

**Ms Nompumelelo Simelane**  
Nkangala District Municipality  
PO BOX 437  
**Middelburg**  
1050

Date:  
12 March 2025

Enquiries:  
Livhuwani Tshilate  
017 615 2317

Ref: 17/AEL/MP312/11/09

Dear Ms. Simelane

## **KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF FEBRUARY 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 February 2025. Verified emissions of particulates matter, SO<sub>2</sub> and NO<sub>x</sub> (as NO<sub>2</sub>) are also included.

### **Raw Materials and Products**

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

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of February 2025
	Coal	Tons/month	1 227 600	474 129.00
	Fuel Oil	Tons/month	8 000	5962.44
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of February 2025
	Energy	GWh	3 000/2 232	800.7027
	Ash	Tons/month	320 000	616.4
	RE PM	kg/MWh	not specified	0.698

1/...

## Abatement Technology

**Table 2:** Abatement Equipment Control Technology for February 2025.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Technology Type	SO <sub>3</sub> Utilisation (%)
Unit 1	ESP& SO3	99.31%	SO3 Plant	100.00
Unit 2	ESP& SO3	99.75%	SO3 Plant	100.00
Unit 3	ESP& SO3	99.72%	SO3 Plant	100.00
Unit 4	ESP& SO3	99.55%	SO3 Plant	100.00
Unit 5	ESP& SO3	99.18%	SO3 Plant	100.00
Unit 6	ESP& SO3	100.00%	SO3 Plant	100.00

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 February 2025




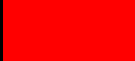
Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.91
Ash Content	27-32 (%)	23.46

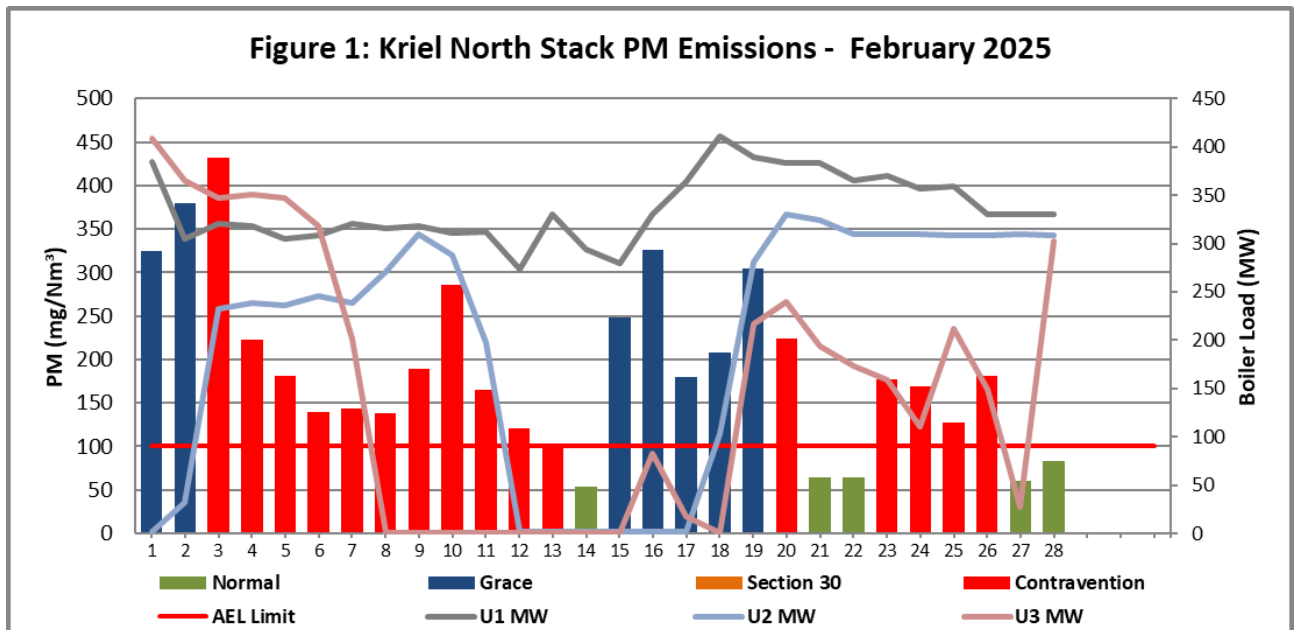
## Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SO <sub>x</sub> (%)	NO <sub>x</sub> (%)
North	96.55	88.58	100.00
South	81.58	67.07	89.52

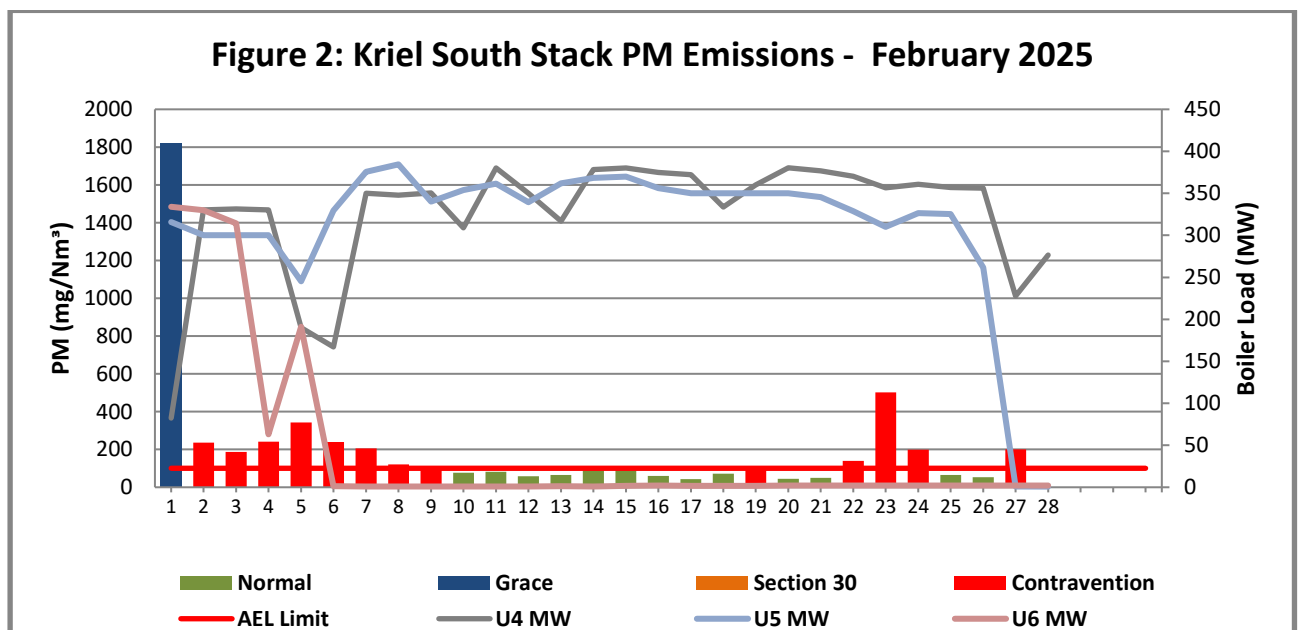
## Emissions Reporting

### Graph Legend Description

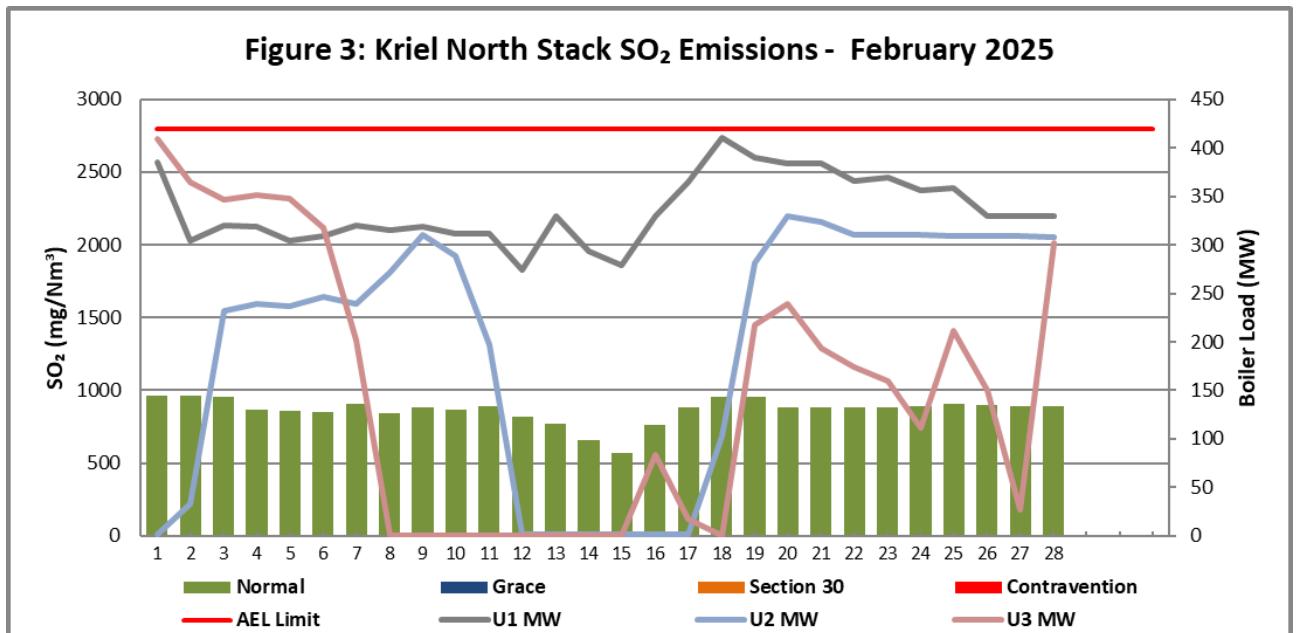
Condition	Colour	Description
Normal		Emissions below Emission Limit Value (ELV)
Grace		Emissions above the ELV during grace period
Section 30		Emissions above ELV during a NEMA S30 incident
Contravention		Emissions above ELV but outside grace or S30 incident conditions



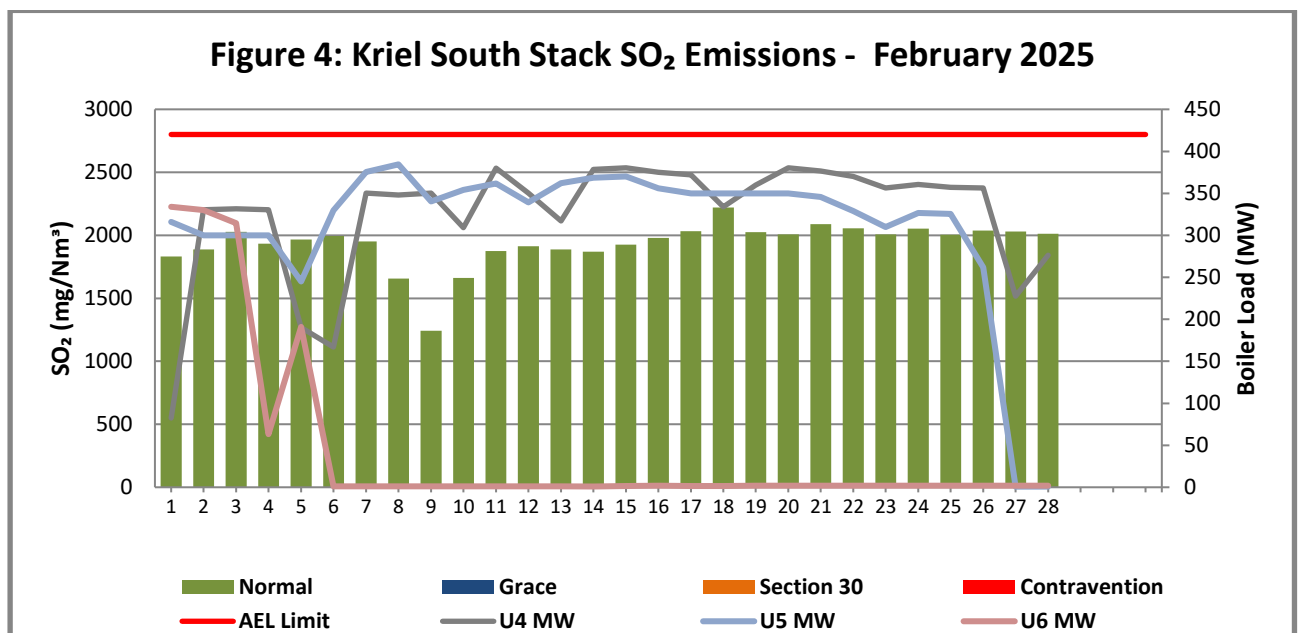
**Figure 1: PM emissions for the month of February 2025 against daily emission limit (100 mg/Nm<sup>3</sup>) for the North Stack. Reasons for exceedances are indicated on Table 7 below.**



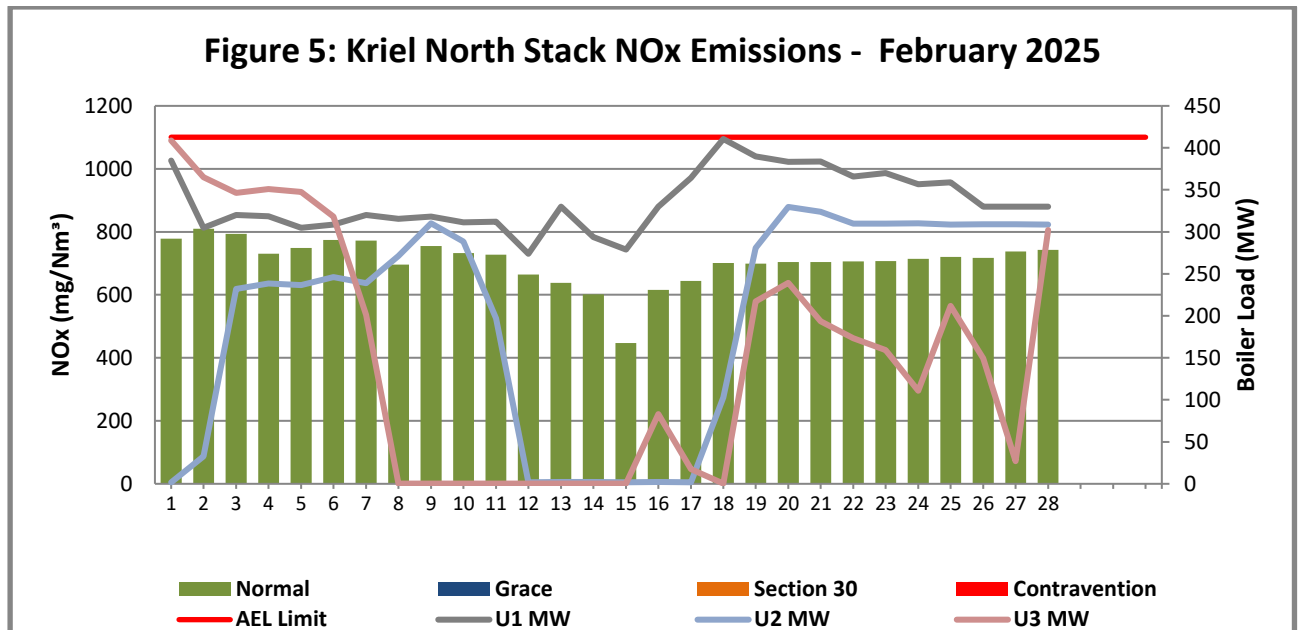
**Figure 2: PM emissions for the month of February 2025 against daily emission limit (100 mg/Nm<sup>3</sup>) for the South Stack. Reasons for exceedances in this reporting month are indicated on Table 7 below. As a result of the Unit 6 DCS T300 upgrade, the South Stack Particulate Matter Emissions Raw Data was last available on the 26/02/2025.**



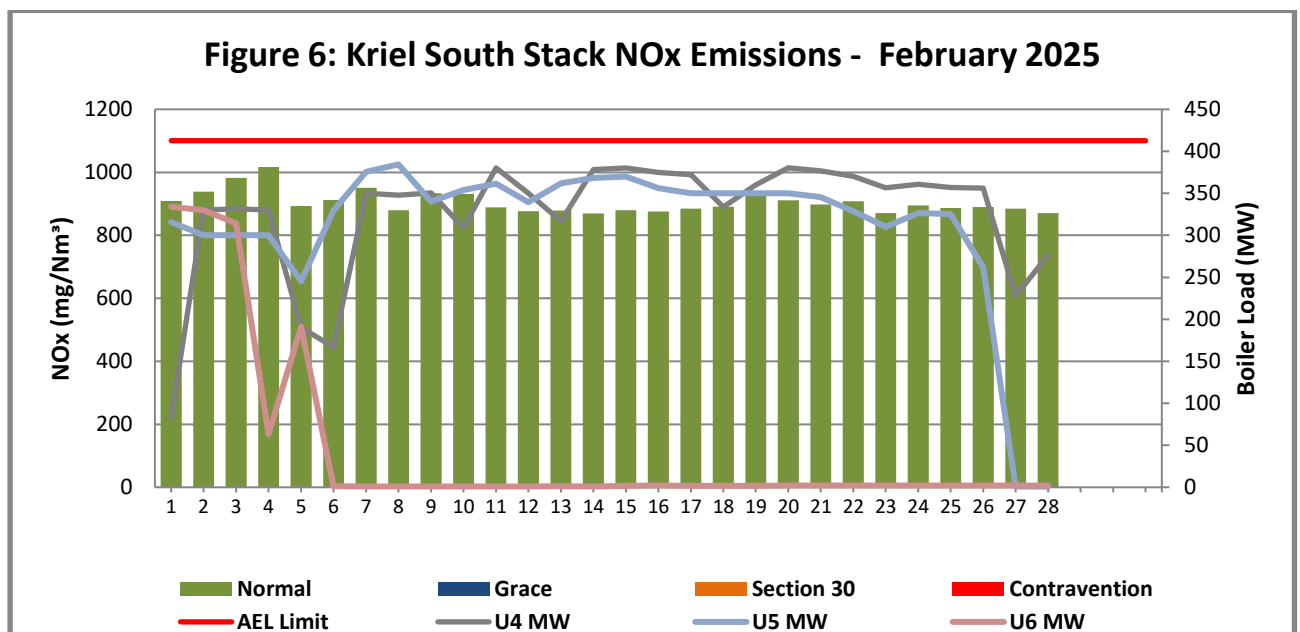
**Figure 3. SO<sub>2</sub> emissions for the month of February 2025 against daily emission limit (2800 mg/Nm<sup>3</sup>) for the North Stack.**



**Figure 4. SO<sub>2</sub> emissions for the month of February 2025 against daily emission limit (2800mg/Nm<sup>3</sup>) for the South Stack.**



**Figure 5. NO<sub>2</sub> emissions for the month of February 2025 against daily emission limit (1100) for the North Stack.**



**Figure 6. NO<sub>2</sub> emissions for the month of February 2025 against daily emission limit (1100mg/Nm<sup>3</sup>) for the South Stack.**

**Table 4:** Monthly tonnages for the month February2025

Unit	PM (tons)	SO <sub>2</sub> (tons)	NO <sub>2</sub> (tons)
<b>SUM</b>	616.4	5 957.7	3 410.3

**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 – February 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm <sup>3</sup> )
North	5	7	0	16	23	186.9
South	13	1	0	13	14	192.0

Note: Due to Unit 6 DCS T300 upgrade, the South Stack Particulate Matter Emissions Raw Data was last available on the 26/02/2025.

Table 5.2: Operating days in compliance to SOx AEL Limit – February 2025

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm <sup>3</sup> )
North	28	0	0	0	0	865.5
South	28	0	0	0	0	1 934.9

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

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm <sup>3</sup> )
North	28	0	0	0	0	706.6
South	28	0	0	0	0	905.1

## Light up information

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

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 2		Unit 2		Unit 2	
Breaker Open (BO)	BO previously	BO previously	BO previously	BO previously	7:35 pm	2025/02/09	12:35 pm	2025/02/11
Draught Group (DG) Shut Down (SD)	n/a	n/a	n/a	n/a	8:05 pm	2025/02/09	12:35 pm	2025/02/12
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	00:00:30	DD:HH:MM	01:00:00	DD:HH:MM
Fires in time			12:35 pm	2025/02/02	1:20 am	2025/02/10	4:35 am	2025/02/18
Synch. to Grid (or BC)			7:50 pm	2025/02/02	4:10 am	2025/02/10	12:50 pm	2025/02/18
Fires in to BC (duration)		DD:HH:MM	00:07:15	DD:HH:MM	00:02:50	DD:HH:MM	00:08:15	DD:HH:MM
Emissions below limit from BC (end date)			12:00 am	2025/02/14	12:00 am	2025/02/14	12:00 am	2025/02/21
Emissions below limit from BC (duration)		DD:HH:MM	11:04:10	DD:HH:MM	03:19:50	DD:HH:MM	02:11:10	DD:HH:MM

North Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 3		Unit 3		Unit 3		Unit 3	
Breaker Open (BO)	2:10 pm	2025/02/07	7:25 pm	2025/02/21	6:50 pm	2025/02/23	5:20 pm	2025/02/25
Draught Group (DG) Shut Down (SD)	2:50 am	2025/02/08	8:20 pm	2025/02/21	8:55 pm	2025/02/23	12:45 am	2025/02/27
BO to DG SD (duration)	00:12:40	DD:HH:MM	00:00:55	DD:HH:MM	00:02:05	DD:HH:MM	01:07:25	DD:HH:MM
Fires in time	8:55 pm	2025/02/18	12:00 am	2025/02/22	5:40 am	2025/02/24	5:05 pm	2025/02/27
Synch. to Grid (or BC)	1:25 am	2025/02/19	5:05 am	2025/02/22	11:50 am	2025/02/24	8:50 pm	2025/02/27
Fires in to BC (duration)	00:04:30	DD:HH:MM	00:05:05	DD:HH:MM	00:06:10	DD:HH:MM	00:03:45	DD:HH:MM

Emissions below limit from BC (end date)	12:00 am	2025/02/21	not > limit	not > limit	1:00 am	2025/02/27	not > limit	not > limit
Emissions below limit from BC (duration)	01:22:35	DD:HH:MM	n/a	DD:HH:MM	02:13:10	DD:HH:MM	n/a	DD:HH:MM

South Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 4		Unit 4		Unit 4		Unit 4	
Breaker Open (BO)	BO previously	BO previously	1:45 pm	2025/02/05	7:45 am	2025/02/13	2:20 pm	2025/02/27
Draught Group (DG) Shut Down (SD)	n/a	n/a	8:20 pm	2025/02/05	DG did not trip or SD	DG did not trip or SD	3:15 pm	2025/02/27
BO to DG SD (duration)	n/a	DD:HH:MM	00:06:35	DD:HH:MM	n/a	DD:HH:MM	00:00:55	DD:HH:MM
Fires in time	7:25 am	2025/02/01	5:25 am	2025/02/06	7:45 am	2025/02/13	5:55 pm	2025/02/27
Synch. to Grid (or BC)	3:40 pm	2025/02/01	10:25 am	2025/02/06	10:50 am	2025/02/13	5:15 am	2025/02/28
Fires in to BC (duration)	00:08:15	DD:HH:MM	00:05:00	DD:HH:MM	00:03:05	DD:HH:MM	00:11:20	DD:HH:MM
Emissions below limit from BC (end date)	12:00 am	2025/02/04	9:00 am	2025/02/10	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	02:08:20	DD:HH:MM	03:22:35	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

South Stack ...Cont.	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 5		Unit 5		Unit 5		Unit 6	
Breaker Open (BO)	BO previously	BO previously	1:45 pm	2025/02/05	7:40 pm	2025/02/26	10:55 pm	2025/02/03
Draught Group (DG) Shut Down (SD)	n/a	n/a	DG did not trip or SD	DG did not trip or SD	2:10 pm	2025/02/27	11:25 pm	2025/02/03
BO to DG SD (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	00:18:30	DD:HH:MM	00:00:30	DD:HH:MM
Fires in time			1:45 pm	2025/02/05	8:10 pm	2025/02/28		
Synch. to Grid (or BC)			4:50 pm	2025/02/05	2:40 am	2025/03/01		



Fires in to BC (duration)		DD:HH:MM	00:03:05	DD:HH:MM	00:06:30	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)			9:00 am	2025/02/10	not > limit	not > limit		
Emissions below limit from BC (duration)		DD:HH:MM	04:16:10	DD:HH:MM	n/a	DD:HH:MM		DD:HH:MM

## Reasons for emissions poor performance for both stack in February 2025

Table 7: Reasons for emissions poor performance for February 2025

Start Date	Plant	Reason	Effect on Emissions	Action	Feedback	End Date
01/02/2025	North stack	Unit 2 half load conditions due to A EFP and BFPT unavailable	Unit on Oil Burner support, increasing emissions	Turbine Engineering and Maintenance to put BFPT in-service	Maintenance attending to defects	10/02/2025
02/02/2025	North stack	Unit 1, 2 and 3 SO3 plant off due to steam leak repairs	No SO3 dosing	Maintenance to attend defects	Defects attended	03/02/2025
03/02/2025	North and South stack	Overland conveyor 18A PTW due to Rip. 18B on PTW due to damaged bearing	No transportation of ash. Increase in emissions	MMD to return belt to service	Defects attended. 18B in-service	05/02/2025
03/02/2025	South stack	Transfer Silo 4 on max level due to blocked Ash conditioner 4B.	No transportation of ash. Increase in hopper levels, and an increase in emissions	MMD to attend defects	Defects attended	05/02/2025
03/02/2025	South stack	Unit 6 Poor ESP Field performance with (10) ten Plate rappers stuck due to high hoppers (30)	Increase in emissions	MMD to attend to Low Air pressure to improve fly ash transportation	MMD to add Mobile Diesel compressor	04/02/2025
04/02/2025	South stack	Unit 6 Blow tanks fail to pressurize	Increase in hopper level alarms	CID to attend Defects	Defects attended	05/02/2025
06/02/2025	North stack and South	Main silo 2,3 and 4 on max, due to Ash conditioner 2B,3B and 4B Blocked	No transportation of fly ash, increasing hopper levels to 23	MMD to attend defects	Defects attended	07/02/2025

07/02/2025	South stack	Unit 6 blow tank 6.2 air inlet keeps blocking	Poor transportation of ash, increasing hopper levels to 30	MMD to attend defects	Defects attended	07/02/2025
07/02/2025	South stack	Blocked ash conditioner 4A, Main silo 4 on max level	No transportation of fly ash, increasing hopper levels	MMD to attend defects	Defects attended	07/02/2025
08/02/2025	North stack	Poor Unit 1 ESP LHS Field performance with High Spark Rates	Ash trapping system not optimized, increasing emissions	EMD to attend to poor performing fields	Defects attended	08/02/2025
08/02/2025	South stack	Unit 5 ESP Fields with poor performance, with 4 Undervoltages and 2 Plate rappers stuck, and 1 Wire rapper stuck	Ash trapping system not optimized, increasing emissions	EMD to attend to poor performing fields	Defects need Opportunity to attend.	TBC
10/02/2025	North stack	Unit 2 Ash conditioner 2B blocked	Increase in ash hopper levels to 15	MMD to attend defects	Conditioner unblocked	11/02/2025
10/02/2025	North stack	Unit 2 Low Load conditions with Oil burner support	Increase in emissions	TPE and Operating to stabilize and increase load.	Unit Shut down due to BTL	12/02/2025
12/02/2025	North and South stack	18B Overland conveyor tripped on Belt Misalignment	No transportation of fly ash. Increasing hopper levels. Increasing emissions	MMD to attend to defect	Defects attended	12/02/2025
12/02/2025	North and South stack	Air Compressors Centac 4 and Demag 1 and 2 tripped due to a Power dip	No transportation of fly ash. Increasing hopper levels. Increasing emissions	MMD to attend to defect	Defects attended	12/02/2025
13/02/2025	North stack	Unit 1 SO3 Plant off due to low sulphur flow, pump keeps tripping	No SO3 dosing	TE Filters and CID to attend defects	Defects attended	13/02/2025
15/02/2025	North Stack	Unit 3 prolonged light up & Unit 1 Half load condition (1A EFP not available)	No SO3 dosing due to low load	Operating & 1A EFP Motor Inspection by EMD	Defects attended	15/02/2025
16/02/2025	North stack	Unit 3 SO3 not converting yet and Unit 3 trip	No SO3 dosing due to low load	Operating		16/02/2025
17/02/2025	North Stack	Unit 3 light and Unit 3 trip	No SO3 dosing due to low load	Operating		17/02/2025

18/02/2025	North Stack	Unit 2 Light, Unit 2 Half load Conditions ( A EFP not available) & Unit 3 Light up.	No SO3 dosing due to low load	A EFP off for bearings inspection and Repair by Turbine Maintenance	Defects attended	19/02/2025
19/02/2025	North Stack	Unit 3 light up and Unit 3 Half load conditions (B EFP not available)	No SO3 dosing due to low load.	B EFP off for Gearbox /Coupling Inspection and Motor Replacement by Turbine Maintenance and Electrical Maintenance	Defects attended	21/02/2025
19/02/2025	South Stack	Multiple transportation line defects on unit 4 and 5	No transportation of fly ash resulting in fields undervoltage trips and consequently high emissions.	CID and MMD to attend to defects	Defects attended	19/02/2025
20/02/2025	North Stack	Unit 3 Half load conditions due to unavailability of the B EFP	No SO3 dosing due to low load	B EFP off for Gearbox /Coupling Inspection and Motor Replacement by Turbine Maintenance and Electrical Maintenance	Defects attended	21/02/2025
22/02/2025 - 24/02/2025	South stack	Unit 5 sustained hopper alarms (>20) due transportation line defects.	Increased poor field performance and undervoltage trips	CID and MMD to attend to defects	Defects attended	24/02/2025
23/02/2025- 26/02/2025	North stack	Prolonged unit 3 light up, frequent unit 3 trips, light ups and half load condition	No SO3 dosing due to low load	Operating		25/02/2025
27/02/2025 - 28/02/2025	South Stack	As a result of the Unit 6 DCS T300 upgrade, the South Stack Particulate Matter Emissions Raw Data will not be available; the last available raw data was on the 26/02/2025 at 12:35	Data not available for reporting. Spot test results will be used to estimate the daily averages.	C&I Engineering to expedite the return of Unit 6 DCS	In progress	06/03/2025

## Complaints Register

Table 8: Complaint for the month of February 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 February 2025.					

### General

Please note that Distributed Control System (DCS) Human-Machine Interface (HMI) hardware and software on Unit 6 was upgraded from Version 4.2 to Version 9.2 including the Plant Information (PI) System. The reason for this upgrade project is due to obsolescence of the DCS T3000 system. The DCS T3000 System was upgraded from 26th of February 2025 to 06th of March 2025. During the Unit 6 DCS T3000 upgrade the system was not accessible and the South Stack Particulate Matter Emissions Raw Data was last available on the 26th of February 2025 at 12:35pm.

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