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1050

Date:
21 February 2025

Enquiries:
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Ref: 17/AEL/MP312/11/09

Dear Ms. Simelane

KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF JANUARY 2025

This serves as the monthly report required in terms of Section 7.4 in Kriel Power Station's Atmospheric Emission License 17/AEL/MP312/11/09. The emissions are for the month of January 2025. Verified emissions of particulates matter, SO₂ and NO_x (as NO₂) are also included.

Raw Materials and Products

Table 1: Quantity of Raw Materials and Products used/produced for the month of January 2025

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of January 2025
	Coal	Tons/month	1 227 600	543 158.00
	Fuel Oil	Tons/month	8 000	5 203.71
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of January 2025
	Energy	GWh	3 000/2 232	920.47512
	Ash	Tons/month	320 000	1520.8
	RE PM	kg/MWh	not specified	1.526

1/...

Abatement Technology

Table 2: Abatement Equipment Control Technology for January 2025.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Technology Type	SO ₃ Utilisation (%)
Unit 1	ESP& SO3	99.47%	SO3 Plant	100.00
Unit 2	ESP& SO3	99.47%	SO3 Plant	100.00
Unit 3	ESP& SO3	99.57%	SO3 Plant	100.00
Unit 4	ESP& SO3	98.12%	SO3 Plant	80.25
Unit 5	ESP& SO3	98.23%	SO3 Plant	100.00
Unit 6	ESP& SO3	99.26	SO3 Plant	46.17

Note: ESP plant does not contain bypass mode operation; hence plant 100% Utilised.

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of January 2025

Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.91
Ash Content	27-32 (%)	23.46

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SO _x (%)	NO _x (%)
North	98.21	93.94	100.00
South	62.38	95.31	48.41

Emissions Reporting

Graph Legend Description

Condition	Colour	Description
Normal	Green	Emissions below Emission Limit Value (ELV)
Grace	Blue	Emissions above the ELV during grace period
Section 30	Orange	Emissions above ELV during a NEMA S30 incident
Contravention	Red	Emissions above ELV but outside grace or S30 incident conditions

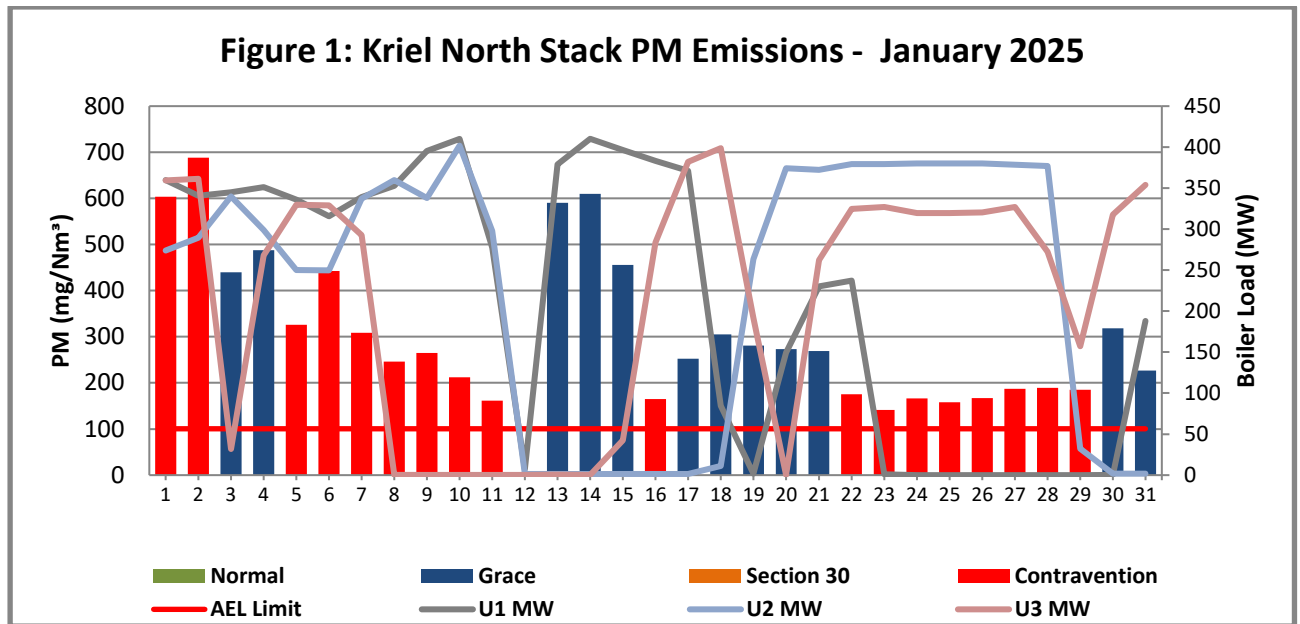


Figure 1: PM emissions for the month of January 2025 against daily emission limit (100 mg/Nm³) for the North Stack. Reasons for exceedances are indicated on Table 7 below.

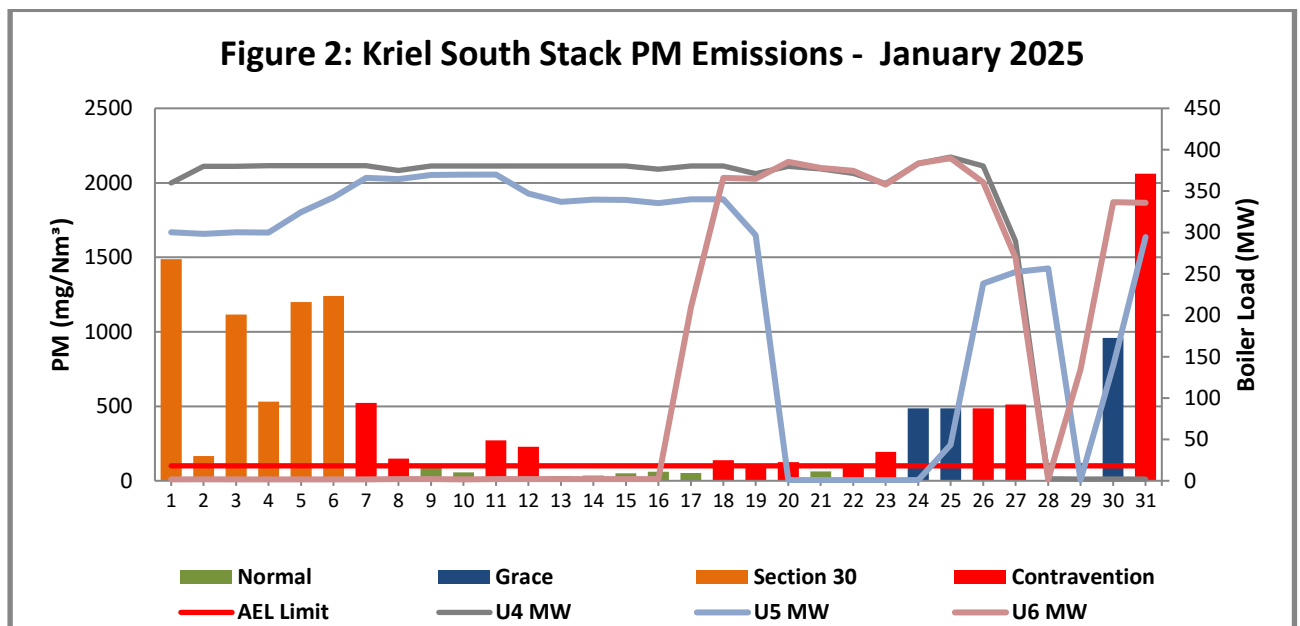


Figure 2: PM emissions for the month of January 2025 against daily emission limit (100 mg/Nm³) for the South Stack. NEMA Section 30 to be declared to DFFE for the 1st of January to 6th of January. Reasons for exceedances are indicated on Table 7 below.

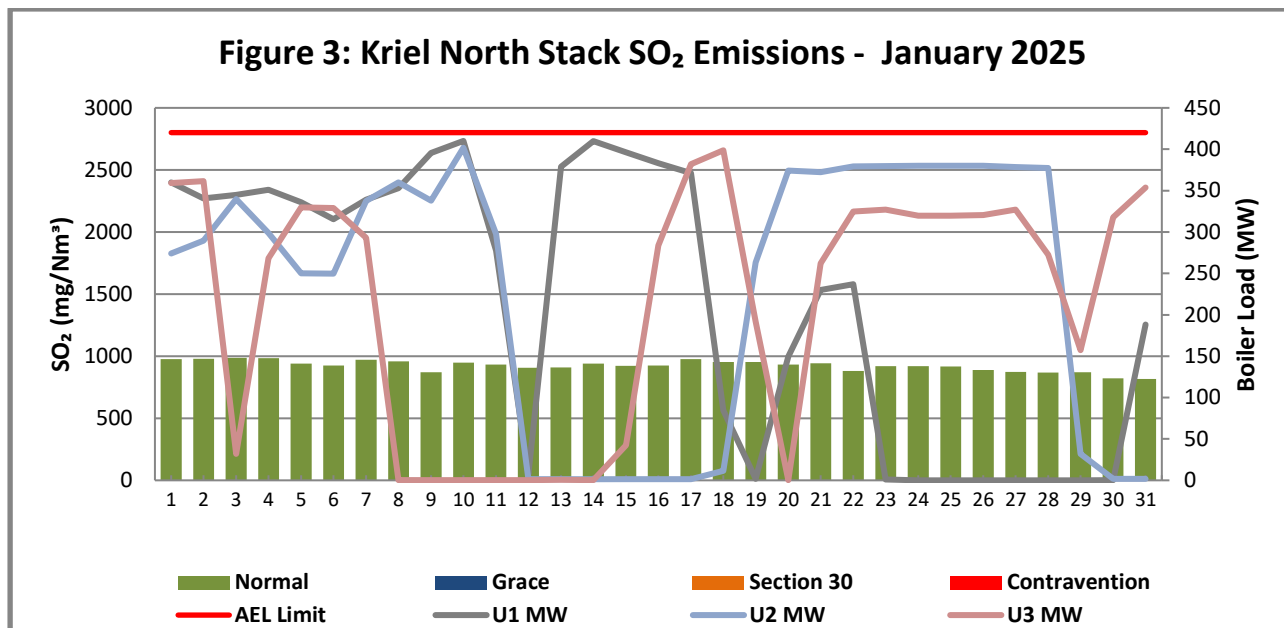


Figure 3. SO₂ emissions for the month of January 2025 against daily emission limit (2800 mg/Nm³) for the North Stack.

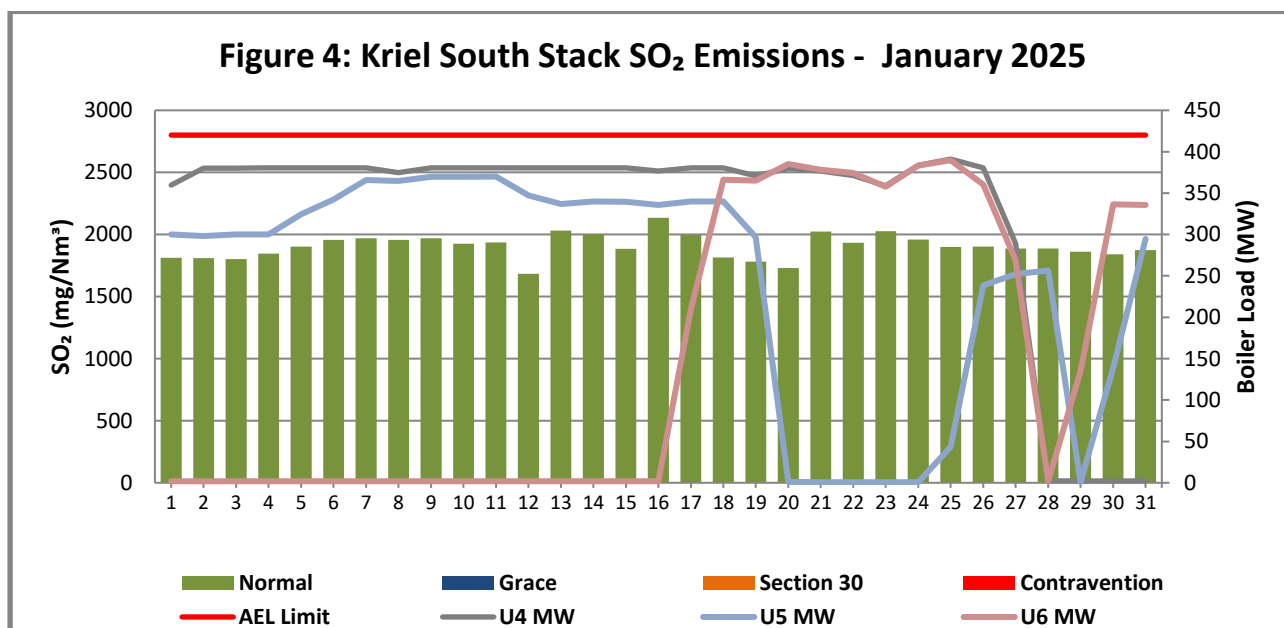


Figure 4. SO₂ emissions for the month of January 2025 against daily emission limit (2800mg/Nm³) for the South Stack.

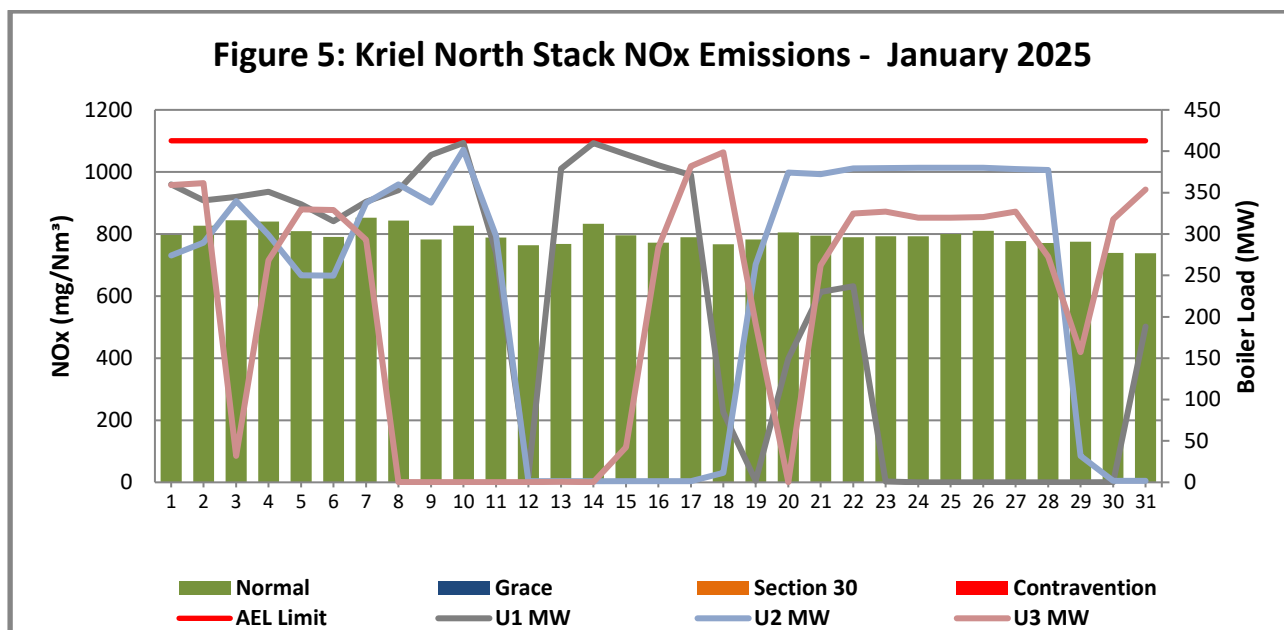


Figure 5. NO₂ emissions for the month of January 2025 against daily emission limit (1100) for the North Stack.

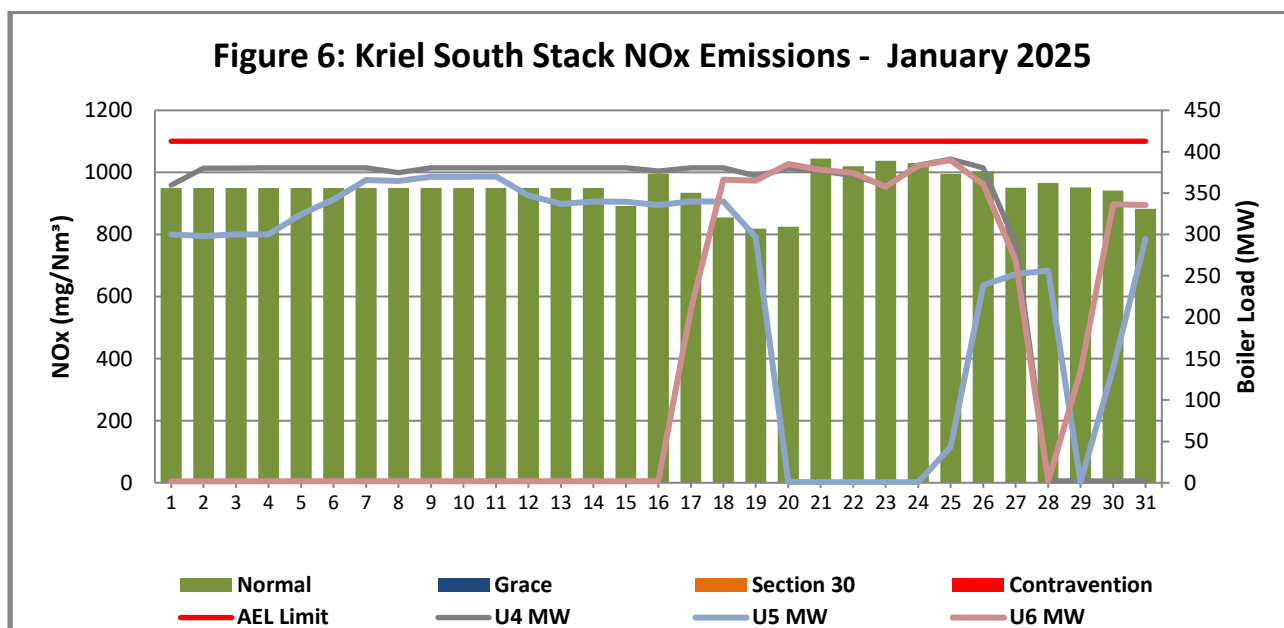


Figure 6. NO₂ emissions for the month of January 2025 against daily emission limit (1100mg/Nm³) for the South Stack. The South stack NO_x was reading a constant value from the 1st-14th of January due to PI Historian Upgrade by C&I Engineering and this has been completed.

Table 4: Monthly tonnages for the month January 2025

Unit	PM (tons)	SO ₂ (tons)	NO ₂ (tons)
SUM	1520.8	7 226.6	4 347.9

Table 5: Each unit and respective days operating under normal operation and section 30 days respectively.

Table 5.1: Operating days in non-compliance to PM AEL Limit – January 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm ³)
North	0	12	0	18	30	211.3
South	8	3	6	12	21	465.2

Table 5.2: Operating days in compliance to SOx AEL Limit - January 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
North	31	0	0	0	0	922.9
South	31	0	0	0	0	1 904.4

Table 5.3: Operating days in compliance to NOx AEL Limit – January 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
North	31	0	0	0	0	795.5
South	31	0	0	0	0	949.7

Light up information

Table 6: PM Start-up information for the month of January 2025

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 1		Unit 1		Unit 2	
Breaker Open (BO)	7:05 pm	2025/01/11	6:15 am	2025/01/18	12:05 am	2025/01/23	BO previously	BO previously
Draught Group (DG) Shut Down (SD)	7:50 pm	2025/01/11	9:30 pm	2025/01/19	2:05 pm	2025/01/25	n/a	n/a
BO to DG SD (duration)	00:00:45	DD:HH:MM	01:15:15	DD:HH:MM	02:14:00	DD:HH:MM	n/a	DD:HH:MM
Fires in time	5:40 pm	2025/01/12	3:30 am	2025/01/20	1:35 am	2025/01/31		
Synch. to Grid (or BC)	10:35 pm	2025/01/12	7:40 am	2025/01/20	8:55 am	2025/01/31		

Fires in to BC (duration)	00:04:55	DD:HH:M M	00:04:10	DD:HH:M M	00:07:20	DD:HH:M M		DD:HH:M M
Emission s below limit from BC (end date)	12:00 am	2025/02/06	12:00 am	2025/02/06	not > limit	not > limit		
Emission s below limit from BC (duration)	24:01:25	DD:HH:M M	16:16:20	DD:HH:M M	n/a	DD:HH:M M		DD:HH:M M

North Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 2		Unit 2		Unit 3		Unit 3	
Breaker Open (BO)	5:55 pm	2025/01/11	2:10 am	2025/01/29	2:20 am	2025/01/03	9:55 pm	2025/01/07
Draught Group (DG) Shut Down (SD)	9:30 am	2025/01/12	3:45 pm	2025/01/29	4:35 am	2025/01/03	9:15 pm	2025/01/08
BO to DG SD (duration)	00:15:35	DD:HH:M M	00:13:35	DD:HH:M M	00:02:15	DD:HH:M M	00:23:20	DD:HH:M M
Fires in time	12:55 pm	2025/01/18	12:35 pm	2025/02/02	4:55 pm	2025/01/03	5:30 pm	2025/01/14
Synch. to Grid (or BC)	9:05 pm	2025/01/18	7:50 pm	2025/02/02	2:55 am	2025/01/04	5:35 pm	2025/01/15
Fires in to BC (duration)	00:08:10	DD:HH:M M	00:07:15	DD:HH:M M	00:10:00	DD:HH:M M	01:00:05	DD:HH:M M
Emission s below limit from BC (end date)	12:00 am	2025/02/06	not > limit	not > limit	12:00 am	2025/02/06	12:00 am	2025/02/06
Emission s below limit from BC (duration)	18:02:55	DD:HH:M M	n/a	DD:HH:M M	01:21:05	DD:HH:M M	21:06:25	DD:HH:M M

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 4		Unit 5		Unit 5		Unit 6	
Breaker Open (BO)	6:15 pm	2025/01/27	9:00 pm	2025/01/19	6:15 pm	2025/01/27	BO previously	BO previously
Draught Group (DG) Shut Down (SD)	9:40 pm	2025/01/27	11:55 pm	2025/01/20	11:35 pm	2025/01/28	n/a	n/a

BO to DG SD (duration)	00:03:25	DD:HH:MM	01:02:55	DD:HH:MM	01:05:20	DD:HH:MM	n/a	DD:HH:MM
Fires in time			11:45 am	2025/01/25	3:20 am	2025/01/30	12:40 pm	2025/01/16
Synch. to Grid (or BC)			5:10 am	2025/01/26	6:10 am	2025/01/30	3:00 am	2025/01/17
Fires in to BC (duration)		DD:HH:MM	00:17:25	DD:HH:MM	00:02:50	DD:HH:MM	00:14:20	DD:HH:MM
Emissions below limit from BC (end date)			12:00 am	2025/01/29	4:00 am	2025/01/30	not > limit	not > limit
Emissions below limit from BC (duration)		DD:HH:MM	02:18:50	DD:HH:MM	##### ##	DD:HH:MM	n/a	DD:HH:MM

South Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 6		no event		no event		no event	
Breaker Open (BO)	6:15 pm	2025/01/27	10:55 pm	2025/02/03				
Draught Group (DG) Shut Down (SD)	4:05 am	2025/01/28	DG did not trip or SD	DG did not trip or SD				
BO to DG SD (duration)	00:09:50	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM		DD:HH:MM
Fires in time	4:35 am	2025/01/29						
Synch. to Grid (or BC)	12:55 pm	2025/01/29						
Fires in to BC (duration)	00:08:20	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	4:00 am	2025/01/30						
Emissions below limit from BC (duration)	00:15:05	DD:HH:MM		DD:HH:MM		DD:HH:MM		DD:HH:MM

Reasons for emissions poor performance for both stack in January 2025

Table 7: Reasons for emissions poor performance for January 2025

Start Date	Plant	Reason	Effect on Emissions	Action	Feedback	End Date
01/01/2025	North stack	Unit 3 converter temps low	No SO3 injection	EMD to attend defects	Converter temps increased	01/01/2025
01/01/2025	North stack	Unit 2 Low load	No SO3 injection	Operating to stabilize unit	Turbine maintenance attending to 2A EFP Bearing.	04/01/2025

01/01/2025	South stack	Unit 4 Sulphur dosing no communication.	High hopper levels, poor ESP performance, high emissions	CNI to attend defect	CNI and CNI Eng did fault finding but did not win, contractor to be sourced on the 6 th .	06/01/2025
01/01/2025	South stack	5a ash conditioner still giving problems	Main silo at max, high hopper alarms leading to Poor performance on ESP's leading to high emissions	Fuses to be replaced	5a ash conditioner fuses replaced	02/01/2025
02/01/2025	South stack	5a ash conditioner still giving problems	Main silo at max, high hopper alarms leading to Poor performance on ESP's leading to high emissions	Relay replaced.	EMD attended defect	02/01/2025
02/01/2025	South stack	Unit 5 High hopper levels from backlog	Poor ESP performance, high emissions	Operating to ensure continuous transportation of lines to reduce levels	All conveying lines running	02/01/2025
03/01/2025	South stack	Unit 5 Plate Rappers 1,2,13,14 and 37 stuck	Rapping system not efficient	Needs an opportunity	TBC	23/01/2025
04/01/2025	North stack	Unit 2 and 3 with high hoppers with multiple line defects	Increase in emissions	MMD to attend defects	Defects attended	04/01/2025
04/01/2025	North stack	Unit 1 blow tank 1.2 transports continuously	ash transportation not possible. Increase in high hopper levels	CID to attend defect	Defects attended	04/01/2025
04/01/2025	North stack	Unit 3 blow tank 3.2 fails to close	Transportation compromised. Hopper level increases	MMD to attend defects	Defects attended	06/01/2025
04/01/2025	North stack	Unit 2 on oil support. BFPT TRIP, B EFP in service	Half-load 250MW, No SO3 Dosing	Turbine maintenance to attend BFPT Defect	Defects attended	06/01/2025
05/01/2025	North stack	Unit 3 SO3 convertor temps not increasing	No SO3 injection	EMD to attend defects	Defects attended	05/01/2025
05/01/2025	North stack	Unit 3 RH ESP off due to broken Plate Rapper broken into Line F5P4	No rapping on the unit. Increase in emissions	MMD to attend defects	Defects attended	05/01/2025
06/01/2025	North and South stack	18A Belt inspections	No transportation of ash	Increase in hopper levels	Defects attended	06/01/2025
06/01/2025	South stack	Unit 4 with multiple ash line defects	Increase in hopper levels. Increase in emissions	MMD to attend defects	Defects attended	06/01/2025
07/01/2025	North stack	Unit 1 blow tanks fail to fill.	No transportation of ash	CID and MMD to attend defects	Defects attended	07/01/2025
07/01/2025	North stack	Unit 1 Transfer silo faulty max level probe	No transportation of ash	CID and MMD to attend defects	Defects attended	07/01/2025

07/01/2025	South stack	Unit 5 Blow tank 5.1 dust inlet fails to close	Transportation compromised. Hopper level increases	CID and MMD to attend defects	Defects attended	07/01/2025
08/01/2025	North stack	Unit 1, 2 and 3 have high hopper levels due to multiple line defects	Increase in hopper levels. Increase in emissions	CID and MMD to attend defects	Defects attended	08/01/2025
09/01/2025	North and South stack	Unit 1, 4 and 5 Main Silo on max level due to 18A Bearing inspections +- 6hours	No transportation of ash	MMD to attend defects	Defects attended	09/01/2025
09/01/2025	North stack	Unit 2 BFPT Trip. B EFP lin-service, unit on oil support	increase in emissions	Turbine maintenance to attend BFPT Defect	Defects attended	09/01/2025
11/01/2025	North and South stack	Overland conveyor 18A on PTW due to spillage	No transportation of ash	MMD to attend defects	Defects attended	11/01/2025
11/01/2025	North stack	Blow tank 1.1 High level fault, Blow tank 2.2 High level fault	Increase in hopper levels. Increase in emissions	CID to attend defect	Defects attended	12/01/2025
13/01/2025	North stack	Blow tank 1.1 High level probe faulty	Transportation compromised. Hopper level increases	CID to attend defect	Defects attended	13/01/2025
14/01/2025	South stack	Unit 5 Transfer silo on Max, due to Blow tank 5.1 purging continuously and striker pin adjustment	Increase in hopper levels. Increase in emissions	CID to attend defect	Defects attended	14/01/2025
15/01/2025	North Stack	Blow tank 3.1 sticky discharge valve, Blow tank 3.2 Dust inlet seal failure	Increase in hopper levels. Increase in emissions	MMD to attend defects	Defects attended	15/01/2025
15/01/2025	South stack	Unit 5 blow tanks both fail to transport	Increase in hopper levels. Increase in emissions	CID to attend defect	Defects attended	15/01/2025
16/01/2025	North stack	Blow tank 3.2 discharge valve fails to close	Transportation compromised. Hopper level increases	CID to attend defect	Defects attended	16/01/2025
16/01/2025	South stack	Blow tank 6.2 not in-service due to faulty solenoid valve	Transportation compromised. Hopper level increases	CID to attend defect	Defects attended	21/01/2025
17/01/2025	North stack	Unit 2 and 3 poor Precip field performance	Increase in emissions	EMD to attend defects	Defects attended	22/01/2025
17/01/2025	North stack	Unit 3 SO3 convertor temps not increasing	No SO3 Dosing	EMD to attend defects	Defects attended	17/01/2025
17/01/2025	South stack	Blow tank 6.1 Silo outlet fails to close	Transportation compromised. Hopper level increases	CID to attend defect	Defects attended	17/01/2025
17/01/2025	South stack	Unit 6 SO3 Pump not in-service	No SO3 Dosing	TE Filters to attend defects	Defects attended	18/01/2025

18/01/2025	South stack	Unit 5 Terminal box leaking. Lines stopped for cleaning to expose leak.	Increase in emissions	MMD to attend defects	Defects attended	19/01/2025
18/01/2025	North and South stack	No transportation of overland conveyor due to Station cleaning at the basement	Increase in hopper levels. Increase in emissions	Transportation to commence after cleaning is complete	standing time +/- 6hours	18/01/2025
20/01/2025	South stack	Blow tank 4.1 pressurises continuously	Transportation compromised. Hopper level increases	CID to attend defect	Defects attended	20/01/2025
20/01/2025	South stack	Unit 6 Transfer silo max, due to Blow tank 6.2 solenoid defect.	No transportation of ash	CID to attend defect	Defects attended	22/01/2025
20/01/2025	North stack	Unit 2 SO3 Pump trip	No SO3 Dosing	EMD to attend defects	Defects attended	20/01/2025
21/01/2025	North stack	Unit 1 on oil support due to 1B EFP oil out of spec.	Increase in emissions	Turbine maintenance and Water chemistry result oil spec issues.	Defects attended	22/01/2025
21/01/2025	North stack	Unit 2 Transfer silo on max due to 2A Conditioner blocked	Increase in emissions	HP Cleaning on 2A Conditioner	Defects attended	21/01/2025
21/01/2025	North stack	Unit 3 Blow tank 3.2 fails to start	increase in emissions	CID to attend defect	Defects attended	22/01/2025
22/01/2025	North stack	No power supply to Unit 3 blow tanks	No transportation of ash	EMD to attend defects	Defects attended	22/01/2025
22/01/2025	North stack	Unit 3 on oil burner support, due to Mill B feeder blocked and tyre coupling damaged	Increase in emissions	MMD Boiler to attend defects	Defects attended	23/01/2025
21/01/2025	South stack	Unit 6 transfer silo on max	Increase in emissions	CID to attend defects	Defects attended	22/01/2025
23/01/2025	North and South stack	18B on PTW. Overland conveyor 18A fails to start. Motor trip on over current.	No transportation of ash. Unit 1, 3, 4 and 6 due to Transfer silos on Max	EMD to attend defects	Defects attended	24/01/2025
24/01/2025	South stack	Main Silo 4, 5 and 6 on max	No transportation of ash	18B Conveyor to return to service	Defects attended	24/01/2025
24/01/2025	North stack	2B Ash conditioner fails to turn	No transportation of ash, Transfer silo 2 on max level	MMD to attend defects	Defects attended	24/01/2025
25/01/2025	North and South stack	Conveyor 18 B tripped online Open Circuit	No transportation of ash	CID to attend defect	Defects attended	25/01/2025
26/01/2025	South stack	Unit 6 SO3 Pump not in-service	No SO3 Dosing	CID to attend defect	Defects attended	26/01/2025
26/01/2025	North stack	Blow tank 3.2 Dust inlet faulty	Ash transportation compromised	CID to attend defect	Defects attended	26/01/2025
26/01/2025	South stack	Blow tank 6.1 and 6.2 fail to transport	No transportation of ash	CID to attend defect	Defects attended	28/01/2025
27/01/2025	North stack	Blow tank 3.2 Discharge valve seal failure	Ash transportation compromised	CID to attend defect	Defects attended	28/01/2025
27/01/2025	North stack	Blow tank 3.1 fails to transport	No transportation of ash	CID to attend defect	Defects attended	28/01/2025

28/01/2025	South stack	Unit 6 blow tanks fail to transport	No transportation of ash	CID and MMD to attend defects	Blow tank 6.2 in-service but not coping. Defects attended	29/01/2025
28/01/2025	South stack	Unit 5 SO3 Temperatures not increasing	No SO3 Dosing	EMD to attend defects	Defects attended	28/01/2025
28/01/2025	North stack	Blow tank 2.2 Silo outlet fails to open	Ash transportation compromised	CID to attend defects	Defects attended	28/01/2025
28/01/2025	South stack	Ash conditioner 4B, 5B and 6B with blocked nozzles	No transportation of ash	MMD to attend defects	Defects attended	28/01/2025
30/01/2025	North stack	Unit 3 Emergency route keeps blocking	No transportation of ash. Increasing hopper levels	MMD to attend defects	Defects still to be attended	TBC
30/01/2025	South stack	Blow tank 6.1 on PTW. Blow tank 6.2 Purges continuously	Ash hopper level reached max 32. No transportation of ash.	MMD to attend defects	Defects attended	30/01/2025
30/01/2025	North and South stack	Main Silo board on PTW. All blow tanks unavailable	Increase in hopper levels. Increase in emissions	EMD to attend defects	Defects attended	30/01/2025

Complaints Register

Table 8: Complaint for the month of January 2025

Source Code/ Name	Root Cause Analysis	Calculation of Impacts/ emissions associated with the incident	Dispersion modeling of pollutants where applicable	Measures implemented to prevent reoccurrence	Date by which measure will be implemented
There was no complaint related to air quality received during the month of January 2025.					

General

NEMA Section 30 to be declared to DFFE for the 1st of January to 6th of January in terms of PM on the South stack.

NB: The rest of the information demonstrating compliance with the emissions license conditions is supplied in the annual emission reports sent to your office.