engines and to give such certificates:-

- (i) Automotive Research Association of India, Pune.
- (ii) Vehicle Research and Development Establishment, Ahmednagar.

¹ Substituted by Rule 2(c) of the Environment (Protection) Amendment Rules, 2003 notified vide Notification G.S.R.520(E), dated 1.7.2003.

¹[(iii) International Centre for Automotive Technology, Manesar (Haryana)]

9. Compliance and testing procedure

The compliance and testing procedure shall be prepared and published by the Central Pollution Control Board with the help of the Certification Agencies.

10. Fuel Specification

The specification of commercial fuel applicable for -diesel gensets shall be the same as applicable for commercial HSD(High Speed Diesel) applicable for diesel vehicles in the area, from time to time].

²96. EMISSION STANDARDS FOR DIESEL ENGINES (ENGINE RATING MORE THAN 0.8 MW (800 KW) FOR POWER PLANT, GENERATOR SET APPLICATIONS AND OTHER REQUIREMENTS

TABLE

Parameter	Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
			Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1.7.2005
NO _x (as NO ₂) (At 15% O ₂ , dry basis, in ppmv)	A	Up to 75 MW	1100	970	710
	B	Up to 150 MW			
	A	More than 75 MW	1100	710	360
	B	More than 150 MW			
NMHC (as C) (at 15% O ₂), mg/Nm ³	Both A and B		150	100	
PM (at 15% O ₂), mg/Nm ³	Diesel Fuels- HSD & LDO	Both A and B	75	75	
	Furnace Oils- LSHS & FO	Both A and B	150	100	
CO (at 15% O ₂), mg/Nm ³	Both A and B		150	150	

¹ Inserted by Rule 2(b) of the Environment (Protection) Second Amendment Rules, 2008 notified by G.S.R.280(E), dated 11.4.2008.

² Serial No.96 and entries relating thereto inserted by Rule 2 of the Environment (Protection) Third Amendment Rules, 2002 notified vide Notification G.S.R.489(E), dated 9.7.2002.

Parameter	Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
			Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1.7.2005
Sulphur content in fuel	A		<2%		
	B		<4%		
Fuel specification	For A only	Up to 5 MW	Only Diesel Fuels (HSD, LDO) shall be used.		
Stack height (for generator sets commissioned after 1.7.2003)	Stack height shall be maximum of the following, in metre: (i) $14 Q^{0.3}$, Q=Total SO ₂ emission from the plant in kg/hr. (ii) Minimum 6m.above the building where generator set is installed. (iii) 30m.				

Note:**1. Acronyms used:**

MW	: Mega (10 ⁶) Watt	FO	: Furnace Oil
NO _x	: Oxides of Nitrogen	HSD	: High Speed Diesel
NO ₂	: Nitrogen Dioxide	LDO	: Light Diesel Oil
O ₂	: Oxygen	LSHS	: Low Sulphur Heavy Stock
NMHC	: Non-Methane Hydrocarbon	kPa	: Kilo Pascal
C	: Carbon	mm	: Milli (10 ⁻³) metre
PM	: Particulate Matter	kg/hr	: Kilo (10 ³) gram per hour
CO	: Carbon Monoxide	mg/Nm ³	: Milli (10 ⁻³)gram per Normal metre cubic
SO ₂	: Sulphur Dioxide		
ppmv	: Part per million(10 ⁶) by volume		

2. Area categories A and B are defined as follows:

Category A: Areas within the municipal limits of towns/cities having population more than 10 lakhs and also up to 5 km beyond the municipal limits of such towns/cities.

Category B: Areas not covered by category A.

3. The standards shall be regulated by the State Pollution Control Boards or Pollution Control Committees, as the case may be.

4. Individual units with engine ratings less than or equal to 800 KW are not covered by this notification.
5. Only following liquid fuels viz. High Speed Diesel, Light Diesel Oil, Low Sulphur Heavy Stock and Furnace Oil or liquid fuels with equivalent specifications shall be used in these power plants and generator sets.
6. For expansion project, stack height of new generator sets shall be as per total Sulphur Dioxide emission (including existing as well as additional load).
7. For multi engine plants, fuels shall be grouped in cluster to get better plume rise and dispersion. Provision for any future expansion should be made in planning stage itself.
8. Particulate matter, Non-Methane Hydrocarbon and Carbon Monoxide results are to be normalized to 25⁰C, 1.01Kilo Pascal (760 mm of mercury) pressure and zero percent moisture (dry basis).
9. Measurement shall be performed at steady load conditions of more than 85% of the rated load.
10. Continuous monitoring of Oxides of Nitrogen shall be done by the plants whose total engine capacity is more than 50 Mega Watt. However, minimum once in six month monitoring for other parameters shall be adopted by the plants.
11. Following methods may be adopted for the measurement of emission parameters:-

Sl No.	Emission Parameters	Measurement Methods
1.	Particulates	Gravimetric
2.	SO ₂	Barium Perchlorate – Thorin indicator method
3.	NO _x	Chemiluminescence, Non Dispersive Infra Red, Non Dispersive Ultra-Violet (for continuous measurement), Phenol disulphonic method
4.	CO	Non Dispersive Infra Red
5.	O ₂	Paramagnetic, Electrochemical Sensor
6.	NMHC	Gas Chromatograph-Flame Ionisation Detector

¹[97. BOILERS USING AGRICULTURE WASTE AS FUEL

Step Grate Particulate matter	250 mg / Nm ³
Horse Shoe/ Pulsating Particulate matter	500 mg / Nm ³ (12% of CO ₂)
Spreader stroker Particulate matter	500 mg / Nm ³ (12% of CO ₂);

98. GUIDELINES FOR POLLUTION CONTROL IN GINNING MILLSMeasures for Noise Control

- (i) Creating separate soundproof enclosures for the fans within the ginning area.
- (ii) Keeping the fans outside the ginning room in separate enclosures.
- (iii) Roller gins may be covered by sound proof enclosures and use of pneumatic feeding of raw cotton while suction of ginned cotton is introduced to considerably reduce the dust pollution level.

Measures for Dust Control

- (i) The fugitive emission can be largely controlled by employing mechanical or pneumatic handling of raw material and ginned material through covered ducts and providing overhead hoods connected to exhaust through ducts and filters; use of lifting platforms for bale formers.
- (ii) The overhead hoods with exhaust arrangement can be provided at:
 - (a) The saw-ginning machine where manual handling to maintain proper feeding in the machine.
 - (b) At the feeding point of the roller ginning machine when manual feeding is carried out.
 - (c) At the collection points of ginned cotton from saw ginning condenser]

¹ Entry 97 and 98 added by Rule 2 (iv) of the Environment (Protection) Third Amendment Rules, 2005 notified vide Notification G.S.R. 546(E), dated 30.8.2005.

¹[99. SPONGE IRON PLANT (ROTARY KILN)

A. Emission Standards*			
	Particulate matter	Fuel Type	Limiting value for concentration
		Coal	100 mg/Nm ³
		Gas	50 mg/Nm ³
	Carbon Monoxide (Vol/Vol.)	Coal/gas	1%
	Stack Height** (minimum)	Coal/gas	30.0m
Note:-			
* Emission shall be normalized at 12% CO ₂ in stack emission,			
** Stack height shall be calculated as $H=14.0 Q^{0.3}$ where Q is emission of Sulphur Dioxide (SO ₂) in kg/hr. i.e.			
	SO ₂ (kg/hr)	Height (Meter)	
	Upto 12.68	30	
	12.69-33.08	40	
	33.09-69.06	50	
	69.07-127.80	60	
	127.81-213.63	70	
(De-dusting unit)	Particulate matter (mg/m ³)	Existing unit	New Unit
		100	50
Note:-			
	(i)	Stack attached to de-dusting unit 1 have minimum height of 30.0 metre.	
	(ii)	If, De-dusting unit is connected to After Burner Chamber (ABC), emission shall be emitted through common stack (minimum height 30.0 metre) having separate arrangements for emission monitoring for de-dusting unit.	

¹ Inserted by Rule 2 (i) of the Environment (Protection) Fourth Amendment Rules, 2008 notified by G.S.R.414(E), dated 30.5.2008.

(Rotary Kiln/De-dusting unit)	B. Fugitive Emission Standards	
	Existing Unit	New Unit
Particulate matter ($\mu\text{g}/\text{m}^3$)	3000	2000
Note:-		
(i)	the existing industry shall comply with a standard of 2000 ($\mu\text{g}/\text{m}^3$) after one year from the date of notification.	
(ii)	Fugitive emission shall be monitored at a distance 10.0 metre from the source of fugitive emission as per following:	
Area	Monitoring location	
Raw material handling area	Wagon tippler, Screen area, Transfer points, Stock bin area	
Crusher area	Crushing plant, vibrating screen, transfer points	
Raw material feed area	Feeder area, Mixing area, Transfer Points	
Cooler discharge area	Over size discharge area, Transfer points	
Product processing area	Intermediate stock bin area, Screening plant, Magnetic separation unit, Transfer points, Over size discharge area, Product separation area, Bagging area	
Other areas	As specified by State Pollution Control Board/ Pollution Control Committees.	
C. Effluent Standards		
pH	5.5-9.0	
Total suspended solids	100mg/l	
Oil & Grease	10 mg/l	
Chemical oxygen demand	250mg/l	

Note:-

- (i) All effort shall be made to reuse and re-circulate the water and to maintain 'Zero discharge'.
- (ii) Stormwater drain shall be provided within the premises of the industry so as to avoid mixing with effluent].

¹[100. COMMON HAZARDOUS WASTE INCINERATOR

A. Emission		
	Limiting concentration in mg/Nm ³ unless stated	Sampling Duration in (minutes) unless stated
Particulate Matter	50	30
HCL	50	30
SO ₂	200	30
CO	100	30
	50	24 hours
Total Organic Carbon	20	30
HF	4	30
NO _x (NO and NO ₂ , expressed as NO ₂)	400	30
Total dioxins and furans	0.1 ngETQ/Nm ³	8 hours
Cd+Th+their compounds	0.05	2 hours
Hg and its compounds	0.05	2 hours
Sb+As+Pb+Co+Cr+Cu+Mn+Ni+V+their compounds	0.50	2 hours

¹ Inserted by Rule 2 of the Environment (Protection) Fifth Amendment Rules, 2008 notified by G.S.R.481(E), dated 26.6.2008.

Notes:

- i. All monitored values shall be corrected to 11 % oxygen on dry basis.
- ii. The CO₂ concentration in tail gas shall not be less than 7%.
- iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in twin chamber incinerators shall be designed to achieve a minimum temperature of 950°C in secondary combustion chamber and with a gas residence time in secondary combustion chamber not less than 2 (two) seconds.
- iv. In case halogenated organic waste is more than 1% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than 2 (two seconds).
- v. Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the slag and bottom ashes less than 3%, or their loss on ignition is less than 5% of the dry weight].

¹[101. INCINERATOR FOR PESTICIDE INDUSTRY

A. EMISSION				
		Limiting concentration in mg/Nm ³ unless stated	Sampling Duration in (minutes) unless stated	
	Particulate Matter	50	30	
	HCL	50	30	
	SO ₂	200	30	
	CO	100	Daily average	
	Total Organic Carbon	20	30	
	Total Dioxins and Furans*	0.2	8 hours	Existing Incinerator
		0.1	8 hours	New Incinerator
	Sb+As+Pb+Cr +Co+Cu+Mn+Ni +V+ their compounds	1.5	2 hours	

* The existing plant shall comply with norms for dioxins and furans as 0.1 ng/TEQ/Nm³ within a period of five years from the date of publication of this notification.

Notes:

- i. All monitored values shall be corrected to 11% oxygen on dry basis.
- ii The CO₂ concentration in tail gas shall not be less than 7%.
- iii. In case, halogenated organic waste is less than 1% by weight in input waste, all the facilities in single chamber incinerators shall be designed so as to achieve a minimum temperature of 1100°C, in the incinerator. For fluidized bed technology Incinerator, temperature shall be maintained at 950°C.

¹ Inserted by Rule 2 of the Environment (Protection) Seventh Amendment Rules, 2008 notified by G.S.R.600(E), dated 18.8.2008.

- iv. In case halogenated organic waste in more than 1% by weight in input waste, waste shall be incinerated only in twin chamber incinerators and all the facilities shall be designed to achieve a minimum temperature of 1100°C in secondary combustion chamber with a gas residence time in secondary combustion chamber not less than two seconds.
- v. Scrubber meant for scrubbing emissions shall not be less used as quencher.
- vi. Incineration plants shall be operated (combustion chambers) with such temperature, retention time and turbulence, as to achieve Total Organic Carbon (TOC) content in the slag and bottom ashes less than 3%, and their loss on ignition is less than 5% of the dry weight.
- vii. The incinerators shall have a chimney of atleast thirty metre height.

B. Wastewater

- i. Wastewater (scrubber water and floor washings) shall be discharged into receiving water conforming to the norms prescribed under Schedule VI: General Standards for Discharge of Environment Pollutions (Part A : Effluents) notified under the Environment (Protection) Rules, 1986.
- ii. The built up in Total Dissolved Solids (TDS) in wastewater of floor washings shall not exceed 1000 mg/l over and above the TDS of raw water used.

¹[102. REFRACTORY INDUSTRY

A. Emission Standards

(i) Down Draft Kiln (Fuel:Coal)

	Category *	limiting concentration (mg/Nm ³)
Particulate matter	Small/ medium/large	350
		Minimum (metres)

¹ Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2009 notified by G.S.R.97(E), dated 18.2.2009.

Stack height	Small	15
	Medium	18
	Large	21

(ii) Other than Down Draft Kiln (Fuel:Coal)

	Category *	Limiting concentration (mg/Nm ³)
Particulate matter	Small	300
	Medium	200
	Large	150
Stack height		Minimum (metres)
	Small	15
	Medium	18
	Large	21

(iii) Box, Tunnel Down Draft Kiln, etc. (Fuel:Natural Gas/Producer Gas/LPG or a combination of Fuels/Furnance Oil as Secondary Fuel)

	Category*	Limiting concentration (mg/Nm ³)
Particulate matter	Small	200
	Medium/ Large	150
Stack height		Minimum (metres)
	Small	12
	Medium	15
	Large	18
	Category*	Production (tpa)
	small kiln	<15,000
	Medium kiln	15,001-50,000
	Large kiln	above 50,000

(iv) Rotary Kiln (Fuel: Furnance Oil)

	Category**	Limiting concentration (mg/Nm ³)
Particulate matter	Small	200
	Medium/ Large	150
		Minimum (metres)
Stack height	Small	35
	Medium	45
	Large	60
	Category**	Production (tpd)
	Small/rotary kiln	<50
	medium rotary kiln	51-100
	large rotary kiln	Above 100

Note:-

- (i) All values of particulate matter are to be corrected at 6 per cent Carbon Dioxide.
- (ii) Fugitive emission shall not exceed 10 mg/m³ from any process or plant.
- (iii) Each stack shall be at least 2 metre above the top most point of the building, shed or plant in the industry excluding bucket elevator, mill house and vibrating screen.
- (iv) If more than one kiln is connected to single stack, sum of the production capacity of all the kilns would be considered for determining the capacity of the kiln and accordingly depending upon the total capacity, emission standard and stack height would be implemented.
- (v) Monitoring of stack shall be carried out at the time of charging and after the completion of charging and average of these two results shall be considered as emission level.

B. EFFLUENT STANDARDS

	Limiting value for concentration (mg/l except for pH)		
	Inland Surface Water	Public Sewer	Land for Irrigation
pH	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
Oil and Grease	10	20	10
BOD BOD _{3 days, 27° C}	30	250	100
COD	250	-	-
Suspended Solids	100	600	200
Phenols	1.0	5.0	-
Cyanide as CN	0.2	2.0	0.2
Cr(Hexavalent)	0.1	2.0	1.0
Cr(Total)	2.0	2.0	2.0]

¹**[103 CASHEW SEED PROCESSING INDUSTRY**

A. EMISSION STANDARDS

	Process	Limiting concentration in mg/Nm ³
	Roasting	250
Particulate Matter	Cooking (roasted shell/deoiled cake as fuel)	150
	Borma Oven Heater (roasted shell/deoiled cake as fuel)	150

¹ Inserted by Rule 2 of the Environment (Protection) Amendment Rules, 2010 notified vide GSR 1(E), dated 1.1.2010.

		Minimum (metres)
Stack height	Roasting	20
	Cooking	15
	Borma Oven	15
	Heater	

Note:

- All values of particulate matter shall be corrected at 4% Carbon Dioxide.
- Each stack shall be at least 2 metres above the top most point of the building, shed or plant in the industry.
- The emissions from 'Dog-house' shall be channelized alongwith Roasting-drum emissions and shall pass through wet scrubber.
- Bio-gasifier shall be installed if roasted shells are used as fuel in the unit.

B-EFFLUENT STANDARDS

Limiting concentration in mg/l, except for pH

	Inland surface Water	Public sewer	Land for Irrigation
pH	6.5 to 8.5	6.5 to 8.5	6.5 to 8.5
Oil & Grease	10	20	10
BOD _{3days, 27oC}	30	250	100
Suspended Solids	100	600	200
Phenols	1.0	5.0	-]

¹[104 PLASTER OF PARIS INDUSTRY

A. Stack Emission Standards
Stack Production Capacity upto 30 tonnes per day (tpd)

	Source	Limiting concentration in mg/Nm ³
Particulate Matter	Crusher	500
	Calciner	500
	Furnace/Grinder	150
Production capacity above 30 tpd		
Particulate matter	Crusher/ Calciner/ Furnace Grinder	150

Notes:

1. The units having production capacity up to 30 tpd shall channelize their emission through a stack or chimney of height at least ten metres above ground level or three metres above the top of shed or building of the industry, whichever is more.
2. The units having production capacity above 30 tpd shall channelize their emission through a stack or chimney of height at least thirty metres above the ground level or three metres above the top of shed or building whichever is more.

B. FUGITIVE EMISSION STANDARDS ($\mu\text{G}/\text{M}^3$)

Particulate Matter 2,000

Note: Fugitive emission shall be monitored at a distance of 10 \pm 1 metres from the source, irrespective of production capacity.]

¹ Inserted by Rule 2 of the Environment (Protection) Second Amendment Rules, 2010 notified vide G.S.R..61(E), dated 5.2.2010.

(F. No. Q-15017/95/2000-CPW)

(R. K. VAISH)
JOINT SECRETARY TO THE GOVT. OF INDIA

Note :

The principal rules were published in the Gazette of India vide number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide S.O. 433(E), dated the 18th April, 1987, S.O.64(E) dated the 18th January, 1988, S.O. 3(E) dated 3rd January, 1989, S.O. 190(E), dated the 15th March, 1989, G.S.R. 913(E), dated the 24th October, 1989, S.O. 12(E), dated the 8th January, 1990, G.S.R.742(E), dated the 30th August, 1990, S.O. 23(E), dated the 16th January, 1991, G.S.R. No.93(E), dated the 21st February, 1991, G.S.R. 95(E), dated the 12th February, 1992, G.S.R. 329(E), dated the 13th March, 1992, G.S.R. 475(E), dated the 5th May, 1992, G.S.R. 797 (E), dated the 1st October, 1992, G.S.R. 386(E), dated the 28th April, 1993, G.S.R. 422(E), dated the 19th May, 1993, G.S.R. 801(E), dated the 31st December, 1993, G.S.R. 176(E), dated the 3rd April, 1996, G.S.R. 631(E), dated the 31st October, 1997, G.S.R. 504(E), dated the 20th August, 1998, G.S.R.7 (E), dated the 2nd January, 1999, G.S.R. 682(E), dated the 5th October, 1999, G.S.R.742(E), dated the 25th September, 2000, G.S.R. 72(E), dated the 6th February, 2001, G.S.R. 54(E), dated the 22nd January, 2002, G.S.R. 371(E), dated the 17th May, 2002, G.S.R. 489(E), dated the 9th July, 2002, S.O.1088(E), dated the 11th October, 2002, G.S.R. 849(E), dated the 30th December, 2002, G.S.R. 520(E), dated the 1st July, 2003, G.S.R. 92(E), dated the 29th January, 2004, G.S.R.448(E), dated the 12th July, 2005, Corrigenda G.S.R. 520(E), dated the 12th August, 2004, G.S.R.272(E), dated the 5th May, 2005, G.S.R.315(E), dated the 16th May, 2005 and G.S.R.546(E), dated 30th August, 2005, G.S.R.46(E), dated the 3rd February, 2006, G.S.R.464(E), dated the 7th August, 2006, G.S.R.640(E), dated the 16th October, 2006, G.S.R.566(E), dated the 29th August, 2007, G.S.R.704(E), dated the 12th November, 2007, G.S.R.186(E), dated the 18th March, 2008, G.S.R.280(E), dated the 11th April, 2008, G.S.R.344(E), dated the 7th May 2008, G.S.R.414(E), dated the 30th May, 2008, G.S.R.481(E), dated the 26th June, 2008, G.S.R.579(E), dated the 6th August, 2008, G.S.R.600(E), dated the 18th August, 2008, G.S.R.752(E), dated the 24th October, 2008, G.S.R.97(E), dated the 18th February, 2009, G.S.R.149(E), dated the 4th March, 2009, G.S.R.512(E), dated the 9th July, 2009, G.S.R.543(E), dated the 22nd July, 2009, G.S.R.595(E), dated 21st August, 2009, G.S.R.794(E), dated the 4th November, 2009, G.S.R.826(E), dated the 16th November, 2009, G.S.R.1(E), dated 1st January, 2010 and G.S.R.61(E), dated the 5th February, 2010.

APPENDIX A

FORM I

(See rule 7)

NOTICE OF INTENTION TO HAVE SAMPLE ANALYSED

To

.....
.....

Take this notice that it is intended to have analysed the same of
Which has been taken today, the day of19.....
from(Name and
designation of the person who takes the sample)

*Specify the place where the sample is taken.

(SEAL)

DATE

FORM II

(See rule 8)

MEMORANDUM TO GOVERNMENT ANALYST

From

.....
.....

To

The Government Analyst

.....
.....

The portion of sample described below is sent herewith for analysis under rule 6 of the Environment (Protection) Rules, 1986.

The portion of the sample has been marked by me with the following mark :

Details of the portion of sample taken

Name and designation of person who sends sample

Date.....

(SEAL)

FORM III
(See Rule 8)

REPORT BY GOVERNMENT ANALYST

Report No.
Date

I hereby certify that I
Government Analyst duly appointed under section 13 of the Environment (Protection)
Act, 1986 received on the day of 19.....
from
1
a sample of for analysis.

The sample was in a condition fit for analysis as reported below :

I further certify that I have analysed the aforementioned sample on
..... and declare the result of the analysis to be as follows :

2.....
.....

The Condition of seals, fastening of sample on receipt was as follows :

.....
.....

Signed thisday of
19.....

Signature

Address.....
.....
.....
.....

(Government Analyst)

¹ Here write the name of the officer/authority from whom sample was obtained.
² Here write full details of analysis and refer to method of analysis.

FORM IV
(See rule 11)

FORM OF NOTICE

By registered post
acknowledgement due

From (1)

Shri
.....
.....

To

.....
.....
.....

Notice under section 19(b) of Environment (Protection) Act, 1986

Whereas an offence under the Environment (Protection) Act, 1986 has been committed/ is being committed by

(2) I/we hereby give notice of 60 days under section 19(b) of the Environment (Protection) Act, 1986 of my/our intention to file a complaint in the court against(2) for violation of section of the Environment (Protection) Act, 1986.

In support of my/our notice, I am /we are enclosed the following documents(3) as evidence of proof of the Environment (Protection) Act, 1986.

Signature(s)

Place.....

Dated

Explanation :

(1) In case the notice is given in the name of a Company, documentary evidence authorising the persons to sign the notice on behalf of the company shall be enclosed to this notice.

Company for this purpose means a company defined in explanation to sub-rule(6) of rule 4.

(2) Here give the name and address of the alleged offender. In case of a manufacturing/processing/operation unit, indicate the name/location/nature of activity etc.

(3) Documentary evidence shall include photograph/ technical reports/ health report of the area, etc. for enabling enquiry into the alleged violation/ offence.

[No. 1(18)/86-PL]
T.N. SESHAN, Secy.

¹[FORM-V]

(See rule 14)

Environmental statement for the financial year ending the 31st March

PART-A

- (i) Name and address of the owner/occupier of the industry operation or process
- (ii) Industry category Primary – (STC Code) Secondary – (SIC Code)
- (iii) Production capacity – Units -----
- (iv) Year of Establishment
- (v) Date of last environmental statement submitted

PART-B

Water and Raw Material Consumption

(i) Water consumption m³/d

Process

Cooling

Domestic

Name of Products	Process water consumption per unit of product output.	
	During the previous financial year	During the current financial year
	(1)	(2)

- (1)
- (2)
- (3)

¹ Substituted by Rule 2(b) of Environment (Protection) Amendment Rules, 1993 notified vide G.S.R. 386 (E) dated 22.04.1993.

(ii) Raw material consumption

*Name of raw materials	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

(1) Pollutants	Quality of Pollutants discharged (mass/day)	Concentrations of pollutants discharges (Mass/volume)	Percentage of variation from prescribed standards with reasons.
(a) Water			
(b) Air			

PART-D

HAZARDOUS WASTES

(As specified under ¹[Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008])

Hazardous Wastes	Total Quantity (Kg.)	
	During the previous financial year	During the current financial year

- (a) From process
- (b) From pollution control facilities

¹ The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 notified vide S.O.2265(E), dated 24.9.2008.

PART-E
Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process		
(b) From pollution control facilities		
(c) (1) Quantity recycled or re-utilized within the unit.		
(2) Sold		
(3) Disposed		

- (a) From process
- (b) From pollution control facilities
- (c) (1) Quantity recycled or re-utilized within the unit.
- (2) Sold
- (3) Disposed

PART-F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

PART-G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

PART-H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution.

PART-I

Any other particulars for improving the quality of the environment.

[F.No. Q-15015/1/90-CPA]
MUKUL SANWAL, Jt. Secy.

¹[SCHEDULE II]

(See rule 3)

General standards for discharge of effluents

Sl. No.	Parameter	Standards			
		Inland surface water	Public sewers	Land for irrigation	Marine coastal areas
		(a)	(b)	(c)	(d)
1.	Colour and odour	See Note 1	-	See Note 1	See Note 1
2.	Suspended solids, mg/l, Max	100	600	200	(a) For process waste water-100 (b) For cooling water effluent-10 per cent above total suspended matter of influent cooling water.
3.	Particle size of suspended solids	Shall pass 850 micron IS Sieve			(a) Floatable solids, Max 3 mm (b) Settleable solids Max 850 microns.
4.	Dissolved Solids (inorganic), mg/a, max.	2100	2100	2100	
5.	PH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature 0 °C, Max	Shall not exceed 40 in any section of the stream within 15 meters down stream from the effluent outlet	45 at the point of discharge	-	45 at the point of discharge.
7.	Oil and grease, mg/l max.	10	20	10	20
8.	Total residual chlorine, mg/l, Max.	1.0	-	-	1.0
9.	Ammonical nitrogen (as N), mg/l, Max.	50	50	-	50
10.	Total kjeldahl nitrogen (as N), mg/l, Max.	100	-	-	100
11.	Free Ammonia (as NH ₃), Mg/l, Max.	5.0	-	-	5.0
12.	Biochemical Oxygen Demand ² [3 days at 27°C] Max.	30	350	100	100

¹ Schedule II inserted vide G.S.R. 919(E) dt. 12.9.88, published in the Gazette no. 488 dt. 12.9.88 and omitted by G.S.R.801(E), dated 31.12.1993.

² Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

13.	Chemical Oxygen Demand, mg/l Max.	250	-	-	250
14.	Arsenic (as As), mg/l, Max.	0.2	0.2	0.2	0.2
15.	Mercury (As Hg), Mg/l Max.	0.01	0.01	-	0.01
16.	Lead (as Pb), Mg/l, Max.	0.1	1.0	-	1.0
17.	Cadmium (as Cd) Mg/l,Max.	2.0	1.0	-	2.0
18.	Hexavalent chromium (as Cr+6) mg/l, Max.	0.1	2.0	-	1.0
19.	Total chromium (as Cr), mg/l, Max.	2.0	2.0	-	2.0
20.	Copper (As Cu) mg/l, Max.	3.0	3.0	-	3.0
21.	Zinc. (as Zn), mg/l, Max.	5.0	15	-	15
22.	Selenium (as Se), mg/l, Max.	0.05	0.05	-	0.05
23.	Nickel (as Ni), mg/l, Max	3.0	3.0	-	5.0
24.	Boron (as B), mg/l, Max	2.0	2.0	2.0	-
25.	Percent sodium, Max.	-	60	60	-
26.	Residual Sodium carbonate, mg/l, Max.	-	-	5.0	-
27.	Cynide (as CN), mg/l, Max.	0.2	2.0	0.2	0.2
28.	Chloride (as Cl), mg/l, Max.	1000	1000	600	-
29.	Fluoride (as F), mg/l, Max.	2.0	15	-	15
30.	Dissolved Phosphates (as P) mg/l, Max.	5.0	-	-	-
31.	Sulphate (as SO ₄), mg/l, Max.	1000	1000	1000	-
32.	Sulphide (as S), mg/l, Max.	2.0	-	-	5.0
33.	Pesticides	Absent	Absent	Absent	Absent
34.	Phenolic compounds (as C ₆ H ₅ OH) mg/l, Max.	1.0	5.0	-	5.0
35.	Radioactive materials :				
	(a) Alpha emitters MC/ml. Max.	10 ⁻⁷	10 ⁻⁷	10 ⁻⁸	10 ⁻⁷
	(b) Beta emitters µc/ml. Max	10 ⁻⁶	10 ⁻⁶	10 ⁻⁷	10 ⁻⁶

- Note :
- All efforts should be made to remove colour and unpleasant odour as far as practicable.
 - The standards mentioned in this notification shall apply to all the effluents discharged such as industrial mining and mineral processing activities municipal sewage etc.
 - ¹[***.....]

1 Omitted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 1992 vide Notification GSR 797(E) dated 01.01.1992, Gazette No. 396 dated 01.01.1992.

¹[SCHEDULE III]

(See rule 3)

AMBIENT AIR QUALITY STANDARDS IN RESPECT OF NOISE

Area Code	Category of Area	Limits in dB(A) Leq.	
		Date Time	Night Times
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

Note :

1. Day time is reckoned in between 6 a.m. and 9 p.m.
2. Night time is reckoned in between 9 p.m. and 6 a.m.
3. Silence zone is defined as areas upto 100 meters around such premises as hospitals, educational institutions and courts. The Silence zones are to be declared by the Competent Authority.

Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.

4. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

¹ Schedule III inserted vide GSR 1063(E), dt. 26.12.89, published in the Gazette No. 643 dt. 26.12.89.

¹[SCHEDULE IV]

(See rule 3)

STANDARDS FOR EMISSION OF SMOKE, VAPOUR ETC. FROM MOTOR VEHICLES :

- (1) Every motor vehicles shall be manufactured and maintained in such condition and shall be so driven that smoke, visible vapour, grit, sparks, ashes, cinders or oily substance do not emit therefrom.
- (2) On and from the 1st day of March, 1990, every motor vehicle in use shall comply with the following standards :
- (a) Idling CO (Carbon monoxide) emission limit for all four wheeled petrol driven vehicles shall not exceed 3 per cent by volume;
- (b) Idling CO emission limit for all two and three wheeled petrol driven vehicles shall not exceed 4.5 per cent by volume;
- (c) Smoke density for all diesel driven vehicles shall be as follows :

Method of Test	Maximum smoke density		
	Light absorption coefficient m-1	Bosch units	Harridge units
(a) Full load at a speed of 60% to 70% of maximum enginerated speed declared by the manufacturer.	3.1	5.2	75
(b) Free acceleration	2.3	-	65

- (3) On and from the 1st day of April, 1991 all petrol driven vehicles shall be so manufactured that they comply with the mass emission standards as specified at Annexure 'I'. The breakdown of the operating cycle used for the test shall be as specified at Annexure 'II' and the reference fuel for all such tests shall be as specified in Annexure 'III' to this Schedule.
- (4) On and from the 1st day of April, 1991, all diesel driven vehicles shall be so manufactured that they comply with the mass emission standards based on exhaust gas capacity as specified at Annexure 'IV' to this Schedule.
- (5) On and from the 1st day of April, 1992, all diesel driven vehicles shall be so manufactured that they comply with the following levels of emission under the Indian driving cycle :-

¹ Schedule IV inserted vide G.S.R. 54 (E) dt. 5.2.90 published in the Gazette No. 45 dt. 5.2.90.

Mass of Carbon Monoxide (CO) Maximum, Grams per KWH	Mass of Hydroxy carbons (HC) Maximum Grams per KWH	Mass of Nitrogen Oxides (NC) Maximum Grams per KWH
14	3.5	18

- (6) Each motor vehicle manufactured on and after the dates specified in paragraphs (2), (3), (4) and (5) shall be certified by the manufacturers to be conforming to the standards specified in the said paragraphs and the manufacturers shall further certify that the components liable to effect the emission of gaseous pollutants are so designed, constructed and assembled as to enable the vehicle, in formal use, despite the vibration to which it may be subjected, to comply with the provisions of the said paragraphs.

- (7) Test for smoke emission level and carbon monoxide level for motor vehicles –
 - (a) Any officer not below the ranks of a sub-inspector of police or an inspector of motor vehicles, who has reason to believe that a motor vehicle is by virtue of smoke emitted from it or other pollutants like carbon monoxide emitted from it, is likely to cause environmental pollution, endangering the health or safety of any other user of the road or the public, may direct the driver or any person incharge of the vehicle to submit the vehicle for undergoing a test to measure the standard of black smoke or the standard of any of the other pollutants.

 - (b) The driver or any person incharge of the vehicle shall upon demand by any officer referred to in sub-paragraph (a) submit the vehicle for testing for the purpose of measuring the standard of smoke or the levels of other pollutants or both.

 - (c) The measurement of standard of smoke shall be done with a smoke meter of a type approved by the State Government and the measurement of other pollutants like carbon monoxide shall be done with instruments of a type approved by the State Government.

ANNEXURE-I

(See paragraph 3)

MASS EMISSION STANDARDS FOR PETROL DRIVEN VEHICLES

1. Type Approval Tests :

Two and Three Wheeler Vehicles

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
R ≤ 150	12	8
150 < R ≤ 350	12 + $\frac{18(R-150)}{200}$	8 + $\frac{4(R-150)}{200}$
R > 350	30	12

Two and Three Wheeler Vehicles

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
rw ≤ 1020	14.3	2.0
1020 < rw ≤ 1250	16.5	2.1
1250 < rw ≤ 1470	18.8	2.1
1470 < rw ≤ 1700	20.7	2.3
1700 < rw ≤ 1930	22.9	2.5
1930 < rw ≤ 2150	24.9	2.7
rw > 2150	27.1	2.9

2. Conformity of Production tests :
Two and Three Wheeler vehicles :

Reference Mass, R (Kg)	CO (g/km)	HC(g/km)
1	2	3
R - 150	15	10
150<R≤350	$15 + \frac{25(R-150)}{200}$	$10 + \frac{5(R-150)}{200}$
R>350	40	15

Light Duty Vehicles :

Reference Mass, rw (Kg)	CO (g/km)	HC(g/km)
1	2	3
rw≤1020	17.3	2.7
1020<rw≤1250	19.7	2.7
1250<rw≤1470	22.5	2.8
1470<rw≤1700	24.9	3.0
1700<rw≤1930	27.6	3.3
1930<rw≤2150	29.9	3.5
rw>2150	32.6	3.7

For any of the pollutants referred to above of the three results obtained may exceed the limit specified for the vehicles by not more than 10 per cent.

Explanation : Mass emission standards refers to the gm. of Pollutants emitted per Km. run of the vehicle as determined by the chassis dynamometer test using the Indian Driving Cycle.

ANNEXURE-II
(See Paragraph 3)

BREAKDOWN OF THE OPERATING CYCLE, USED FOR THE TESTS

No. of Operation	Acceleration (m/acc ²)	Speed (Km/h)	Duration of each operation(s)	Cumulative time(s)
1	2	3	4	5
01. Idling	-	-	16	16
02. Acceleration	0.65	0-14	6	22
03. Acceleration	0.56	14 – 22	4	26
04. Declaration	-0.63	22 – 13	4	30
05. Steady speed	-	13	2	32
06. Acceleration	0.56	13 – 23	5	37
07. Acceleration	0.44	23 – 31	5	42
08. Deceleration	-0.56	31 – 25	3	45
09. Steady Speed	-	25	4	49
10. Deceleration	-0.56	25 – 21	2	51
11. Acceleration	0.45	21 – 34	8	59
12. Acceleration	0.32	34 – 42	7	66
13. Deceleration	0.46	42 – 37	3	69
14. Steady speed	-	37	7	76
15. Deceleration	-0.42	37 – 34	2	78
16. Acceleration	0.32	34 – 42	7	85
17. Deceleration	-0.46	42 – 27	9	94
18. Deceleration	-0.52	27 – 14	7	101
19. Deceleration	-0.56	14 – 00	7	108

ANNEXURE-III
(See Paragraph 3)

REFERENCE FUEL FOR TYPE AND PRODUCTION CONFORMITY TESTS

S. No.	Characteristics	Requirements		Method of test (ref. of P: or IS: 1448*)
		87 Octane	93 Octane	
1	2	3	4	5
1.	Colour, visual	Orange	Red	-
2.	Copper-strip corrosion for 3 hours at 50°C	Not worse than No. 1		P : 15 (1968)
3.	Density at 15°C	Not limited but to be reported		P : 16 (1967)
4.	Distillation :			P: 18 (1967)
	(a) Initial boiling point * methods for test for petroleum and its products.	Not limited but to be reported		
	(b) Recovery up to 20°C percent by volume min.	10	10	
	(c) Recovery upto 125°C 50 percent by volume	50	50	
	(d) Recovery upto 130°C percent by volume	90	90	
	(e) Final boiling point, Max.	215°C	215°C	
	(f) Residue percent by volume Max.	2	2	
5.	Octane number (Research method) Max.	87	94	P : 27 (1960)
6.	Oxidation stability in minutes, Min.	360	360	P : 28 (1966)
7.	Residue on evaporation mg/100 ml. Max.	4.0	4.0	P : 29 (1960) (Air-jet solvent washed)
8.	Sulphur, total, percent by weight Max.	0.25	0.20	P : 34 (1966)
9.	Lead content (as Pb), g/l Max.	0.56	0.80	P : 37 (1967) or P :38 (1967)
10	Reid Vapour pressure at 38 degree C. kg/Cm ³ Max.	0.70	0.70	P : 39 (1967)

¹ANNEXURE-IV
(See Paragraph 4)

**LIMIT VALUES OF EXHAUST GAS CAPACITY APPLICABLE
FOR DIESEL DRIVEN VEHICLES
THE ENGINE TESTS AT STEADY SPEED**

Nominal Flow G(l/s)	Absorption Coefficient (Km-1)	Nominal Flow G(l/s)	Absorption Coefficient (K9-1)
42	2.00	120	1.20
45	1.91	125	1.17
50	1.82	130	1.15
55	1.75	135	1.31
60	1.68	140	1.11
65	1.61	145	1.09
70	1.56	150	1.07
75	1.50	155	1.05
80	1.46	160	1.04
85	1.41	165	1.02
90	1.38	170	1.01
95	1.34	175	1.00
100	1.31	180	0.99
105	1.27	185	0.97
110	1.25	190	0.96
115	1.22	195	0.95
		> 200	0.93

¹ Annexure IV inserted vide G.S.R. 54 (E) dt. 5.2.90 published in the Gazette no. 45 dt. 5.2.90.

¹[SCHEDULE V]

(See rule 12)

S. No.	Place at which the discharge of any environmental Pollutant in excess of prescribed standards occurs or is apprehended to occur	Authorities or agencies to be intimated	Appointed under
1	2	3	4
1.	Factories as defined under the Factories Act, 1948		
	(a) owned by Central Government and engaged in carrying out the purposes of the Atomic Energy Act;1962;	(i) The Atomic Energy Regulatory Board (AERB)	The Atomic Energy Act, 1962
		(ii) The Ministry of Environment and Forests.	
	(b) Factories other than those mentioned in paragraph (a)	(i) The Chief Inspector of Factories	The Factories Act, 1948
		(ii) The Inspector of Factories having local jurisdiction.	- do -
		(iii) The Ministry of Environment and Forests	
2.	Mine as defined under the Mines and Minerals (Regulation and Development) Act, 1957	(i) The Controller General, Indian Bureau of Mines	The Mines and Mineral (Regulation & Development)Act,1957

¹ Schedule II relating to rule 12 re-numbered as Schedule V vide G.S.R. 422 (E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.
 Entries relating to S.No. 2 corrected in terms of S.O. 64(E) published in Gazette No. 42 dt. 18.01.1988 and corrigendum No. G.S.R. 434(E) dt. 07.04.1988 published in the Gazette No. 181 dt. 07.04.1988.

		(ii) Regional Controller of Mines having local jurisdiction	- do -
		(iii) The Ministry of Environment and Forests.	-
3.	Port as defined under the Indian Ports Act, 1908	(i) Conservator of Ports	The Indian Ports Act, 1908
		(ii) The Ministry of Environment & Forests	-
4.	Plantation as defined under the Plantations Labour Act, 1951	(i) The Chief Inspector of Plantations.	The Plantations Labour Act, 1951
		(ii) The Inspector of Plantation having local jurisdiction.	- do -
		(iii) The Ministry of Environment & Forests.	-
5.	Motor Vehicles as defined under the Motor Vehicles Act, 1939	(i) State Transport Authority	The Motor Vehicles Act, 1939
		(ii) Regional Transport Authority having regional jurisdiction.	- do -
		(iii) The Ministry of Environment & Forests.	-
6.	Ship as defined under the Merchant Shipping Act, 1958	(i) Director General of Shipping	The Merchant Shipping Act, 1958
		(ii) Surveyor having jurisdiction.	- do -
		(iii) The Ministry of Environment & Forests.	-

¹[SCHEDULE – VI]
(See rule 3A)

**GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL
POLLUTANTS PART-A : EFFLUENTS**

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1.	Colour and odour	See 6 of Annexure-I	--	See 6 of Annexure -I	See 6 of Annexure-I
2.	Suspended solids mg/l, Max.	100	600	200	(a) For process waste water-100 (b) For cooling water effluent 10 percent above total suspended matter of influent.
3.	Particulate size of suspended solids	Shall pass 850 micron IS Sieve	--	--	(a) Floatable solids, max. 3 mm. (b) Settleable solids, max. 850 microns.
² 4.	***	*	--	***	--
5.	pH Value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	shall not exceed 5°C above the receiving water temperature	--	--	shall not exceed 5°C above the receiving water temperature

¹ Schedule VI inserted by Rule 2(d) of the Environment (Protection) Second Amendment Rules, 1993 notified vide G.S.R. 422(E) dated 19.05.1993, published in the Gazette No. 174 dated 19.05.1993.

² Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
7.	Oil and grease mg/l Max.	10	20	10	20
8.	Total residual chlorin mg/l Max.	1.0	--	--	1.0
9.	Ammonical nitrogen (as N), mg/l Max.	50	50	--	50
10.	Total Kjeldahl Nitrogen (as NH ₃) mg/l, Max.	100	--	--	100
11.	Free ammonia (as NH ₃) mg/l, Max.	5.0	--	--	5.0
12.	Biochemical Oxygen demand ¹ [3 days at 27°C] mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l, max.	250	--	--	250
14.	Arsenic (as As), mg/l, max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg), mg/l, Max.	0.01	0.01	--	0.01
16.	Lead (as Pb) mg/l, Max.	0.1	1.0	--	2.0
17.	Cadmium (as Cd) mg/l, Max.	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr+6), mg/l max.	0.1	2.0	--	1.0

¹ Substituted by Rule 2 of the Environment (Protection) Amendment Rules, 1996 notified by G.S.R.176, dated 2.4.1996 may be read as BOD (3 days at 27°C) wherever BOD 5 days 20°C occurred.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
19.	Total chromium (as Cr.) mg/l, Max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (As Zn.) mg/l, Max.	5.0	15	--	15
22.	Selenium (as Se.) mg/l, Max.	0.05	0.05	--	0.05
23.	Nickel (as Ni) mg/l, Max.	3.0	3.0	--	5.0
¹ 24.	***	*	*	*	*
¹ 25.	***	*	*	*	*
¹ 26.	***	*	*	*	*
27.	Cyanide (as CN) mg/l Max.	0.2	2.0	0.2	0.2
¹ 28.	***	*	*	*	*
29.	Fluoride (as F) mg/l Max.	2.0	15	--	15
30.	Dissolved Phosphates (as P), mg/l Max.	5.0	--	--	--
² 31.	***	*	*	*	*
32.	Sulphide (as S) mg/l Max.	2.0	--	--	5.0
33.	Phenoile compounds (as C ₆ H ₅ OH) mg/l, Max.	1.0	5.0	--	5.0

¹ Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No.G.S.R.801(E), dated 31.12.1993.

S. No.	Parameter	Standards			
		Inland surface water	Public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
34.	Radioactive materials :				
	(a) Alpha emitter micro curie/ml.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	(b) Beta emitter micro curie/ml.	10^{-6}	10^{-6}	10^{-7}	10^{-6}
35.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
37.	Iron (as Fe)	3 mg/l	3 mg/l	--	3 mg/l
38.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
39.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l
¹ 40.	* * *	*	*	*	*

¹ Omitted by Rule 2(d)(i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R. 801(E) dated 31.12.1993

WASTE WATER GENERATION STANDARDS - PART-B

S.No.	Industry	Quantum
1.	Integrated Iron & Steel	16 m ³ /tonne of finished steel
2.	Sugar	0.4 m ³ /tonne of cane crushed
3.	Pulp & Paper Industries	
	(a) Larger pulp & paper	
	(i) Pulp & Paper	175 m ³ /tonne of paper produced
	(ii)Viscose Staple Fibre	150 m ³ /tonne of product
	(iii)Viscose Filament Yarn	500 m ³ /tonne of product
	(b) Small Pulp & Paper :	
	(i) Agro residue based	150 m ³ /tonne of paper produced
	(ii) Waste paper based	50 m ³ /tonne of paper produced
4.	Fermentation Industries :	
	(a) Maltry	3.5 m ³ /tonne of grain produced
	(b) Brewery	0,25 m ³ /KL of beer produced
	(c) Distillery	12 m ³ /KL of alcohol produced
5.	Caustic Soda	
	(a) Membrane cell process	1 m ³ /tonne of caustic soda produced excluding cooling tower blowdown
	(b) Mercury cell process	4 m ³ /tonne of caustic soda produced (mercury bearing) 10% blowdown permitted for cooling tower
6.	Textile Industries : Man-made Fibre	
	(i) Nylon & Polyester	120 m ³ /tonne of fibre produced
	(ii) Vixcose rayon	150 m ³ /tonne of product
7.	Tanneries	28 m ³ /tonne of raw hide
8.	Starch. Glucose and related products	8 m ³ /tonne of maize crushed
9.	Dairy	3 m ³ /KL of Milk

10. Natural rubber processing industry 4 m³/tonne of rubber
11. Fertilizer
- (a) Straight nitrogenous fertilizer 5 m³/tonne of urea or equivalent produced
- (b) Straight phosphatic fertilizer (SSP & TSP) excluding manufacture of any acid 0.5 m³/tonne of SSP/TSP
- (c) Complex fertilizer Standards of nitrogenous and phosphatic fertilizers are applicable depending on the primary product

LOAD BASED STANDARDS - PART-C

¹[1. Petroleum Oil Refinery:

Parameter 1	Standard 2
	Quantum limit in Kg/l 1,000 tonne of crude processed
1. Oil & Grease	2.0
2. BOD _{3 days, 27° C}	6.0
3. COD	50
4. Suspended Solids	8.0
5. Phenols	0.14
6. Sulphides	0.2
7. CN	0.08
8. Ammonia as N	6.0
9. TKN	16
10. P	1.2
11. Cr (Hexavalent)	0.04
12. Cr(Total)	0.8
13. Pb	0.04
14. Hg	0.004
15. Zn	2.0
16. Ni	0.4
17. Cu	0.4
18. V	0.8
19. Benzene	0.04
20. Benzo (a) – Pyrene	0.08

¹ Substituted by Rule 2(ii)(a) of the Environment (Protection) Amendment Rules, 2008 notified by G.S.R.186(E), dated 18.3.2008

Notes:

- (i) Quantum limit shall be applicable for discharge of total effluent (process effluent, cooling water blow down including sea cooling water blow down, washings, etc.) to receiving environment (excluding direct application on land for irrigation/horticulture purposes within the premises of refinery).
- (ii) In order to measure the quantity of effluent (separately for discharge to receiving environment, application for irrigation/horticulture purposes within the premises of refinery & blow-down of cooling systems), appropriate flow measuring devices (e.g. V-notch, flow meters) shall be provided with.
- (iii) Quantum of pollutants shall be calculated on the basis of daily average of concentration values (one 24-hourly composite sample or average of three grab samples, as the case may be), average flow of effluent during the day and crude throughput capacity of the refinery.
- (iv) Limit for quantity of effluent discharged (excluding blow-down from seawater cooling) shall be 400 m³/1000 tonne of crude processed. However, for refineries located in high rain fall area, limit of quantity of effluent only during rainy days shall be 700 m³/1000 tonne of crude processed].

- 2. Large Pulp & Paper, News Print/ Rayon grade Plants of capacity above 24000 tonne/ Annum

Parameter	Quantum
Total Organic Chloride (TOCI)	2 kg/tonne of product.

GENERAL EMISSION STANDARDS - PART-D

I. Concentration Based Standards

Sl. No.	Parameter	Standard Concentration not to exceed (in mg/Nm ³)
1.	Particulate Matter (PM)	150
2.	Total Fluoride	25
3.	Asbestos	4 Fibres/cc and dust should not be more than 2 mg/Nm ³

4.	Mercury	0.2
5.	Chlrine	15
6.	Hydrochloric acid vapour and mist	35
¹ 7.	***	*
8.	Sulphuric acid mist	50
9.	Carbon monoxide	1% max. (v/v)
¹ 10.	***	*
11.	Lead	10 mg/Nm ³
¹ 12.	***	*

II. Equipment based Standards

²[For dispersal of sulphur dioxide, in minimum stack height limit is accordingly prescribed as below]

SI. No.	Parameter	Standard
1.	Sulphur dioxide	Stack-height limit in metre
	(i) Power generation capacity :	
	- 500 MW and more	275
	- 200/210 MW and above to less than 500 MW	220
	- less than 200/210 MW	$H=14(Q)^{0.3}$
	(ii) Steam generation capacity	
	- Less than 2 tonne/h	Less than 8.5 MT 9
	- 2 to 5 tonne/h	8.5 to 21 MT 12
	- 5 to 10 tonne/h	21 to 42 MT 15
	- 10 to 15 tonne/h	42 to 64 MT 18
	- 15 to 20 tonne/h	64 to 104 MT 21
	- 20 to 25 tonne/h	104 to 105 MT 24
	- 25 to 30 tonne/h	105 to 126 MT 27
	- More than 30 tonne/h	More than 126 MT 30
		or using the formula $H=14(Q)^{0.3}$

¹ Omitted by Rule 2 (g) (iv) of the Environment (Protection) Third Amendment Rules, 1993 vide G.S.R. 801(E) dated 31.12.1993.

² Substituted by Rule 2(h)(i), *ibid.*

Note : H – Physical height of the stack in metre
Q – Emission rate of SO₂ in kg/hr.

III. Load/Mass based Standards

Sl. No.	Industry	Parameter	Standard	
1.	Fertiliser (Urea)	Particulate Matter (PM)	2 kg/tonne of product	
	Commissioned Prior to 1.1.82			
	Commissioned after 1.1.82	Particulate Matter (PM)	0.5 kg/tonne of product	
2.	Copper, Lead and Zinc Smelter/converter	Sulphur dioxide	4 kg/tonne of concentrated (100% acid produced)	
3.	Nitric Acid	Oxides of Nitrogen	3 kg/tonne of weak acid (before concentration) produced	
¹ [4.	Sulphuric Acid Plant		Quantum Limit in kg/tonne Plant capacity for 100% Existing Unit New Unit concentration of	
		Sulphuric Acid (tonne/day)		
		Sulphur dioxide (SO ₂)	Upto 300	2.5 2.0
			Above 100	2.0 1.5]
5.	Coke Oven	Carbon Monoxide	3 kg/tonne of coke produced.	
² [6.	Petroleum Oil Refinery (Sulphur Recovery)	Installed Capacity of SRU* (tonne/day)	Kg/tonne of sulphur in the feed to SRU	
		Sulphur Dioxide	Existing SRU	New SRU
			Above 20	26 10
			5 to 20	80 40
			Upto 5	120 80

* SRU – Sulphur Recovery Unit]

¹ Substituted by Rule 2(ii) of the Environment (Protection) Third Amendment Rules, 2008 notified by G.S.R.344(E), dated 7.5.2008.

² Substituted by Rule 2 of the Environment (Protection) Fifth Amendment Rules, 2009 notified by G.S.R.595(E), dated 21.8.2009.

7. Aluminium Plants :

(i)	Anode Bake Oven Total Fluoride		0.3 Kg/MT of Aluminium
(ii)	Pot room		
(a)	VSS	-do-	4.7 Kg/MT of Aluminium
(b)	HSS	-do-	6 Kg/MT of Aluminium
(c)	PBSW	-do-	2.5 Kg/MT of Aluminium
(d)	PBCW	-do-	1.0 Kg/MT of Aluminium

Note : VSS = Vertical Stud Soderberg
 HSS = Horizontal Stud Soderberg
 PBSW = Pre Backed Side Work
 PBCW = Pre Backed Centre Work

8. Glass Industry :

(a) Furnace Capacity

- | | | | |
|------|---|------|----------------------------|
| (i) | Up in the product draw Particulate matter 2 Kg/hr ca capacity of 60 MTD/Day | | |
| (ii) | Product draw capacity more than 60 MT/Day | -do- | 0.8 Kg/MT of Product drawn |

***NOISE STANDARDS - PART-E**

A.	Noise Limits for Automobiles (Free Field Distance at 7.5 Metre in dB(A) at the manufacturing Stage	
(a)	Motorcycle, Scooters & Three Wheelers	80
(b)	Passenger Cars	82
(c)	Passenger or Commercial vehicles upto 4 MT	85
(d)	Passenger or Commercial vehicles above 4 MT and upto 12 MT	89
(e)	Passenger or Commercial vehicles exceeding 12MT	91

* Standards notified at S. No. 46 may also be referred.

¹[AA. Noise limits for vehicles at manufacturing stage

The test method to be followed shall be IS:3028-1998.

(1) Noise limits for vehicles applicable at manufacturing stage from the year 2003

Serial Number	Type of vehicle	Noise limits dB(A)	Date of implementation
(1)	(2)	(3)	(4)
1.	Two wheeler		1 st January,2003
	Displacement upto 80 cm ³	75	
	Displacement more than 80 cm ³ but upto 175 cm ³	77	
	Displacement more than 175 cm ³	80	
2.	Three wheeler		1 st January,2003
	Displacement upto 175 cm ³	77	
	Displacement more than 175 cm ³	80	
3.	Passenger Car	75	1 st January, 2003
4.	Passenger or Commercial Vehicles		1 st July, 2003
	Gross vehicle weight upto 4 tonnes	80	
	Gross vehicle weight more than 4 tonnes but upto 12 tonnes.	83	
	Gross vehicle weight more than 12 tonnes.	85	

(2) Noise limits for vehicles at manufacturing stage applicable on and from 1st April, 2005

Serial Number	Type of vehicles	Noise limits dB(A)
1.0	Two wheelers	
1.1	Displacement upto 80 cc	75
1.2	Displacement more than 80 cc but upto 175 cc	77
1.3	Displacement more than 175 cc	80
2.0	Three wheelers	
2.1	Displacement upto 175 cc	77
2.2	Displacement more than 175 cc	80
3.0	Vehicles used for the carriage of passengers and capable of having not more than nine seats, including the driver's seat	74

¹ Substituted by Rule 2 of the Environment (Protection) Fourth Amendment Rules, 2002 notified vide Notification G.S.R.849(E), dated 30.12.2002 (Earlier 'AA – Noise limits for vehicles w.e.f. 1st January 2003' inserted by Rule 2 (2) of the Environment (Protection) Amendment Rules, 2000 notified vide Notification G.S.R. 742(E), dated 25.9.2000.)

4.0	Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat, and a maximum Gross Vehicle Weight (GVW) of more than 3.5 tonnes	
4.1	With an engine power less than 150 KW	78
4.2	With an engine power of 150 KW or above.	80
5.0	Vehicles used for the carriage of passengers having more than nine seats, including the driver's seat : vehicles used for the carriage of goods.	
5.1	With a maximum GVW not exceeding 2 tonnes	76
5.2	With a maximum GVW greater than 3 tonnes but not exceeding 3.5 tonnes	77
6.0	Vehicles used for the transport of goods with a maximum GVW exceeding 3.5 tonnes.	
6.1	With an engine power less than 75 KW	77
6.2	With an engine power of 75 KW or above but less than 150 KW.	78
6.3	With an engine power of 150 KW or above.	80]

¹[Provided that for vehicles mentioned at serial numbers 3.0 to 6.3, the noise limits for the following States shall be applicable on and from the date specified against that State,-

- (i) Himachal Pradesh with effect from 1st October, 2005
- (ii) Jammu and Kashmir with effect from 1st October, 2005
- (iii) Madhya Pradesh with effect from 1st September, 2005
- (iv) Punjab with effect from 1st October, 2005
- (v) Rajasthan with effect from 1st June, 2005
- (vi) Uttar Pradesh (Mathura, Kannauj, Muzaffarnagar, Aligarh, Farukkabad, Saharanpur, Badaun, Barreily, Moradabad, Hathras, Rampur, Bijnor, Agra, Pilibhit, J.P. Nagar, Mainpuri, Lalitpur, Hardio, Ferozabad, Jhansi, Shahjahanpur, Etawah, Jalon, Lakhimpur, Kheri, Etah, Mahoba, and Sitapur) with effect from 1st June, 2005.
- (vii) Uttranchal with effect from 1st July, 2005.]

B. Domestic appliances and construction equipments at the manufacturing stage to be achieved by 31st December, 1993.

- | | |
|---|------|
| (a) Window Air Conditioners of 1 ton to 1.5 ton | 68 |
| (b) Air Coolers | 60 |
| (c) Refrigerators | 46 |
| ² [(d) * * * | ...] |
| (e) Compactors (rollers), Front Loaders, Concrete mixers, Cranes (moveable), Vibrators and Saws | 75 |

¹ Inserted by the Environment (Protection) Amendment Rules, 2005 notified vide Notification G.S.R.272 (E), dated 5.5.2005.

² Entry (d) relating to 'Diesel Generator of Domestic Purposes.....85 - 90' omitted by Rule 3 of the Environment (Protection) Second Amendment, Rules, 2002 notified vide Notification G.S.R. 371(E), dated 17.5.2002.

ANNEXURE-I

(For the purposes of Parts – A, B and C)

The State Boards shall following guide-lines in enforcing the standards specified under the schedule VI :

- (1) the waste waters and gases are to be treated with the best available technology (BAT) in order to achieve the prescribed standards.
- (2) the industries need to be encouraged for recycling and reuse, of waste materials as far as practicable in order to minimize the discharge of wastes into the environments.
- (3) the industries are to be encouraged for recovery of biogas, energy and reusable materials.
- (4) while permitting the discharge of effluent and emission into the environment, State Boards have to take into account the assimilative capacities of the receiving bodies, especially water bodies so that quality of the intended use of the receiving waters is not affected. Where such quality is likely to be effected discharges should not be allowed into water bodies.
- (5) the Central and State Boards shall put emphasis on the implementation of clean technologies by the industries in order to increase fuel efficiency and reduce the generation of environmental pollutants.
- (6) All efforts should be made to remove colour and unpleasant odour as far as practicable.
- (7) The standards mentioned in the Schedule shall also apply to all other effluents discharged such as industrial mining, and mineral processing activities and sewage.
- (8) the limit given for the total concentration of mercury in the final effluent of caustic soda industry, is for the combined effluent from (a) Cell house, (b) Brine Plant, (c) Chlorine handling, (d) hydrogen handling and (e) hydro choleric acid plant.
- (9) ¹[(a)...(f)]
- (10) All effluents discharge including from the industries such as cotton textile, composite woolen mills, synthetic rubber, small pulp & paper, natural rubber, petro-chemicals, tanneries, point dyes,

¹ Omitted by Rule 4 of the Environment (Protection) Rules, 1996 notified by notification G.S.R. 176(E), dated 2.4.1996.

slaughter houses, food & fruit processing and diary industries into surface waters shall conform to be BOD limit specified above, namely 30 mg/l. For discharge an effluent having a BOD more than 30 mg./l, the standards shall conform to those given, above for other receiving bodies, namely, sewers, coastal waters, and land for irrigation.

- (11) ¹[***.....]
- (12) In case of fertilizer industry the limits in respect of chromium and fluoride shall be complied with at the outlet of chromium and fluoride removal units respectively.
- (13) In case of pesticides :
- (a) The limits should be complied with at the end of the treatment plant before dilution.
 - (b) Bio-assay test should be carried out with the available species of fish in the receiving water, the COD limits to be specified in the consent conditions should be correlated with the BOD limits.
 - (c) In case metabolites and isomers of the Pesticides in the given list are found in significant concentration, standards should be prescribed for these also in the same concentration as the individual pesticides.
 - (d) Industries are required to analyze pesticides in waste water by advanced analytical methods such as GLC/HPLC.
- (²14) The chemical oxygen demands (COD) concentration in a treated effluent, if observed to be persistently greater than 250 mg/l before disposal to any receiving body (public sewer, land for irrigation, inland surface water and marine coastal areas), such industrial units are required to identify chemicals causing the same. In case these are found to be toxic as defined in the Schedule I of the Hazardous Rules 1989 the State Board in such cases shall direct the industries to install tertiary treatment stipulating time limit.
- (15) Standards specified in Part A of Schedule – VI for discharge of effluent into the public sewer shall be applicable only if such sewer leads to a secondary treatment including biological treatment system, otherwise the discharge into sewers shall be treated as discharge into inland surface waters].

¹ Omitted by Rule, 2(k) (vii) of the Environment (Protection) Third amendment Rules, 1993 vide G.S.R. 801 (E), dated 31.12.1993.

² Inserted by rule 2(k) (ix), *ibid.*

ANNEXURE-II

(For the purpose of Part-D)

The State Boards shall follow the following guidelines in enforcing the standards specified under Schedule VI:

- (a) In case of cement plants, the total dust (from all sections) shall be within 400 mg/Nm³ and 250 mg/Nm³ for the plants upto 200 t/d and more than 200 t/d capacities respectively.
- (b) In respect of calcinations process (e.g. Aluminum Plants) Kilns. and step Grate Bagasse fired-Boilers. Particulate Matter (PM) emissions shall be within 250 mg/Nm³.
- (c) In case of thermal power plants commissioned prior to 01.01.1982 and having generation capacity less than 62.5 MW, the PM emission shall be within 350 mg/Nm³.
- (d) In case of Lime Kilns of capacity more than 5 t/day and upto 40 t/day, the PM emission shall be within 500 mg/Nm³.
- (e) In case of horse shoe/pulsating Grate and Spreader Stroker Bagasse-fired-Boilers, the PM emission shall be within 500 (12% CO₂) and 800 (12% CO₂) mg/Nm³ respectively. In respect of these boilers, if more than attached to a single stack, the emission standards shall be fixed, based on added capacity of all the boilers connected with the stack.
- (f) In case of asbestos dust, the same shall not exceed 2mg/Nm³.
- (g) In case of the urea plants commissioned after 01.01.92, coke ovens and lead glass units, the PM emission shall be within 50 mg/Nm³.
- (h) In case of small boilers of capacity less than 2 tons/hour and between 2 to 5 tons/ hour, the PM emissions shall be within 1000 and 1200 mg/Nm³.
- (i) In case of integrated Iron and Steel Plants, PM emission upto 400 mg/Nm³ shall be allowed during oxygen lancing.

- (j) In case of stone crushing units, the suspended PM contribution value at a distance of 40 meters from a controlled, isolated as well as from a unit located in cluster should be less than 600 micrograms/Nm³.¹ [* * *] These units must also adopt the following pollution control measures :
- (i) Dust containment cum suppression system for the equipment;
 - (ii) Construction of wind breaking walls;
 - (iii) Construction of the metalled roads within the premises;
 - (iv) Regular cleaning and wetting of the ground within the premises;
 - (v) Growing of a green belt along with periphery.
- (k) In case of Ceramic industry, from the other sources of pollution, such as basic raw materials and processing operations, heat recovery dryers, mechanical finishing operation, all possible preventive measures should be taken to control PM emission as far as practicable.
2. The total fluoride emission in respect of Glass and Phosphatic Fertilizers shall not exceed 5 mg/Nm³ and 25 mg/Nm³ respectively.
- ²3. [In case of copper, lead and zinc smelting, the off-gases may, as far as possible, be utilized for manufacturing sulphuric acid]
- ³4. [In case of cupolas (Foundries) having capacity (melting rate) less than 3 tonne/hour, the particulate matter emission shall be within 450 mg/Nm³. In these cases it is essential that stack is constructed over the cupolas beyond the charging door and the emissions are directed through the stack, which should be at least six times the diameter of cupola. In respect of Arc Furnaces and Induction Furnaces, provision has to be made for collecting the fumes before discharging the emissions through the stack].

[No. Q-15017/24/89-CPW]
MUKUL SANWAL, Jt. Secy.

¹ Omitted by Rule 2(i)(iii) of the Environment (Protection) Third Amendment Rules, 1993, vide G.S.R. 801(E) dated 31.12.1993.

² Substituted by Rule 2(1)(i); Ibid.

³ Added by Rule 2(1)(ii), Ibid.

¹[SCHEDULE VII]

[See Rule 3(3B)]

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH ₃) µg/m ³	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method

¹ Substituted by Rule 3 of the Environment (Protection) Seventh Amendment Rules, 2009 notified by G.S.R. 826 (E) dated 16.11.2009.

(1)	(2)	(3)	(4)	(5)	(6)
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note. — Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.]

[File No. Q-15017/43/2007-CPW]
RAJNEESH DUBE, Jr. Secretary

Note : The principal rules were published in the Gazette of India vide Number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide S.O. 433 (E) dated 18th April, 1987, S.O. 64 (E) dated the 18th January, 1988, S.O. 8(E) dated the 3rd January, 1989, S.O. 190 (E) dated the 15th March, 1989, G.S.R. 913 (E) dated the 24th October, 1989, S.O. 12(E), dated the 8th January, 1990, GSR 742 (E), dated 30th August, 1990, S.O. 23(E), dated the 16th January, 1991, GSR 93(E), dated the 21st February, 1991, GSR 95(E) dated the 12th February, 1992, GSR 329 (E) dated the 13th March, 1992, GSR 475(E), dated the 5th May, 1992, GSR 797 (E) dated the 1st October, 1992, GSR 386(E), dated the 28th April, 1993, GSR 422(E), dated the 19th May, 1993, GSR 801(E) dated the 31st December, 1993, GSR 176(E), dated the 2nd April, 1996, GSR 97(E), dated the 18th February, 2009, GSR 149(E), dated the 4th March, 2009, GSR 512(E), dated the 9th July, 2009, GSR 543(E), dated the 22nd July, 2009, GSR 595(E), dated the 21st August, 2009 and GSR 794(E), dated the 4th November, 2009.



BIHAR STATE POLLUTION CONTROL BOARD

Parivesh Bhawan, N.S.B.-2, Patliputra Industrial Area, Patliputra, Patna – 800 010

Ref.no- 1840

Patna, dated- 15-6-2022

DISCHARGE CONSENT ORDER

With reference to the online application ID. 5853525, dated 26.04.2022, of M/s Nabinagar Super Thermal Power Project (3x660 MW), Vill-Majhiyawan, P.O.-Ankorha, Distt.-Aurangabad for consent under sections 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, he/they is/are granted consent to bring into use his/their new/altered/existing outlet(s) for discharge of trade effluent and/or domestic sewage thermal power plant at Vill-Majhiyawan, P.O.-Ankorha, Distt.-Aurangabad for the capacity Power Generation (3x660 MW) for the period of five years from the date of issue with the following conditions:-

- 1 That, he/they shall not make any alteration, addition, deletion or modification in the plant without the prior clearance from the Board and shall also abide by the obligations under sections 24,31 and 33A of the Water (Prevention & Control of Pollution) Act,1974 and further shall extend co-operation to the Board in performing its functions entrusted under sections 20,21,23,30 and 32 of the Act;
- 2 That, he/they shall comply with the requirements of rule14 of the Environment (Protection) Rules, 1986; rules 4,5,7,9,10 and 11 of the Hazardous and other Wastes (Management and Transboundary Movement) Rules,2016; rules 4,5,7,8,10,11,12,13,15 and 18 of the Manufacture, Storage and Import of Hazardous Chemical Rules,1989; and the provisions of the Public Liability Insurance Act,1991,whichever is applicable;
- 3 That, he/they shall monitor his/their effluent(s) regularly and maintain its quality in conformity with Board's standards and shall produce its proof, as and when asked for;
- 4 That, he/they shall submit application for consent again 30 days before the expiration of the period of consent or within 30 days from the date of receipt of this order, whichever is applicable.
- 5 That, they shall comply with the provisions (whichever applicable) of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and Rules and Notifications issued there under. The quality of final effluent shall comply with the standards as prescribed under the Rules;
- 6 That, all waste water like effluent from DM plant, boiler blow down, oil extraction system, raw water treatment plant, blow down of cooling tower water used in fly ash slurry, leakage, floor washing etc should be treated properly and re-used as far as possible to maintain zero discharge, No discharge from ash ponds shall be maintained;
- 7 That, they shall update and well maintain up to the marks all effluent treatment plant of facilities/oil extraction units including LWTP;
- 8 That, they shall comply with the conditions (whichever applicable) of the environmental clearance issued by MoEFCC, Govt. of India vide dated 27.12.2010/14.01.2020 and submit the compliance report accordingly to the Board;
- 9 That, they shall comply with the standards as per notifications of MoEFCC, Govt. of India dated 02.01.2014, 07.12.2015, 07.03.2016, 28.06.2018, 19.10.2020 etc or as amended and as prescribe under the rules (whichever applicable) and point wise compliance report shall be submitted quarterly to the Board;
- 10 That, the unit shall make effort not to discharge any trade effluent outside the plant premises (in to the Ganga River) and maintain zero liquid discharge (ZLD);
- 11 That, continuous online (24x7) monitoring system for effluent should be operative, maintained and connected to CPCB & BSPCB server for data transfer;
- 12 That, they shall re-use treated effluent to maintain Zero Discharge from the plant premises and water consumption shall be reduced by adopting 3 R's (reduce, reuse and recycle) concept;

- 13 That, they shall withdraw water from Sone River as per agreement with the competent authority and a report shall be submitted to the Board on quarterly basis;
- 14 That, daily water withdrawal, consumption, power generation and average PLF shall be submitted. The specific water consumption per MW hr shall be calculated based on water consumption and power generation and to be submitted in the compliance report.
- 15 That, water meter conforming to ISO standards shall be installed at the inlet point of water uptake as well as at all necessary points to monitor the daily water consumption (including water consumption in fly ash slurry management) and a log book shall be maintained in this regard. Use of water efficient devices/fixtures and appliance should be promoted;
- 16 That, they shall have to provide suitable and separate drainage system for sewer/other waste water and storm water. No sewage or untreated effluent would be discharged through storm water drains. A coloured drainage map shall be submitted to the Board within 3 months time;
- 17 That, they shall adopt rain water harvesting as provisions made by the local bye-law. If local bye-law provision is not available, adequate provision for storage and recharge should be followed as per CPCB guideline. Ensure proper management of storm water to optimum use and allow it to be by-passed during times of heavy rain to avoid any flooding problem inside the campus. Submit an action plan of well-designed rain water harvesting system with storm water management.
- 18 That, the sewage shall be treated in Sewage Treatment Plant (STP) and after treatment the water will be recycled for flushing of toilets, floor washing/cleaning, gardening/horticulture etc;
- 19 That, the quality of treated sewage of STP shall have to comply with the following standards (whichever applicable);

Sl No.	Parameter	Limiting concentration in mg/l, except pH and Fecal Coliform
1	pH	5.5-9.0
2	BOD	10
3	Total Suspended Solids (TSS)	20
4	COD	50
5	Nitrogen-Total	10
6	Phosphorus-Total for discharge into Ponds, Lakes	1.0
7	Fecal Coliform (FC) (Most Probable Number per 100 milliliter, MPN/100 ml)	Desirable-100 Permissible-230

- 20 That, sludge generated from the STP will be dried and later it will be used as manure in agriculture and for green belt development/gardening/horticulture;
- 21 That, they shall comply with the provisions (whichever applicable) of the Solid Waste Management Rules, 2016. Separate wet and dry bins must be provided in each unit and at the ground level for facilitating segregation of waste. All non-biodegradable waste shall be handed over to authorized recyclers for which a written tie up must be done with authorized recyclers. Organic waste compost/vermiculture pit with a minimum capacity of 0.3 kg/person per day must be installed;
- 22 That, segregation of dry (in blue bin), wet (in green bin) and domestic hazardous waste (in black bin) must be ensure; wet waste must be composted inside the premises and dry & domestic hazardous waste shall be handed over to the local body;
- 23 That, non-biodegradable waste and dry waste like rejected corrugated cardboard, waste paper etc may be handed over to the recyclers registered with Bihar State Pollution Control Board;

- 24 That, they shall comply with the provisions (whichever applicable) of the E-Waste (Management) Rules, 2016. The e-waste generated shall be disposed off by handing over to the authorized collection centre and a record shall be maintained;
- 25 That, they shall comply with the provisions (whichever applicable) of the Plastic Waste Management Rules, 2016. They will make effort to discourage the use of plastics so that minimum generation of plastics wastes to be taken place.
- 26 That, the environmental statement for each financial year ending the 31st Sept., in Form-V as is amended to be submitted by the proponent to the Board as prescribed in the Environment (Protection) Rules, 1986;
- 27 That, they shall make provisions for display of data outside main factory gate about quantity and quality of water discharge and air emission along with solid waste generated within the factory premises;
- 28 That, compliance report of above consent conditions shall be submitted quarterly to the Board; and
- 29 That, notwithstanding any thing stated above, the applicant unit shall abide by all the provisions of the environmental laws including policies and guidelines made there under;

To,

Sri Raj Kumar Pandey, CEO,
M/s Nabinagar Super Thermal Power Project, (3x660MW),
Vill-Majhiyawan, P.O.-Ankorha,
Distt.-Aurangabad


(S. Chandrasekar)
Member Secretary

ANNEXURE—F

राजसेट्टी सं. डी.एल.- 33004/99

REGD. No. D. L.-33004/99



भारत का राजपत्र The Gazette of India

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असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

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NEW DELHI, FRIDAY, DECEMBER 31, 2021/PAUSHA 10, 1943

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 31 दिसम्बर, 2021

का.आ. 5481(अ).—केन्द्रीय सरकार ने भारत सरकार के तत्कालीन पर्यावरण और वन मंत्रालय की अधिसूचना सं. का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 द्वारा कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से तीन सौ किलोमीटर के विनिर्दिष्ट व्यास के भीतर ईंटों के विनिर्माण के लिए उपजाऊ मिट्टी के उत्खनन को प्रतिबंधित करने के लिए और भवन निर्माण सामग्री के विनिर्माण में और संनिर्माण क्रियाकलाप में फ्लाई-राख के उपयोग को बढ़ावा देने के लिए निदेश जारी किए हैं;

और, प्रदूषणकर्ता भुगतान सिद्धांत (पीपीपी) के आधार पर, ऐसा करके कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों द्वारा फ्लाई-राख का 100 प्रतिशत उपयोग सुनिश्चित करते हुए और फ्लाई-राख प्रबंधन प्रणाली की संधारणीयता के लिए पूर्वोक्त अधिसूचना को और अधिक प्रभावकारी ढंग से कार्यान्वित करने हेतु, केंद्रीय सरकार ने मौजूदा अधिसूचना की समीक्षा की;

और प्रदूषणकर्ता भुगतान सिद्धांत के आधार पर पर्यावरणीय प्रतिकर निर्धारित किए जाने की आवश्यकता है;

और, विनिर्माण को बढ़ावा देकर तथा निर्माण कार्य के क्षेत्र में राख आधारित उत्पादों तथा भवन निर्माण सामग्रियों के प्रयोग को अनिवार्य करके उपजाऊ मिट्टी को संरक्षित करने की आवश्यकता है;

और, सड़क बनाने, सड़क एवं फ्लाई ओवर के रेलिंग बनाने, तटरेखा की सुरक्षा का उपाय करने, अनुमोदित परियोजनाओं के निचले क्षेत्रों को भरने, खनित स्थलों को फिर से भरने में मिट्टी की सामग्रियों से भरने के विकल्प के रूप में राख उपयोग को बढ़ावा देकर उपजाऊ मिट्टी और प्राकृतिक संसाधनों को संरक्षित करने की आवश्यकता है;

और, पर्यावरण को सुरक्षित करना तथा कोयला अथवा लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित फ्लाई राख के निक्षेपण तथा निपटान की रोकथाम करना आवश्यक है;

और, उक्त अधिसूचना में जो 'राख' शब्द का प्रयोग किया गया है उसमें कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित फ्लाई-राख और बॉटम-राख दोनों शामिल हैं;

और, केंद्रीय सरकार प्रदूषणकर्ता भुगतान सिद्धांत के आधार पर, पर्यावरणीय प्रतिकर की प्रणाली सहित राख के उपयोग के लिए एक व्यापक ढांचा लाना चाहती है;

अतः पर्यावरण (संरक्षण) नियम, 1986 के नियम (5) के उप-नियम (3) के खंड (घ) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, भारत सरकार के पर्यावरण एवं वन मंत्रालय की अधिसूचना जो का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 द्वारा भारत के राजपत्र, असाधारण भाग II, खंड 3, उप खंड (i) में प्रकाशित का अधिक्रमण करते हुए, कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों द्वारा राख के उपयोग के संबंध में प्रारूप अधिसूचना जो सा.का.नि. 285 (अ) तारीख 22 अप्रैल, 2021 द्वारा भारत के राजपत्र, असाधारण, भाग-2, धारा 3, उप धारा (i) में प्रकाशित की गई थी जिसमें उन सभी व्यक्तियों से जिनका इससे प्रभावित होना सामान्य है उस तारीख से, जिसको उक्त प्रारूप उपबंधों की शासकीय राजपत्र में अंतर्विष्ट प्रतियां जनता को उपलब्ध करा दी गई थी, साठ दिनों के अवसान से पूर्व आक्षेप और सुझाव आमंत्रित किए गए थे।

और उक्त प्रारूप अधिसूचना के संबंध में उससे संभावित तौर पर प्रभावित होने वाले सभी व्यक्तियों से प्राप्त आक्षेपों और सुझावों पर केंद्रीय सरकार द्वारा सम्यक रूप से विचार कर लिया गया है;

अतः पर्यावरण (संरक्षण) नियम, 1986 के नियम (5) के उप-नियम (3) के खंड (घ) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3 की उप-धारा (1) और उप-धारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए और अधिसूचना का.आ. 763 (अ) तारीख 14 सितम्बर, 1999 का उन बातों के सिवाय अधिकांत करते हुए जिन्हें ऐसे अधिक्रमण से पूर्व किया गया है या करने का लोप किया गया है, केंद्रीय सरकार कोयलों या लिग्नाइट आधारित ताप विद्युत संयंत्रों से राख के उपयोग के संबंध में निम्नलिखित अधिसूचना जारी करती है, जो इस अधिसूचना के प्रकाशन की तिथि से प्रवृत्त होगी, अर्थात्

क. फ्लाई-राख और बॉटम-राख का निपटान करने हेतु ताप विद्युत संयंत्रों (टीपीपी) के उत्तरदायित्व.-

(1) प्रत्येक कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्र (जिनमें कैप्टिव और/या सह-उत्पादन केंद्र शामिल हैं या दोनों) की यह प्राथमिक जिम्मेदारी होगी कि वह अपने द्वारा सृजित राख (फ्लाई-राख और बॉटम-राख) का उप पैरा (2) में दिए गए पारि-अनुकूल तरीके से 100 प्रतिशत उपयोग सुनिश्चित करे;

(2) कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्रों से सृजित राख का उपयोग केवल निम्नलिखित पारि-अनुकूल प्रयोजनों के लिए किया जाएगा, अर्थात्:-

- (i) फ्लाई राख पर आधारित उत्पाद अर्थात्: ईट ब्लॉक टाइल, फाइबर सीमेंट शीट, पाइप, बोर्ड, पैनल का विनिर्माण;
- (ii) सीमेंट विनिर्माण, रेडी-मिक्स कंक्रीट;

- (iii) सड़क निर्माण और फ्लाई-ओवर के रेलिंग का निर्माण, राख और जिओ-पॉलीमर आधारित निर्माण सामग्री;
- (iv) बांध का निर्माण;
- (v) निचले क्षेत्र को भरना;
- (vi) खनन कार्य से रिक्त हुए स्थान को भरना;
- (vii) सिंटेड या शीत-बद्ध राख संचय का विनिर्माण;
- (viii) मृदा परीक्षण के आधार पर नियंत्रित तरीके से कृषि;
- (ix) तटीय जिलों में तटरेखा संरक्षण संरचनाओं का निर्माण;
- (x) अन्य देशों को राख का निर्यात;
- (xi) समय-समय पर यथाधिसूचित किसी अन्य पारि-अनुकूल प्रयोजन के लिए।
- (3) अध्यक्ष, केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति गठित की जाएगी जिसमें पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी), विद्युत मंत्रालय, खान मंत्रालय, कोयला मंत्रालय, सड़क परिवहन और राजमार्ग मंत्रालय, कृषि अनुसंधान एवं शिक्षा विभाग, सड़क कांग्रेस संस्थान तथा राष्ट्रीय सीमेंट एवं भवन सामग्री परिषद के प्रतिनिधियों को सदस्यों के रूप में शामिल किया जाएगा, जिसका प्रयोजन राख के उपयोग के पारि-अनुकूल तौर-तरीकों की जांच करना, उनकी समीक्षा एवं अनुशंसा करना तथा प्रौद्योगिकीय विकासों तथा पणधारी से प्राप्त अनुरोधों के आधार पर उप-पैरा (2) में यथोल्लिखित ऐसे तौर-तरीकों की सूची में समिति द्वारा सुझाए गए तौर-तरीकों को शामिल करना या किसी तौर-तरीके को सूची से हटाना या उसमें संशोधन करना है। जब भी इस प्रयोजन के लिए अपेक्षित हो, यह समिति राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति, ताप विद्युत संयंत्र और खानों के प्रचालकों को आमंत्रित कर सकती है। इस समिति सिफारिश के आधार पर, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ऐसे पारि-अनुकूल प्रयोजन प्रकाशित करेगा।
- (4) प्रत्येक कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्र उस वर्ष के दौरान सृजित राख (फ्लाई-राख और बॉटम-राख) का 100 प्रतिशत उपयोग करने हेतु उत्तरदायी होगा; तथापि, किसी भी स्थिति में, किसी वर्ष में राख का उपयोग 80 प्रतिशत से नीचे नहीं होगा और साथ ही, उस ताप विद्युत संयंत्र को तीन वर्ष की अवधि में 100 प्रतिशत औसत राख के उपयोग का लक्ष्य प्राप्त करना होगा :

परंतु, यह और कि पहली बार के लिए लागू तीन वर्ष के चक्र को ऐसे ताप विद्युत संयंत्रों, जहां राख का उपयोग 60-80 प्रतिशत के बीच होता है, एक वर्ष के लिए और ऐसे संयंत्रों, जहां राख का उपयोग 60 प्रतिशत से कम है, दो वर्ष के लिए बढ़ाया जा सकता है, और राख के उपयोग की प्रतिशतता की गणना के प्रयोजन के लिए वर्ष 2021-2022 में उपयोग की प्रतिशत प्रमात्रा को नीचे दी गई तालिका के अनुसार ध्यान में रखा जाएगा:

तापीय विद्युत संयंत्रों के उपयोग की प्रतिशतता	100 प्रतिशत उपयोगिता प्राप्त करने के लिए प्रथम अनुपालन चक्र	100 प्रतिशत उपयोगिता प्राप्त करने के लिए द्वितीय अनुपालन चक्र
>80 प्रतिशत	3 वर्ष	3 वर्ष
60-80 प्रतिशत	4 वर्ष	3 वर्ष
<60 प्रतिशत	5 वर्ष	3 वर्ष

परन्तु, ताप विद्युत संयंत्रों के लिए 80 प्रतिशत न्यूनतम उपयोग प्रतिशतता, क्रमशः 60-80 प्रतिशत और <60 प्रतिशत की उपयोगिता की श्रेणी के तहत आने वाले ताप विद्युत संयंत्रों के लिए प्रथम अनुपालन चक्र के पहले वर्ष और पहले दो वर्षों पर लागू नहीं होगी।

परन्तु, अनुपालन चक्र के अंतिम वर्ष में सृजित 20 प्रतिशत राख को अगले चक्र में भी ले जाया जाएगा जिसका उपयोग उस अनुपालन चक्र के दौरान सृजित राख के साथ अगले तीन वर्षों में किया जाएगा।

- (5) अप्रयुक्त संचित राख अर्थात् लीगेसी राख, जिसका इस अधिसूचना के प्रकाशन से पहले भंडारण किया गया है, को ताप विद्युत संयंत्र (टीपीपी) द्वारा इस रीति से क्रमिक रूप से उपयोग में लाया जाएगा, कि लीगेसी राख को इस अधिसूचना के प्रकाशन की तिथि से दस वर्षों के भीतर पूरी तरह उपयोग कर लिया जाएगा और यह उस विशिष्ट वर्ष के चालू संचालनों के माध्यम से राख उत्सर्जन के लिए निर्धारित उपयोग लक्ष्यों से अतिरिक्त होगा।

परन्तु, निम्नलिखित प्रतिशतताओं में यथा उल्लिखित लीगेसी राख की न्यूनतम मात्रा का उपयोग तास्थानी वर्ष के दौरान कर लिया जाएगा और लीगेसी राख की न्यूनतम मात्रा की ताप विद्युत संयंत्र की संस्थापित क्षमता के अनुसार वार्षिक राख उत्सर्जन के आधार पर की जानी है।

प्रकाशन की तिथि से वर्ष	पहला	दूसरा	तीसरा-दसवां
लीगेसी राख का उपयोग (वार्षिक राख की प्रतिशतता)	कम से कम 20 प्रतिशत	कम से कम 35 प्रतिशत	कम से कम 50 प्रतिशत

परन्तु, यह और कि लीगेसी राख का उपयोग वहां अपेक्षित नहीं है, जहां राख के तालाब या डाइक स्थिर हो गए हैं और हरित पट्टी के निर्माण या पौध रोपण से पुनरुद्धार किया गया है और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड इस संबंध में प्रमाणित करेगा। किसी राख तालाब या डाइक के स्थिरीकरण और भूमि-उद्धार का कार्य, जिसमें केन्द्रीय प्रदूषण नियंत्रण बोर्ड या राज्य प्रदूषण नियंत्रण बोर्ड द्वारा प्रमाणन शामिल है, इस अधिसूचना के प्रकाशन की तारीख से एक वर्ष के भीतर किया जाएगा। अन्य सभी राख के कुंड या डाइक में शेष बचे राख का उपयोग ऊपर उल्लिखित समय-सीमाओं के अनुसार क्रमिक रूप से किया जाएगा।

टिप्पण: राख के उपयोग के लक्ष्यों को हासिल करने के लिए उप पैरा (4) और (5) के अधीन दायित्व 01 अप्रैल, 2022 की तारीख से लागू होंगे।

- (6) किसी भी नए तापीय विद्युत संयंत्र (टीपीपी) में 0.1 हेक्टेयर प्रति मेगावाट (एमडब्ल्यू) क्षेत्रफल के साथ आपातकालीन या अस्थायी राख कुंड की अनुमति दी जा सकती है। राख के तालाब या डाइकों का तकनीक विनिर्देश, केन्द्रीय विद्युत प्राधिकरण (सीईए) के परामर्श से केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा बनाए गए दिशानिर्देशों के अनुसार होगा और ये दिशानिर्देश राख के कुंड या डाइक के संबंध में इसकी सुरक्षा, पर्यावरणीय प्रदूषण, उपलब्ध प्रमात्रा, निपटान का तरीका, निपटान में जल की खपत या संरक्षण, राख जल पुनर्चक्रण और ग्रीन बेल्ट आदि के वार्षिक प्रमाणन के लिए कार्यविधि भी निर्धारित करेंगे और इस अधिसूचना के प्रकाशन की तारीख से तीन महीनों के भीतर प्रस्तुत किए जाएंगे।
- (7) प्रत्येक कोयला या लिग्नाइट आधारित ताप विद्युत संयंत्र यह सुनिश्चित करेगा कि राख की लदाई, उतराई, ढुलाई, भंडारण और निपटान पर्यावरणीय दृष्टि से अनुकूल रीति से किया गया है और वायु और जल प्रदूषण की रोकथाम के लिए सभी ऐहियतात किए गए हैं और इस संबंध में स्थिति की सूचना इस अधिसूचना में संलग्न अनुबंध में संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को दी जाएगी।
- (8) प्रत्येक कोयला या लिग्नाइट आधारित तापीय विद्युत संयंत्र, संस्थापित क्षमता पर आधारित राख के कम से कम 16 घंटों के भंडारण के लिए समर्पित शुष्क फ्लाई राख साइलोस प्रतिष्ठापित करेगा, जिनके पास पृथक पहुंच मार्ग होंगे, जिससे कि राख पहुंचाने के कार्य को सुगम बनाया जा सके। इसकी सूचना संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को उपाबंध में दी जाएगी और केन्द्रीय प्रदूषण नियंत्रण

बोर्ड (सीपीसीबी) या राज्य केन्द्रीय प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति द्वारा समय-समय पर निरीक्षण किया जाएगा।

- (9) प्रत्येक कोयला या लिग्नाईट आधारित तापीय विद्युत संयंत्र (जिसके अंतर्गत कैप्टिव या सह उत्पादन केन्द्र भी है या दोनों), वास्तविक उपयोगकर्ता (उपयोगकर्ताओं) के हित के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड के वेब पोर्टल या मोबाईल फोन एप्प का लिंक उपलब्ध कराकर ताप विद्युत संयंत्र के पास राख की उपलब्धता के वास्तविक आंकड़े प्रदान करेगा।
- (10) राख के 100 प्रतिशत उपयोग का वैधानिक दायित्व, जहां भी लागू हो, विधि में बदलाव के रूप में माना जाएगा।

ख. राख के उपयोग के प्रयोजनार्थ, उत्तरवर्ती उप पैराग्राफ लागू होंगे :-

- (1) ऐसे सभी अभिकरण (सरकारी, अर्द्धसरकारी और निजी), जो सड़क बिछाने, सड़क और फ्लाई ओवर के किनारों, तटीय जिलों में तटरेखा की सुरक्षा संरचनाओं और लिग्नाईट या कोयला आधारित ताप विद्युत संयंत्र से 300 किमी के भीतर बांधों जैसे निर्माण संबंधी कार्यकलापों में लगे हुए हैं, इन कार्यकलापों में अनिवार्य रूप से राख का उपयोग करेंगे :

परंतु इसको परियोजना स्थल पर निशुल्क पहुंचाया जाए और परिवहन लागत, ऐसे कोयला या लिग्नाईट आधारित ताप विद्युत संयंत्रों द्वारा वहन की जाए।

परंतु यह और कि ताप विद्युत संयंत्र पारस्परिक सहमत हुई शर्तों के अनुसार राख की लागत और परिवहन के लिए शुल्क ले सकता है उस मामले में जहां ताप विद्युत संयंत्र अन्य माध्यम से राख का निपटान करने में समर्थ है और ये अभिकरण इसके लिए प्रार्थना कर सकते हैं और बिना लागत और बिना परिवहन शुल्क के राख उपलब्ध कराने के प्रावधान तभी लागू होंगे यदि उसके लिए ताप विद्युत संयंत्र उस निर्माण अभिकरण को नोटिस जारी करता है।

- (2) उक्त कार्यकलापों में राख का उपयोग भारतीय मानक ब्यूरो, भारतीय रोड कांग्रेस, केन्द्रीय भवन अनुसंधान संस्थान, रूडकी, केन्द्रीय सड़क अनुसंधान संस्थान, दिल्ली, केन्द्रीय लोक निर्माण विभाग, राज्य लोक निर्माण विभागों और अन्य केन्द्रीय और राज्य सरकार के अभिकरणों द्वारा निर्धारित किए गए विनिर्देशों और दिशानिर्देशों के अनुसार किया जाएगा।

- (3) तापीय विद्युत संयंत्र की 300 किलोमीटर की परिधि के भीतर अवस्थित सभी खानों के लिए विस्तारित उत्पादक उत्तरदायित्व (ईपीआर) के तहत खुली आवर्त खानों में राख का पृष्ठ भंडारण करना या अधिक भार के ढेरों के साथ राख का मिश्रण करना बाध्यकारी होगा। सभी खान के स्वामी या प्रचालक (चाहे सरकारी, सार्वजनिक और निजी क्षेत्र के हो) कोयला या लिग्नाईट आधारित तापीय विद्युत संयंत्रों से तीन सौ किलोमीटर (सड़क द्वारा) के भीतर, महानिदेशक, खान सुरक्षा (डीजीएमएस) के दिशानिर्देशों के अनुसार ओवर बर्डन के बाह्य निक्षेप खान क बैकफिलिंग अथवा स्टोर्विंग (प्रचालित या छोड़ी गई खानों, जैसा भी मामला हो) के लिए उपयोग की गई सामग्रियों के भार-दर-भार के आधार पर कम से कम 25 प्रतिशत राख को मिश्रित करने के लिए उपाय करेंगे :

परंतु ऐसे तापीय विद्युत केन्द्र निःशुल्क राख प्रदान करके और परिवहन की लागत को वहन करके या पारस्परिक सहमत हुई शर्तों पर लिए गए निर्णय के अनुसार लागत या परिवहन व्यवस्था करके राख की अपेक्षित मात्रा क उपलब्धता को सुकर बनायेंगे और खानों के खाली स्थानों और ढेरों में अधिकभार के साथ राख को मिश्रित करना, सृजित अधिभार के लिए इस अधिसूचना के प्रकाशन की तिथि से लागू होगा और उक्त कार्यकलापों में राख का उपयोग, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, महानिदेशक खान सुरक्षा और भारतीय खदान ब्यूरो द्वारा निर्धारित दिशानिर्देशों के अनुसार किया जाएगा।

स्पष्टीकरण .- इस उप-पैरा के प्रयोजन के लिए यह भी स्पष्ट किया जाता है कि लागत मुक्त राख और निःशुल्क परिवहन के उपबंध केवल तभी लागू होंगे यदि ताप विद्युत संयंत्र इसके लिए खान मालिक को नोटिस देते हैं और अधिभार वाले ढेर के साथ मिश्रित करने और खान में खाली स्थान को भरने के लिए राख के 25 प्रतिशत हिस्से के उपयोग का अधिदेश तब तक लागू नहीं होगा जब तक कि ताप विद्युत संयंत्र द्वारा खान मालिक को नोटिस न दिया गया हो।

- (5) (i) सभी खान मालिकों को खान में खाली स्थानों में राख को समायोजित करने के लिए खान बंद योजना (प्रगामी और अंतिम) तैयार करनी होगी और खान में खाली स्थानों में राख के निपटान और अधिभार वाले ढेर के साथ राख को मिश्रित करने के लिए खान योजनाओं को संबंधित प्राधिकारी अनुमोदित करेगा। पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा ताप विद्युत संयंत्रों और कोयला खदानों की पर्यावरणीय मंजूरी की अपेक्षा से छूट देने के साथ-साथ ऐसे निपटान के लिए अपनाए जाने वाले दिशानिर्देशों के संबंध में तारीख 28 अगस्त, 2019 को दिशानिर्देश जारी किए गए।
- (ii) मंत्रालय, केन्द्रीय प्रदूषण नियंत्रण बोर्ड, महानिदेशक, खान सुरक्षा (डीजीएमएस) और भारतीय खान ब्यूरो (आईबीएम) के साथ परामर्श करके, खानों में खाली स्थानों में राख के निपटान करने तथा अधिभार वाले ढेरों में इसे मिश्रित करना सुगम बनाने के लिए समय-समय पर आगे भी दिशानिर्देश जारी कर सकता है और यह खान मालिकों की जिम्मेदारी होगी कि वे ऐसी खानों को अभिज्ञात करने की तिथि से एक वर्ष के भीतर विभिन्न विनियामक प्राधिकरणों द्वारा जारी की गई अनुमतियों में आवश्यक संशोधन या परिवर्तन प्राप्त करेंगे।
- (6) (i) पर्यावरणीय प्रदूषण के संदर्भ में सुरक्षा, व्यवहार्यता (आर्थिक व्यवहार्यता नहीं) और पहलुओं की जांच सहित राख से खान में खाली स्थान को वापस भरने/अधिभार वाले ढेर के साथ राख को मिश्रित करने के लिए खानों की पहचान करने के लिए पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, विद्युत मंत्रालय, खान मंत्रालय, कोयला मंत्रालय, महानिदेशक खान सुरक्षा और भारतीय खान ब्यूरो से प्रतिनिधियों को शामिल करते हुए अध्यक्ष, केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति का गठन किया जाएगा और यह समिति पणधारी मंत्रालयों या विभागों के लिए अभिज्ञात खानों (भूमिगत और खुली, दोनों) के संबंध में तैयार की गई तिमाही रिपोर्टों को अद्यतन करेगी और यह समिति, इस अधिसूचना के प्रकाशन के तुरंत पश्चात उपयुक्त खानों की पहचान करना आरंभ करेगी।
- (ii) ताप विद्युत संयंत्र या खानें, उपरोक्त अनुसार अधिदेशित उपयोग लक्ष्यों को पूरा करने के लिए उपर्युक्त समिति द्वारा पहचान किए जाने तक राख के निपटान हेतु प्रतीक्षा नहीं करेंगी।
- (7) राख से निचले क्षेत्र को भरने का कार्य, अनुमोदित परियोजनाओं के लिए राज्य प्रदूषण नियंत्रण बोर्ड की पूर्व अनुमति से और केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा निर्धारित दिशा-निर्देशों के अनुसार किया जाएगा और राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति द्वारा अनुमोदित स्थलों, अवस्थान, क्षेत्र और अनुमत मात्रा को अपनी वेबसाइट पर प्रतिवर्ष प्रकाशित किया जाएगा।
- (8) केन्द्रीय प्रदूषण नियंत्रण बोर्ड, संगत पणधारी के साथ मिलकर, राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा अनुमति प्रदान करने के लिए समयबद्ध ऑनलाइन आवेदन प्रक्रिया प्रस्तुत करने के साथ-साथ इस अधिसूचना के अधीन परिकल्पित सभी प्रकार के कार्यकलापों के लिए एक वर्ष के भीतर दिशानिर्देश प्रस्तुत करेगा।
- (9) कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र से तीन सौ किलोमीटर के दायरे में स्थित सभी भवन निर्माण परियोजनाएं (केंद्रीय, राज्य और स्थानीय प्राधिकरणों सरकारी उपक्रमों, अन्य सरकारी अभिकरणों तथा सभी निजी अभिकरणों) राख की ईटों, टाइल्स, धातुमल राख अथवा अन्य राख आधारित उत्पादों का उपयोग करेंगी बशर्ते कि वे वैकल्पिक उत्पादों की कीमत से अधिक कीमत पर उपलब्ध न हो।
- (10) राख आधारित उत्पादों के विनिर्माण और ऐसे उत्पादों में राख के उपयोग में भारतीय मानक ब्यूरो, भारतीय सड़क कांग्रेस और केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा निर्धारित विनिर्देशों और दिशानिर्देशों की अनुपालना होगी।

ग. गैर-अनुपालन के लिए पर्यावरणीय प्रतिकर .-

- (1) तीन वर्ष के चक्र के प्रथम दो वर्षों में, यदि कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र (कैप्टिव और/ या सह-उत्पादक स्टेशनों या दोनों सहित) ने कम-से-कम 80 प्रतिशत राख (फ्लाइ-राख और बॉटम-राख) उपयोग नहीं की है तो ऐसे गैर-अनुपालन ताप विद्युत संयंत्रों पर प्रस्तुत की गई वार्षिक रिपोर्टों के आधार पर वित्तीय वर्ष के

अंत में अप्रयुक्त राख पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा और यदि यह तीन वर्ष के चक्र के तीसरे वर्ष में 100 प्रतिशत राख का उपयोग करने में असमर्थ रहता है, तो वह अप्रयुक्त मात्रा पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर के भुगतान का पात्र होगा, जिस पर पहले पर्यावरणीय प्रतिकर नहीं लगायी गयी है।

परंतु पर्यावरणीय प्रतिकर को पैरा क के उप-पैरा (4) में उल्लिखित विभिन्न उपयोगी श्रेणियों के अनुसार प्रथम अनुपालन चक्र के अंतिम वर्ष के अंत में अनुमान लगाया जाएगा और अधिरोपित किया जाएगा।

- (2) अधिकारियों द्वारा एकत्रित पर्यावरणीय प्रतिकर को केन्द्रीय प्रदूषण नियंत्रण बोर्ड के निर्दिष्ट खाते में जमा किया जाएगा।
- (3) लैगोसी राख के मामले में, यदि कोयला या लिग्नाइट आधारित तापीय ऊर्जा संयंत्र (कैप्टिव या सह-उत्पादक स्टेशनों या दोनों सहित) ने स्थापित क्षमता पर आधारित उत्पन्न राख का कम-से-कम 20 प्रतिशत (प्रथम वर्ष के लिए), 35 प्रतिशत (द्वितीय वर्ष के लिए), 50 प्रतिशत (तीसरे से दसवें वर्ष तक) उपयोग के बराबर लक्ष्य प्राप्त नहीं किया है तो उस वित्तीय वर्ष के दौरान अप्रयुक्त लैगोसी राख पर 1000 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा और यदि 10 वर्ष के अंत में लैगोसी राख का उपयोग नहीं किया जाता है तो 1000 रुपए प्रति टन की दर से शेष अप्रयुक्त मात्रा पर पर्यावरणीय प्रतिकर लगाया जाएगा जिस पर पहले पर्यावरणीय प्रतिकर नहीं लगाया गया है।
- (4) अधिकृत खरीददारों या उपभोक्ता अभिकरणों तक राख भेजने की जिम्मेदारी परिवाहकों या वाहन मालिक की जिम्मेदारी है और यदि इसका अनुपालन नहीं किया जाता है, तो अनधिकृत उपयोगकर्ताओं अथवा गैर-अधिकृत उपयोगकर्ताओं को ऐसी मात्रा गलत तरीके से वितरित करने पर 1500 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगायी, इसके अतिरिक्त राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा गैर अनुपालनकर्ता परिवाहकों पर अभियोजन लागू होगा।
- (5) इस अधिसूचना के पैरा ख में विहित पर्यावरण अनुकूल तरीके में राख के उपयोग की जिम्मेदारी खरीददार या उपभोगकर्ता एजेंसियों की है और ऐसा नहीं करने पर केन्द्रीय प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा 1500 रुपए प्रति टन की दर से पर्यावरणीय प्रतिकर लगाया जाएगा।
- (6) यदि उपयोगकर्ता अधिकरण पैरा ख के अधीन निर्धारित सीमा तक अथवा पैरा घ के उप-पैरा (1) के अधीन, दिए गए नोटिस के माध्यम से सूचित की गई सीमा, इनमें से जो भी कम हो, तक राख का उपयोग नहीं करती है, वे अतिरिक्त राख की मात्रा का 1500 रुपए प्रति टन की दर से भुगतान करने के लिए उत्तरदायी होंगी।
परंतु भवन निर्माण के संबंध में पर्यावरणीय प्रतिकर निर्मित क्षेत्र के 75 रुपये प्रति वर्ग फीट की दर से वसूल किया जाएगा।
- (7) (i) ताप विद्युत संयंत्रों अन्य बकायादारों से केन्द्रीय प्रदूषण नियंत्रण बोर्ड द्वारा लगायी गई का पर्यावरणीय प्रतिकर उपयोग अप्रयुक्त राख के सुरक्षित निपटान हेतु किया जाएगा और राख आधारित उत्पादों सहित राख के उपयोग के संबंध में और अधिक अनुसंधान करने के लिए भी निधि का उपयोग किया जा सकता है।
(ii) अप्रयुक्त मात्रा पर लगाए गए पर्यावरणीय प्रतिकर के पश्चात भी राख के उपयोग का उत्तरदायित्व ताप विद्युत संयंत्रों की होगी और यदि पश्चातवती चक्रों में पर्यावरणीय प्रतिकर लगाने के पश्चात ताप विद्युत संयंत्र, किसी विशेष चक्र की राख के उपयोग के लक्ष्य को प्राप्त करता है तो अगले चक्र के दौरान अप्रयुक्त मात्रा पर एकत्र की गई पर्यावरणीय प्रतिकर में 10 प्रतिशत कटौती के पश्चात उक्त रकम ताप विद्युत संयंत्र को वापस कर दी जाएगी और पश्चातवती चक्रों में राख के उपयोग के मामले में एकत्र की गई पर्यावरणीय प्रतिकर की 20 प्रतिशत, 30 प्रतिशत और उसी क्रम में कटौती की जानी है।

घ. राख या राख आधारित उत्पादों की आपूर्ति हेतु प्रक्रिया .—

- (1) ताप विद्युत संयंत्रों के स्वामी अथवा राख की ईंटों या टाईल्स या धातुमल आधारित राख के विनिर्माता उन व्यक्तियों या अभिकरणों को लिखित सूचना देंगे जो बिक्री या परिवहन या दोनों के लिए प्रस्तुत राख या राख आधारित उत्पादों के उपयोग के लिए उत्तरदायी हैं।
- (2) ऐसे व्यक्ति या उपयोगकर्ता अभिकरणों जिन्हें ताप विद्युत संयंत्रों के स्वामी द्वारा या राख की ईंटों या टाईल्स या धातुमल आधारित राख के उत्पादकों द्वारा सूचना दी गई है, यदि वे पहले ही राख या राख उत्पादों के उपयोग के प्रयोजन से अन्य अभिकरणों के साथ जुड़े हुए हैं, यदि वे किसी भी राख/राख उत्पादों का उपयोग नहीं कर सकते हैं अथवा कम मात्रा का उपयोग कर सकते हैं, तदनुसार ताप विद्युत संयंत्र को सूचित करेंगे।

ड. प्रवर्तन, निगरानी, लेखा परीक्षा और प्रतिवेदन करना

- (1) केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी), उपबंधों के अनुपालना सुनिश्चित करने के लिए प्रवर्तन और निगरानी प्राधिकरण होंगे। सीपीसीबी या एसपीसीबी या पीसीसी तिमाही आधार पर राख के उपयोग की निगरानी करेंगे और सीपीसीबी इस प्रयोजन के लिए अधिसूचना की प्रकाशन की तारीख से छः माह के भीतर एक पोर्टल विकसित करेगा। संबंधित जिला अधिकारी के पास इस अधिसूचना के उपबंधों को लागू करने और निगरानी करने के लिए समवर्ती अधिकारिता होगी।
- (2) (i) ताप विद्युत संयंत्र, राख उत्सर्जन और उपयोग से संबंधित मासिक सूचना वेब पोर्टल पर अगले महीने की 5 तारीख तक अपलोड करेगा। कोयला या लिग्नाइट आधारित ताप ऊर्जा संयंत्रों द्वारा केंद्रीय प्रदूषण नियंत्रण बोर्ड, संबंधित राज्य प्रदूषण नियंत्रण बोर्ड या प्रदूषण नियंत्रण समिति (पीसीसी), केंद्रीय विद्युत प्राधिकरण (सीईए) और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय के संबंधित एकीकृत क्षेत्रीय कार्यालयों को इस अधिसूचना के उपबंधों के अनुपालन संबंधी सूचना उपलब्ध कराते हुए वार्षिक कार्यान्वयन रिपोर्ट प्रत्येक वर्ष (1 अप्रैल से 31 मार्च तक की अवधि के लिए) अप्रैल माह के 30वें दिन तक प्रस्तुत की जाएगी। सीपीसीबी और सीईए द्वारा सभी ताप विद्युत संयंत्रों द्वारा प्रस्तुत वार्षिक रिपोर्टों का समेकन किया जाएगा और उसे पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय को 31 मई तक प्रस्तुत किया जाएगा।
- (ii) सभी अन्य उपयोगकर्ता अधिकरण पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय या राज्य स्तरीय पर्यावरण प्रभाव आकलन प्राधिकरण (एसईआईएए) द्वारा जारी पर्यावरणीय मंजूरी (ईसी) अथवा राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) द्वारा जारी संचालन की सहमति (सीटीओ), जो भी लागू हो, की अनुपालना रिपोर्ट में इस अधिसूचना में आज्ञापकता के अनुसार राख के उपभोग या उपयोग या निस्तारण तथा राख आधारित उत्पादों के उपयोग संबंधी सूचना प्रस्तुत करेंगे। केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) या राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) अधिसूचना के उपबंधों के प्रभावी कार्यान्वयन की समीक्षा करने हेतु ताप विद्युत संयंत्रों के अतिरिक्त अन्य सभी अधिकरणों की राख उपयोग क वार्षिक रिपोर्ट प्रकाशित करेंगे।
- (3) इस अधिसूचना के उपबंधों की निगरानी और कार्यान्वयन के प्रयोजन के लिए केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) की अध्यक्षता में एक समिति का गठन किया जाएगा जिसके सदस्य विद्युत मंत्रालय, कोयला मंत्रालय, खनन मंत्रालय, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय, सड़क परिवहन और राजमार्ग मंत्रालय और भारी उद्यम विभाग से होने के साथ-साथ समिति के अध्यक्ष द्वारा नामित किए जाने वाले कोई संबंधित पणधारी होंगे। यह समिति संगत पणधारी को आमंत्रित कर सकती है। यह समिति इस अधिसूचना के उपबंधों के प्रभावी और दक्ष कार्यान्वयन के लिए सिफारिशें कर सकती है। यह समिति छः माह में कम से कम एक बार एक बैठक करेगी और वार्षिक कार्यान्वयन रिपोर्टों की समीक्षा करेगी और यह समिति, इस अधिसूचना द्वारा आज्ञापक किए गए अनुसार छः महीनों में कम से कम एक बार संगत पणधारी (को) को आमंत्रित करके राख के उपयोग क निगरानी करने के लिए पणधारी से साथ परामर्शदात्री बैठकें आयोजित करेगी। यह समिति पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी) को छः मासिक रिपोर्ट प्रस्तुत करेगी।

- (4) ताप विद्युत संयंत्रों और राख के उपयोगकर्ताओं या राख आधारित उत्पादों के विनिर्माताओं के बीच के विवाद का समाधान करने के प्रयोजन से राज्य सरकारें या संघ राज्यक्षेत्र की सरकारें इस अधिसूचना के प्रकाशन की तारीख से तीन माह के भीतर राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) क अध्यक्षता में एक समिति का गठन करेंगी जिसमें विद्युत विभाग के प्रतिनिधि और एक प्रतिनिधि उस विभाग का होगा, जो विवाद वाले संबंधित अभिकरण का कार्य देख रहे हैं।
- (5) केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) द्वारा प्राधिकृत लेखा परीक्षकों द्वारा ताप विद्युत संयंत्रों और उपयोगकर्ता अभिकरणों द्वारा किए गए राख के निपटान की अनुपालन लेखा परीक्षा संचालित की जाएगी और लेखा परीक्षा की रिपोर्ट प्रत्येक वर्ष 30 नवम्बर तक केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) को प्रस्तुत की जाएगी। केन्द्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) और संबंधित राज्य प्रदूषण नियंत्रण बोर्ड (एसपीसीबी) या प्रदूषण नियंत्रण समिति (पीसीसी) लेखा परीक्षा की रिपोर्ट प्राप्त होने के पंद्रह दिनों के भीतर अनुपालन न करने वाले ताप विद्युत संयंत्रों के विरुद्ध कार्रवाई प्रारंभ करेंगे।

[फा. सं. एचएसएम-9/1/2019-एचएसएम]

नरेश पाल गंगवार, संयुक्त सचिव

उपाबंध

31 मई तक अथवा उससे पहले प्रस्तुत की जाने वाली राख संबंधी उपबंधों की अनुपालन रिपोर्ट (01 अप्रैल से 31 मार्च की अवधि के लिए)।

क्र.सं.	ब्यौरा	
1.	विद्युत संयंत्र का नाम	
2.	कंपनी का नाम	
3.	जिला	
4.	राज्य	
5.	पत्राचार के लिए डाक का पता :	
6.	ई-मेल :	
7.	विद्युत संयंत्र की संस्थापित क्षमता (मेगा वॉट) :	
8.	संयंत्र लोड फैक्टर (पीएलएफ) :	
9.	उत्पादित यूनिटों की संख्या (एमडब्ल्यूएच) :	
10.	विद्युत संयंत्र के अंतर्गत कुल क्षेत्र (हेक्टेयर) (राख कुंडों के अधीन क्षेत्र सहित) :	
11.	रिपोर्टिंग की अवधि के दौरान कोयला खपत की मात्रा (प्रति वर्ष मीट्रिक टन) :	
12.	औसत राख सामग्री प्रतिशतता में (%) :	
13.	रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख की मात्रा (प्रति वर्ष मीट्रिक टन) : फ्लाई राख (प्रति वर्ष मीट्रिक टन) : बॉटम राख (प्रति वर्ष मीट्रिक टन) :	
14.	ड्राई फ्लाई राख भंडारण गड्ढा (गड्ढों) की क्षमता (मीट्रिक टन) :	
15.	रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख के उपयोग का ब्यौरा: (क) रिपोर्टिंग की अवधि के दौरान वर्तमान में उपयोग की गई राख की	

	<p>कुल मात्रा (एमटीपीए) :</p> <p>(ख) उपयोग की गई फ्लाई राख की मात्रा (एमटीपीए) :</p> <ol style="list-style-type: none"> फ्लाई-एश आधारित उत्पाद (ईट या ब्लॉक या टाइल्स या फाइबर सीमेंट शीट या पाइप या बोर्ड/पैनल) : सीमेंट विनिर्माण : रेडी मिक्स कंक्रीट : राख और जीओ-पॉलिमर आधारित निर्माण सामग्री : सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण : सड़कों, सड़क और फ्लाई ओवर के पुशतों का निर्माण : बांधों का निर्माण : निम्न भू-क्षेत्र का भराव : खनिज क्षेत्रों का भराव : अधिभार वाले डम्पों में उपयोग : कृषि : तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण : अन्य देशों को राख का निर्यात : अन्य (कृपया विनिर्दिष्ट करें) : <p>(ग) उपयोग किए गए तल के राख की मात्रा (एमटीपीए) :</p> <ol style="list-style-type: none"> फ्लाई-एश आधारित उत्पाद (ईट या ब्लॉक या टाइल्स या फाइबर सीमेंट शीट या पाइप या बोर्ड या पैनल) : सीमेंट विनिर्माण : रेडी मिक्स कंक्रीट : राख और जीओ-पॉलिमर आधारित निर्माण सामग्री : सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण : सड़कों, सड़क और फ्लाईओवर के पुशतों का निर्माण : बांधों का निर्माण : निम्न भू-क्षेत्र का भराव : खनिज क्षेत्रों का भराव : अधिभार वाले डम्पों में उपयोग : कृषि : तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण : अन्य देशों को राख का निर्यात : अन्य (कृपया विनिर्दिष्ट करें) : <p>रिपोर्टिंग की अवधि के दौरान वर्तमान में अप्रयुक्त राख की कुल मात्रा (एमटीपीए) :</p>	
16.	रिपोर्टिंग की अवधि के दौरान वर्तमान में उत्पादित राख का प्रतिशतता उपयोग (%) :	
17.	<p>राख कुंडों में राख के निपटान का ब्यौरा</p> <p>क) तारीख 31 मार्च तक (रिपोर्टिंग की अवधि को छोड़कर) राख कुण्ड (कुण्डों) में निपटान किए गए राख की कुल मात्रा (मीट्रिक टन):</p>	

	<p>ख) रिपोर्टिंग की अवधि के दौरान राख कुण्ड (कुण्डों) में निपटान किए गए राख की मात्रा (मीट्रिक टन):</p> <p>ग) रिपोर्टिंग की अवधि के दौरान राख कुण्डों में गारा निस्सरण हेतु खपत हुए जल की कुल मात्रा (मी³):</p> <p>घ) राख कुण्डों की कुल संख्या:</p> <p>(i) सक्रिय:</p> <p>(ii) खाली किए गए (पुनः भरा जाना है)</p> <p>(iii) पुनः भरे गए:</p> <p>ड.) राख कुण्डों के अधीन कुल क्षेत्र (हेक्टेयर):</p>	
18.	<p>अलग-अलग राख कुण्ड का ब्यौरा</p> <p>राख कुण्ड 1,2 आदि (यदि राख कुण्डों की संख्या एक से अधिक हो, तो कृपया निम्नलिखित ब्यौरा अलग से उपलब्ध कराएं)</p> <p>क) स्थिति: निर्माणाधीन या सक्रिय या खाली किया गया या पुनः भरा गया</p> <p>ख) राख कुण्ड में राख का निपटान शुरू करने की तारीख/महीना/वर्ष या महीना/वर्ष):</p> <p>ग) राख कुण्ड की क्षमता पूर्ण किए जाने के पश्चात् उसमें राख निपटान रोकने की तारीख</p> <p>(तारीख/महीना/वर्ष या महीना/वर्ष):</p> <p>(सक्रिय राख कुण्डों के लिए लागू नहीं)</p> <p>ग) क्षेत्र (हेक्टेयर):</p> <p>घ) डाइक की ऊंचाई (मी.):</p> <p>घ) आयतन (मी³):</p> <p>ड.) तारीख 31 मार्च तक निपटान किए गए राख की मात्रा (मीट्रिक टन):</p> <p>च) उपलब्ध आयतन का प्रतिशत (%) और आगे निपटान किए जा सकने वाले राख की मात्रा (मीट्रिक टन):</p> <p>छ) राख कुण्ड के भरे जाने की अनुमानित अवधि (वर्षों और महीनों की संख्या):</p> <p>ड.) निर्देशांक (अक्षांश और देशान्तर):</p> <p>(कृपया न्यूनतम 4 निर्देशांकों को विनिर्दिष्ट करें)</p> <p>ज) राख कुण्ड में की गई लाइनिंग का प्रकार: एचडीपीई लाइनिंग या एलडीपीई लाइनिंग या क्ले लाइनिंग या कोई लाइनिंग नहीं</p> <p>छ) निपटान की विधि: शुष्क निपटान या नम गारा (नम गारा के मामले में कृपया विनिर्दिष्ट करें कि क्या एचसीएसडी या एमसीएसडी या एलसीएसडी है)</p> <p>ज) राख का अनुपात: गारा मिश्रण में जल (1:____):</p> <p>झ) संस्थापित और कार्यशील राख जल पुनर्चक्रण प्रणाली (एडब्ल्यूआरएस): हां या नहीं</p> <p>ञ) जमीन के अंदर या जल निकाय में राख कुण्ड से निस्सरित अपशिष्ट जल की मात्रा (मी³):</p> <p>ट) डाइक की स्थिरता का अध्ययन कराए जाने की पिछली तारीख और उस संगठन का नाम जिसने अध्ययन किया:</p> <p>ठ) लेखा-परीक्षा किए जाने की पिछली तारीख और उस संगठन का नाम जिसने लेखा-परीक्षा की:</p>	
19.	<p>उपयोग किए गए पुराने राख की मात्रा (एमटीपीए):</p> <p>i. फ्लाई-एश आधारित उत्पाद (ईट या ब्लॉक या टाइल्स या फाइबर</p>	

	सीमेंट शीट या पाइप या बोर्ड या पैनल):			
	ii. सीमेंट विनिर्माण:			
	iii. रेडी मिक्स कंक्रीट:			
	iv. राख और जीओ-पॉलिमर आधारित निर्माण सामग्री:			
	v. सिंटर्ड या कोल्ड बॉन्डेड राख एग्रीगेट का निर्माण:			
	vi. सड़कों, सड़क और फ्लाई ओवर के पुशतों का निर्माण:			
	vii. बांधों का निर्माण:			
	viii. निम्न भू-क्षेत्र का भराव:			
	ix. खनिज क्षेत्रों का भराव:			
	x. अधिभार वाले डम्पों में उपयोग:			
	xi. कृषि:			
	xii. तटीय जिलों में तटरेखा सुरक्षा संरचनाओं का निर्माण:			
	xiii. अन्य देशों को राख का निर्यात			
	xiv. अन्य (कृपया विनिर्दिष्ट करें):			
20.	सार :			
	व्यौरा	सृजित मात्रा (एमटीपी)	उपयोग की गई मात्रा (एमटीपी) और (%)	शेष मात्रा (एमटीपी)
	रिपोर्टिंग की अवधि के दौरान राख			
	पुरानी राख			
	कुल			
21.	कोई अन्य सूचना : वार्षिक अनुपालन रिपोर्ट, और विद्युत संयंत्रों और राख कुण्डों की शेष फाइलों की सॉफ्ट कॉपी ई-मेल:- moefcc- coalash@gov.in पर भेजी जाए।			
22.	प्राधिकृत हस्ताक्षरकर्ता के हस्ताक्षर			

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 31st December, 2021

S.O. 5481(E).—Whereas by notification of the Government of India in the erstwhile Ministry of Environment and Forests *vide* S.O.763 (E), dated the 14th September, 1999, as amended from time to time, the Central Government, issued directions for restricting the excavation of top soil for manufacturing of bricks and promoting the utilisation of fly ash in the manufacturing of building materials and in construction activity within a specified radius of three hundred kilometres from the coal or lignite based thermal power plants;

And whereas, to implement the aforesaid notification more effectively based on the polluter pays principle (PPP) thereby ensuring 100 per cent utilisation of fly ash by the coal or lignite based thermal power plants and for the sustainability of the fly ash management system, the Central Government reviewed the existing notification; and whereas environmental compensation needs to be introduced based on the polluter pays principle;

And whereas, there is a need to conserve top soil by promoting manufacture and mandating use of ash based products and building materials in the construction sector;

And whereas, there is a need to conserve top soil and natural resources by promoting utilisation of ash in road laying, road and flyover embankments, shoreline protection measures, low lying areas of approved projects, backfilling of mines, as an alternative for filling of earthen materials;

And whereas, it is necessary to protect the environment and prevent the dumping and disposal of fly ash discharged from coal or lignite based thermal power plants on land;

And whereas, in the said notification the phrase 'ash', has been used which includes both fly ash as well as bottom ash generated from the Coal or Lignite based thermal power plants;

And whereas, the Central Government intends to bring out a comprehensive framework for ash utilisation including system of environmental compensation based on polluter pays principle;

And whereas, a draft notification on ash utilisation by coal or lignite thermal power plants in supersession of the notification of the Government of India, Ministry of Environment and Forests published in the Gazette of India, Extra Ordinary part II, section 3, sub-section (i) *vide* S.O.763 (E), dated the 14th September, 1999, by notification in exercise of the powers conferred under sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, was published in the Gazette of India, Extraordinary, Part II, section 3, sub-section (i), *vide* G.S.R. 285(E), dated the 22nd April, 2021 inviting objections and suggestions from all persons likely to be affected thereby before the expiry of sixty days from the date on which copies of the Gazette containing the said draft provisions were made available to the public;

And, whereas all the objections and suggestions received from all persons likely to be affected thereby in respect of the said draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, and in supersession of the Notification S.O.763 (E), dated the 14th September, 1999 except as respect things done or omitted to be done before such supersession, the Central Government hereby issues the following notification on ash utilisation from coal or lignite thermal power plants which shall come into force on the date of the publication of this notification, namely:-

A. Responsibilities of thermal power plants to dispose fly ash and bottom ash.—

- (1) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall be primarily responsible to ensure 100 per cent utilisation of ash (fly ash, and bottom ash) generated by it in an eco-friendly manner as given in sub-paragraph (2);
- (2) The ash generated from coal or lignite based thermal power plants shall be utilised only for the following eco-friendly purposes, namely:-
 - (i) Fly ash based products viz. bricks, blocks, tiles, fibre cement sheets, pipes, boards, panels;
 - (ii) Cement manufacturing, ready mix concrete;
 - (iii) Construction of road and fly over embankment, Ash and Geo-polymer based construction material;
 - (iv) Construction of dam;
 - (v) Filling up of low lying area;
 - (vi) Filling of mine voids;
 - (vii) Manufacturing of sintered or cold bonded ash aggregate;
 - (viii) Agriculture in a controlled manner based on soil testing;
 - (ix) Construction of shoreline protection structures in coastal districts;

- (x) Export of ash to other countries;
- (xi) Any other eco-friendly purpose as notified from time to time.
- (3) A committee shall be constituted under the chairmanship of Chairman, Central Pollution Control Board (CPCB) and having representatives from Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Power, Ministry of Mines, Ministry of Coal, Ministry of Road Transport and Highways, Department of Agricultural Research and Education, Institute of Road Congress, National Council for Cement and Building Materials, to examine and review and recommend the eco-friendly ways of utilisation of ash and make inclusion or exclusion or modification in the list of such ways as mentioned in Sub-paragraph (2) based on technological developments and requests received from stakeholders. The committee may invite State Pollution Control Board or Pollution Control Committee, operators of thermal power plants and mines, cement plants and other stakeholders as and when required for this purpose. Based on the recommendations of the Committee, Ministry of Environment, Forest and Climate Change (MoEFCC) may publish such eco-friendly purpose.
- (4) Every coal or lignite based thermal power plant shall be responsible to utilise 100 per cent ash (fly ash and bottom ash) generated during that year, however, in no case shall utilisation fall below 80 per cent in any year, and the thermal power plant shall achieve average ash utilisation of 100 per cent in a three years cycle:

Provided that the three years cycle applicable for the first time is extendable by one year for the thermal power plants where ash utilisation is in the range of 60-80 per cent, and two years where ash utilisation is below 60 per cent and for the purpose of calculation of percentage of ash utilisation, the percentage quantity of utilisation in the year 2021- 2022 shall be taken into account as per the table below:

Utilisation percentages of thermal power plants	First compliance Cycle to meet 100 per cent utilisation	Second compliance cycle onwards, to meet 100 per cent utilisation
>80 per cent	3 years	3 years
60-80 per cent	4 years	3 years
<60 per cent	5 years	3 years

Provided further that the minimum utilisation percentage of 80 per cent shall not be applicable to the first year and first two years of the first compliance cycle for the thermal power plants under the utilisation category of 60-80 per cent and <60 per cent, respectively.

Provided also that 20per cent of ash generated in the final year of compliance cycle may be carried forward to the next cycle which shall be utilised in the next three years cycle along with the ash generated during that cycle.

- (5) The unutilised accumulated ash i.e. legacy ash, which is stored before the publication of this notification, shall be utilised progressively by the thermal power plants in such a manner that the utilization of legacy ash shall be completed fully within ten years from the date of publication of this notification and this will be over and above the utilisation targets prescribed for ash generation through current operations of that particular year:

Provided that the minimum quantity of legacy ash in percentages as mentioned below shall be utilised during the corresponding year and the minimum quantity of legacy ash is to be calculated based on the annual ash generation as per installed capacity of thermal power plant.

Year from date of publication	1 st	2 nd	3 rd -10 th
Utilisation of legacy ash (in percentage of Annual ash)	At least 20 per cent	At least 35 per cent	At least 50 per cent

Provided further that the legacy ash utilisation shall not be required where ash pond or dyke has stabilised and the reclamation has taken place with greenbelt or plantation and the concerned State Pollution Control Board shall certify in this regard. Stabilisation and reclamation of an ash pond or dyke including certification by the Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall be carried out within a year from the date of publication of this notification. The ash remaining in all other ash ponds or dykes shall be utilised in progressive manner as per the above mentioned timelines.

Note: The obligations under sub-paragraph (4) and (5) above for achieving the ash utilisation targets shall be applicable from 1st April, 2022.

- (6) Any new as well as operational thermal power plant may be permitted an emergency or temporary ash pond with an area of 0.1 hectare per Mega Watt (MW). Technical specifications of ash ponds or dykes shall be as per the guidelines of Central Pollution Control Board (CPCB) made in consultation with Central Electricity Authority (CEA) and these guidelines shall also lay down a procedure for annual certification of the ash pond or dyke on its safety, environmental pollution, available volume, mode of disposal, water consumption or conservation in disposal, ash water recycling and greenbelt, etc., and shall be put in place within three months from the date of publication of this notification.
- (7) Every coal or lignite based thermal power plant shall ensure that loading, unloading, transport, storage and disposal of ash is done in an environmentally sound manner and that all precautions to prevent air and water pollution are taken and status in this regard shall be reported to the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) in Annexure attached to this notification.
- (8) Every coal or lignite based thermal power plant shall install dedicated silos for storage of dry fly ash silos for at least sixteen hours of ash based on installed capacity and it shall be reported upon to the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) in the Annexure and shall be inspected by Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) from time to time.
- (9) Every coal or lignite based thermal power plant (including captive or co-generating stations or both) shall provide real time data on daily basis of availability of ash with Thermal Power Plant (TPP), by providing link to Central Pollution Control Board's web portal or mobile phone App for the benefit of actual user(s).
- (10) Statutory obligation of 100 per cent utilisation of ash shall be treated as a change in law, wherever applicable.

B. For the purpose of utilisation of ash, the subsequent sub-paras shall apply.—

- (1) All agencies (Government, Semi-government and Private) engaged in construction activities such as road laying, road and flyover embankments, shoreline protection structures in coastal districts and dams within 300 kms from the lignite or coal based thermal power plants shall mandatorily utilise ash in these activities:

Provided that it is delivered at the project site free of cost and transportation cost is borne by such coal or lignite based thermal power plants.

Provided further that thermal power plant may charge for ash cost and transportation as per mutually agreed terms, in case thermal power plant is able to dispose the ash through other means and those agencies makes a request for it and the provisions of ash free of cost and free transportation shall be applicable, if thermal power plant serves a notice on the construction agency for the same.

- (2) The utilisation of ash in the said activities shall be carried out in accordance with specifications and guidelines laid down by the Bureau of Indian Standards, Indian Road Congress, Central Building Research Institute, Roorkee, Central Road Research Institute, Delhi, Central Public Works Department, State Public Works Departments and other Central and State Government Agencies.

- (3) It shall be obligatory on all mines located within 300 kilometres radius of thermal power plant, to undertake backfilling of ash in mine voids or mixing of ash with external Overburden dumps, under Extended Producer Responsibility (EPR). All mine owners or operators (Government, Public and Private Sector) within three hundred kilometres (by road) from coal or lignite based thermal power plants, shall undertake measures to mix at least 25 per cent of ash on weight to weight basis of the materials used for external dump of overburden, backfilling or stowing of mine (running or abandoned as the case may be) as per the guidelines of the Director General of Mines Safety (DGMS):

Provided that such thermal power stations shall facilitate the availability of required quantity of ash by delivering ash free of cost and bearing the cost of transportation or cost of transportation arrangement decided on mutually agreed terms and mixing of ash with overburden in mine voids and dumps shall be applicable for the overburden generated from the date of publication of this notification and the utilisation of ash in the said activities shall be carried out in accordance with guidelines laid down by the Central Pollution Control Board, Director General of Mines Safety and Indian Bureau of Mines.

Explanation.- For the purpose of this sub-paragraph, it is also clarified that the provisions of ash free of cost and free transportation shall be applicable, if thermal power plants serve a notice on the mine owner for the same and the mandate of using 25 per cent of ash for mixing with overburden dump and filling up of mine voids shall not be applicable unless a notice is served on the mine owner by thermal power plant.

- (4) (i) All mine owners shall get mine closure plans (progressive and final) to accommodate ash in the mine voids and the concerned authority shall approve mine plans for disposal of ash in mine voids and mixing of ash with overburden dumps. The Ministry of Environment, Forest and Climate Change (MoEFCC) has issued guidelines on 28th August, 2019 regarding exemption of requirement of Environmental Clearance of thermal power plants and coal mines along with the guidelines to be followed for such disposal.
- (ii) The Ministry in consultation with Central Pollution Control Board (CPCB), Director General of Mine Safety (DGMS) and Indian Bureau of Mines (IBM) may issue further guidelines time to time to facilitate ash disposal in mine voids and mixing with overburden dumps and it shall be the responsibility of mine owners to get the necessary amendments or modifications in the permissions issued by various regulatory authorities within one year from the date of identification of such mines.
- (5) (i) There shall be a committee headed by Chairperson, Central Pollution Control Board (CPCB) with representatives from Ministry of Environment, Forest and Climate Change, Ministry of Power, Ministry of Mines, Ministry of Coal, Director General of Mine Safety and Indian Bureau of Mines for identification of mines for backfilling of mine voids with ash or mixing of ash with overburden dump including examination of safety, feasibility (not economic feasibility) and aspects of environmental contamination and the committee shall get updated quarterly reports prepared regarding identified mines (both underground and opencast) for the stakeholder Ministries or Departments and the committee shall start identifying the suitable mines immediately after the publication of this notification.
- (ii) Thermal power plants or mines shall not wait for disposal of ash till the identification is done by the above mentioned committee, to meet the utilisation targets mandated as above.
- (6) Filling of low lying areas with ash shall be carried out with prior permission of the State Pollution Control Board or Pollution Control Committee for approved projects, and in accordance with guidelines laid down by Central Pollution Control Board (CPCB) and the State Pollution Control Board or Pollution Control Committee (PCC) shall publish approved sites, location, area and permitted quantity annually on its website.
- (7) Central Pollution Control Board after engaging relevant stakeholders, shall put in place the guidelines within one year for all types of activities envisaged under this notification including putting in place time bound online application process for the grant permission by State Pollution Control Boards (SPCBs) or Pollution Control Committees (PCCs).

- (8) All building construction projects (Central, State and Local authorities, Govt. undertakings, other Govt. agencies and all private agencies) located within a radius of three hundred kilometres from a coal or lignite based thermal power plant shall use ash bricks, tiles, sintered ash aggregate or other ash based products, provided these are made available at prices not higher than the price of alternative products.
- (9) Manufacturing of ash based products and use of ash in such products shall be in accordance with specifications and guidelines laid down by the Bureau of Indian Standards, Indian Road Congress, and Central Pollution Control Board.

C. Environmental compensation for non-compliance.—

- (1) In the first two years of a three years cycle, if the coal or lignite based thermal power plant (including captive or co-generating stations or both) has not achieved at least 80 per cent ash (fly ash and bottom ash) utilisation, then such non-compliant thermal power plants shall be imposed with an environmental compensation of Rs. 1000 per ton on unutilised ash during the end of financial year based on the annual reports submitted and if it is unable to utilise 100 per cent of ash in the third year of the three years cycle, it shall be liable to pay an environmental compensation of Rs. 1000 per ton on the unutilised quantity on which environmental compensation has not been imposed earlier:

Provided that the environmental compensation shall be estimated and imposed at the end of last year of the first compliance cycle as per the various utilisation categories as mentioned in sub-paragraph (4) of Para A.

- (2) Environmental compensation collected by the authorities shall be deposited in the designated account of Central Pollution Control Board.
- (3) In case of legacy ash, if the coal or lignite based thermal power plant (including captive or co-generating stations or both) has not achieved utilisation equivalent to at least 20 per cent (for the first year), 35 per cent (for the second year), 50 per cent (for third to tenth year) of ash generated based on installed capacity, an environmental compensation of Rs. 1000 per ton of unutilised legacy ash during that financial year shall be imposed and if the utilization of legacy ash is not completed at the end of 10 years, an environmental compensation of Rs.1000 per ton shall be imposed on the remaining unutilised quantity which has not been imposed earlier.
- (4) It shall be the responsibility of the transporters or vehicle owner to deliver ash to authorised purchaser or user agency and if it is not complied, then an environmental compensation of Rs. 1500 per ton on such quantity as mis-delivered to unauthorised users or non- delivered to authorised users will be imposed besides prosecution of such non-compliant transporters by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC).
- (5) It is the responsibility of the purchasers or user agencies to utilise ash in an eco-friendly manner as laid down at para B of this notification and if it is not complied, then an environmental compensation of Rs. 1500 per ton shall be imposed by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC).
- (6) If the user agencies do not utilise ash to the extent obligated under para B or the extent to which they have been intimated through Notice(s) served under sub-paragraph (1) of para D, whichever is lower, they shall be liable to pay Rs. 1500 per ton of ash for the quantity they fall short off:

Provided that the environmental compensation on building constructions shall be levied at Rs.75/- per square feet of built up area of construction.

- (7) (i) The environmental compensation collected by Central Pollution Control Board from the thermal power plants and other defaulters shall be used towards the safe disposal of the unutilised ash and the fund may also be utilised for advancing research on use of ash including ash based products.

(ii) The liability of ash utilisation shall be with thermal power plants even after imposition of environmental compensation on unutilised quantities and in case thermal power plant achieves the ash utilisation of any

particular cycle after imposition of environmental compensation in subsequent cycles, the said amount shall be returned to thermal power plant after deducting 10 per cent of the environmental compensation collected on the unutilised quantity during the next cycle and deduction of 20 per cent, 30 per cent, and so on, of the environmental compensation collected is to be made in case of utilisation of ash in subsequent cycles.

D. Procedure for supply of ash or ash based products.—

- (1) The owner of thermal power plants or manufacturers of ash bricks or tiles or sintered ash aggregate shall serve written notice to persons or agencies who are liable to utilise ash or ash based products, offering for sale, or transport or both.
- (2) Persons or user agencies who have been served notices by owner of thermal power plants or manufacturers of ash bricks or tiles or sintered ash aggregate, if they have already tied up with other agencies for the purpose of utilisation of ash or ash products, shall inform the thermal power plant accordingly, if they cannot use any ash or ash products or use reduced quantity.

E. Enforcement, Monitoring, Audit and Reporting.—

- (1) The Central Pollution Control Board (CPCB) and the concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall be the enforcing and monitoring authority for ensuring compliance of the provisions and shall monitor the utilisation of ash on quarterly basis. Central Pollution Control Board shall develop a portal for the purpose within six months of date of publication of the notification. The concerned District Magistrate shall have concurrent jurisdiction for enforcement and monitoring of the provisions of this notification.
- (2) (i) Thermal power plants shall upload monthly information regarding ash generation and utilisation by 5th of the next month on the web portal. Annual implementation report (for the period 1st April to 31st March) providing information about the compliance of provisions in this notification shall be submitted by the 30th day of April, every year to the Central Pollution Control Board, concerned State Pollution Control Board or Pollution Control Committee (PCC), Central Electricity Authority (CEA), and concerned Integrated Regional Office of Ministry of Environment, Forest and Climate Change by the coal or lignite based thermal power plants. Central Pollution Control Board and Central Electricity Authority shall compile the annual reports submitted by all the thermal power plants and submit to Ministry of Environment, Forest and Climate Change by 31st May.
 - (ii) All other user agencies shall submit consumption or utilisation or disposal of ash and use of ash based products as mandated in this notification in the compliance report of Environmental Clearance (EC) issued by Ministry of Environment, Forest and Climate Change or State Level Environment Impact Assessment Authority (SEIAA) or Consent to Operate (CTO) issued by State Pollution Control Board (SPCB) or Pollution Control Committee (PCC), whichever is applicable. The Central Pollution Control Board (CPCB) or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall publish annual report of ash utilisation of all other agencies except thermal power plants to review the effective implementation of the provisions of the notification.
- (3) For the purpose of monitoring the implementation of the provisions of this notification, a committee shall be constituted under the Chairperson, Central Pollution Control Board (CPCB), with members from Ministry of Power, Ministry of Coal, Ministry of Mines, Ministry of Environment, Forest and Climate Change, Ministry Road Transportation and Highways, Department of Heavy Industry as well as any concerned stakeholder(s), to be nominated by the Chairman of the committee. The committee may make recommendations for effective and efficient implementation of the provisions of the notification. The committee shall meet at least once in six months and review annual implementation reports and the committee shall also hold stakeholder consultations for monitoring of ash utilisation as mandated by this notification by inviting relevant stakeholder(s) at least once in six months. The committee shall submit the six monthly report to Ministry of Environment, Forest and Climate Change (MoEFCC).

- (4) For the purpose of resolving disputes between thermal power plants and users of ash or manufacturer of ash based products, the State Governments or Union territory administration constitute a Committee within three months from the date of publication of this notification under the Chairman, State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) with representatives from Department of Power, and one representative from the Department which deals with the subject of concerned agency with which dispute is made.
- (5) The compliance audit for ash disposal by the thermal power plants and the user agency shall be conducted by auditors, authorised by Central Pollution Control Board (CPCB) and audit report shall be submitted to Central Pollution Control Board (CPCB) and concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) by 30th November every year. Central Pollution Control Board (CPCB) and concerned State Pollution Control Board (SPCB) or Pollution Control Committee (PCC) shall initiate action against non-compliant thermal power plants within fifteen days of receipt of audit report.

[F. No. HSM-9/1/2019-HSM]

NARESH PAL GANGWAR, Jt. Secy.

AnnexureAsh Compliance Report (for the period 1st April-31st March) to be submitted on or before 31st May.

Sl. No.	Details	
1.	Name of Power Plant	
2.	Name of the company	
3.	District	
4.	State	
5.	Postal address for communication:	
6.	E-mail:	
7.	Power Plant installed capacity (MW):	
8.	Plant Load Factor (PLF):	
9.	No. of units generated (MWh):	
10.	Total area under power plant (ha): (including area under ash ponds)	
11.	Quantity of coal consumption during reporting period (Metric Tons per Annum):	
12.	Average ash content in percentage (per cent):	
13.	Quantity of current ash generation during reporting period (Metric Tons per Annum): Fly ash (Metric Tons per Annum): Bottom ash (Metric Tons per Annum):	
14.	Capacity of dry fly ash storage silo(s) (Metric Tons) :	
15.	Details of utilisation of current ash generated during reporting period (a) Total quantity of current ash utilised (MTPA) during reporting period: (b) Quantity of fly ash utilised (MTPA): (i) Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels) (ii) Cement manufacturing:	

	<ul style="list-style-type: none"> (iii) Ready mix concrete: (iv) Ash and Geo-polymer based construction material: (v) Manufacturing of sintered or cold bonded ash aggregate: (vi) Construction of roads, road and fly over embankment: (vii) Construction of dams: (viii) Filling up of low lying area: (ix) Filling of mine voids: (x) Use in overburden dumps: (xi) Agriculture: (xii) Construction of shoreline protection structures in coastal districts; (xiii) Export of ash to other countries: (xiv) Others (please specify): <p>(c) Quantity of bottom ash utilised (MTPA):</p> <ul style="list-style-type: none"> (i) Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels): (ii) Cement manufacturing: (iii) Ready mix concrete: (iv) Ash and Geo-polymer based construction material: (v) Manufacturing of sintered or cold bonded ash aggregate: (vi) Construction of roads, road and flyover embankment: (vii) Construction of dams: (viii) Filling up of low lying area: (ix) Filling of mine voids: (x) Use in overburden dumps: (xi) Agriculture: (xii) Construction of shoreline protection structures in coastal districts: (xiii) Export of ash to other countries: (xiv) Others (please specify): <p>Total quantity of current ash unutilised (MTPA) during reporting period:</p>	
16.	Percentage utilisation of current ash generated during reporting period (per cent):	
17.	<p>Details of disposal of ash in ash ponds</p> <p>(a) Total quantity of ash disposed in ash pond(s) (Metric Tons) as on 31st March (excluding reporting period):</p> <p>(b) Quantity of ash disposed in ash pond(s) during reporting period (Metric Tons):</p> <p>(c) Total quantity of water consumption for slurry discharge into ash ponds during reporting period (m³):</p> <p>(d) Total number of ash ponds:</p> <ul style="list-style-type: none"> (i) Active: (ii) Exhausted (yet to be reclaimed): (iii) Reclaimed: <p>(e) total area under ash ponds (ha):</p>	
18.	<p>Individual ash pond details</p> <p><i>Ash pond-1,2, etc (please provide below mentioned details separately, if number of ash ponds is more than one)</i></p> <p>(a) Status: Under construction or Active or Exhausted or</p>	

	<p>Reclaimed</p> <p>(b) Date of start of ash disposal in ash pond (DD/MM/YYYY or MMYYYY):</p> <p>(c) Date of stoppage of ash disposal in ash pond after completing its capacity (DD/MM/YYYY or MM/YYYY): (Not applicable for active ash ponds)</p> <p>(c) area (hectares):</p> <p>(d) dyke height (m):</p> <p>(d) volume (m³):</p> <p>(e) quantity of ash disposed as on 31st March (Metric Tons):</p> <p>(f) available volume in percentage (per cent) and quantity of ash can be further disposed (Metric Tons):</p> <p>(g) expected life of ash pond (number of years and months):</p> <p>(e) co-ordinates (Lat and Long): (please specify minimum 4 co-ordinates)</p> <p>(f) type of lining carried in ash pond: HDPE lining or LDPE lining or clay lining or No lining</p> <p>g) mode of disposal: Dry disposal or wet slurry (in case of wet slurry please specify whether HCSD or MCSD or LCSD)</p> <p>(h) Ratio of ash: water in slurry mix (1:___):</p> <p>(i) Ash water recycling system (AWRS) installed and functioning: Yes or No</p> <p>(j) Quantity of wastewater from ash pond discharged into land or water body (m3):</p> <p>(k) Last date when the dyke stability study was conducted and name of the organisation who conducted the study:</p> <p>(l) Last date when the audit was conducted and name of the organisation who conducted the audit:</p>									
19.	<p>Quantity of legacy ash utilised (MTPA):</p> <ol style="list-style-type: none"> i. Fly ash based products (bricks or blocks or tiles or fibre cement sheets or pipes or boards or panels): ii. Cement manufacturing: iii. Ready mix concrete: iv. Ash and Geo-polymer based construction material: v. Manufacturing of sintered or cold bonded ash aggregate: vi. Construction of roads, road and flyover embankment: vii. Construction of dams: viii. Filling up of low lying area: ix. Filling of mine voids: x. Use in overburden dumps: xi. Agriculture: xii. Construction of shoreline protection structures in coastal districts; xiii. Export of ash to other countries: xiv. Others (please specify): 									
20.	<table border="1"> <tr> <td colspan="4">Summary:</td> </tr> <tr> <td>Details</td> <td>Quantity generated (MTP)</td> <td>Quantity utilised (MTP) and (per cent)</td> <td>Balance quantity (MTP)</td> </tr> </table>	Summary:				Details	Quantity generated (MTP)	Quantity utilised (MTP) and (per cent)	Balance quantity (MTP)	
Summary:										
Details	Quantity generated (MTP)	Quantity utilised (MTP) and (per cent)	Balance quantity (MTP)							

	Current ash during reporting period			
	Legacy ash			
	Total			
21.	Any other information: Soft copy of the annual compliance report, and shape files of power plant and ash ponds may be e-mailed to:- moefcc-coalash@gov.in			
22.	Signature of Authorised Signatory			

Annexure-G

AGREEMENT

BETWEEN

GOVERNMENT OF BIHAR

&

NABINAGAR POWER GENERATING COMPANY PRIVATE LIMITED

FOR

WITHDRAWAL OF 125 CUSEC OF WATER FROM SONE RIVER
FOR
NABINAGAR SUPER THERMAL POWER PROJECT, AURANGABAD

520

412

Letting 156

NPGCPL shall take all reasonable precautions in connection with rivers/streams/drain/water courses and will prevent silting erosion of beds/banks, pollution of water so as to affect adversely the quality thereof. NPGCPL shall endeavor to comply with all the environment protection laws/regulation of GOI/GOB.

19. CHARGE AND PAYMENT

19.1. A Water Charges

Water Charge of Rs. 18 per thousand Gallons shall be payable as laid down in the GOB notification No. 189 dated 3rd Oct 2016 from the actual date of drawl of water. This water charge is revisable. Any revised rate and its date of application as laid down in the notification shall be chargeable as water Charges from NPGCPL. In case of excess withdrawal or withdrawal for the Purposes other than those stipulated in this agreement, penal rate of i.e. twice of the normal rate shall be charged.

19.1.B Capital Cost Recovery Charge:

The Capital Cost recovery charges of the water consumed by NPGCPL in proportion to the water allocated to Bihar from Bansagar Project shall be payable from the actual date of drawl of water by the NPGCPL to the Govt. of Bihar till the date when the water will be withdrawn. At present the amount chargeable under this head will be Rs. 317000.00 (Rupees Three Lakh Seventeen thousand only) per month. The amount chargeable under this head will be increased every year @10% per year as adjustment against inflation. The NPGCPL will also have to pay a proportionate share of cost in case the Govt. of Bihar has to bear further capital expenditure on the Bansagar Project.

19.2) Billing

- (A) Water Charges shall be levied as per actual quantity of water drawn with a minimum guaranteed supply of 25 Cusec (20% of Contract Volume). The GOB shall render to the NPGCPL a billing statement (a "Billing Statement") in Indian Rupees on or before the 5th day of the succeeding month.

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 423Indrapuri

Date : 03.04.2023.....

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (March 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.04.2023 is 75701147 M³ (35174934 + 13665906 + 12257786 + 14602521)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.03.2023 is 71237301 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.04.2023 is 75701147 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of March 2023 (1.50 x 3,17,000) Amount Chargeable under this head for March 2023	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	* 1814400 M ³ / Month
	As Present reading for 1 Months of March (75701147 M ³ - 71237301 M ³)	* 44,63,846.00 M ³

1 Month (March 2023)	x $\frac{4463846 \times 1000}{3.785}$	x $\frac{18}{1000}$	* Rs. : 2,12,28,329.70
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Say Rs. = 2,12,28,330.00 (C)

Hence Total Bill to be paid by = (B+C) = 475500.00 + 21228330.00	* Rs. : 2,17,03,830.00
--	------------------------

(Rupees Two Crore Seventeen Lakh Three Thousand Eight Hundred Thirty) only.

03/04/23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

*Verified
Rachana*

*Rachana Meena
Sr mgr (CEEMG)*

03-04-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 269IndrapuriDate : 04.03.2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (February 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.03.2023 is 71237301 M³ (31405126 + 13579899 + 11946524 + 14305752)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.02.2023 is 67756844 M³	Present Cumulative Reading Water Meter Reading on Date : 01.03.2023 is 71237301 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2022-23) Rate for the month of February 2023 (1.50 x 3,17,000) Amount Chargeable under this head for February 2023	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	* 1814400 M ³ / Month
	As Present reading for 1 Months of February (71237301 M ³ - 67756844 M ³)	* 34,80,457.00 M ³

1 Month (February 2023) x $\frac{3480457 \times 1000}{3.785}$ x $\frac{18}{1000}$	* Rs. : 1,65,51,711.00
Say Rs. = 1,65,51,711.00 (C)	

Hence Total Bill to be paid by = (B+C) = 475500.00 + 16551711.00	* Rs. : 1,70,27,211.00
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(Rupees One Crore Seventy Lakh Twenty Seven Thousand Two Hundred Eleven) only.

C. Jais
04/03/23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

Verified
Rachana Meena

04-03-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

Rachana Meena
Sr mgr (EBMG)
416 TPS Nabinagar

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. 109 IndrapuriDate : 03.02.2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (January 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.02.2023 is 67756844 M³ (29049511 + 13434711 + 11445064 + 13827558)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.01.2023 is 64828800 M³	Present Cumulative Reading Water Meter Reading on Date : 01.02.2023 is 67756844 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of January 2023 (1.50 x 3,17,000) Amount Chargeable under this head for January 2023	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec * 1814400 M ³ / Month	
	As Present reading for 1 Months of January (67756844 M ³ - 64828800 M ³) * 29,28,044.00 M ³	

1 Month (January 2023) x $\frac{2928044 \times 1000}{3.785}$ x $\frac{18}{1000}$ *	Rs. : 1,39,24,647.80
Say Rs. = 1,39,24,648.00 (C)	

Hence Total Bill to be paid by = (B+C) = 475500.00 + 13924648.00 *	Rs. : 1,44,00,148.00
--	----------------------

(Rupees One Crore Forty Four Lakh One Hundred Forty Eight) only.

[Signature]
03/02/23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

*Verified
Rachana*

[Signature]
03-02-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

*Rachana Meena
Sr Mgr (EEMG)
NIS TPS Nabinagar*

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 01Indrapuri

Date : 03-01-2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from some river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (December 2022)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.01.2023 is 64828800 M³ (27056877 + 13300169 + 11038076 + 13433678)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.12.2022 is 62192609 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.01.2023 is 64828800 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2022-23) Rate for the month of December 2022 (1.50 x 3,17,000) Amount Chargeable under this head for December 2022	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	+ 1814400 M ³ / Month
	As Present reading for 1 Months of December (64828800 M ³ - 62192609 M ³)	+ 26,36,191.00 M ³

1 Month (December 2022) x $\frac{2636191 \times 1000}{3.785}$ x $\frac{18}{1000}$	+ Rs. : 1,25,36,707.50
Say Rs. = 1,25,36,708.00 (C)	

Hence Total Bill to be paid by = (B+C) = 475500.00 + 12536708.00	+ Rs. : 1,30,12,208.00
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(Rupees One Crore Thirty Lakh Twelve Thousand Two Hundred Eight) only.

[Signature]
03/01/23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

[Signature]
Verified
[Signature]
Rachana Meena
Sr Manager (EGM)

[Signature]
03/01/23
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 1416.....Indrapuri

Date : 02.12.2022

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (November 2022)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.12.2022 is 62192609 M³ (25519746 + 13095019 + 10583734 + 12994110)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.11.2022 is 59531731 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.12.2022 is 62192609 M ³
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2022-23) Rate for the month of November 2022 (1.50 % 3,17,000) Amount Chargeable under this head for November 2022	Rs. : 4,75,500 (B)
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	1814400 M ³ / Month
	As Present reading for 1 Months of November (62192609 M ³ - 59531731 M ³)	26,60,878.00 M ³
	1 Month (November 2022) $\times \frac{2660878 \times 1000}{3.785} \times \frac{18}{1000}$	Rs. : 1,26,54,109.40
	Say Rs. = 1,26,54,110.00 (C)	
	Hence Total Bill to be paid by = (B+C) = 475500.00 + 12654110.00	Rs. : 1,31,29,610.00
	(Rupees One Crore Thirty One Lakh Twenty Nine Thousand Six Hundred Ten) only.	

[Signature]
02/12/22
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

Verified
[Signature]

[Signature]
21/12/22
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 1309Indrapuri

Date : 21/11/22

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from some river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (October 2022)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.11.2022 is 59531731 M³ (24311591 + 12852254 + 09973814 + 12394072)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.10.2022 is 56465098 M³	Present Cumulative Reading Water Meter Reading on Date : 01.11.2022 is 59531731 M³
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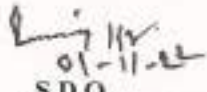
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of October 2022 (1.50 x 3,17,000) Amount Chargeable under this head for October 2022	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec *	1814400 M³ / Month
	As Present reading for 1 Months of October (59531731 M ³ - 56465098 M ³) *	30,66,633.00 M³

1 Month (October 2022) x $\frac{3066633 \times 1000}{3.785}$ x $\frac{18}{1000}$ *	Rs. : 1,45,83,723.60
Say Rs. = 1,45,83,724.00 (C)	

Hence Total Bill to be paid by = (B+C) = 475500.00 + 14583724.00 *	Rs. : 1,50,59,224.00
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(Rupees One Crore Fifty Lakh Fifty Nine Thousand Two Hundred Twenty Four) only.


 S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri


 EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 1237Indrapuri

Date : 8/10/22

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (September 2022)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.10.2022 is 56465098 M³ (21356665 + 12818482 + 09956165 + 12333786)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.09.2022 is 53667585 M³	Present Cumulative Reading Water Meter Reading on Date : 01.10.2022 is 56465098 M³
----	---	--

B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of September 2022 (1.50 x 3,17,000) Amount Chargeable under this head for September 2022	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	* 1814400 M ³ / Month
	As Present reading for 1 Months of September (56465098 M ³ - 53667585 M ³)	* 27,97,513.00 M ³

1 Month (September 2022) x $\frac{2797513 \times 1000}{3.785}$	x $\frac{18}{1000}$	* Rs. : 1,33,03,892.70
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Say Rs. = 1,33,03,893.00 (C)

Hence Total Bill to be paid by = (B+C) = 475500.00 + 13303893.00	* Rs. : 1,37,79,393.00
--	------------------------

(Rupees One Crore Thirty Seven Lakh Seventy Nine Thousand Three Hundred Ninety Three) only.

Lijw.
6/10/2022
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

S/S
8/10/22
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

Verified
Rachana

Rachana Meena Sr Mgr NSTPS

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

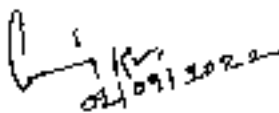
Letter No. 1097 / IndrapuriDate: 02.09.2022

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankola (Aurangabad) Pin 324503

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (August 2022)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.09.2022 is 53667585 M³ (18559157 + 12818482 + 09956165 + 12333786)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.08.2022 is 50392406 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.09.2022 is 53667585 M ³
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of August 2022 (1.5) x 3,17,000) Amount Chargeable under this head for August 2022	
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec As Present reading for 1 Months of August (53667585 M ³ - 50392406 M ³)	+ 1814400 M ³ / Month 32,75,179.00 M ³
1 Month (August 2022) x $\frac{3275179 \times 1000}{3.785}$ x $\frac{18}{1000}$		+ Rs. : 1,55,75,488.00 Say Rs. - 1,55,75,488.00 (C)
Hence Total Bill to be paid by = (B+C) = 475500.00 + 15575488.00		+ Rs. : 1,60,50,988.00
(Rupees One Crore Sixty Lakh Fifty Thousand Nine Hundred Eighty Eight) only.		


S.D.O.
Barrage and Camp Sub. Division.
Indrapuri


EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

45th R. A. BillOFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI

Letter No. : 936 / Indrapuri

Date : 03-08-2022

To,

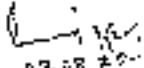
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd
Ankoira (Aurangabad) Pin - 824503

Subject :- Bill for withdrawal of 135 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd - Aurangabad. (July 2022)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.08.2022 is 50392406 M³ (15283073 + 12818482 + 09956165 - 12533786)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.07.2022 is 46628562 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.08.2022 is 50392406 M ³
B.	Capital cost recovery charges (Basic Rate 337000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of July 2022 (1.31 x 3,17,000) Amount Chargeable under this head for July 2022	Rs. : 4,75,500 (B)
C.	Bill for water consumed for 1 month is Minimum Billed for 25 cusec → As Present reading for 1 Months of July (50392406 M ³ - 46628562 M ³) →	1314406 M ³ / Month 37,63,844.00 M ³
	1 Month (July 2022) × $\frac{3763844 \times 1000}{3.785}$ × $\frac{18}{1000}$ →	Rs. : 1,78,99,390.20
		Say Rs. = 1,78,99,391.00 (C)
	Hence Total Bill to be paid by = (B+C) = 4,75,500.00 + 1,78,99,391.00 →	Rs. : 1,83,74,891.00
	(Rupees One Crore Eighty Three Lakh Seventy Four Thousand Eight Hundred Ninety One) only.	


S.D.O.
Barrage and Camp Sub. Division
Indrapuri


EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 845.....Indrapuri

Date : 05-07-2022

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (June 2022)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.07.2022 is 46628562 M³ (11520129 + 12818482 + 09956165 + 12333786)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.06.2022 is 43754053 M³	Present Cumulative Reading Water Meter Reading on Date : 01.07.2022 is 46628562 M³
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2022-23) Rate for the month of June 2022 (1.50 x 3,17,000) Amount Chargeable under this head for June 2022	Rs. : 4,75,500 (B)
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec * As Present reading for 1 Months of June (46628562 M ³ - 43754053 M ³) *	1814400 M ³ / Month 28,74,509.00 M ³
	1 Month (June 2022) x $\frac{2874509 \times 1000}{3.785}$ x $\frac{18}{1000}$ *	Rs. : 1,36,70,056.00
	Say Rs. = 1,36,70,056.00 (C)	
	Hence Total Bill to be paid by = (B+C) = 475500.00 + 13670056.00 *	Rs. : 1,41,45,556.00
	(Rupees One Crore Forty One Lakh Forty Five Thousand Five Hundred Fifty Six) only.	

L. K. R.
05-7-22
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

E. E.
5/7/2022
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER,
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. 605 / IndrapuriDate: 1.5.2022

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Aholira (Aurangabad) Pin - 524303

Subject :- Bill for withdrawal of 125 cusec of water from same river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (April 2022)

Sir,

in connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01-05-2022 is 37534124 M³ (6607436 + 12468945 + 06605020 + 11972972)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.04.2022 is 37534124 M³	Present Cumulative Reading Water Meter Reading on Date : 01.05.2022 is 40649373 M³
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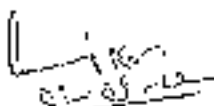
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2022-23) Rate for the month of April 2022 (1.50 x 3,17,000) Amount Chargeable under this head for April 2022	Rs. : 4,75,500 (B)
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C.	Bill for water consumed for 3 months Minimum Billed for 75 cusec →	1814400 M³ / Month
	As Present reading for 1 Month of April (40649373 M ³ - 37534124 M ³) →	31,15,249.00 M³

1 Month (April 2022)	x	$\frac{3115249 \times 1000}{3.785}$	x	$\frac{18}{1000}$	→	Rs. : 1,48,14,923.60
Say Rs. = 1,48,14,923.00 (C)						

Hence Total Bill to be paid by = (B+C) = 475500.00 + 14814923.00 →	Rs. : 1,52,90,423.00
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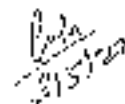
(Rupees One Crore Filly Two Lakh Ninety Thousand Four Hundred Twenty Three) only.



S.D.O.

Manager and Charge S.D.O. Division
Indrapuri


EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri


15/5/2022

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. 420Indrapuri

Date : 02-04-2024

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from some river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (March 2024)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.04.2024 is 117496696 M³ (68590986 + 15279662 + 15692868 + 17933180)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.03.2024 is 114596194 M³	Present Cumulative Reading Water Meter Reading on Date : 01.04.2024 is 117496696 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of March 2024 (1.60 x 3,17,000) Amount Chargeable under this head for March 2024	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec +	1814400 M³ / Month
	As Present reading for 1 Months of Mar. (117496696 M ³ - 114596194 M ³) +	29,00,502.00 M³

1 Month (March 2024) x $\frac{2900502 \times 1000}{3.785}$ x $\frac{18}{1000}$ +	Rs. : 1,37,93,668.70
Say Rs. = 1,37,93,669.00 (C)	

Hence Total Bill to be paid by = (B+C) = 507200.00 + 13793669.00 +	Rs. : 1,43,00,869.00
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(Rupees One Crore Fourty Three Lakh Eight Hundred Sixty Nine) only.


 02-04-2024
 S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri

Received
 ARJUN - KUMAR


 02-04-2024
 EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 261Indrapuri

Date : 04-03-2024

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from some river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (February 2024)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.03.2024 is 114596194 M³ (66980913 + 15068881 + 15144141 + 17402259)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.02.2024 is 112133579 M³	Present Cumulative Reading Water Meter Reading on Date : 01.02.2024 is 114596194 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of February 2024 (1.60 x 3,17,000) Amount Chargeable under this head for February 2024	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec *	1814400 M³ / Month
	As Present reading for 1 Months of Feb. (114596194 M ³ - 112133579 M ³) *	24,62,615.00 M³

I Month (February 2024) x $\frac{2462615 \times 1000}{3.785}$ x $\frac{18}{1000}$ *	Rs. : 1,17,11,247.00
Say Rs. = 1,17,11,247.00 (C)	

Hence Total Bill to be paid by = (B+C) = 507200.00 + 11711247.00 *	Rs. : 1,22,18,447.00
(Rupees One Crore Twenty Two Lakh Eighteen Thousand Four Hundred Forty Seven) only.	


 04.03.2024
 S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri


 04-03-2024
EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. 105Indrapuri

Date : 01-02-2024

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from some river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (January 2024)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.02.2024 is 112133579 M³ (65046254 + 15066004 + 14877295 + 17144026)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.01.2024 is 110212311 M³	Present Cumulative Reading Water Meter Reading on Date : 01.02.2024 is 112133579 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of January 2024 (1.60 x 3,17,000) Amount Chargeable under this head for January 2024	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	* 1814400 M ³ / Month
	As Present reading for 1 Months of Jan. (112133579 M ³ - 110212311 M ³)	* 19,21,268.00 M ³

1 Month (January 2024) x $\frac{1921268 \times 1000}{3.785}$ x $\frac{18}{1000}$	* Rs. : 91,36,809.51
Say Rs. = 91,36,810.00 (C)	

Hence Total Bill to be paid by = (B+C) = 507200.00 + 9136810.00	* Rs. : 96,44,010.00
(Rupees Ninety Six Lakh Forty Four Thousand Ten) only.	


01-02-24
S.D.O.
Barrage and Camp Sub. Division
Indrapuri


01-02-2024
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 07 Indrapuri

Date : 06/01/2024

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (December 2023)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.01.2024 is 110212311 M³ (63599926 + 15041283 + 14649640 + 16921462)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.12.2023 is 107569701 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.01.2024 is 110212311 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of December 2023 (1.60 x 3,17,000) Amount Chargeable under this head for December 2023	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	* 1814400 M ³ / Month
	As Present reading for 1 Months of Dec. (110212311 M ³ - 107569701 M ³)	* 26,42,610.00 M ³

1 Month (December 2023) x $\frac{2642610 \times 1000}{3.785}$ x $\frac{18}{1000}$	* Rs. : 1,25,67,233.80
Say Rs. = 1,25,67,234.00 (C)	

Hence Total Bill to be paid by = (B+C) = 507200.00 + 12567234.00	* Rs. : 1,30,74,434.00
(Rupees One Crore Thirty Lakh Seventy Four Thousand Four Hundred Thirty Four) only.	

06.01.2024
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

verified
Bisain

06-01-2024
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 1306IndrapuriDate : 07.12.2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (November 2023)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.12.2023 is 107569701 M³ (61124619 + 15028032 + 14571807 + 16845243)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.11.2023 is 104284153 M³	Present Cumulative Reading Water Meter Reading on Date : 01.12.2023 is 107569701 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of November 2023 (1.60 x 3,17,000) Amount Chargeable under this head for November 2023	Rs. : 5,07,200 (B)
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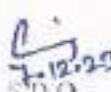
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec + 1814400 M ³ / Month As Present reading for 1 Months of Nov. (107569701 M ³ - 104284153 M ³) + 32,85,548.00 M ³
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1 Month (November 2023) x $\frac{3285548 \times 1000}{3.785}$ x $\frac{18}{1000}$ +	Rs. : 1,56,24,798.90
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Say Rs. = 1,56,24,799.00 (C)

Hence Total Bill to be paid by = (B+C) = 507200.00 + 15624799.00 +	Rs. : 1,61,31,999.00
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(Rupees One Crore Sixty One Lakh Thirty One Thousand Nine Hundred Ninety Nine) only.

o/k

 S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri


 07-12-2023
EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI

Letter No. 1296 IndrapuriDate: 02/11/2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankakra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (October 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.11.2023 is 104284153 M³ (58183852 + 14961470 + 14432366 + 16706165)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.10.2023 is 100554575 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.11.2023 is 104284153 M ³
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2023-24) Rate for the month of October 2023 (1.60 x 3,17,000) Amount Chargeable under this head for October 2023	Rs. : 5,07,200 (B)
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec As Present reading for 1 Months of Oct. (104284153 M ³ - 100554575 M ³)	1814400 M ³ / Month 37,29,578.00 M ³
1 Month (October 2023) x $\frac{3729578 \times 1000}{3.785}$ x $\frac{18}{1000}$		Rs. : 1,77,36,434.30
Say Rs. = 1,77,36,435.00 (C)		
Hence Total Bill to be paid by = (B+C) = 507200.00 + 17736435.00		Rs. : 1,82,43,635.00
(Rupees One Crore Eighty Two Lakh Forty Three Thousand Six Hundred Thirty Five) only.		


S.D.O.
Barrage and Camp Sub. Division
Indrapuri


52-11-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri.

OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI

Letter No. : 1148IndrapuriDate : 05/10/2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (September 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.10.2023 is 100554575 M³ (54922451 + 14821152 + 14265533 + 16545439)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.09.2023 is 96407861 M³	Present Cumulative Reading Water Meter Reading on Date : 01.10.2023 is 100554575 M³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of September 2023 (1.60 x 3,17,000) Amount Chargeable under this head for September 2023	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec + 1814400 M ³ / Month As Present reading for 1 Months of Sept. (100554575 M ³ – 96407861 M ³) + 41,46,714.00 M ³	
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1 Month (September 2023) x $\frac{4146714 \times 1000}{3.785}$ x $\frac{18}{1000}$ +	Rs. : 1,97,20,172.30
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Say Rs. = 1,97,20,173.00 (C)

Hence Total Bill to be paid by = (B+C) = 507200.00 + 19720173.00 +	Rs. : 2,02,27,373.00
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(Rupees Two Crore Two Lakh Twenty Seven Thousand Three Hundred Seventy Three) only.


 05-10-23
S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri


 05-10-2023
EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 1043IndrapuriDate : 02/09/2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (August 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.09.2023 is 96407861 M³ (51613623 + 14562389 + 13972396 + 16259453)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.08.2023 is 92301597 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.09.2023 is 96407861 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2023-24) Rate for the month of August 2023 (1.60 x 3,17,000) Amount Chargeable under this head for August 2023	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec →	1814400 M ³ / Month
	As Present reading for 1 Months of August (96407861 M ³ - 92301597 M ³) →	41,06,264.00 M ³

1 Month (August 2023) x	$\frac{4106264 \times 1000}{3.785}$	x	$\frac{18}{1000}$	→	Rs. : 1,95,27,807.70
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Say Rs. = 1,95,27,808.00 (C)

Hence Total Bill to be paid by = (B+C) = 507200.00 + 19527808.00	→	Rs. : 2,00,35,008.00
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(Rupees Two Crore Thirty Five Thousand Eight) only.

02/09/2023
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

verified
Shrin
Jr. foreman

02-09-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 899Indrapuri

Date : 03/08/2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (July 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.08.2023 is 92301597 M³ (48406010 + 14388151 + 13610146 + 15897290)

A.	<p align="center">Previous Cumulative Reading Water Meter Reading on Date : 01.07.2023 is 88562036 M³</p>	<p align="center">Present Cumulative Reading Water Meter Reading on Date : 01.08.2023 is 92301597 M³</p>
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B.	<p>Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of July 2023 (1.60 x 3,17,000) Amount Chargeable under this head for July 2023</p>	<p>Rs. : 5,07,200 (B)</p>
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C.	<p>Bill for water consumed for 1 months Minimum Billed for 25 cusec +</p>	<p>1814400 M³ / Month</p>
	<p>As Present reading for 1 Months of July (92301597 M³ - 88562036 M³) +</p>	<p>37,39,561.00 M³</p>

1 Month (July 2023)	x	$\frac{3739561 \times 1000}{3.785}$	x	$\frac{18}{1000}$	+	<p>Rs. : 1,77,83,909.60</p>
Say Rs. = 1,77,83,910.00 (C)						

<p>Hence Total Bill to be paid by = (B+C) = 507200.00 + 17783910.00 +</p>	<p>Rs. : 1,82,91,110.00</p>
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(Rupees One Crore Eighty Two Lakh Ninety One Thousand One Hundred Ten) only.


 09.08.23
S.D.O.
 Barrage and Camp Sub. Division
 Indrapuri

Verified

 In. foreman


 03-08-2023
EXECUTIVE ENGINEER
 Sone Barrage Division,
 Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 726IndrapuriDate : 04.07.2023

To,
Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (June 2023)

Sir,
In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.07.2023 is 88562036 M³ (45271899 + 14278231 + 13360442 + 15651464)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.06.2023 is 84866773 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.07.2023 is 88562036 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for (F.Y. 2023-24) Rate for the month of June 2023 (1.60 x 3,17,000) Amount Chargeable under this head for June 2023	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	+	1814400 M ³ / Month
	As Present reading for 1 Months of June (88562036 M ³ - 84866773 M ³)	+	36,95,263.00 M ³

1 Month (June 2023)	x	$\frac{3695263 \times 1000}{3.785}$	x	$\frac{18}{1000}$	+	Rs. : 1,75,73,245.40
Say Rs. = 1,75,73,246.00 (C)						

Hence Total Bill to be paid by = (B+C) = 507200.00 + 17573246.00	+	Rs. : 1,80,80,446.00
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(Rupees One Crore Eighty Lakh Eighty Thousand Four Hundred Forty Six) only.

Chiker
04.07.2023
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

Verified
S. Wain
Tr. In-charge

04.07.2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 627IndrapuriDate : 05.06.2023

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (May 2023)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.06.2023 is 84866773 M³ (42417080 + 14017981 + 13065856 + 15365856)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.05.2023 is 80122500 M ³	Present Cumulative Reading Water Meter Reading on Date : 01.06.2023 is 84866773 M ³
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B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of May 2023 (1.60 x 3,17,000) Amount Chargeable under this head for May 2023	Rs. : 5,07,200 (B)
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C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec	+	1814400 M ³ / Month
	As Present reading for 1 Months of May (84866773 M ³ - 80122500 M ³)	*	47,44,273.00 M ³

1 Month (May 2023)	x	$\frac{4744273 \times 1000}{3.785}$	x	$\frac{18}{1000}$	+	Rs. : 2,25,61,932.40
Say Rs. = 2,25,61,933.00 (C)						

Hence Total Bill to be paid by = (B+C) = 507200.00 + 22561933.00	+	Rs. : 2,30,69,133.00
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(Rupees Two Crore Thirty Lakh Sixty Nine Thousand One Hundred Thirty Three) only.

[Signature]
05.06.23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

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05-06-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

**OFFICE OF THE EXECUTIVE ENGINEER
SONE BARRAGE DIVISION, INDRAPURI**

Letter No. : 535.....Indrapuri

Date : 08.05.2023

To,

Chief Executive Officer
Nabinagar Power Generating Company Pvt. Ltd.
Ankohra (Aurangabad) Pin - 824303

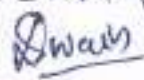
Subject :- Bill for withdrawal of 125 cusec of water from sone river for Nabinagar Power Generating Company Pvt. Ltd. Aurangabad. (April 2023)

Sir,

In connection with above matter the reading of water meter (At Barrage site Indrapuri) taken by WRD Indrapuri on dated 01.05.2023 is 80122500 M³ (38716347 + 13775948 + 12650941 + 14979264)

A.	Previous Cumulative Reading Water Meter Reading on Date : 01.04.2023 is 75701147 M³	Present Cumulative Reading Water Meter Reading on Date : 01.05.2023 is 80122500 M³
B.	Capital cost recovery charges (Basic Rate 317000/- month for F.Y. 2017-18 Taking 10% enhancement per year for ((F.Y. 2023-24) Rate for the month of April 2023 (1.60 x 3,17,000) Amount Chargeable under this head for April 2023	Rs. : 5,07,200 (B)
C.	Bill for water consumed for 1 months Minimum Billed for 25 cusec +	1814400 M ³ / Month
	As Present reading for 1 Months of April (80122500 M ³ - 75701147 M ³) +	44,21,353.00 M ³
	1 Month (April 2023) x $\frac{4421353 \times 1000}{3.785}$ x $\frac{18}{1000}$ +	Rs. : 2,10,26,249.40
	Say Rs. = 2,10,26,250.00 (C)	
	Hence Total Bill to be paid by = (B+C) = 507200.00 + 21026250.00 +	Rs. : 2,15,33,450.00
	(Rupees Two Crore Fifteen Lakh Thirty Three Thousand Four Hundred Fifty) only.	


08/05/23
S.D.O.
Barrage and Camp Sub. Division
Indrapuri

Verified

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08-05-2023
EXECUTIVE ENGINEER
Sone Barrage Division,
Indrapuri

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

		Unit	April 2023	
			Domestic	Imported
1	Opening quantity of coal/Lignite	(MT)	105,026.86	4,074.00
2	Value of stock		376,696,391.29	59789576.92
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	779,455.56	32,311.50
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-3,538.70	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	775,916.86	32,311.50
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,207.33	64.62
7	Net coal / Lignite Supplied (3-4)	(MT)	769,709.53	32,246.88
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,998,142,488.00	474,933,007.91
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-8,548,273.41	-40,899,915.00
10	Handling, Sampling and such other similar charges		48,172.99	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,989,642,387.58	434,033,092.91
12	Transportation charges by rail/ship/road transport	(Rs.)	639,901,493.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	3,125,103.29	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	643,026,596.29	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,632,668,983.87	434,033,092.91
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,440.31	13,596.11
19	Blending Ratio (Domestic/Imported)	%	95.46%	4.54%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,900.91	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,269.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,246.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,249.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,870.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,869.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	5,204.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	5,136.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,869.00	5,143.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,927	

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

	Unit	May 2023		
		Domestic	Imported	
1	Opening quantity of coal/Lignite	(MT)	117,816.42	360.88
2	Value of stock		405,325,134.90	4,906,542.81
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	878,240.87	35,518.70
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-1,048.36	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	877,192.51	35,518.70
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	7,017.54	71.04
7	Net coal / Lignite Supplied (3-4)	(MT)	870,174.97	35,447.66
8	Amount charged by the Coal /Lignite Company	(Rs.)	2,253,516,776.00	510,186,589.67
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-2,531,383.25	-24,610,203.00
10	Handling, Sampling and such other similar charges		4,175,502.73	0.00
11	Total amount Charged (8+9+10)	(Rs.)	2,255,160,895.48	485,576,386.67
12	Transportation charges by rail/ship/road transport	(Rs.)	740,565,111.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	3,871,514.49	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	744,436,625.49	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,999,597,520.97	485,576,386.67
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,446.31	13,697.37
19	Blending Ratio (Domestic/Imported)	%	96.19%	3.81%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,837.26	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,249.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,047.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,072.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,869.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,829.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	5,143.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	5,041.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,834.00	5,042.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,880	

PART-I
FORM- 15 **Final**

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

	Unit	June 2023		
		Domestic	Imported	
1	Opening quantity of coal/Lignite	(MT)	233,160.70	5,879.54
2	Value of stock		803,543,605.19	80,534,263.98
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	770,240.33	22.40
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-1,705.38	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	768,534.95	22.40
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,148.28	0.04
7	Net coal / Lignite Supplied (3-4)	(MT)	762,386.67	22.36
8	Amount charged by the Coal /Lignite Company	(Rs.)	2,069,843,845.00	355,536.03
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-4,292,030.71	0.00
10	Handling, Sampling and such other similar charges		30,674,193.86	0.00
11	Total amount Charged (8+9+10)	(Rs.)	2,096,226,008.15	355,536.03
12	Transportation charges by rail/ship/road transport	(Rs.)	674,660,855.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,711,345.58	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	677,372,200.58	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,773,598,208.73	355,536.03
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,593.14	13,705.73
19	Blending Ratio (Domestic/Imported)	%	99.28%	0.72%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,665.87	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,072.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,037.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,046.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,834.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,746.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	5,046.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	5,267.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,767.00	5,047.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,776	

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Sinha
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Rajesh
Vishwakarma
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Rajesh Vishwakarma
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PART-I
FORM- 15 **Final(Accounting)**

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd
Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	July 2023		
		Domestic	Imported	
1	Opening quantity of coal/Lignite	(MT)	237,641.11	411.90
2	Value of stock		853,877,963.29	5,645,338.40
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	785,472.63	0.00
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	785,472.63	0.00
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,283.78	0.00
7	Net coal / Lignite Supplied (3-4)	(MT)	779,188.85	0.00
8	Amount charged by the Coal /Lignite Company	(Rs.)	2,245,713,794.00	0.00
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	0.00
10	Handling, Sampling and such other similar charges		24,039,247.14	0.00
11	Total amount Charged (8+9+10)	(Rs.)	2,269,753,041.14	0.00
12	Transportation charges by rail/ship/road transport	(Rs.)	652,536,247.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,062,652.70	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	654,598,899.70	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,924,351,940.84	0.00
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,715.69	13,705.73
19	Blending Ratio (Domestic/Imported)	%	99.95%	0.05%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,720.44	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,137.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	3,957.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	0.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,000.00	0.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,730.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,648.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	0.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	0.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,668.00	0.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,668	

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay
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PART-I
FORM- 15 **Final(Accounting)**

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: NTPC Ltd
Name of the Generating Station: Nabinagar Super Thermal Power Station

	Unit	Aug 2023		
		Domestic	Imported	
1	Opening quantity of coal/Lignite	(MT)	150,246.76	-
2	Value of stock		558,271,124.88	-
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	873,278.60	0.00
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-6,974.96	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	866,303.64	0.00
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	6,930.43	0.00
7	Net coal / Lignite Supplied (3-4)	(MT)	859,373.21	0.00
8	Amount charged by the Coal /Lignite Company	(Rs.)	2,555,514,359.00	0.00
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-17,465,611.18	0.00
10	Handling, Sampling and such other similar charges		2,190,353.67	0.00
11	Total amount Charged (8+9+10)	(Rs.)	2,540,239,101.49	0.00
12	Transportation charges by rail/ship/road transport	(Rs.)	733,444,086.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	3,006,136.97	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	736,450,222.97	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	3,276,689,324.46	0.00
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,798.42	0.00
19	Blending Ratio (Domestic/Imported)	%	100.00%	0.00%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,798.42	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,000.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,157.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	0.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,133.00	0.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,668.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,638.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	0.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	0.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,643.00	0.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,644	

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Rajesh
Vishwakarma
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Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

	Unit	Sep 2023		
		Domestic	Imported	
1	Opening quantity of coal/Lignite	(MT)	153,733.07	-
2	Value of stock		583,942,738.99	-
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	720,898.17	8,144.90
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-6,488.78	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	714,409.39	8,144.90
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	5,715.28	16.29
7	Net coal / Lignite Supplied (3-4)	(MT)	708,694.11	8,128.61
8	Amount charged by the Coal /Lignite Company	(Rs.)	2,103,329,842.72	95,599,848.00
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	-16,265,432.02	0.00
10	Handling, Sampling and such other similar charges		68,920,362.86	0.00
11	Total amount Charged (8+9+10)	(Rs.)	2,155,984,773.56	95,599,848.00
12	Transportation charges by rail/ship/road transport	(Rs.)	656,753,571.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,727,861.36	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	659,481,432.36	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,815,466,205.92	95,599,848.00
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,941.68	11,760.91
19	Blending Ratio (Domestic/Imported)	%	99.01%	0.99%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	4,019.13	
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,157.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,163.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	0.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,162.00	0.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,643.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,709.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	0.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	4,988.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,697.00	4,988.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,710	

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For M.C. Bhandari & Co.
Chartered Accountants

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PART-I
FORM- 15 **Final(Accounting)**

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

		Unit	Oct 2023		
			Domestic (Other Sources)	Domestic (NTPC Mines)	Imported
1	Opening quantity of coal/Lignite	(MT)	49,772.187	-	-
2	Value of stock		196,185,858.65	-	-
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	567,748.66	173,623.130	35,388.800
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-5,907.740	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	567,748.660	167,715.39	35,388.80
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	4,541.99	335.43	70.78
7	Net coal / Lignite Supplied (3-4)	(MT)	563,206.67	167,379.96	35,318.02
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,522,053,347.00	437,460,215.00	420,775,070.74
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	-14,801,183.85	0.00
10	Handling, Sampling and such other similar charges		802,001.32	375,946.35	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,522,855,348.32	423,034,977.50	420,775,070.74
12	Transportation charges by rail/ship/road transport	(Rs.)	522,056,248.00	133,088,818.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,758,725.77	662,772.65	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	524,814,973.77	133,751,590.65	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,047,670,322.09	556,786,568.15	420,775,070.74
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,660.58	3,326.48	11,913.89
19	Blending Ratio (Domestic/Imported)	%	72.72%	22.62%	4.65%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	3,969.00		
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,162.00	0.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,179.00	4,601.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	N/A	0.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,177.00	0.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,697.00	0.00	N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,606.00	3,828.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	N/A	0.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	N/A	4,919.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,614.00	3,828.00	4,919.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,724		

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For M.C. Bhandari & Co.
Chartered Accountants

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Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

		Unit	Nov 2023		
			Domestic (Other Sources)	Domestic (NTPC Mines)	Imported
1	Opening quantity of coal/Lignite	(MT)	78,358.066	1,053.56	1,112.81
2	Value of stock		286,835,717.38	3,504,633.40	13,257,925.69
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	558,525.840	197,341.560	62,655.000
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-7,148.91	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	558,525.84	190,192.65	62,655.00
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	4,468.21	1,521.54	125.31
7	Net coal / Lignite Supplied (3-4)	(MT)	554,057.63	188,671.11	62,529.69
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,546,419,790.00	497,430,919.00	792,909,563.30
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	-17,924,119.21	0.00
10	Handling, Sampling and such other similar charges		1,050,622.13	222,602.33	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,547,470,412.13	479,729,402.12	792,909,563.30
12	Transportation charges by rail/ship/road transport	(Rs.)	566,968,676.00	150,717,570.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,540,851.04	897,748.09	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	569,509,527.04	151,615,318.09	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,116,979,939.16	631,344,720.22	792,909,563.30
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,801.01	3,346.16	12,667.12
19	Blending Ratio (Domestic/Imported)	%	69.27%	23.99%	6.75%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	4,289.99		
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,177.00	4,601.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,194.00	4,601.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,192.00	4,601.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,614.00		N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,570.00	3,997.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	N/A	4,919.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	N/A	4,915.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,576.00	3,997.00	4,915.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,771		

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For M.C. Bhandari & Co.
Chartered Accountants

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PART-I
FORM- 15 Final(Accounting)

Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Petitioner: **NTPC Ltd**
Name of the Generating Station: **Nabinagar Super Thermal Power Station**

	Unit	Dec 2023			
		Domestic (Other Sources)	Domestic (NTPC Mines)	Imported	
1	Opening quantity of coal/Lignite	(MT)	87,753.525	1,110.75	10,599.20
2	Value of stock		333,551,646.45	3,716,742.19	134,261,414.34
3	Quantity of Coal/Lignite supplied by Coal/Lignite Company	(MT)	629,422.340	87,359.820	135,768.200
4	Adjustment (+/-) in quantity supplied made by Coal/Lignite Company	(MT)	-	-2,976.70	-
5	Coal supplied by Coal/Lignite Company (3+4)	(MT)	629,422.34	84,383.12	135,768.20
6	Normative Transit & Handling Losses (For coal/Lignite based Projects) @0.8%	(MT)	5,035.38	675.06	271.54
7	Net coal / Lignite Supplied (3-4)	(MT)	624,386.96	83,708.06	135,496.66
8	Amount charged by the Coal /Lignite Company	(Rs.)	1,759,109,058.00	220,562,890.00	1,731,323,340.13
9	Adjustment (+/-) in amount charged made by Coal/Lignite Company	(Rs.)	0.00	-7,474,760.87	0.00
10	Handling, Sampling and such other similar charges		26,367,104.74	3,601,858.78	0.00
11	Total amount Charged (8+9+10)	(Rs.)	1,785,476,162.74	216,689,987.91	1,731,323,340.13
12	Transportation charges by rail/ship/road transport	(Rs.)	591,282,760.00	66,843,589.00	0.00
13	Adjustment (+/-) in amount charged made by Railways/Transport Company	(Rs.)	Nil	Nil	Nil
14	Demurrage Charges, if any	(Rs.)	0.00	0.00	0.00
15	Cost of diesel in transporting coal through MGR system, if applicable	(Rs.)	2,728,531.02	378,702.76	0.00
16	Total Transportation Charges (12+13+14+15)	(Rs.)	594,011,291.02	67,222,291.76	0.00
17	Total amount Charged for coal/lignite supplied including Transportation (11+16)	(Rs.)	2,379,487,453.76	283,912,279.67	1,731,323,340.13
18	Landed cost of coal/ Lignite (2+17)/(1+7)	(Rs./MT)	3,809.70	3,391.10	12,769.59
19	Blending Ratio (Domestic/Imported)	%	74.23%	12.29%	13.49%
20	Weighted average cost of coal/Lignite for the month	(Rs./MT)	4,966.58		
21	GCV of Domestic of the opening coal stock as per bill of coal company	(kCal/Kg)	4,192.00	4,601.00	N/A
22	GCV of domestic coal as per bill of coal company.	(kCal/Kg)	4,103.00	4,601.00	N/A
23	GCV of Imported Coal of the opening stock as per bill Coal Company	(kCal/Kg)	N/A	N/A	5,000.00
24	GCV of imported coal supplied as per bill coal company	(kCal/Kg)	N/A	N/A	5,000.00
25	Weighted average GCV of coal/Lignite as Billed	(kCal/Kg)	4,115.00	4,601.00	5,000.00
26	GCV of Domestic Coal of the opening stock as received at Station	(kCal/Kg)	3,576.00		N/A
27	GCV of domestic coal supplied as recived at station	(kCal/Kg)	3,604.00	3,782.00	N/A
28	GCV of imported coal of opening stock as recived at station	(kCal/Kg)	N/A	N/A	4,919.00
29	GCV of Imported Coal supplied as received at Station	(kCal/Kg)	N/A	N/A	4,975.00
30	Weighted average GCV of coal/Lignite as Received	(kCal/Kg)	3,600.00	3,782.00	4,971.00
30(a)	Weighted average GCV of coal/Lignite as Received (including Imported Coal)	(kCal/Kg)	3,807		

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For M.C. Bhandari & Co.
Chartered Accountants

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Details of Sourcewise fuel for computation of Energy Charges

Company		NTPC Limited			
Name of the generating Station		Nabinagar STPS-STAGE 01			
Month		January-2024			
SL	Particulars	Unit	COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED
A)	OPENING QUANTITY				
1	Opening Stock of coal	MT	2129.18	212517.61	55325.86
2	Value of Stock	Rs.	7220272.14	809627575.92	706488653.25
B)	QUANTITY				
3	Quantity of Coal /Lignite supplied by Coal / Lignite Company	MT	82547.97	637042.62	123662.20
3.01	- Qty Received (Pit Head)	MT	0.00	0.00	123662.20
3.02	- Qty Received (Non Pit Head)	MT	82547.97	637042.62	0.00
4	Adjustment (+/-) in quantity supplied made by Coal / Lignite Company	MT	2227.14-	0.00	0.00
5	Coal supplied by Coal/Lignite Company (3+4)	MT	80320.83	637042.62	123662.20
6	Normative transit & Handling losses (for Coal /Lignite based projects)	MT	642.57	5096.34	247.32
6.01	- Normative Loss (Pit Head)	MT	0.00	0.00	247.32
6.02	- Normative Loss (Non Pit Head)	MT	642.57	5096.34	0.00
7	Net Coal / Lignite supplied (5 - 6)	MT	79678.26	631946.28	123414.88
C)	PRICE				
8	Amount charged by the Coal / Lignite Company	Rs.	208305575.00	1900358827.00	1576427339.24
9	Adjustment (+ / -) in amount charged by coal / Lignite Company	Rs.	5587520.54-	0.00	0.00
10	Handling,Sampling and such other Similar charges	Rs.	539583.58	4279557.05	0.00
11	Total Amount charged (8 +9+10)	Rs.	203257638.04	1904638384.05	1576427339.24
D)	TRANSPORTATION				
12	Transportation charges by Rail / Ship / Road Transport	Rs.	63412092.00	564985233.00	0.00
13	Adjustment (+/-) in amount charged by railways / transport company	Rs.	0.00	0.00	0.00
14	Demurrage charges, if any	Rs.	0.00	0.00	0.00
15	Cost of diesel in transporting Coal through MGR system, if applicable	Rs.	0.00	0.00	0.00
16	Total transportation charges (12+/- 13 - 14 + 15)	Rs.	63412092.00	564985233.00	0.00
17	Total amount charged for Coal / Lignite supplied including transportation (11 + 16)	Rs.	266669730.04	2469623617.05	1576427339.24
E)	TOTAL COST				
18	Landed Cost of Coal/Lignite (2+17) / (1+7)	Rs./MT	3347.98	3883.23	12772.22
19	Blending Ratio (Domestic/Imported)	%	16.84	64.71	18.44
20	Weighted average cost of Coal /Lignite (Including biomass)	Rs./MT	5432.29		
20.10	Weighted average cost of Coal /Lignite (Excluding biomass)	Rs./MT	5432.29	5432.29	5432.29
F)	QUALITY				
21	GCV of Domestic coal of the opening coal stock as per bill of coal company	kCal/Kg	4601	4109	0
22	GCV of Domestic coal supplied as per bill of coal company	kCal/Kg	4601	4535	0
23	GCV of Imported coal of the opening coal stock as per bill of coal company	kCal/Kg	0	0	5000
24	GCV of Imported coal supplied as per bill of coal company	kCal/Kg	0	0	5000
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	kCal/Kg	4562		
25.10	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	kCal/Kg	4562	4562	4562
26	GCV of Domestic coal of the Opening stock as received at station	kCal/Kg	3782	3600	0
27	GCV of Domestic coal/biomass supplied as received at station	kCal/Kg	3808	3765	0
28	GCV of Imported coal of the Opening stock as received at station	kCal/Kg	0	0	4971
29	GCV of Imported coal supplied as received at station	kCal/Kg	0	0	4937
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	kCal/Kg	3963		
30.10	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	kCal/Kg	3963	3963	3963

Submitted On :19.04.2024

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For M.C. Bhandari & Co.
Chartered Accountants

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Details of Sourcewise fuel for computation of Energy Charges

Company		NTPC Limited			
Name of the generating Station		Nabinagar STPS-STAGE 01			
Month		February-2024			
SL	Particulars	Unit	COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED
A)	OPENING QUANTITY				
1	Opening Stock of coal	MT	647.00	532666.52	89890.74
2	Value of Stock	Rs.	2166127.54	2068469075.74	1148104245.49
B)	QUANTITY				
3	Quantity of Coal /Lignite supplied by Coal / Lignite Company	MT	7554.92	621654.26	41991.60
3.01	- Qty Received (Pit Head)	MT	0.00	0.00	41991.60
3.02	- Qty Received (Non Pit Head)	MT	7554.92	621654.26	0.00
4	Adjustment (+/-) in quantity supplied made by Coal / Lignite Company	MT	0.00	0.00	0.00
5	Coal supplied by Coal/Lignite Company (3+4)	MT	7554.92	621654.26	41991.60
6	Normative transit & Handling losses (for Coal /Lignite based projects)	MT	60.44	4973.23	83.98
6.01	- Normative Loss (Pit Head)	MT	0.00	0.00	83.98
6.02	- Normative Loss (Non Pit Head)	MT	60.44	4973.23	0.00
7	Net Coal / Lignite supplied (5 - 6)	MT	7494.48	616681.03	41907.62
C)	PRICE				
8	Amount charged by the Coal / Lignite Company	Rs.	24300888.00	1656891644.47	550275228.83
9	Adjustment (+ / -) in amount charged by coal / Lignite Company	Rs.	0.00	0.00	0.00
10	Handling,Sampling and such other Similar charges	Rs.	297306.98	24463819.68	0.00
11	Total Amount charged (8 +9+10)	Rs.	24598194.98	1681355464.15	550275228.83
D)	TRANSPORTATION				
12	Transportation charges by Rail / Ship / Road Transport	Rs.	21991.00	578604993.20	0.00
13	Adjustment (+/-) in amount charged by railways / transport company	Rs.	0.00	0.00	0.00
14	Demurrage charges, if any	Rs.	0.00	867356.00	0.00
15	Cost of diesel in transporting Coal through MGR system, if applicable	Rs.	0.00	0.00	0.00
16	Total transportation charges (12+/- 13 - 14 + 15)	Rs.	21991.00	577737637.20	0.00
17	Total amount charged for Coal / Lignite supplied including transportation (11 + 16)	Rs.	24620185.98	2259093101.35	550275228.83
E)	TOTAL COST				
18	Landed Cost of Coal/Lignite (2+17) / (1+7)	Rs./MT	3290.10	3765.23	12886.20
19	Blending Ratio (Domestic/Imported)	%	1.18	90.60	8.22
20	Weighted average cost of Coal /Lignite (Including biomass)	Rs./MT	4509.14		
20.10	Weighted average cost of Coal /Lignite (Excluding biomass)	Rs./MT	4509.14	4509.14	4509.14
F)	QUALITY				
21	GCV of Domestic coal of the opening coal stock as per bill of coal company	kCal/Kg	4601	4425	0
22	GCV of Domestic coal supplied as per bill of coal company	kCal/Kg	4408	4411	0
23	GCV of Imported coal of the opening coal stock as per bill of coal company	kCal/Kg	0	0	5000
24	GCV of Imported coal supplied as per bill of coal company	kCal/Kg	0	0	5000
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	kCal/Kg	4465		
25.10	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	kCal/Kg	4465	4465	4465
26	GCV of Domestic coal of the Opening stock as received at station	kCal/Kg	3808	3723	0
27	GCV of Domestic coal/biomass supplied as received at station	kCal/Kg	3562	3783	0
28	GCV of Imported coal of the Opening stock as received at station	kCal/Kg	0	0	4948
29	GCV of Imported coal supplied as received at station	kCal/Kg	0	0	4937
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	kCal/Kg	3851		
30.10	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	kCal/Kg	3851	3851	3851

Submitted On :19.04.2024

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Rajesh Vishwakarma
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Details of Sourcewise fuel for computation of Energy Charges

Company		NTPC Limited			
Name of the generating Station		Nabinagar STPS-STAGE 01			
Month		March-2024			
SL	Particulars	Unit	COAL DOMESTIC (NTPC MINES)	COAL-DOMESTIC	COAL - IMPORTED
A)	OPENING QUANTITY				
1	Opening Stock of coal	MT	647.02	576168.01	79807.35
2	Value of Stock	Rs.	2128749.91	2169407092.51	1028413245.20
B)	QUANTITY				
3	Quantity of Coal /Lignite supplied by Coal / Lignite Company	MT	15486.27	617136.73	72505.90
3.01	- Qty Received (Pit Head)	MT	0.00	0.00	72505.90
3.02	- Qty Received (Non Pit Head)	MT	15486.27	617136.73	0.00
4	Adjustment (+/-) in quantity supplied made by Coal / Lignite Company	MT	934.32-	0.00	0.00
5	Coal supplied by Coal/Lignite Company (3+4)	MT	14551.95	617136.73	72505.90
6	Normative transit & Handling losses (for Coal /Lignite based projects)	MT	116.42	4937.09	145.01
6.01	- Normative Loss (Pit Head)	MT	0.00	0.00	145.01
6.02	- Normative Loss (Non Pit Head)	MT	116.42	4937.09	0.00
7	Net Coal / Lignite supplied (5 - 6)	MT	14435.53	612199.64	72360.89
C)	PRICE				
8	Amount charged by the Coal / Lignite Company	Rs.	39304447.00	1897501301.94	951814872.48
9	Adjustment (+ / -) in amount charged by coal / Lignite Company	Rs.	2352322.13-	0.00	0.00
10	Handling,Sampling and such other Similar charges	Rs.	365042.81	31593094.29	0.20-
11	Total Amount charged (8 +9+10)	Rs.	37317167.68	1929094396.23	951814872.28
D)	TRANSPORTATION				
12	Transportation charges by Rail / Ship / Road Transport	Rs.	11741468.00	608070062.39	0.00
13	Adjustment (+/-) in amount charged by railways / transport company	Rs.	0.00	0.00	0.00
14	Demurrage charges, if any	Rs.	0.00	278150.00	0.00
15	Cost of diesel in transporting Coal through MGR system, if applicable	Rs.	0.00	0.00	0.00
16	Total transportation charges (12+/- 13 - 14 + 15)	Rs.	11741468.00	607791912.39	0.00
17	Total amount charged for Coal / Lignite supplied including transportation (11 + 16)	Rs.	49058635.68	2536886308.62	951814872.28
E)	TOTAL COST				
18	Landed Cost of Coal/Lignite (2+17) / (1+7)	Rs./MT	3393.82	3960.30	13013.41
19	Blending Ratio (Domestic/Imported)	%	2.27	87.56	10.17
20	Weighted average cost of Coal /Lignite (Including biomass)	Rs./MT	4867.97		
20.10	Weighted average cost of Coal /Lignite (Excluding biomass)	Rs./MT	4867.97	4867.97	4867.97
F)	QUALITY				
21	GCV of Domestic coal of the opening coal stock as per bill of coal company	kCal/Kg	4408	4418	0
22	GCV of Domestic coal supplied as per bill of coal company	kCal/Kg	4601	4481	0
23	GCV of Imported coal of the opening coal stock as per bill of coal company	kCal/Kg	0	0	5000
24	GCV of Imported coal supplied as per bill of coal company	kCal/Kg	0	0	5000
25	Weighted average GCV of Coal /Lignite as billed (Including biomass)	kCal/Kg	4510		
25.10	Weighted average GCV of Coal /Lignite as billed (Excluding biomass)	kCal/Kg	4510	4510	4510
26	GCV of Domestic coal of the Opening stock as received at station	kCal/Kg	3562	3755	0
27	GCV of Domestic coal/biomass supplied as received at station	kCal/Kg	4697	3736	0
28	GCV of Imported coal of the Opening stock as received at station	kCal/Kg	0	0	4944
29	GCV of Imported coal supplied as received at station	kCal/Kg	0	0	5011
30	Weighted average GCV of coal/ Lignite as Received (Including biomass)	kCal/Kg	3891		
30.10	Weighted average GCV of coal/ Lignite as Received (Excluding biomass)	kCal/Kg	3891	3891	3891

Submitted On :16.05.2024

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Date: 2024.09.14 13:49:03 +05'30'
For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Date: 2024.08.21 17:00:46 +05'30'

Rajesh Vishwakarma
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Part-I
Form-15A Final

Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	April 2023
1	Opening quantity of LDO	(KL)	4,379.485
2	Value of Stock	(Rs.)	419,664,983.70
3	Quantity of LDO supplied by Oil company	(KL)	0.000
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	-
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	-
8	Amount charged by Oil Company	(Rs.)	-
9	Adjustment in amount charged made by Oil Company	(Rs.)	-
10	Total amount charged (8+9)	(Rs.)	-
11	Transportation charges by rail/ship/road	(Rs.)	-
12	Adjustment(+/-) in amount made by Railways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	-
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
19	Weighted average rate of Secondary Fuel	Rs/KL	95,825.19

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For M.C. Bhandari & Co.
Chartered Accountants

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Vishwakarma** Digitally signed by
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Part-I
Form-15A Final

Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	May 2023
1	Opening quantity of LDO	(KL)	4,337.485
2	Value of Stock	(Rs.)	415,640,325.71
3	Quantity of LDO supplied by Oil company	(KL)	0.000
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	-
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	-
8	Amount charged by Oil Company	(Rs.)	-
9	Adjustment in amount charged made by Oil Company	(Rs.)	
10	Total amount charged (8+9)	(Rs.)	-
11	Transportation charges by rail/ship/road	(Rs.)	
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	-
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
19	Weighted average rate of Secondary Fuel	Rs/KL	95,825.19

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Part-I
Form-15A Final

Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	June 2023
1	Opening quantity of LDO	(KL)	4,033.685
2	Value of Stock	(Rs.)	386,528,632.89
3	Quantity of LDO supplied by Oil company	(KL)	242.838
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	242.838
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	242.838
8	Amount charged by Oil Company	(Rs.)	24629121.3
9	Adjustment in amount charged made by Oil Company	(Rs.)	
10	Total amount charged (8+9)	(Rs.)	24,629,121.30
11	Transportation charges by rail/ship/road	(Rs.)	
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	24,629,121.30
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
19	Weighted average rate of Secondary Fuel	Rs/KL	96,143.00

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For M.C. Bhandari & Co.
Chartered Accountants

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Part-I
Form-15A Final(Accounting)

Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>July 2023</u>
<u>1</u>	Opening quantity of LDO	(KL)	4,018.568
<u>2</u>	Value of Stock	(Rs.)	386,431,869.59
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	-
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	-
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	-
<u>8</u>	Amount charged by Oil Company	(Rs.)	0
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	-
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	-
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	96,161.59

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For M.C. Bhandari & Co.
Chartered Accountants

Sanjay Sinha
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Date: 2024.08.21 17:03:28 +05'30'

Details / information to be submitted in respect of Fuel for computation of Energy Charges

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>Aug 2023</u>
<u>1</u>	Opening quantity of LDO	(KL)	4,009.778
<u>2</u>	Value of Stock	(Rs.)	385,586,609.26
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	-
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	-
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	-
<u>8</u>	Amount charged by Oil Company	(Rs.)	0
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	-
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	-
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	96,161.59

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For M.C. Bhandari & Co.
Chartered Accountants

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Rajesh Vishwakarma
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Details / information to be submitted in respect of Fuel for computation of Energy Charges

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>Sep 2023</u>
<u>1</u>	Opening quantity of LDO	(KL)	3,617.778
<u>2</u>	Value of Stock	(Rs.)	347,891,267.81
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	-
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	-
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	-
<u>8</u>	Amount charged by Oil Company	(Rs.)	0
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	-
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	-
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,164.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	96,161.59

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For M.C. Bhandari & Co.
Chartered Accountants

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Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	Oct 2023
1	Opening quantity of LDO	(KL)	3,385.348
2	Value of Stock	(Rs.)	325,540,430.53
3	Quantity of LDO supplied by Oil company	(KL)	112.845
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	112.845
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	112.845
8	Amount charged by Oil Company	(Rs.)	10,869,614.06
9	Adjustment in amount charged made by Oil Company	(Rs.)	
10	Total amount charged (8+9)	(Rs.)	10,869,614.06
11	Transportation charges by rail/ship/road	(Rs.)	
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	10,869,614.06
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,071.00
19	Weighted average rate of Secondary Fuel	Rs/KL	96,166.81

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For M.C. Bhandari & Co.
Chartered Accountants

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Rajesh Vishwakarma
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Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	Nov 2023
1	Opening quantity of LDO	(KL)	2,664.873
2	Value of Stock	(Rs.)	256,276,672.31
3	Quantity of LDO supplied by Oil company	(KL)	864.677
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	864.677
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	864.677
8	Amount charged by Oil Company	(Rs.)	77,501,474.01
9	Adjustment in amount charged made by Oil Company	(Rs.)	
10	Total amount charged (8+9)	(Rs.)	77,501,474.01
11	Transportation charges by rail/ship/road	(Rs.)	
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	77,501,474.01
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,152.00
19	Weighted average rate of Secondary Fuel	Rs/KL	94,566.77

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For M.C. Bhandari & Co.
Chartered Accountants

Rajesh
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Details / information to be submitted in respect of Fuel for computation of Energy

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

Sl.No.	Particulars	Unit	Dec 2023
1	Opening quantity of LDO	(KL)	3,249.338
2	Value of Stock	(Rs.)	304,786,863.50
3	Quantity of LDO supplied by Oil company	(KL)	-
4	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
5	HFO/LDO supplied by Oil company (3+4)	(KL)	-
6	Normative transit & Handling losses	(KL)	NIL
7	Net Oil supplied (5-6)	(KL)	-
8	Amount charged by Oil Company	(Rs.)	-
9	Adjustment in amount charged made by Oil Company	(Rs.)	-
10	Total amount charged (8+9)	(Rs.)	-
11	Transportation charges by rail/ship/road	(Rs.)	-
12	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
13	Demurrage Charges, if any	(Rs.)	-
14	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
15	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
16	Others/ E.TAX	(Rs.)	-
17	Total amount charged for HFO (10+15+16)	(Rs.)	-
18	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,121.00
19	Weighted average rate of Secondary Fuel	Rs/KL	93,799.68

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For M.C. Bhandari & Co.
Chartered Accountants

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Details / information to be submitted in respect of Fuel for computation of

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>Jan 2024</u>
<u>1</u>	Opening quantity of LDO	(KL)	3,249.338
<u>2</u>	Value of Stock	(Rs.)	304,786,863.50
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	75.399
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	75.399
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	75.399
<u>8</u>	Amount charged by Oil Company	(Rs.)	7,262,688.03
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	7,262,688.03
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	7,262,688.03
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,167.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	93,856.91

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For M.C. Bhandari & Co.
Chartered Accountants

Rajesh
Vishwakarma

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Details / information to be submitted in respect of Fuel for computation of

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>Feb 2024</u>
<u>1</u>	Opening quantity of LDO	(KL)	3,122.987
<u>2</u>	Value of Stock	(Rs.)	293,170,304.27
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	1,487.844
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	1,487.844
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	1,487.844
<u>8</u>	Amount charged by Oil Company	(Rs.)	118,814,360.85
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	118,814,360.85
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	118,814,360.85
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,190.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	89,351.50

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For M.C. Bhandari & Co.
Chartered Accountants

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Details / information to be submitted in respect of Fuel for computation of

Name of the Company: NTPC Limited
Name of the Power Station: Nabinagar Super Thermal Power Station

<u>Sl.No.</u>	<u>Particulars</u>	<u>Unit</u>	<u>March 2024</u>
<u>1</u>	Opening quantity of LDO	(KL)	2,873.031
<u>2</u>	Value of Stock	(Rs.)	247,609,991.73
<u>3</u>	Quantity of LDO supplied by Oil company	(KL)	853.104
<u>4</u>	Adjustment(+/-) in qnty.supplied made by Oil Comopany	(KL)	-
<u>5</u>	HFO/LDO supplied by Oil company (3+4)	(KL)	853.104
<u>6</u>	Normative transit & Handling losses	(KL)	NIL
<u>7</u>	Net Oil supplied (5-6)	(KL)	853.104
<u>8</u>	Amount charged by Oil Company	(Rs.)	70,861,393.00
<u>9</u>	Adjustment in amount charged made by Oil Company	(Rs.)	
<u>10</u>	Total amount charged (8+9)	(Rs.)	70,861,393.00
<u>11</u>	Transportation charges by rail/ship/road	(Rs.)	
<u>12</u>	Adjustment(+/-) in amount made byRailways/ Transport Company	(Rs.)	-
<u>13</u>	Demurrage Charges, if any	(Rs.)	-
<u>14</u>	Cost of Diesel in transporting HFO/LDO, if applicable	(Rs.)	-
<u>15</u>	Total Transportation Charges (11+/-12+13+14)	(Rs.)	-
<u>16</u>	Others/ E.TAX	(Rs.)	-
<u>17</u>	Total amount charged for HFO (10+15+16)	(Rs.)	70,861,393.00
<u>18</u>	Weighted average GCV of Oil (HFO/LDO)*	(Kcal/Ltr)	9,152.00
<u>19</u>	Weighted average rate of Secondary Fuel	Rs/KL	85,469.63

**AMIT
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For M.C. Bhandari & Co.
Chartered Accountants

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