

एनएलसी इंडिया लिमिटेड
(भारत सरकार का 'नवरत्न' उद्यम)
135, ई.वी.आर.पेरियार हाई रोड,
कीलपॉक, चेन्नई- 600 010.



NLC INDIA LIMITED
(‘NAVRATNA’ Govt. of India Enterprise)
135, EVR Periyar High Road,
Kilpauk, Chennai-600 010.

वाणिज्य विभाग / COMMERCIAL DEPARTMENT

सी.आई.एन / CIN : L93090TN1956GOI003507 जी.एस.टी.एन / GST No : 33AAACN1121C1ZG पी.ए.एन / PAN : AAACN1121C
दूरभाष / Phone : 044-28369112 फ़ैक्स / Fax : 044-28360057 वेबसाइट / Website : www.nlcindia.com
ई-मेल / E-mail : ed.commercial@nlcindia.in, commercial@nlcindia.in

Lr. No: NLCIL/ GM/ Comml./F-1144/051/2024

Date: 20.02.2024

To

The Secretary,
Central Electricity Regulatory Commission,
3rd & 4th floor, Chanderlok Building,
36, Janpath Marg,
New Delhi - 110 001.

Sir,

Sub: NLCIL– Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1.4.2024 to 31.3.2029 – Comments from NLCIL- Reg.

Ref: CERC’s Public Notice - L-1/268/2022/CERC Dated 04-01-2024

Pursuant to the public notice cited in the reference, Hon’ble Commission has invited comments/suggestions from the stakeholders on the Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024, NLCIL is hereby submitting its comments for kind perusal and consideration, as enclosed.

The above may please be taken on record.

Yours Sincerely,

For NLC India Limited,

Deputy General Manager/ Commercial

Encl: as above

A. SRINIVASAN
Deputy General Manager / Commercial
NLC INDIA LIMITED
(‘NAVRATNA’ Govt. of India Enterprise)
No.135, EVR Periyar High Road,
Kilpauk, Chennai - 600 010.

INDEX OF PAPERS

S.NO	DESCRIPTION	PAGE No.
1	FORM-1	3
2	FORM-2	4
3	NLCIL's Comments on the Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1.4.2024 to 31.3.2029	6
4	Annexure-I: Equipment wise auxiliary power consumption details of NLCIL-NNTPS (2x500 MW Lignite based TPS)	38



BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION,

NEW DELHI

IN THE MATTER OF:

Furnishing comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1.4.2024 to 31.3.2029.

AND IN THE MATTER OF:

NLC India Limited,
135, EVR Periyar High Road,
Kilpauk, Chennai – 600 010,
Tamil Nadu, India.

..... PETITIONER

THE PETITIONER HUMBLY STATES THAT:

BACKGROUND:

In exercise of power conferred under Section 178 of the Electricity Act, 2003 (the Act), the Commission has prepared the draft notification of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period commencing from 01.04.2024 through the public notice dated 04-01-2024 and requested comments/suggestions from stake holders to be submitted on or before 20.02.2024.

Accordingly, NLCIL is submitting its comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024.

PRAYER:

NLCIL humbly requests the Hon'ble Commission to take on record the comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 submitted vide this affidavit.



P. Jayaraman
P. JAYARAMAN, B.A., B.L.,
ADVOCATE & NOTARY PUBLIC
EGMORE COURT ADVOCATES
ASSOCIATION, CH-600 008.
Cell: 94440 11605

[Signature]
PETITIONER



தமிழ்நாடு தமில்நாடு TAMIL NADU 1.12.2023
NLC India LTD

26AC 706156
K. MAHALAKSHMI
S.M.L. No. 3016/12/95
New No.11, Old No.8, 2nd Street,
Mangalapuram, Chatpet,
Chennai-31, Cell: 95228 95090

FORM 2
BEFORE THE CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

IN THE MATTER OF:

Furnishing comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1.4.2024 to 31.3.2029.

AND IN THE MATTER OF:

NLC India Limited,
135, EVR Periyar High Road,
Kilpauk, Chennai – 600 010
Tamil Nadu, India.

.... PETITIONER



P. JAYARAMAN, B.A., B.L.,
ADVOCATE & NOTARY PUBLIC
EGMORE COURT ADVOCATES
ASSOCIATION, CH-600 008.
Cell: 94449 11605

Affidavit verifying the Petition:

I, Srinivasan. A, S/o Shri S. Alwan, aged about 58 years, resident of Flat no. 7, Kenwith Garden, No.12, Mc Nicholas Road, 3rd lane, Chetpet, Chennai – 600 031 do hereby solemnly affirm and say as follows:

- ❖ I am the Deputy General Manager /Commercial of NLC India Limited (NLCIL), the Petitioner in the above matter and I am duly authorized by the said Petitioner to make this affidavit.
- ❖ The Hon'ble Commission has published Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 for the tariff period from 1.4.2024 to 31.3.2029 and has invited comments/suggestions from stakeholders on the same.
- ❖ Accordingly, NLCIL is hereby submitting its comments on Draft Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 vide this affidavit.

I say that the statements made in the affidavit and format enclosed, containing a total number of pages 49 herein now shown to me are based on information and records of the Petitioner maintained in the ordinary course of business and I believe them to be true.

Solemnly affirm at Chennai on 20th February 2024, that the contents of the above affidavit are true to my knowledge, no part of it is false and no material has been concealed there from.

A. Srinivasan

Deputy General Manager/ Commercial

NLC India Limited

Identified before me by



**P. JAYARAMAN, B.A., B.L.,
ADVOCATE & NOTARY PUBLIC
EGMORE COURT ADVOCATES
ASSOCIATION, CH-600 008.
Cell: 94440 11005**

A. SRINIVASAN
Deputy General Manager / Commercial
NLC INDIA LIMITED
(‘NAVRATNA’ Govt. of India Enterprise)
No.135, EVR Periyar High Road,
Kilpauk, Chennai - 600 010.

NLCIL's Comments on Draft Tariff Regulation 2024

Section 1:

Determination of Input Price for Lignite and Coal for Integrated Mines

1. Regulation 39: Run of Mine (RoM) cost:

"(3) Run of Mine Cost of lignite in case of integrated mine(s) for lignite shall be worked out as under:

ROM Cost = [(Annual Extraction Cost / (ATQ or Actual production whichever is higher) + (Mining Charge)]

Where,

- (i) Annual Extraction Cost is the cost of extraction of lignite as computed in accordance with Regulation 43 of these regulations; and*
- (ii) Mining Charge is the charge per tonne of lignite paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable"*

NLCIL Comments:

NLCIL lignite mines are unique in nature and incomparable to coal mines and are subjected to multifarious vagaries as depicted below:

- (a) Dynamic strata of Lignite Mines and Pressurized aquifer beneath the lignite seam which exerts upward pressure and hence continuous pumping of ground water is mandatory.
- (b) Lignite seam thickness varies from 18m to 11m due to which average stripping ratio varies significantly.
- (c) Neyveli receives very high rainfall due to its predominant location in monsoonal and cyclonic prone Zone. Also, average annual rainfall in Neyveli is more than 1500 mm which requires evacuation of rain water from the mines which is dependent on the concurrence of District Administration. Mining operation gets affected during high velocity wind flow during those times. These are the factors beyond the control of mining company.
- (d) Also, mining operations are risky in nature due to various operational conditions, space constraints, blasting requirements, Issues in land availability & its acquisition.

As per Draft Regulation, when Actual Production is below 85% of Mining Capacity as per the Mines Plan, Mining company will bear the under-recovery of production cost. However when the actual Production is more than 85% of Mining Capacity, benefits are passed on to beneficiary in terms of lower RoM cost.

The same has been illustrated in the table as below:

Particulars	Case-I	Case-II	Case-III
Capacity as per Mine Plan (in LT)	250	250	250
85% of Capacity (in LT) (A)	213	213	213
Actual Production (in LT) (B)	200	213	230
ATQ as per Draft Regulation-24 (in LT) (C) ((Higher of (A) and (B))	212.5	212.5	230
Total Extraction Cost (in Crs) (D)	5000	5000	5000
LTP as per Draft Reg24 (Rs/Tonnes) $E=(D)/(C)*100$	2352.94	2352.94	2173.91
Recovery of Annual Extraction Cost (in Crs) $F=(E*B)$	4705.88	5000.00	5000.00
Under-recovery of Cost (in Crs)	-294.12	0.00	0.00

When Production is above 85%, LTP will be Rs.2174 per Ton as per Draft regulation in case-III of the above example and NLC will be charging the beneficiaries at reduced price. However, when actual production is lesser than 85%, NLCIL has to bear the loss as shown in Case-I of above table.

Hence it is requested that If production achieved is lesser than 85% during any particular year on account of reasons beyond the control of mining company, Relaxation in ATQ may be continued in a similar provision as extended in 2019-24 input price regulations and it is suggested that the RoM cost shall be computed based on ATQ with relaxation as allowed in the second Amendment to 2019 Tariff Regulation.

2. Regulation 53: Adjustment on account of non-tariff income (NTI Adjustment):

“(1) Adjustment on account of non-tariff income (NTI Adjustment) for any year, such as income from sale of washery rejects in case of integrated mine of coal and profit, if any, from supply of coal to the Coal India Limited or merchant sale of coal as allowed under the Coal Mines (Special Provisions) Act, 2015 shall be worked out as under:

$NTI\ Adjustment = (2/3) \times (Total\ Non-tariff\ income\ during\ the\ year) / (Actual\ quantity\ of\ coal\ or\ lignite\ extracted\ during\ the\ year)$

(2) The adjustment on account of non-tariff income worked out in accordance with this Regulation shall not be applicable in case of the integrated mine(s) allocated through an auction route under the Coal Mines (Special Provisions) Act, 2015.”

NLCIL Comments:

NLCIL mines are captive mines and considering the above clause, 2/3rd profit on sale of lignite/coal is required to be passed on to the beneficiaries whereas the risk and expenditure for carrying out Mining operation is entirely borne by mining companies.

The Mines and Minerals (Development and Regulation) Amendment Act, 2021 also allows the miner where coal or lignite is used for captive purpose to sell up to fifty per cent of the total coal or lignite produced in a year after meeting the requirement of the end use plant considering that the risk & expenditures for carrying out Mining operations are completely borne by mining company.

Further, actual coal or lignite produced maybe lesser than 85% of capacity due to reason not attributable to mines such that shutdown/partial loading of plant, weather issues, force majeure events etc. and mines may not recover full fixed cost because of these issues beyond the control of mining company.

The risk & expenditure in Mining Operation and any under-recovery of cost are entirely borne by the mining companies. Hence, any risk or reward on account of outside sales shall be purely with the generating company in line with MoC letter to CERC vide dated 23.08.2022 with respect to amending the clause relating to adjustment on account of non-tariff income (NTI Adjustment) as the same has been followed in earlier MOC guidelines.

As illustrated in the table below, Recovery from beneficiaries is made to the extent of quantity supplied to linked Thermal Power Stations only which is less than the actual production cost of Mine. This leads to under recovery of Mines AEC which could be compensated by resorting to outside sales without burdening the beneficiaries.

Particulars	values
Mine Capacity as per Mine Plan (LT)	250
ATQ 85% of above (A)	213
Actual Production (B)	200
Outside Sales (C)	10
Actual qty. supplied to linked TPS (D)=(B-C)	190
Total Annual Extraction Cost (Rs. Crs) (AEC) (E)	5000
ROM Cost F=(E/A)	2347
Annual Extraction Cost recovered from beneficiaries (G) (Rs. Crs)	4459
Unrecovered Cost from beneficiaries (E-G) (Rs. Crs)	541

Hence any risk or reward on account of outside sales shall rest with mining company as was allowed in the past under MOC regime. Accordingly, **it requested from Hon'ble**

Commission that sale of coal or lignite may be kept outside the purview of NTI in the Tariff Regulation 2024.

3. Regulation 44: Capital Structure, Return on Equity (ROE) and Interest on Loan:

"(1) For integrated mine(s), the debt-equity ratio as on the date of commercial operation and as on the date of achieving Peak Rated Capacity shall be considered in the manner as specified under Clause (1) of Regulation 18 of these regulations:

Provided that for integrated mine(s) in respect of lignite with the date of commercial operation prior to 1.4.2024, the debt-equity ratio allowed by the Commission for the period ending 31.3.2024 shall form the basis for computation of input price

(2) For integrated mine(s), the debt-equity ratio for additional capital expenditure admitted by the Commission under these regulations shall be considered in the manner specified under Clause (1) of this Regulation.

(3) Return on equity shall be computed in rupee terms on the equity base arrived under Clause (1) of this Regulation at the base rate of 14%. ..."

NLCIL Comments:

Coal mining operations faces several risks which may include geological surprises, seasonal impact, socio-political factors, direct exposure to extreme weather conditions like rain etc. Considering the several of the risks associated in mining operations and returns available, It is submitted that the return on equity has to be commensurate with the risks.

It is requested that Return on Equity for Integrated mines may be considered @15.5% in line with applicable RoE for Thermal Stations and as recommended in the report of Working Group on Regulatory framework for Determination of Input price for Integrated Mine. Commission may appreciate the fact that earlier MoC guidelines had also allowed Return on Equity for mines @15.5% considering the higher Risks involved in Mining Operation.

Hence, it is requested that RoE for Input Price of Lignite/Coal may be revised to 15.5%.

4. Regulation 51: Adjustment on account of Shortfall of Overburden Removal (OB Adjustment):

"

(1) The generating company shall remove overburden as specified in the Mining Plan.

(2) In case of a shortfall of overburden removal during a year, the generating company shall be allowed to adjust such shortfall against excess of overburden removal, if any, during the subsequent three years.

- (3) In case of excess of overburden removal during a year, the generating company shall be allowed to carry forward such excess for adjustment against the shortfall, if any, during the subsequent three years.
- (4) Where the shortfall of overburden removal of any year is not made good by the generating company in accordance with Clause (2) of this Regulation, the adjustment on account of the shortfall of overburden removal (OB Adjustment) for that year shall be worked out as under:

OB Adjustment = [Factor of adjustment for shortfall of overburden removal during the year] x [Mining Charge during the year + Operation and Maintenance expenses during the year]

Where,

- i) Factor of adjustment for the shortfall of overburden removal during the year shall be computed as under:
- $$\frac{[(\text{Actual quantity of coal or lignite extracted during the year} \times \text{Annual Stripping Ratio as per Mining Plan}) - (\text{Actual quantity of overburden removed during the year} / \text{Annual Stripping Ratio as per Mining Plan})]}{(\text{Annual Target Quantity})}$$
- ii) Annual Stripping ratio is the ratio of the volume of overburden to be removed for one unit of coal or lignite as specified in the Mining Plan.
- iii) Mining Charge is the charge per tonne of coal or lignite paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable.
- iv) Mining Charge and Operation and Maintenance expenses shall be in terms of Rupees per tonne corresponding to the Annual Target Quantity. ...”

NLCIL Comments:

It is submitted that in case of Talabiramines where MDO has been appointed, adjustment for shortfall in Overburden is envisaged in the contract which is as follows

"Overburden Shortfall" shall mean "The difference between the Scheduled Overburden Quantity and the Overburden removed, divided by the Stripping Ratio".

Hence the above formula provided in the MDO contract takes care of the adjustments due to shortfall in overburden removal vis-à-vis that envisaged in the mining plan. In case of lower requirement of overburden removal, lesser amounts would be paid to MDO and as such the reduced cost of the same would be passed onto the beneficiaries automatically. In such cases OB Adjustment as per regulation doesn't not arise.

However, in case Overburden removal is taken up departmentally then OB adjustment factor to the extent of OB removal expenses may be considered as there is apparent error in existing OB adjustment factor which needs to be corrected as follows

OB Adjustment = [Factor of adjustment for shortfall of overburden removal during the year] x OB Removal Expenses

And OB Adjustment factor = [(Normative OB Removal Qty) - (Actual OB removal Qty)] / Normative OB Removal Qty

*Where Normative OB quantity = Actual Qty of Coal/lignite Excavated * Stripping ratio as per the Mine Plan.*

5. Regulation 52: Adjustment on account of shortfall in GCV (GCV Adjustment):

“(1) In case the weighted average GCV of coal extracted from the integrated mine(s) in a year is higher than the declared GCV of coal for such mine(s), no GCV adjustment shall be allowed.

(2) In case the weighted average GCV of coal extracted from the integrated mine(s) in a year is lower than the declared GCV of coal of such mine(s), the GCV adjustment in that year shall be worked out as under:

(a) Where the integrated mine(s) are allocated through an auction route under the Coal Mines (Special Provisions) Act, 2015:

GCV Adjustment = (Quoted Price of coal + Fixed Reserve Price) X [(Declared GCV of coal - Weighted Average GCV of coal extracted in the year) / (Declared GCV of coal)]

Where,

i) Quoted Price of coal is the Final Price Offer of coal in respect of the concerned coal Block or Mine, along with subsequent escalation, if any, as provided in the Coal Mine Development and Production Agreement:

Provided that additional premium, if any, quoted by the generating company in the auction shall not be considered; and

ii) Declared GCV of coal shall be the GCV of coal as specified or quoted in the auction

(b) Where the integrated mine(s) are allocated through an allotment route under the Coal Mines (Special Provisions) Act, 2015:

GCV Adjustment = [(Annual Extraction Cost/ATQ) + (Mining Charge)] X [(Declared GCV of coal - Weighted Average GCV of coal extracted in the year) / (Declared GCV of coal)]

Where,

i) *Annual Extraction Cost is the cost of extraction of coal as computed in accordance with Regulation 43 of these regulations;*

ii) *Mining Charge is the charge per tonne of coal paid by the generating company to the Mine Developer and Operator engaged by the generating company for mining, wherever applicable; and*

iii) *Declared GCV of coal shall be the average GCV as per the Mining Plan or as approved by the Coal Controller*

NLCIL Comments:

It is submitted that quantity and quality of geological coal reserves of the entire coal block are estimated based on the geological studies carried out during preparation of Feasibility Report of a mine. Based on that total extractable coal reserves and weighted average coal quality for the entire mine is estimated in Mining Plan.

However, actual coal quality during operational phase varies from year to year depending upon the coal seams exposed. Accordingly, during the operational phase of the mine, supply of coal is based on the quality of the coal declared by the Coal Controller. It is possible that the actual quality of the coal may not be same as that of the quality declared by the Coal Controller.

In view of the above, it is submitted that GCV Adjustment may be removed from the regulations as the same is beyond the control of the mining company.

6. Regulation 3(45): Definition of Integrated Mine:

*"Integrated Mine' means the captive mine (allocated for use in one or more identified generating stations) or basket mine (allocated to a generating company for use in any of its generating stations) or **both being developed by the generating company** for supply of coal or lignite to one or more specified end use generating stations for generation and sale of electricity to the beneficiaries;"*

NLCIL Comment:

Working group on "Regulatory framework for Determination of Input price or Transfer Price of Coal or Lignite from Integrated Mine" in its report to Hon'ble CERC stated that "Creation of Special Purpose Vehicle (SPV) or Company will not alter the allotment agreements. The allotted of mine, i.e. the Generating Company shall continue to have binding obligations to comply with allotment agreement and control of such SPV or separate company will remain with the generating company. The input price of coal is to



be determined by taking into account the captive nature of mine irrespective of separate creation of company or SPV.”

As there may be cases where Mine is allocated to the holding generating company and coal linkage may be allotted to its subsidiary also (For Example NTPL has allocation of 25% in NLCIL Talabira Mines), considering the same, definition of Integrated Coal mine may be modified as follows:

'Integrated Mine' means the captive mine (allocated for use in one or more identified generating stations) or basket mine (allocated to a generating company for use in any of its generating stations) or both being developed by the generating company **or its related Holding or Subsidiary or Associate or Joint Venture of Generating Company** for supply of coal or lignite to one or more specified end use generating stations for generation and sale of electricity to the beneficiaries.

7. Regulation 37(2): Input Price of coal and lignite for energy charges:

“(2) The generating company shall, after the date of commercial operation of the integrated mine(s) till the input price of coal is determined by the Commission under these regulations, adopt the notified price of Coal India Limited commensurate with the grade of the coal from the integrated mine(s) or the estimated price available in the investment approval, whichever is lower, as the input price of coal for the generating station:

Provided that the difference between the input price of coal determined under these regulations and the input price of coal so adopted prior to such determination, the quantity of coal billed shall be adjusted in accordance with Clause (4) of this Regulation.”

NLCIL Comment:

Mining Conditions differ from Company to company and hence adoption of Coal India notified price shall not reflect the correct transfer price due to various reasons such as differential stripping ratio and mining equipment used.

Also, CIL notified price is the Pithead Run of Mine (RoM) price and does not include some other charges like surface transportation charges, crushing charges, evacuation facility charges etc. which are levied separately by CIL

In view of the above, it is submitted that the Hon'ble Commission may consider granting interim input price of up to ninety per cent (90%) of the input price claimed in case of new integrated mine from the date of filing of tariff petition (as proposed for the generating stations in the draft Regulations 10(3)).

Section2:
Determination of Tariff for Thermal Generating Stations

1. Capital Spares

Regulation 3:

“(12) ‘Capital Spares’ means spares individually costing above Rs. 20 lakh, which is maintained by the generating company or the transmission licensee over and above the initial spares”

Regulation 36(1)(6):

“(6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:

Provided that water charges shall be allowed based on water consumption depending upon type of plant and type of cooling water system or water agreement with state govt./utilities, and the norms specified by the Ministry of Environment, Forest and Climate Change subject to prudence check. The details regarding the same shall be furnished along with the petition; ...”

NLCIL Comments:

The actual Capital Spare consumption of NLCIL stations for the period 2019-23 is given as below:

Capital Spares booked during FY 2019-23 (Crs)					
	BTPS (2x125 MW)	TPS I Exp (2x210 MW)	TPS II (7x210 MW)	TPS II Exp (2x250 MW)	Total
2019-20	4.14	2.69	6.97	7.14	20.94
2020-21	3.51	1.81	5.15	5.94	16.41
2021-22	4.49	1.53	4.01	7.62	17.65
2022-23	3.83	2.39	5.23	9.14	20.58
Total	15.96	8.42	21.36	29.84	75.59
Spares Value less than 20 Lakhs Approx	10.80	5.07	18.60	13.60	48.07
Percentage of Total	68%	60%	87%	46%	64%

As it can be seen, capital spares with value less than Rs 20 lakhs contributes majority of total consumption for NLCIL Station of capacity less than equal to 250 MW.

Hence, it is requested that the stations may be allowed to claim the capital spares of value more than Rs 1 lakhs separately over and above of normative O&M along with appropriate justification.

Also, any impact on O&M on account of change in law shall be allowed at actual irrespective of basic limit of 5% and above from normative O&M.

On the context of the details mentioned above, it is also submitted that the definition for Capital spares may be modified and existing practice of allowing capital spares individually costing above Rs. 1 Lakh may be continued for the control period 2024-29 also as it was envisaged in various Orders of the Hon'ble Commission.

2. Regulation 10: 'Determination of tariff':

(3) *"If the information furnished in the petition is in accordance with these regulations, the Commission may consider granting interim tariff of up to ninety per cent (90%) of the tariff claimed in case of new generating station or unit thereof or transmission system or element thereof during the first hearing of the application:*

Provided that in case the final tariff determined by the Commission is lower than the interim tariff by more than 10%, the generating company or transmission licensee shall return the excess amount recovered from the beneficiaries or long term customers, as the case may be with simple interest at 1.20 times of the rate worked out on the basis of 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the financial year in which such excess recovery was made.

(4) *In case of the existing projects, the generating company or the transmission licensee, as the case may be, shall continue to bill the beneficiaries or the long-term customers at the capacity charges or the transmission charges respectively as approved by the Commission and applicable as on 31.3.2024 for the period starting from 1.4.2024 till approval of final capacity charges or transmission charges by the Commission in accordance with these regulations:"*

Provided that the billing for energy charges w.e.f. 1.4.2024 shall be as per the operational norms specified in these regulations.

(5) *The Commission shall grant the final tariff in case of existing and new projects after considering the replies received from the respondents and suggestions and objections, if any, received from the general public and any other person permitted by the Commission, including the consumers or consumer associations.*

(6) *The Commission may hear the petitioner, the respondents and any other person permitted, including the consumers or recognized consumer associations while granting interim or final tariff.*

(7) *Subject to Sub-Clause (8) below, the difference between the tariff determined in accordance with clauses (3) and (5) above and clauses (4) and (5) above, shall be recovered from or refunded to, the beneficiaries or the long term customers, as the case may be, with simple interest at the rate equal to the 1 year SBI MCLR plus 100 basis points prevailing as on 1st April of the respective year of the tariff period, in six equal monthly installments.*

Provided that the bills to recover or refund shall be raised by the generating company or the transmission licensees within 30 days from the issuance of the Order.

Provided further that such interest, including that determined as per sub-clause (8) of this regulation shall be payable till the date of issuance of the Order and no interest shall be allowed or levied during the period of six-monthly installments. Provided

further that in case where money is to be refunded and there is a delay in the raising of bills by the generating company or transmission licensees beyond 30 days from the issuance of the Order, it shall attract a late payment surcharge as applicable in accordance with these regulations.

- (8) Where the capital cost approved by the Commission on the basis of projected additional capital expenditure exceeds the actual tried up additional capital expenditure incurred on a year to year basis by more than 10%, the generating company or the transmission licensee shall refund to the beneficiaries or the long term customers as the case may be, the tariff recovered corresponding to the additional capital expenditure not incurred, as approved by the Commission, along with simple interest at 1.20 times of the rate worked out on the basis of 1-year SBI MCLR plus 100 basis points as prevalent on 1st April of the respective year."

Stipulation:

The Regulation 10 (3) stipulates that, if the final tariff is lower than the interim tariff by more than 10%, the generating company or transmission licensee shall return the excess amount recovered from the beneficiaries with simple interest at 1.20 times of the rate worked out on the basis of 1-year SBI MCLR plus 100 basis points.

Whereas as per sub-clause (7), the difference between the interim tariff and final tariff, shall be recovered from or refunded to, the beneficiaries with simple interest at the rate equal to the 1-year SBI MCLR plus 100 basis points

Also, as per sub-clause (8), the difference of actual less by more than 10% from Tariff Order needs to be refunded to beneficiary year-wise during the control period.

NLCIL Comments:

I. For New Projects:

In case of new projects, as per the proposed draft regulation, Generators have to file petition within 90 days from the date of actual COD and the commission may grant interim tariff up to 90% of the petition value.

Capital cost includes cost overrun, IDC& IEDC which may constitute a considerable value if the project gets delayed by substantial period. If Interim tariff is approved up to 90% of petition value and when the final tariff approved happens to be lower than the interim tariff order, in such cases though generators had submitted the actual expenditures incurred till CoD of the Station, the refund of excess recovery @1.2 times of 1year SBI MCLR+100 basis points would be additional burden as Generators would have suffered already due to disallowances in terms of IDC/IEDC.

Hence it is requested to adopt the rate to 1year SBI MCLR+100 basis points only to settle the differential tariff (refund/recovery).

II. Existing Projects:

Similarly, for existing projects, Tariff petition would be filed at the beginning of the control period on projected basis and tariff determination by Commission practically may take substantial period of time.

As per regulation 10(4), Generators continue to bill the DISCOMs capacity charges as approved by the Commission and applicable as on 31.3.2024 till the approval of Tariff for the control period 2024-29.

Due to practical difficulty with reconciliation of Tariff based on actual Additional Capital expenditures year wise during the control period as per Reg.10(8), **provision may be considered to allow Generators to bill @90% of petitioned price till the issuance of Tariff Order.**

In order to have parity, **any tariff difference (refund/recovery) based on actuals at the end of the year may be permitted to settle on year on year basis at 1-year SBI MCLR+100 basis points which will avoid unwarranted carrying cost for both generators and DISCOMs as well.**

III. Period for settlement of Bills:

The tariff difference arising on account of change in tariff based on final order by CERC needs to be worked out comprehensively month-wise, DISCOM-wise and it is a time-consuming process. The workings are reconciled with DISCOMS and then the after-Management approval the credit notes are issued. Hence it is requested to change the **timeline for issuance of the refund/recovery to three months from the date of the tariff Order issued by the Commission**, similar to that mentioned in Tariff Regulation 2014-19 which is reproduced below:

Regulation 8(13) of Tariff Regulation 2014-19: "The amount under-recovered or over-recovered, along with simple interest at the rate equal to the bank rate as on 1st April of the respective year, shall be recovered or refunded by the generating company or the transmission licensee, as the case may be, in six equal monthly installments starting within three months from the date of the tariff order issued by the Commission"

3. Regulation 21: Interest During Construction (IDC) and Incidental Expenditure during Construction (IEDC)'

"(1) Interest during construction (IDC) shall be computed considering the actual loan and normative loan after taking into account the prudent phasing of funds up to actual COD:

Provided that IDC on normative loan corresponding to excess equity over 30% of funds deployed shall be allowed only in case the actual infusion of equity on a quarterly basis is more than 30% of total funds deployed on a pari-passu basis.

Provided further that in case IDC on normative loan is to be allowed prior to infusion of actual loan, rate of interest for computing such IDC shall be equal to 1-year SBI MCLR as prevailing on 1st April of the respective year.

Provided further that IDC on normative loan, post infusion of actual loan shall be computed based on WAROI for that respective quarter."

"..... (5) If the delay in achieving the COD is attributable either in entirety or in part to the generating company or the transmission licensee or its contractor or supplier or agency, in such cases, IDC and IEDC due to such delay may be disallowed after prudence check either in entirety or on pro-rata basis corresponding to the period of delay not condoned vis-à-vis total implementation period and the liquidated damages, if any, recovered from the contractor or supplier or agency shall be retained by the generating company or the transmission licensee, in the same proportion of delay not condoned vis-à-vis total implementation period.

[Note: For e.g.: In case a project was scheduled to be completed in 48 months and is actually completed in 60 months. Out of 12 months of time overrun, if only 6 months of time overrun is condoned, the allowable IDC and IEDC shall be computed by considering the total IDC and IEDC incurred for 60 months and allowed in the proportion of 54 months over 60-month period.]

Provided that in case of activities like obtaining forest clearance, NHAI Clearance, approval of Railways, and acquisition of government land, where delay is on account of delay in approval of concerned authority, in such cases maximum condonation shall be allowed up to 90% of the delay associated with obtaining such approvals or clearances."

Stipulation:

IDC shall be computed considering the actual loan and normative loan after taking into account the prudent phasing of funds up to actual COD. IDC on normative loan for excess equity over 30% shall be allowed only in case the actual infusion of equity on a quarterly basis is more than 30% of total funds deployed on a pari-passu basis. IEDC shall be computed from the zero date, taking into account pre-operative expenses up to actual COD.

In case of delay: For uncontrollable parameters- Fully allowed and For controllable parameters –Partly allowed/disallowed after prudence check with LD adjustment, if any in proportion with whole delay period. However, for forest clearance, NHAI Clearance, approval of Railways, and acquisition of government land, where delay is on account of delay in approval of concerned authority, in such cases maximum condonation shall be allowed up to 90% of the delay associated with obtaining such approvals or clearances.

NLCIL Comment:

As per first proviso of clause 5 of Regulation 21, the maximum condonation allowed on account of delay in approval from different government authorities like NHAI, Railways, Forest department, acquisition of government land etc. shall be only up to 90% of the delay associated with obtaining such approval from these authorities. The Generators always yearn for early commercial Operation of the Unit/Station so that revenue is realized for the investment.

However, delays on approval from different government authorities are beyond the control of Generating companies and therefore should be allowed completely.



Hence it is requested that the delay in obtaining approval from different government authorities like NHAI, Railways, Forest department, acquisition of government land etc. shall be condoned up to 100% after prudence check.

4. Regulation 25: Additional Capitalisation within the original scope and after the cut-off date:

Expense towards "Raising of ash dyke as a part of ash disposal system" (Regulation 25 (1)(g) of Tariff Regulation 2019-24) was removed in draft regulation 2024-29 under additional capital expenditure under work within original scope and executed after cut-off date:

Stipulation:

The draft Regulation does not allow the expenditure incurred in Raising of ash dyke as a part of ash disposal system. It stipulates that the work has to be completed with-in the cut-off date.

NLCIL Comments:

It is submitted that the ash stored in ash dyke is toxic and the expenditure incurred for storing bottom ash in ash dyke/Pond is of recurring nature. Further the safety of the surrounding villages has to be ensured by raising the height of Ash dyke as and when the need arises even though same is not envisaged in the original scope. So, in certain cases if raising of ash dyke becomes essential to ensure the safety of the surrounding villages and avoid collapsing of Ash bund.

It is therefore submitted that in such of those cases, **based on the recommendation obtained from the MoEFCC, the above expenses may be allowed by the Hon'ble Commission and existing provision in 25 (1) (g) to claim the same may be retained in the Tariff Regulation 2024-29 also.**

5. Regulation 25: Additional Capitalisation within the original scope and after the cut-off date:

"...Provided that any claim of additional capitalisation with respect to the replacement of assets under the original scope and on account of obsolescence of technology, less than Rs. 20 lakhs shall not be considered as part of Capital cost and shall be met by Generating company and Transmission licensee through normative O&M charges only..."

Stipulation:

The regulation stipulates that any asset replacement under additional capitalisation on account of obsolescence of technology whose individual value is less than Rs. 20 Lakhs



and claimed under Regulation 25 (2) (C) of tariff regulation 2019-24, the said expenditure has to be met from normative O & M expenses allowed for the Generating Station.

NLCIL Comments:

So far, the expenditure incurred for replacement of assets under the original scope and **on account of obsolescence of technology** are being considered as part of capital cost. The same was allowed by the Hon'ble Commission based on the recommendation of OEM.

It is submitted that, the tender process, award of contract and thereafter erection and commissioning of various equipment of Plant have a time period of 4 to 5 years and with rapid technological advancement, certain assets like control systems and software etc needs to be updated or replaced with OEM recommendation even though such assets would not have served its full life. However, the assets may require replacement and the generating company would have carried out the same for efficient performance of the Generating station. Hence, disallowance of such claims of individual value less than Rs 20 Lakhs discourages the efforts made by generating company for the improvement of equipment performance.

It is submitted that the cost incurred for replacement of assets above Rs. 1 Lakh shall be allowed under additional capitalization and the replacement of assets of value up to Rs. 1 lakh can be considered under normative O&M as these are of smaller value.

6. Regulation 26: Additional Capitalisation beyond the original scope:

(1) The capital expenditure, in respect of the existing generating station or the transmission system, including the communication system, incurred or projected to be incurred on the following counts beyond the original scope, may be admitted by the Commission, subject to prudence check:

- a. Payment made against award of arbitration or for compliance of order or directions of any statutory authority, or order or decree of any court of law;*
- b. Change in law or compliance of any existing law;*
- c. Force Majeure events;*
- d. Need for higher security and safety of the plant as advised or directed by appropriate Indian Government Instrumentality or statutory authorities responsible for national or internal security;*
- e. Deferred works relating to ash pond or ash handling system in addition to the original scope of work, on case to case basis: Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M) or repairs and maintenance under O&M expenses, the same shall not be claimed under this Regulation;*
- f. Usage of water from the sewage treatment plant in the thermal generating station.*



- g. Works required towards biomass handling system to enable biomass co-firing and towards enabling flexible operation of the generating station as may be required.*
- h. Works pertaining to Railway Infrastructure and its augmentation for transportation of coal up to the receiving end of the generating station (excluding any transportation cost and any other appurtenant cost paid to railways) that are not covered under Regulation 24, 25 and 27, but shall result in better fuel management and can lead to a reduction in operation costs, or shall have other tangible benefits: Provided that the generating company shall have to mandatorily seek prior approval of the Commission before implementing such works based on a detailed cost benefit analysis of such schemes; and*
- i. Any additional capital expenditure which has become necessary for efficient operation of generating station or transmission system as the case may be, including the works required towards projects acquired through NCLT process. The claim shall be substantiated with the technical justification and cost benefit analysis.*

(2) Any claim of additional capitalisation less than Rs. 20 lakhs shall not be considered under Clause (1) of this regulation”

NLCIL Comments:

Any order/guideline/recommendation issued by Government or any statutory authority must be complied by the Generating Company and asset addition in such compliances which are beyond the original scope shall be treated as mandatory requirement and same may be allowed under Regulation 26. Also, any expenditure made towards assets procured for the enhancement of efficiency of the station, safety and security of the Station shall not be discouraged by limiting on the claim amount of Rs 20 lakhs.

Certain assets such as **PLC/Controller modules in DCS System, Analysers in Lignite Conveyor System and intangible assets** such as software and Computers need frequent replacement and claim of additional capitalisation on account of any change or compliance in law, Force Majeure, enhancing safety and security shall be considered under Clause (1) of Regulation 26 of Draft Tariff Regulation 2024 irrespective of item value.

Hence, claim of additional capitalisation value on account of change or compliance in law, Force Majeure, enhancing safety and security of the station shall be considered under Clause (1) of Regulation 26 of Draft Tariff Regulation 2024 irrespective of item value.



7. Regulation 28: Special Allowance in lieu of R&M:

The Special Allowance admissible to a generating station shall be @ Rs 10.75 lakh per MW per year for the control period.

NLCIL Comments:

Special Allowance introduced first in the 2009-14 tariff period was a sustainable and cost-effective approach which avoids seeking fresh approvals and clearances where works can be carried out on need basis so that they are well maintained and continue to operate efficiently without the need of relaxed norms. These units are required to provide base load and balancing requirements for RE integration.

Regulations proposed 10.75 lakhs per MW without escalation for control period 2024-29.

Aged units fixed cost is proportionally lower as the depreciation of assets under original scope would have been already recovered and loan would have been fully repaid. The RoE for generators will also be negligible.

For instance, ROE for NLCIL Station of TPS II Stage-I ROE is **1.7 paisa** per kWhr and TPS-II Stage II is **4 paisa** per kWhr which is very minimum as compared to Industry.

Particulars	<i>(in Rs per Unit)</i>	
	TPS-II Stg-I	TPS-II Stg-II
Return on Equity	0.017	0.04
Depreciation	0	0
Interest on Working Capital	0.094	0.094
Operation & Maintenance Expenses	0.591	0.591
Special Allowance in lieu of R&M	0.141	0.141
Annual Fixed Cost per Unit	0.843	0.866

Hence it is requested from Hon'ble Commission that appropriate escalation factor in Special Allowance may be provided in order to meet the rate of inflations.

Also planning and execution of need-based works under special allowance takes substantial time period from conceptualization to final completion of the required works and there will be lag in commissioning of the works funded through special allowance. **Hence Normative based Special allowance will incentivize the efficient older units having minimal fixed cost & negligible RoE by considering the fact that Special allowance is receivable only on achievement of Normative Plant Availability Factor.**

8. Regulation 32: Interest on loan capital:

"(6) In the case of New Project(s), the rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio of the generating company or the transmission licensee, as the case may be;

Provided further that if the generating station or the transmission system, as the case may be, does not have any actual loan, then the rate of interest for a loan shall be

considered as 1-year MCLR of the State Bank of India as applicable as on April 01, of the relevant financial year.”

NLCIL Comment:

As the actual interest on loan for upcoming Thermal Projects of NLCIL are higher than the SBI MCLR, it is prudent that in cases when the actual loan portfolio is not available for a new project, 1-year SBI MCLR + 200 basis point shall be considered for interest on loan for such project.

9. Regulation 33: Depreciation:

“(6) Depreciation for New Projects shall be calculated annually based on the Straight-Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 15 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.”

NLCIL Comment:

As per the Regulation (6), assets will be depreciated over the period of 15 years for new project. The project loan's duration is affected by current market conditions when the loan is taken out, as well as the loan's terms and conditions, RBI policy, and other various factors. NLCIL has loans of tenure 12 years or lesser period.

Hence it is requested to retain period of depreciation to 12 years and the depreciation schedule as per the current Tariff Regulation 2019-24.

10. Regulation 34: Interest on working capital:

“(3) Rate of interest on working capital shall be on a normative basis and shall be considered at the Reference Rate of Interest as on 1.4.2024 or as on 1st April of the year during the tariff period 2024-29 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later:

Provided that in case of tripping-up, the rate of interest on working capital shall be considered at Reference Rate of Interest as on 1st April of each of the financial year during the tariff period 2024-29.”

NLCIL Comment:

The rate of interest on loan is affected by current market conditions when the loan is taken out, the loan's terms and conditions, Company's financial status, credit rating, RBI policy, loan tenure and other various factors.

Therefore, in order to compensate increase in actual working capital, it is requested that the existing rate of interest on working capital may be continued i.e. 1-year MCLR of SBI plus 350 basis point.

11. Regulation 36: Operation and Maintenance Expenses:

“(1) Thermal Generating Station: Normative Operation and Maintenance expenses of thermal generating stations shall be as follows:

Year	200/210/ 250 MW Series	300/330/ 350 MW Series	500 MW Series	600 MW Series	800 MW Series and above
FY 2024-25	39.96	33.09	26.22	24.81	22.33
FY 2025-26	42.32	35.04	27.77	26.27	23.64
FY 2026-27	44.81	37.11	29.41	27.82	25.04
FY 2027-28	47.45	39.29	31.14	29.46	26.51
FY 2028-29	50.25	41.61	32.97	31.20	28.08

Coal based and lignite fired (including those based on Circulating Fluidised Bed Combustion (CFBC) technology) generating stations, other than the generating stations or units referred to in clauses (2), (4) and (5) of this Regulation:

“...(4) Lignite-fired generating stations:

Year	125 MW Sets
FY 2024-25	39.04
FY 2025-26	41.34
FY 2026-27	43.77
FY 2027-28	46.35
FY 2028-29	49.08

“..(6) The Water Charges, Security Expenses and Capital Spares for thermal generating stations shall be allowed separately after prudence check:

Provided that water charges shall be allowed based on water consumption depending upon type of plant and type of cooling water system or water agreement with state govt./utilities, and the norms specified by the Ministry of Environment, Forest and Climate Change subject to prudence check. The details regarding the same shall be furnished along with the petition;

Provided further that the generating station shall submit the assessment of the security requirement and estimated expenses along with the petition seeking the determination of tariff;

Provided also that the generating station shall submit the details of year-wise actual capital spares consumed individually costing above Rs. 20 Lakh at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance as per Regulation 17 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 or

Special Allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization...

NLCIL Comment:

Normative O&M for 500 MW series:

Escalation in normative O&M provided YoY is 5.89% as compared to 3.5% provided in tariff regulation 2019-24.

However, the difference between Normative O&M for 2023-24 (2019-24 control periods) and 2024-25 (control period) is shown as below:

Capacity	125 MW series	200/210/250 MW series	300/330/350 MW series	500 MW series	600 MW series	800 MW series
FY 2023-24	35.76	37.84	31.84	25.84	23.26	20.93
FY 2024-25	39.04	39.96	33.09	26.22	24.81	22.33
% Change	9.17%	5.60%	3.93%	1.47%	6.66%	6.69%

It can be observed that the escalation in normative O&M for 500 MW series is only 1.47% which is lower escalation considered in either of the control period.

NNTPS Station is having 2x500 MW Pulverized Fuel-Fired (PF) boilers using lignite as fuel. Being a low caloric fuel, the fuel feeding rate of the combustor is much higher than that of coal-based Station, frequent maintenance of lignite handling system and other equipments like ID fans, FD fans, SA Fans, PA fans etc. Actual O&M of NNTPS is given as below:

Particulars	2020-21	2021-22	2022-23	Average
O&M expense (in Lakhs)	15,463.68	31,203.09	30,317.19	
Capacity Installed	500	1000	1000	
O&M expense (in Lakhs/MW)	30.93	31.20	30.32	30.82

Hence, it is requested to allow the O&M of NNTPS (2x500 MW lignite based TPS) to 30.82 Lakhs/MW for FY 2024-25 and revised O&M of future years with the current escalation of 5.89%.

12.Regulation 64: Computation and Payment of Energy Charge for Thermal Generating Stations and Supplementary Energy Charge for Coal or Lignite based Thermal Generating Stations:

“(3) Energy charge rate (ECR) and Supplementary Energy charge rate in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formulae:

(a) ECR for coal based and lignite fired stations:

$$ECR = \{(SHR - SFC \times CVSF) \times LPPF / (CVPF + SFC \times LPSFi + LC \times LPL) \times 100 / (100 - AUX)\}$$

Where;

ECR = Energy charge rate, in Rupees per kWh;

SHR = Gross station heat rate, in kCal per kWh;

SFC = Normative Specific fuel oil consumption, in ml per kWh

CVPF = (a) Weighted Average Gross calorific value of coal considering GCV as per Regulation 60, in kCal per kg for coal based stations less 85 Kcal/Kg on account of variation during storage at generating station; (b) Weighted Average Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic meter, as applicable for lignite, gas and liquid fuel based stations;

LC = Normative limestone consumption in kg per kWh;

LPL = Weighted average landed cost of limestone in Rupees per kg;

LPPF = Weighted average landed fuel cost of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed fuel cost of primary fuel shall be arrived in proportion to the blending ratio);

AUX = Normative auxiliary energy consumption in percentage.

NLCIL Comment:

It is requested that the typographical error in the formula may kindly be corrected as:

$$ECR = \{((SHR - (SFC \times CVSF)) \times LPPF / CVPF) + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)$$

13. Regulation 70(B): Normative Annual Plant Loading Factor (NAPLF) for Incentive:

“(B) Normative Annual Plant Load Factor (NAPLF) for Incentive:

(a) 85% for all thermal generating stations, except for those covered under clause

(b) below 80% for coal and lignite based generating stations completing 30 years from COD as on 31.03.2024”

NLCIL Comments:

CEA has recommended that the level of Annual Plant Load Factor for incentive is to be at the same level of Normative Annual Plant Availability Factor (NAPAF) for the station for the year.

Hence, it is requested to allow the Normative PLF of Thermal Station to the same level of NAPAF as per the recommendation given by CEA.

Also, the current Draft Tariff Regulation 2024 suggests relaxed NAPLF norm of 80% for stations completing its 30years of operation from its COD. However, useful life of a Thermal Stations is considered 25 years. For a station completing 25 years from COD, its AFC component is already minimal, with loan repaid and minimal RoE. Such stations supply power to the DISCOMs with comparatively lower tariff.

To encourage continuous operation of such stations, it is requested that the NAPLF may be relaxed to 75% for Stations completing 25 years from COD.

14. Regulation 62(6) Incentive for Schedule more than NAPLF:

“(6) In addition to the capacity charge, an incentive shall be payable to a generating station or unit thereof @ 75 paise/ kWh for ex-bus scheduled energy during Peak Hours and @ 50 paise/ kWh for ex-bus scheduled energy during Off-Peak Hours corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF) achieved on a cumulative basis, as specified in Clause (B) of Regulation 70 of these regulation.”

NLCIL Comments:

The current Incentive mechanism for Generating Station, over and above capacity charge recovery is to incentivise and promote Cheaper Generating Stations. Higher scheduling from such stations reduces overall procurement cost of DISCOMs. However, the rate of incentive has not changed much over the period of past many control periods.

Hence, considering the inflation & existing higher power market prices, incentive rate for Generating Station having schedule more than their NAPLF needs to be revised upward.

15. Regulation 70(C) Gross Station Heat Rate:

“(C) Gross Station Heat Rate:

(a) Existing Thermal Generating Stations achieving COD before 1.4.2009

(i) For Coal-based Thermal Generating Stations other than those covered under clause (ii) below:

200/210/250 MW Sets	500 MW Sets (Sub-critical)
2,400kCal/kWh	2,375kCal/kWh

Note 1

In respect of 500 MW and above units where the boiler feed pumps are electrically operated, the gross station heat rate shall be 40 kCal/kWh lower than the gross station heat rate specified above.

Note 2

For the generating stations having combination of 200/210/250 MW sets and 500 MW and above sets, the normative gross station heat rate shall be the weighted average gross station heat rate of the combinations.

Note 3

The normative gross station heat rate above is exclusive of the compensation specified as per the Grid Code. The generating company shall, based on the unit loading factor, consider the compensation in addition to the normative gross heat rate above.

Note 4

The gross station heat rate for the unit capacity of less than 200 MW sets, shall be dealt with on a case-to-case basis.

“.. (iii) Lignite-fired Thermal Generating Stations: For lignite-fired thermal generating stations, except for TPS-I and TPS-II (Stage I & II) of NLC India Ltd, the gross station heat rates specified under sub-clause (i) for coal-based thermal generating stations shall be applied with correction, using multiplying factors as given below:

(a) For lignite having 50% moisture: 1.10

(b) For lignite having 40% moisture: 1.07

(c) For lignite having 30% moisture: 1.04

For other values of moisture content, the multiplying factor shall be pro-rated for moisture content between 30-40% and 40-50% depending upon the rated values of the multiplying factor for the respective range given under sub-clauses (a) to (c) above.

(iv) TPS-I, TPS-II (Stage I & II) & Barsingsar (2x125 MW) of NLC India Ltd:

TPS-II (Stg I & II): 2,880 kCal/kWh

TPS-1 (Expansion): 2,710 kCal/kWh

(b) Thermal Generating Stations achieving COD on or after 1.4.2009:

(i) For Coal-based and lignite-fired Thermal Generating Stations:

For 200/210/250 MW Sets. : 1.05 X Design Heat Rate (kCal/kWh)

For 500 MW Sets and above: 1.04 X Design Heat Rate (kCal/kWh)

Where the Design Heat Rate of a generating unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero per cent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design, unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating (Kg/cm ²)	150	170	170
SHT/RHT (Degree C)	535/535	537/537	537/565
Type of BFP	Electrical Driven	Turbine Driven	Turbine Driven
Max Turbine Heat Rate (kCal/kWh)	1955	1950	1935
Min. Boiler Efficiency			
Sub-Bituminous Indian Coal (%)	86	86	86
Bituminous Imported Coal (%)	89	89	89

Pressure Rating (Kg/cm ²)	247	247	260	270	270
SHT/RHT (Degree C)	537/565	565/593	593/593	593/593	600/600
Type of BFP	Turbine Driven	Turbine Driven	Turbine Driven	Turbine Driven	Turbine Driven
Max Turbine Heat Rate (kCal/kWh)	1900	1850	1814	1810	1790
Min. Boiler Efficiency					
Sub-Bituminous Indian Coal (%)	86	86	86	86.5	86.5
Bituminous Imported Coal (%)	89	89	89.5	89.5	89.5

*For Lignite fired thermal generating station, the minimum boiler efficiency shall be 76% (for pulverised) and 80% (for fluidised bed) based boilers.

Provided further that in case the pressure and temperature parameters of a unit are different from the above ratings, the maximum design heat rate of the unit of the nearest class shall be taken:

Provided also that where the heat rate of the unit has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the design heat rate of the unit shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency:

Provided also that where the boiler efficiency is lower than 86% for Sub-bituminous Indian coal and 89% for bituminous imported coal, the same shall be

considered as 86% and 89% for Sub-bituminous Indian coal and bituminous imported coal, respectively, for computation of station heat rate:

Provided units based on a dry cooling system, the maximum turbine cycle heat rate shall be considered as per the actual design or 6% higher than the values given in the table above, whichever is lower;

Provided also that in the case of coal based generating station, if one or more generating units were declared under commercial operation prior to 1.4.2024, the heat rate norms for those generating units as well as generating units declared under commercial operation on or after 1.4.2024 shall be lowest of the heat rate norms considered by the Commission during tariff period 2019-24 or those arrived at by above methodology or the norms as per the sub-clause (C)(a)(i) of this Regulation:

Provided also that in case of lignite-fired generating stations (including stations based on CFBC technology), maximum design heat rates shall be increased using a factor for moisture content given in sub-clause (C)(a)(iii) of this Regulation:

Provided also that for Generating stations based on coal rejects, the Commission shall approve the Station Heat Rate on a case-to-case basis.

Note: In respect of generating units where the boiler feed pumps are electrically operated, the maximum design heat rate of the unit shall be 40 kCal/kWh lower than the maximum design heat rate of the unit specified above with turbine driven Boiler Feed Pump.

“.. (iii) For the following lignite generating stations of NLC India Ltd:

Barsingsar (2X125 MW)	2,525 kCal/kWh
-----------------------	----------------

“

NLCIL Comments:

Gross SHR for Barsingsar has been given as 2525 kCal/kWh which is lower than Gross SHR calculated based on methodology given for stations with similar configuration in this draft Regulation.

However, the average Station heat rate of last 6 years of BTPS Station is 2535 kCal/kWhr which is lower than the current norm considered in Draft regulation 2024. The actual SHR of the station from last 6 years is reproduced as below:

Particulars	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24(till Dec-23)	Average
Generation PLF (%)	61.97	69.58	66.28	74.33	78.36	73.3	70.104
Station Heat Rate (kCal/kWh)	2546	2548	2513	2530	2538	2525.35	2535

Moreover, the calculated value of heat rate as per the Draft regulation for BTPS is worked out to be

S.No	Description	UoM	Parameters
1	SHT/RHT	⁰ c	535/535
2	MS Pressure	Kg/cm ²	126
3	BFP type	-	Electrical driven
4	Guaranteed Design Gross Turbine Cycle Heat Rate	(kCal/kWh)	1994.60
5	Design / Guaranteed Boiler Efficiency	(%)	81.81%
6	Maximum Design Heat Rate based on Draft regulation (TCHR: 1994.60 kCal/kWh, boiler efficiency: 81.81%)	(kCal/kWh)	2438 = 1994.6*100/Max(81.81%,80%)
7	Multiplying Factor for 200/210/250 MW sets	-	1.05
8	Gross Station Heat Rate calculated based on Draft regulation	(kCal/kWh)	2559.99
9	Gross Station Heat Rate as given in Draft regulation	(kCal/kWh)	2525

Therefore, it is requested that instead of fixing the Norm for SHR as 2525 kCal/kWh, it may be revised to **2559.99 kCal/kWh** as per the calculation specified in draft tariff regulation 2024 else BTPS would suffer financial under recovery under SHR as historical Average of Actual SHR of the station is more than 2525 kCal/kWh.

16. Regulation 70(D) Norms for Secondary Fuel Oil Consumption:

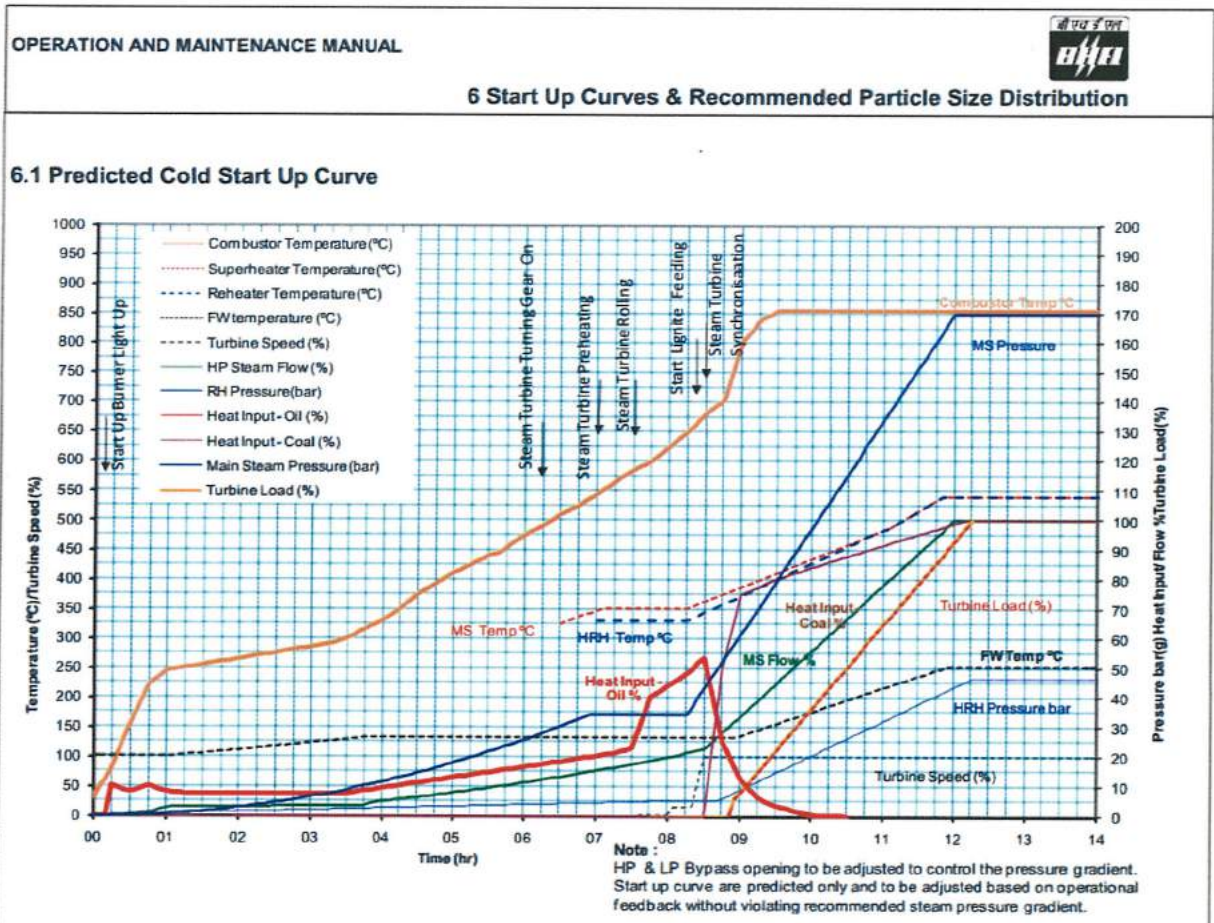
“... (C) For Lignite-fired generating stations (Pulverized and CFBC): 1.0 ml/kWh”

NLCIL Comment:

TPS-II Expansion is having CFBC boilers with capacity of 2x250 MW. Currently the station is still stabilising and gradually improving its availability. However, outages related to inherent design issues have caused frequent shutdown and start-up of the Units due to FBHE failures. Due to design differences and use of bed material in furnace, heat inertia is higher in CFBC boilers as compared to conventional PF boilers, thus time taken for synchronisation of Units and reaching full load is higher. Average time for different start-up events of light up during last 4 years (2019-2023) in the Stations of NLCIL is given in the table below:

Station	Fuel/Boiler Type	Rated Parameter (SHT/RHT & MS Pressure)	Light up (burner cut-in) to reaching parameter (Avg Hours)	light up to synch (Avg Hours)	synch to full load (Avg Hours)	Average Oil Consumption (Avg kl)
TPS-I Expansion (2x210 MW)	Lignite (PF boilers)	535/535 deg C 150 ksc	5.12	7.28	5.69	81.94
TPS-II Expansion (2x250 MW)	Lignite (CFBC boilers)	537/537 deg C 170 ksc	5.84	12.74	18.72	115.10
NNTPS (2x500 MW)	Lignite (PF boilers)	537/565 deg C 170 ksc	4.69	5.74	5.92	106.28
BTPS (2x125 MW)	Lignite (CFBC boilers)	535/535 deg C 120 ksc	6.33	8.02	6.64 </tr	

Start-curve given by M/s BHEL for CFBC boilers of TPS-II Expansion is attached below for reference.



Handwritten signature

The consumption of oil is higher in TPS-II Expansion than BTPS CFBC Boilers, due to more number of cold start-up because of its inherent design issue as mentioned in the para above.

Hence it is requested to kindly revise the Specific fuel oil consumption for TPS-II Expansion to 1.5 ml/kWhr.

17. Regulation 70(E) Norms for Auxiliary Energy Consumption:

“(1) For Coal-based generating stations except at (b) below:

S. No.	Generating Station	With Natural Draft cooling tower or without cooling tower
(i)	200/210/250 MW series	8.50%
(ii)	300/ 330/ 350/ 500 MW and above	
	Steam driven boiler feed pumps	5.25%
	Electrically driven boiler feed pumps	8.00%
(iii)	600 MW and above	
	Steam driven boiler feed pumps	5.25%
	Electrically driven boiler feed pumps	8.00%

Provided that for thermal generating stations with induced draft cooling towers and where tube-type coal mill is used, the norms shall be further increased by 0.5% and 0.8%, respectively

Provided further that Additional Auxiliary Energy Consumption as follows shall be allowed for plants with Dry Cooling Systems:

Type of Dry Cooling System	(% of gross generation)
Direct cooling air cooled condensers with mechanical draft Fans	1.0%
Indirect cooling system employing jet condensers with pressure recovery turbine and natural draft tower	0.5%

Note: The auxiliary energy consumption for the unit capacity of less than 200 MW sets shall be dealt with on a case-to-case basis."

"... (d) For Lignite-fired thermal generating stations:

- (i) For all generating stations with 200 MW sets and above:
The auxiliary energy consumption norms shall be 0.5 percentage points more than the auxiliary energy consumption norms of coal-based generating stations at (E) (a) above.

Provided that for the lignite fired stations using CFBC technology, the auxiliary energy consumption norms shall be 1.5 percentage points more than the auxiliary energy consumption norms of coal-based generating stations at (E) (a) above.

- (ii) For Barsingsar Generating station of NEC using CFBC technology: 12.50%
- (iii) For TPS-I (Expansion) and TPS-II Stage-I&II of NLC India Ltd.:
TPS-II Stage-I and Stage-II 10.00%
TPS-II (Expansion) 12.50% "

NLCIL Comment:

The APC provided in the regulation is based on average of actual APC for multiple thermal stations installed across the country. However, it is to be mentioned that the equipment loading of lignite fired stations are different than that of coal based thermal plant.

Because of low caloric value of the lignite, lignite flow rate into combustor in NNTPS is around 500 Tonnes/Hour as compared to coal-based station of similar capacity where it is 300 Tonnes/hours.

The higher feeding rate reflects in higher loading the Lignite feeding system, SA fans, PA fans, thus increasing the APC of the Stations. Similarly, the volume flue gas in lignite-based station is much higher than that in coal-based station hence loading of both ID (induced draft) and FD (forced draft) fans are also to be much higher than that of coal-based stations of similar capacity.

Equipment wise loading of NNTPS to operate the Station at full load is enclosed as **annexure**. The actual APC of the NNTPS for full load operation of the Stations is coming to be 6.29%.

Hence it is requested to kindly revise the APC norms of NNTPS from current 5.75% in Draft Tariff regulation to 6.29% as per actual equipment rating submitted.



18. Regulation 70(E) (f): Norms for Emission Control System (Aux_{en}):

Name of Technology	AUX _{en} (as % of grossgeneration)
(1) For reduction of emission of Sulphur dioxide:	
a) Wet Limestone based FGD system (without Gas to Gas heater)	1.0%
b) Lime Spray Dryer or Semi dry FGD System	1.0%
c) Dry Sorbent Injection System (using Sodium bicarbonate)	NIL
d) For CFBC Power plant (furnace injection)	NIL
e) Sea water based FGD system (without Gas to Gas heater)	1.00%
(2) For reduction of emission of oxide of nitrogen:	
a) Selective Non-Catalytic Reduction system	NIL
b) Selective Catalytic Reduction system	0.2%

NLCIL Comments:

FGD in lignite-based Stations are different from coal-based stations on various aspects which are mentioned below:

- a) **GCV of lignite vs coal:** Lignite generally has a lower GCV compared to coal. The GCV of lignite is typically in the range of 2715 kcal/kg, while coal can have a GCV ranging from 4600 to 4200 kcal/kg in case of imported coal. This implies that more lignite needs to be burned to produce the same amount of energy as coal.
- b) **Sulphur content in primary fuel:** Lignite often has a higher sulphur content compared to many coal varieties. Higher sulphur content leads to increased sulphur dioxide (SO₂) emissions during combustion, which necessitates the increased capacity of Flue Gas Desulfurization (FGD) to meet environmental regulations. (Lignite used in NNTPS have sulphur content of 0.8 % where else sulphur in coal is generally 0.5 %)
- c) **Fuel Consumption:** Due to the lower GCV and higher moisture of 53% of lignite, power plants using lignite as fuel would generally consume a larger quantity of fuel compared to coal-based plants to generate the same amount of electricity in case of NNTPS FGD designed for lignite consumption of 526 TPH (Guarantee Point) and (582 Designed Point), while coal-based plant coal consumption will be 300-420 TPH for same 500 MW.
- d) **Flue Gas Volume and SO₂ emission:** The volume of flue gas generated during the combustion of lignite is generally higher than that of coal due to its lower energy content. This increased flue gas volume impacts the design and efficiency of pollution control systems, including FGD. This demands higher booster Fan capacity which results in increased auxiliary power consumption.

Inlet Flue Gas to FGD (IDF Outlet) of NNTPS 2* 500 MW		
	Design Point	Guarantee Point
Flow rate Nm ³ /h	24,91,200	22,88,880

Inlet Flue Gas to FGD (IDF Outlet) of a Coal Based Station 3* 660 MW		
	Design Point	Guarantee Point
Flow rate Nm ³ /h	23,14,800	21,06,000

- e) **Lime Stone consumption and Gypsum:** Lignite based FGD System Experience Higher Limestone Consumption Due to Elevated Sulphur levels. This, in turn, leads to increased gypsum production, resulting in a higher capacity limestone and gypsum Handling system. Consequently, there is also an increase in auxiliary consumption.

	NNTPS 2*500MW	Coal Based Station 3*600MW
Lime stone consumption	23950 kg/hr	8596 kg/hr

In conclusion, lignite-based power plants present specific challenges compared to coal-based ones, including lower energy content, higher fuel consumption, and increased sulphur emissions. Effective FGD systems are crucial for lignite plants to meet environmental standards, and their design and capacity may differ from those used in coal-based power plants due to variations in fuel characteristics. Guaranteed Auxiliary Energy Consumption (AEC) of 2.15% indicated by the successful bidder for the Emission Control system of NNTPS which is much higher than the 1% norm specified by the CERC in Draft Tariff Regulation 2024.

Hence, it is submitted that the guaranteed AEC of 2.15% shall be allowed for FGD of NNTPS and other lignite-based Station where FGD is being installed.

Details related to FGD of NNTPS has been submitted to Hon'ble Commission in additional submission submitted in the petition 219/GT/2019 – Amended Tariff Petition to determine Tariff for the period 2019-24 on 01.04.2022, under Regulation 29 of CERC (Terms and Conditions of Tariff) First amendment Regulation 2020.

19. Regulation 70(F): Norms for consumption of reagent:

“... (d) For CFBC Technology (furnace injection) based generating station: The specific limestone consumption for CFBC based generating station (furnace injection) shall be computed with the following formula:

$$[62.9 \times S \times SHR / CVPF]$$

Where

*S = Sulphur content in percentage,
LP = Limestone Purity in percentage,
SHR = Gross station heat rate, in kCal per kWh,
CVPF = (a) Weighted Average Gross calorific value of lignite as received, in kCal per kg as
applicable for lignite based thermal generating stations ... "*

NLCIL Comments:

The above-mentioned formula for calculating Specific Lime Consumption doesn't provide the unit of measurement.

Considering the following value of station parameter to calculate Specific Lime Consumption norms:

S = 0.8%
SHR = 2525 kCal/kWhr
CVPF = 2949 kCal/kg
Lime purity: 85%

Sp. Lime consumption = $62.9 * 0.8\% * (2525 \text{ kCal/kWhr}) / (2949 \text{ kCal/kg})$ kg/kWhr
= 0.4309 kg/kWhr

It can be seen that arrived norm is much higher than the norms specified in principle Tariff Regulation 2019 (0.046 kg/kWhr for TPS-II Expansion and 0.056 kg/kWhr for BTPS). Hence, **it is requested to kindly review and specify the Unit of measurement in the formula for the calculating specific lime consumption of CFBC boilers.**

A. Srinivasan

Deputy General Manager/ Commercial

NLC India Limited

A. SRINIVASAN
Deputy General Manager / Commercial
NLC INDIA LIMITED
('NAVRATNA' Govt. of India Enterprise)
No.135, EVR Periyar High Road,
Kilpauk, Chennai - 600 010.

UNIT AUXILIARY LOAD DETAIL INSTALLED VS RUNNING			
S.NO	11KV Loads (Installed Capacity)	capacity (Kw)	RUNNING LOADS
1	ID FAN -1A	5200	2690
2	FD FAN-1A	3400	1080
3	ID FAN -1B	5200	2690
4	FD FAN-1B	3400	1080
5	U-1 MILL-10	1300	910
6	U-1 MILL-20	1300	910
7	U-1 MILL-30	1300	910
8	U-1 MILL-40	1300	910
9	U-1 MILL-50	1300	910
10	U-1 MILL-60	1300	910
11	U-1 MILL-70	1300	910
12	U-1 MILL-80	1300	0
13	U-1 CWP-1	3100	2700
14	U-1 CWP-2	3100	2700
15	CEP-1A	900	754
16	CEP-1B	900	754
17	CEP-1C	900	0
18	MDBFP-1C	10200	0
19	BCP-1	700	0
20	ID FAN -2A	5200	2690
21	FD FAN-2A	3400	1080
22	ID FAN -2B	5200	2690
23	FD FAN-2B	3400	1080
24	U-2 MILL-10	1300	910
25	U-2 MILL-20	1300	910
26	U-2 MILL-30	1300	910
27	U-2 MILL-40	1300	910
28	U-2 MILL-50	1300	910
29	U-2 MILL-60	1300	910
30	U-2 MILL-70	1300	910
31	U-2 MILL-80	1300	0
32	U-2 CWP-3	3100	2700
33	U-2 CWP-4	3100	2700
34	CEP-2A	900	754
35	CEP-2B	900	754
36	CEP-2C	900	0
37	MDBFP-2C	10400	0
38	BCP-2	700	0
S.NO	3.3KV LOAD DETAILS		
1	SG DMCW-1B	300	265
2	SG DMCW-1A	300	0

MS

3	TG-DMCW-1B	160	138
4	TG-DMCW-1C	160	138
5	TG DMCW-1A	160	0
6	ACW-1A	125	104
7	ACW-1B	125	104
8	ACW-1C	125	0
9	IAC-A	315	250
10	IAC-B	315	250
11	IAC-C	315	0
12	SAC-A	315	110
13	SAC-B	315	0
14	SG DMCW-2B	300	265
15	SG DMCW-2A	300	0
16	TG-DMCW-2B	160	138
17	TG-DMCW-2C	160	138
18	TG DMCW-2A	160	0
19	ACW-2A	125	104
20	ACW-2B	125	104
21	ACW-2C	125	0

S.NO	0.4KV LOAD DATA		
1	RAPH-1A MOTOR-1	18.5	16
2	RAPH-1A MOTOR-2	18.5	0
3	RAPH-1B MOTOR-1	18.5	16
4	RAPH-1B MOTOR-2	18.5	0
5	Slag Conveyor-1A	30	19
6	Slag Conveyor-1B	30	0
7	CT PUM-A	45	35
8	CT PUM-B	45	0
9	CT PUM-C	45	0
10	PW Pump-1A	37	23
11	PW Pump-1B	37	0
12	TDBFP-1A LOP-A	90	72
13	TDBFP-1A LOP-B	90	0
14	TDBFP-1B LOP-A	90	72
15	TDBFP-1B LOP-B	90	0
16	VACUUM PUMP 1A	160	105
17	VACUUM PUMP 1B	160	0
18	Aux. oil pump 1A	110	60
19	Aux. oil pump 1B	110	0
20	Jack oil pump 1A	60	48

Uff

[Handwritten signature]

21	Jack oil pump 1B	60	0
22	CONTROL OIL PUMP 1A	132	105.6
23	CONTROL OIL PUMP 1B	132	0
24	Scanner cooling air fan 1A	15	12
25	Scanner cooling air fan 1B	15	0
26	Condensate drain pump 1A	90	72
27	Condensate drain pump 1B	90	0
28	Air washer Blowers (8 Nos.)	75	240
29	Air washer pumps (16 Nos.)	30	192
30	HFO supply pump (3 Nos.)	90	72
31	Sealing & cooling pump for CWPs(Nos.)	30	24
32	LDO supply pump (3 Nos.)	22	17.6
33	bottom ash makeup water pump(3Nos.)	22	17.6
34	Boiler Fill pump A	132	0
35	Boiler Fill pump B	132	0
36	RAPH-2A MOTOR-1	18.5	16
37	RAPH-2A MOTOR-2	18.5	0
38	RAPH-2B MOTOR-1	18.5	16
39	RAPH-2B MOTOR-2	18.5	0
40	Slag Conveyor-2A	30	19
41	Slag Conveyor-2B	30	0
42	PW Pump-2A	37	23
43	PW Pump-2B	37	0
44	TDBFP-2A LOP-A	90	72
45	TDBFP-2A LOP-B	90	0
46	TDBFP-2B LOP-A	90	72
47	TDBFP-2B LOP-B	90	0
48	Vacuum Pump-2A	160	105
49	Vacuum Pump-2B	160	0
50	CONTROL OIL PUMP 2A	132	105.6
51	CONTROL OIL PUMP 2B	132	0
52	Scanner cooling air fan 1A	15	12
53	Scanner cooling air fan 1B	15	0
54	Condensate drain pump 2A	90	72
55	Condensate drain pump 2B	90	0
56	Aux. oil pump 1A	110	0
57	Aux. oil pump 1B	110	0
58	Jack oil pump 1A	60	48
59	Jack oil pump 1B	60	0
60	BOILER AND TURBINE LIGHT LOAD	1476	875
61	UNIT-1 ESP LOAD	4800	840
62	UNIT-2 ESP LOAD	4800	840
TOTAL		114633	48078.4

U.P.S.

[Handwritten signature]

STATION AUXILIARY LOAD DETAIL INSTALLED VS RUNNING

LIGNITE HANDLING SYSTEM

S.NO	MACHINERY	QTY	KW	QTY X KW	RUNNING
1	BCN-1	1	335	335	268
2	BCN-2	3	400	1200	960
3	BCN-5	3	400	1200	960
4	BCN-6	3	400	1200	960
5	BCN-7A	1	335	335	268
6	BCN-7B	1	335	335	0
7	DFDS	2	422	844	675.2
8	BCN-8A	3	670	2010	1608
9	BCN-8B	3	670	2010	0
10	BCN-IOA	2	737	1474	1179.2
11	BCN-IOB	2	737	1474	0
12	BCN-IIA	1	335	335	268
13	BCN-IIB	1	335	335	0
14	DES ID FAN-I	1	335	335	268
15	BCN9A	1	215	215	172
16	DSS PUMP 1 (DOSS)	1	7.5	7.5	6
17	ROTARY FEEDER MOTOR FOR DES CRUSHER HOUSE	3	1	3	2.4
18	REVERSIBLE BELT FEEDER-IA	1	100	100	80
19	ECCENTRIC DISC ROLLER SCREEN-A- MOTOR	2	50	100	80
20	CRUSHER-A MOTOR	2	216	432	345.6
21	DSS PUMP 2 (DFDSS)	2	7.37	14.74	0
22	MOTOR FOR INLET DAMPER OF ID FAN-I	1	1	1	0
23	SHUTTLE FEEDER-2B	1	100	100	80
24	SCREW CONVEYOR	1	3	3	2.4
25	REVERSIBLE BELT FEEDER-IB	1	100	100	0
26	ECCENTRIC DISC ROLLER SCREEN-B- MOTOR	2	50	100	0
27	CRUSHER-B MOTOR	2	215	430	0
28	BCN9B	1	215	215	0
29	SHUTTLE FEEDER-2A	1	100	100	0
30	SHUTTLE FEEDER-IA	1	74	74	59.2
31	SHUTTLE FEEDER-IB	1	74	74	0
32	CENTRIFUGAL SUPPLY FAN	1	25	25	20
33	HYDRANT BOOSTER PUMP	2	120	240	192
34	REVERSIBLE SHUTTLE FEEDER RSFD-IA	1	100	100	80
35	REVERSIBLE SHUTTLE FEEDER RSFD-2A	1	121	121	96.8
36	REVERSIBLE SHUTTLE FEEDER RSFD-2B	1	121	121	0
37	REVERSIBLE SHUTTLE FEEDER RSFD-IB	1	100	100	0
38	DSS PUMP	2	3	6	0
39	PLANT CLEANING SERVICE WATER PUMP	2	25	50	40
40	BCN-3	1	215	215	172
41	BCN-4	1	215	215	0
42	SLEW FEEDER	1	120	120	96

U.g.

Handwritten signature

43	DSS PUMP(STOCK YARD)	2	100	200	160
TOTAL				17004.24	9098.8

DM PLANT (WCTP)					
1	POLYELECTROLYTE DOSING TANK -AGITATOR(PDT-3)	1	0.5	0.5	0.4
2	FERRIC CHLORIDE DOSING PUMP(CDP-1)	1	3	3.0	2.4
3	FLOCCULATOR-AGITATOR(FC-2-A)	1	1.5	1.5	1.2
4	POLYELECTROLYTE DOSING TANK-AGITATOR(DDT-2)	1	1.5	1.5	1.2
5	POLYELECTROLYTE DOSING PUMP(PDP-3)	1	0.5	0.5	0.0
6	FLOCCULATOR-AGITATOR(FC-1-A)	1	1.5	1.5	1.2
7	FERRIC CHLORIDE(FECL3) UNLOADING PUMP FECL3UP-1 (FECL3UP-1)	1	5	5.0	4.0
8	POLYELECTROLYTE DOSING TANK-AGITATOR(PDT-1)	1	1.5	1.5	1.2
9	SLUDGE THICKNER-SCRAPER MECHANISM (ST)	1	0.50	0.5	0.4
10	FLASH MIXTURE-AGITATOR(FM-1)	1	5	5.0	4.0
11	THICKNER FEED PUMP(TFP-1)	1	7.50	7.5	6.0
12	FERRIC CHLORIDE DOSING TANK-AGITATOR(CDT-1)	1	3	3.0	2.4
13	DRIVE FOR POLYELECTROLYTE DOSING PUMP(PDP-1)	1	2	2.0	1.6
14	POLYELECTROLYTE DOSING PUMP(PDP-2)	1	2	2.0	1.6
15	FERRIC CHLORIDE DOSING TANK-AGITATOR(CDT-3)	1	0.5	0.5	0.0
16	FERRIC CHLORIDE DOSING PUMP(CDP-3)	1	0.5	0.5	0.0
17	FLOCCULATOR-AGITATOR(FC-1-C)	1	1.5	1.5	0.0
18	CONCENTRATE TRANSFER PUMP CTP-2)	1	5	5.0	0.0
19	FERRIC CHLORIDE DOSING TANK-AGITATOR(CDT-2)	1	3	3.0	0.0
20	SLUDGE COLLECTION SUMP AIR BLOWR (SCS AB-2)	1	2	2.0	0.0
21	FLOCCULATOR-AGITATOR(FC-2-D)	1	1.5	1.5	0.0
22	FLOCCULATOR-AGITATOR FC-2-B	1	1.5	1.5	0.0
23	FLOCCULATOR-AGITATOR FC-2-B	1	1.5	1.5	1.2
24	DEWATERING POLYELECTROLYTE DOSING TANK - AGITATOR -2(PDT-2)	1	1.0	1.0	0.8
25	FERRIC CHLORIDE DOSING PUMP(CDP-2)	1	3	3.0	0.0

M.F.

26	CENTRIFUGE(CF)-1	1	30	30.0	24.0
27	FLASH MIXTURE-AGITATOR(FM-2)	1	5	5.0	0.0
28	POLYELECTROLYTE DOSING TANK-AGITATOR(PDT-4)	1	0.5	0.5	0.0
29	FERRIC CHLORIDE DOSING TANK-AGITATOR(CDT-4)	1	0.5	0.5	0.0
30	FERRIC CHLORIDE DOSING PUMP(CDP-4)	1	0.5	0.5	0.0
31	DEWATERING POLYELECTROLYTE DOSING PUMP(DDP-1)	1	1	1.0	0.8
32	DEWATERING POLYELECTROLYTE DOSING TANK-AGITATOR(DDT-1)	1	1	1.0	0.8
33	FERRIC CHLORIDE(FeCl3) UNLOADING PUMP FECL3UP-1 (FECL3UP-2)	1	5	5.0	4.0
34	FLOCCULATOR-AGITATOR(FC-1-D)	1	1.5	1.5	1.2
35	HPSCC-AGITATOR MOTOR	1	1.5	1.5	1.2
36	HRSCC-SCRAPER MECHANISM	1	0.5	0.5	0.4
37	THICKNER FEED PUMP(TEP-2)	1	7.50	7.5	0.0
38	CENTRIFUGE FEED PUMP CFP-1	1	5	5.0	4.0
39	SLUDGE COLLECTION SUMP AIR BLOWER(SCS AB - 1)	1	2	2.0	1.6
40	CONCENTRATE TRANSFER PUMP CTP-1)	1	5	5.0	4.0
41	FLOCCULATOR-AGITATOR(FC-2-C)	1	1.5	1.5	0.0
42	CENTRIFUGE FEED PUMP(CFP-2)	1	5	5.0	0.0
43	POLYELECTROLYTE DOSING PUMP-2 (PDP-4)	1	0.5	0.5	0.0
44	DEWATERING POLYELECTROLYTE DOSING PUMP (PDP-2)	1	1	1.0	0.8
45	DRIVE MOTOR FOR CAUSTIC REGENERATION TANK FOR SBA-AGITATOR(CR	1	1	1.0	0.8
46	DRIVE MOTOR FOR BRINE REGENERATION PUMP(BRP-1)	1	12.5	12.5	10.0
47	DRIVE MOTOR FOR CAUSTIC UN LOADING PUMP(CUP-2)	1	3	3.0	2.4
48	DRIVE MOTOR FOR DEGASSED WATER TRANSFER PUMP(DGWP-1)	1	25	25.0	20.0
49	DRIVE MOTOR FOR GRAVITY FILTER FEED PUMP-3	1	20	20.0	0.0
50	DRIVE MOTOR FOR FRESH BRINE TRANSFER PUMP(FBTP-1)	1	7.50	7.5	6.0
51	DRIVE MOTOR FOR ACID UNLOADING PUMP(AUP-2)	1	5	5.0	4.0
52	DRIVE MOTOR FOR PORTABLE AIR COMPRESSOR(PAC-1)	1	12.5	12.5	10.0

U.S.

[Handwritten signature]

53	DRIVE MOTOR FOR UF CIP PUMP-UFCIP-1(UFCIPP-1)	1	12.5	12.5	10.0
54	DRIVE MOTOR FOR MB/N-PIT AIR BLOWER(MB/N-PIT AB-1)	1	12.5	12.5	10.0
55	DRIVE MOTOR FOR DM WATER TRANSFER PUMP-1	1	20		16.0
56	DRIVE MOTOR FOR CAUSTIC DOSING PUMP(CEB-1)	1	0.5		0.4
57	DRIVE MOTOR FOR SODIUM METABISULPHITE DOSING TANK-AGITATOR-	1	1.5		1.2
58	DRIVE MOTOR FOR CAUSTIC REGENERATION FOR MB-AGITATOR(CRT-MB-	1	0.5		0.4
59	DRIVE MOTOR FOR BLOWER FOR GRAVITY SALT FILTER -1(BL-1)	1	20		16.0
60	DRIVE MOTOR FOR MB/N-PIT AIR BLOWER(MB/N-PIT AB-2)	1	12.5		10.0
61	DRIVE MOTOR FOR UF FEED PUMP UFFP-3)	1	15		0.0
62	DRIVE MOTOR FOR UF FEED PUMP UFFP-3)	1	15		0.0
63	SPENT BRINE TRANSFER PUMP(SBTP-1)	1	12.5		10.0
64	DG AIR BLOWER(DGB-4)	1	2		0.0
65	DE GASED WATER TRANSFER PUMP(DGWP-3)	1	25		0.0
66	ACID UNLOADING PUMP(AUP-1)	1	5		4.0
67	FRESH BRINE TRANSFER PUMP(FBTP-2)	1	7.37		5.9
68	SODIUM METABISULPHATE DOSING TANK AGITATOR -2	1	1.5		1.2
69	DM WATER TRANSFER ruMp - 2	1	20		16.0
70	CAUSTIC REGENERATION FOR MB-AGITATOR(CRT-	1	0.5		0.4
71	UF BACK FLUSH PUMP(UFBFT-2)	1	25		0.0
72	DG AIR BLOWER(DGB-3)	1	2		0.0
73	GRAVITY FILTER FEED PUMP-2	1	20		16.0
74	BACK WASH TRANSFER PUMP(FBP-1)	1	25		20.0
75	DG AIR BLOWER(DGB-1)	1	2		1.6
76	CAUSTIC DOSING PUMP(CEB-2)	1	0.5		0.4
77	CAUSTIC RE GENERATION TANK FOR SBA-	1	1		0.8
78	CAUSTIC UN LOADING PUMP(CUP-1)	1	3		2.4
79	DG AIR BLOWER(DGB-2)	1	2		0.0
80	EFFLUENT TRANSFER PUMP(CUP-1)	1	30		24.0
81	UF FEED PUMP(UFFP-1)	1	15		12.0

M.F.

82	SODIUM META BI SULPHITE DOSING PUMP-1	1	0.5	0.4	
83	PSF AIR BLOWER(FBL-1)	1	7.37	5.9	
84	GRAVITY FILTER FEED PUMP-1	1	20	16.0	
85	FILTER BACK WASH PUMP(FBP-2)	1	15	0.0	
86	CAUSTIC DOSING TANK-N-PIT-AGITATOR(CDT-N-PIT)	1	0.5	0.4	
87	BACK WASH WATER TRANSFER PUMP-2(BWTP-1)	1	25	20.0	
88	UF BACK FLUSH PUMP(UFBFT-1j)	1	25	0.0	
89	SPENT BAINE TRANSFER PUMP(SBTP-2)	1	12.5	10.0	
90	PORTABLE AIR COMPRESSOR(PAC-2j)	1	12.5	10.0	
91	UF CIP PUMP-UFCIP-1(UFCIPP-2)	1	12.5	10.0	
92	BLOWER FOR GRAVITY SALT FILTER -2(BL-2)	1	20	16.0	
93	DM REGENERATION PUMP(DMRP-1)	1	15	12.0	
94	DM WATER TRANSFER PUMP-3	1	20	0.0	
95	SODIUM METABISULPHITE DOSING PUMP-2	1	0.5	0.4	
96	PSF AIR BLOWER(FBL-2)	1	7.37	5.9	
97	EFFLUENT TRANSFER PUMP CUP-2)	1	30	24.0	
98	DM RE GENERATION PUMP(DMRP-2)	1	15	12.0	
99	CAUSTIC DOSING TANK AGITATOR-UF(CDT-UF)	1	0.5	0.4	
100	BRINE REGENERATION PUMP(BRP-2)	1	12.5	10.0	
101	GRAVITY FILTER FEED PUMP-4	1	20	0.0	
102	DE GASED WATER TRANSFER PUMP(DGWP-2)	1	25	20.0	
103	SOFTENING PLANT FEED PUMP-3(00GBQ03AP001	1	168	0.0	
104	SOFTENING PLANT FEED PUMP-1(00GBQ01AP001	1	168	134.4	
105	SERVICE WATER PUMP-3	1	120	0.0	
106	SERVICE WATER PUMP-1	1	120	96.0	
107	SERVICE WATER PUMP-1 FOR INPLANT CONSUMPTION(00GHD04AP001)	1	2	1.6	
108	POTABLE WATER PUMP-1	1	20	16.0	
109	DM PLANT FEED PUMP-2(00GCQ02AP001)	1	30	24.0	
110	SOFTENING PLANT FEED PUMP-4(00GBQ04AP001)	1	168	134.4	
111	SERVICE WATER PUMP-2(00GHO02AP001)	1	120	0.0	
112	SOFTENING PLANT FEEO PUMP-2(00GBQ02AP001)	1	167	0.0	
113	POTABLE WATER PUMP-2(00GKB02AP001)	1	20	0.0	
114	SERVICE WATER PUMP-2 FOR INPLANT CONSUMPTION(00GHD05AP001)	1	2	0.0	
115	DM PLANT FEED PUMP-3(00GCQ03AP001)	1	30	0.0	
116	DM PLANT FEED PUMP-1(00GCQ01AP001)	1	30	24.0	
117	PLANT SUPPLY PUMP-1,2,3	3	2.9	8.7	4.64
118	BRINE PUMP-1,2	2	7.5	15	6
119	DEGASSIFIER AIR BLOWER-1,2,3,4	4	5	20	12
120	SHOCK DOSING PUMP FOR CW-1,2,3	3	12.5	37.5	20
121	CONTINUOUS DOSING PUMP FOR CW-1,2,3	3	1.1	3.3	1.76

Mag

122	CONTINUOUS DOSING PUMP FOR PORTABLE -1,2	2	0.5	1	0.4
123	CONTINUOUS DOSING PUMP FOR PT PLANT-1,2	2	2	4	1.6
124	SALT AGITATOR MOTOR-1	1	5	5	4
125	N-PIT MOTOR	1	0.5	0.5	0.4
126	ACID PUMP 1,2	2	5	10	4
127	ABS MOTOR1,2,3	3	1.1	3.3	1.76
128	SCALE INHIBITOR DOSING SYSTEM 1,2	4	0.5	2	1.2
129	FILTER BACK WASH PUMP-1	1	15	15	12
130	AIR BLOWER MOTOR-1,2	2	15	30	12
131	BRINE REGENERATION PUMP-1,2	2	30	60	24
132	BRINE RESIN TRANSFER PUMP-1,2	2	20	40	16
133	ALKALI DOSING PUMP-1,2	2	2	4	1.6
134	ALKALI RECIRCULATION PUMP-1,2	2	7.5	15	6
135	ACID DOSING PUMP-1,2	2	10	20	8
136	ACID TRANSFER PUMP-1,2	2	7.5	15	6
137	ALKALI TRANSFER PUMP-1,2	2	7.5	15	6
138	N-PIT PUMP-1,2	2	20	40	16
139	ALKALI DOSING PUMP-1,2	2	0.5	1	0
140	ALKALI DOSING TANK AGITATOR-1,2	2	0.5	1	0
141	ACID DOSING PUMP-1,2	2	0.5	1	0
142	N-PIT PUMP-1,2	2	50	100	0
143	AIR BLOWER MOTOR-1,2	2	5	10	4
144	SEWAGE TRANSFER PUMP-1,2	2	2	4	1.6
145	SLUDGE TRANSFER PUMP-1,2	2	2	4	1.6
146	FILTER FEED PUMP-1,2	2	2	4	1.6
147	TREATED WATER TRANSFER PUMP-1,2	2	2	4	1.6
148	AIR BLOWER MOTOR-1,2	2	1.5	3	0
149	SEWAGE TRANSFER PUMP-1,2	2	2	4	0
150	SLUDGE TRANSFER PUMP-1,2	2	2	4	0
151	FILTER FEED PUMP-1,2	2	2	4	0
152	TREATED WATER TRANSFER PUMP-1,2	2	2	4	0
153	POLY DOSING PUMP-1,2	2	0.5	1	0.4
154	COAGULANT DOSING PUMP-1,2	2	0.5	1	0.4
155	COAGULANT DOSING TANK AGITATOR-1,2	2	0.5	1	0.4
156	POLY DOSING TANK AGITATOR-1,2	2	0.5	1	0.4
157	TUBE SETTLER FEED PUMP-1,2	2	5	10	4
158	FLAX MIXTURE MOTOR	1	0.5	0.5	0
159	RAW WATER PUMP-1,2,3	3	370	1110	592
TOTAL				3624.9	1681.4

FIRE WATER PUMP HOUSE

S.NO	MACHINERY	QTY	KW	QTY X KW	RUNNING
1	FIRE WATER JOCKEY PUMP-2	2	30	60	36
2	MAIN SPRAY PUMP-2	2	215	430	258
3	MAIN HYDRANT PUMP-2	3	215	645	387
4	FOAM CONCENTRATE PUMP-I FOR FOAM SYSTEM	1	10	10	6

U.f.

[Handwritten Signature]

TOTAL

1145

687

S.NO	ASH HANDLING SYSTEM				
1	Conveying Air Compressor	2	870	870	348
2	INSTRUMENT Air Compressor	2	870	870	348
3	Slurry Disposal Pump	3	270	270	108
4	Raw Water Pumps	3	370	370	148
5	VACUUM PUMP	10	100	1000	400
6	BAG FILTER FAN FOR ISH	5	3	15	6
7	DRAIN SUMP PUMP	2	5	10	4
8	SEAL WATER PUMP	3	7.5	22.5	9
9	MOBILE CONVEYOR	1	10	10	4
10	HEATER BUFFER HOPPER FLUIDIZING BLOWER	3	12	36	14.4
11	ESP/BUFFER HOPPER FLUIDIZING BLOWER	3	12.5	37.5	15
12	INSTRUMENT AIR COMPRESSOR	2	100	200	80
13	VACUUM PUMP	10	100	1000	400
14	BAG FILTER FAN FOR ISH	5	3	15	6
15	DRAIN SUMP PUMP	2	5	10	4
16	MOBILE CONVEYOR	1	10	10	4
17	HEATER BUFFER HOPPER FLUIDIZING BLOWER	3	12	36	14.4
18	ESP/BUFFER HOPPER FLUIDIZING BLOWER	3	12.5	37.5	15
19	INSTRUMENT AIR COMPRESSOR	2	100	200	80
20	HP WATER PUMP	3	220	660	264
21	LP WATER PUMP	2	150	300	120
22	ROTARY VANE FEEDER	12	3	36	14.4
23	BAG FILTER FAN FOT MOTORIZED UNLOADING SPOUT	8	3	24	9.6
24	MOTORIZED ACTUATOR VALVE	5	2	10	4
25	MOTORIZED UNLOADING (GEARED) SPOUT	8	2	16	6.4
26	HEATER SILO BLOWER	6	21.5	129	51.6
27	SILO FLUIDISING BLOWER	6	30	180	72
28	RVF FOR ASH SLURRY SYSTEM	4	1	4	1.6
29	ASH CONDITIONER	4	30	120	48
30	DRAIN SUMP PUMP FOR SLURRY SYSTEM	2	5	10	4
31	SILO TOP BACK FILTER FAN VENT MOTOR	4	12.5	50	20
32	SEAL WATER PUMP MOTOR	2	75	150	60
TOTAL				6708.5	2683.4

S.NO	LHS RECLAIMER LOADS				
1	RECIRCULATION PUMP	2	1	2	0.8
2	CABIN ADJ.HYD. DRIVE	1	2	2	0.8
3	OIL COOLER PUMP	1	1.5	1.5	0.6
4	LUBE SYS OF RAIL TRAVEL	1	0.5	0.5	0.2
5	LUBE SYS OF SLEW DRIVE	1	0.5	0.5	0.2
6	BOOM LUFFING MOTOR	1	25	25	10
7	DS SYSTEM	1	5.5	5.5	2.2

M. J.



8	PCRD	1	1.5	1.5	0.6
9	CCRD	1	0.75	0.75	0.3
10	RAIL CLAMP	2	0.8	1.6	0.64
11	SLEWING MOTOR	1	15	15	6
12	OIL COOLER BC HYD. DRIV	1	7.37	7.37	2.948
13	TRAVEL	6	10	60	24
14	BOOM CONVEYOR	1	270	270	108
15	BUCKET WHEEL MOTOR	1	180	180	72
16	SLEW MOTOR	1	30	30	12
17	BOOM LUFFING DRIVE	1	25	25	10
18	BOOM CONVEYOR	1	270	270	108
19	TRAVEL	8	7.5	60	24
20	RECIRCULATION PUMP	2	1.5	3	1.2
21	CABIN ADJUSTMENT DRIV	1	2	2	0.8
22	OIL COOLER BC HYD.. DRIV	1	7.37	7.37	2.948
23	LUBE SYS OF RAIL TRAVEL	1	0.55	0.55	0.22
24	LUBE SYS OF SLEW DRIVE	1	0.55	0.55	0.22
25	PCRD	1	1.5	1.5	0.6
26	CCRD	1	1	1	0.4
27	RAIL CLAMP	2	0.8	1.6	0.64
28	DS SYSTEM	1	5.5	5.5	2.2
29	BUCKET WHEEL MOTOR	1	180	180	72
30	SLEW MOTOR	1	30	30	12
31	BOOM LUFFING DRIVE	1	25	25	10
32	BOOM CONVEYOR	1	270	270	108
33	TRAVEL	8	7.5	60	24
34	RECIRCULATION PUMP	2	1.5	3	1.2
35	CABIN ADJUSTMENT DRIV	1	2	2	0.8
36	OIL COOLER BC HYD. DRIV	1	7.37	7.37	2.948
37	LUBE SYS OF RAIL TRAVEL	1	0.55	0.55	0.22
38	LUBE SYS OF SLEW DRIVE	1	0.55	0.55	0.22
39	PCRD	1	1.5	1.5	0.6
40	CCRD	1	1	1	0.4
41	RAIL CLAMP	2	0.8	1.6	0.64
42	DS SYSTEM	1	5.5	5.5	2.2
TOTAL				1569.36	627.744

M.J.

[Handwritten signature]

NNTPS- AUXILIARY POWER-DATA			
S.NO	AREA	INSTALLED	RUNNING
1	UNIT AUXILIARY LOAD	114633	48078.4
2	LHS LOADS	18573.6	9726.544
3	AHS LOADS	6708.5	2683.4
4	WCTP LOADS	3624.9	1681.4
5	FIRE WATER SYSTEM	1145	687
TOTAL		144685.01	62856.792

STATION GENERATION IN KW	1000000
AUXILIARY CONSUMPTION WITHOUT LOSSES IN KW	62856.792
APC WITHOUT LOSSES IN %	6.29%

Ref.

sextillion

B.S →

[Handwritten signature]