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Date:
 11 May 2023

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Ref: 17/4/AEL/MP312/11/09

Dear Ms Simelane

KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF MARCH 2023

This serves as the monthly report required in terms of Section 7.4 in Kriel Power Station's Atmospheric Emission License 17/4/AEL/MP312/11/09. The emissions are for the month of March 2023. 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 March 2023

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption / Rate (Quantity)	Consumption / Rate in Month of March 2023
	Coal	Tons/month	1 227 600	570 935.50
	Fuel Oil	Tons/month	5 000	6 964.11
Production Rates	Product/ By-Product Name	Unit	Maximum Production Capacity Permitted (Quantity)	Production Rate in Month of March 2023
	Ash	Tons/month	not specified	900.4
	RE PM	kg/MWh	not specified	

1/...

Abatement Technology

Table 2: Abatement Equipment Control Technology for March 2023.

Associated Unit/Stack	Technology Type	Actual Efficiency (%)	Utilisation
		March 2023	March 2023
Unit 1	ESP	99.55%	62.8%
Unit 2	ESP	99.48%	75.2%
Unit 3	ESP	99.59%	35.7%
Unit 4	ESP	99.57%	71.8%
Unit 5	ESP	98.14%	82.9%
Unit 6	ESP	99.13%	100%

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of March 2023





Characteristic	Stipulated Range (Unit)	Monthly Average Content
Sulphur Content	0.6-1.2 (%)	0.75
Ash Content	21-36 (%)	27.36

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SO _x (%)	NO _x (%)
North	79.73	36.95	37.08
South	98.55	87.80	100.00

Emissions Reporting

Table 6.5: 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

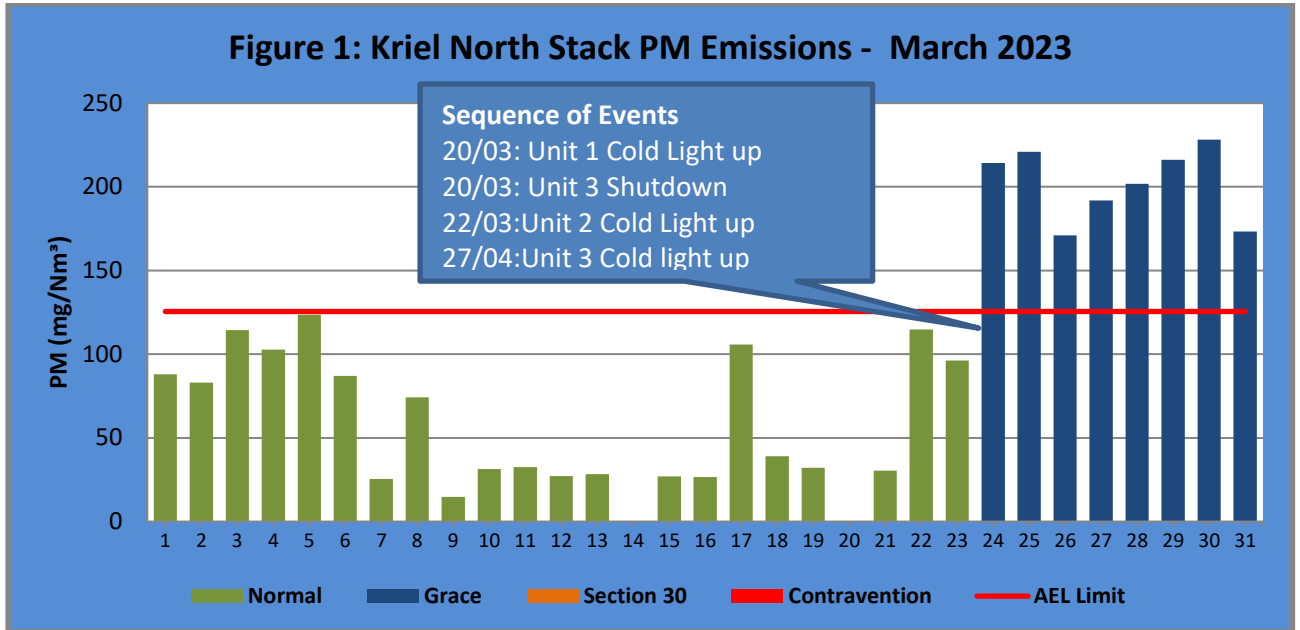


Figure 1: PM emissions for the month of March 2023 against emission limit for the North Stack. Monthly average was 121.8 mg/Nm³

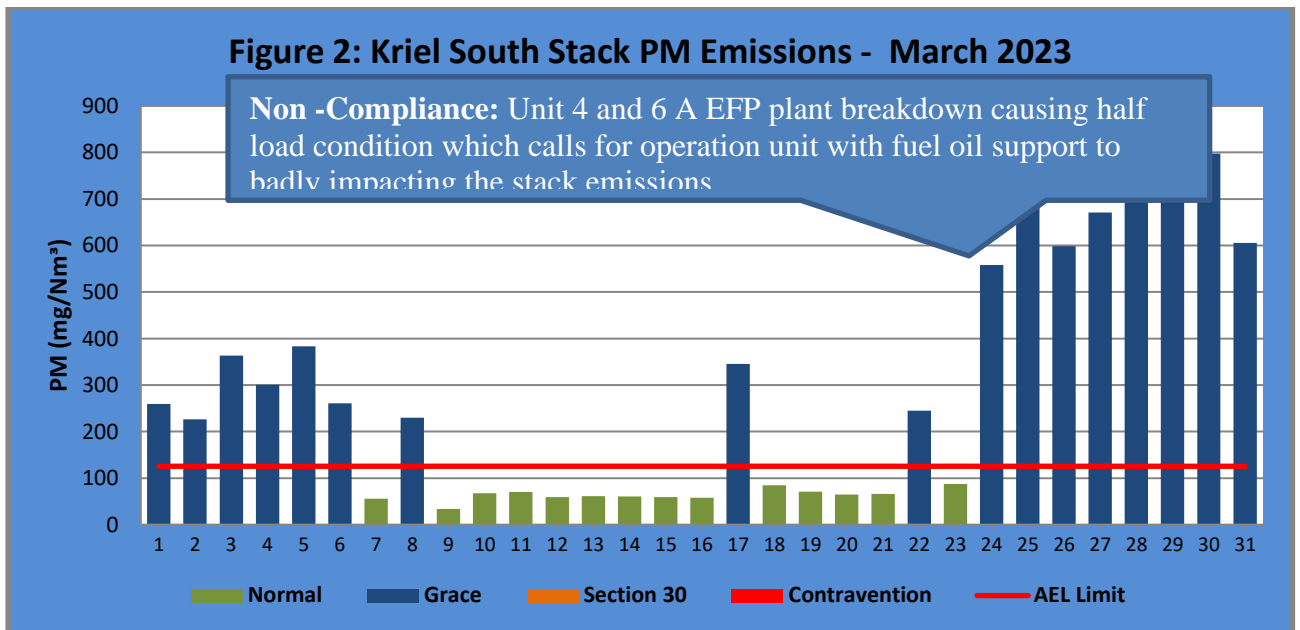


Figure 2: PM emissions for the month of March 2023 against emission limit for the South Stack. Monthly average was 324.1 mg/Nm³

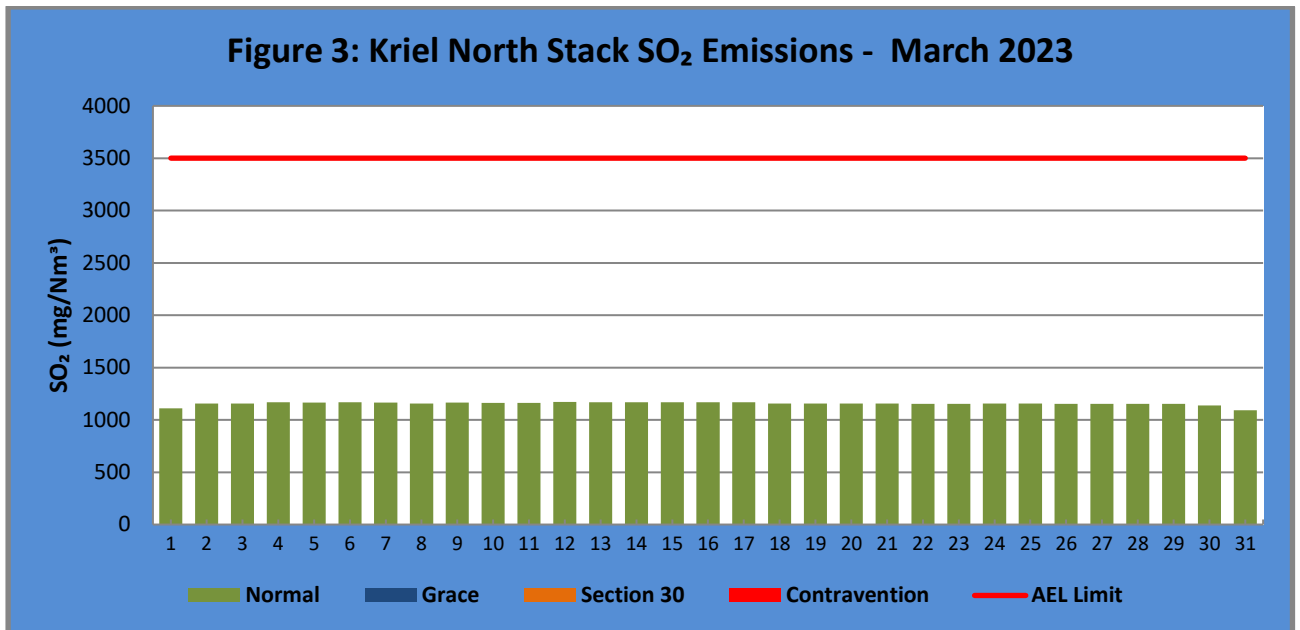


Figure 3. SO₂ emissions for the month of March 2023 against emission limit for the North Stack. The SO_x Limit is 3500 mg/Nm³.

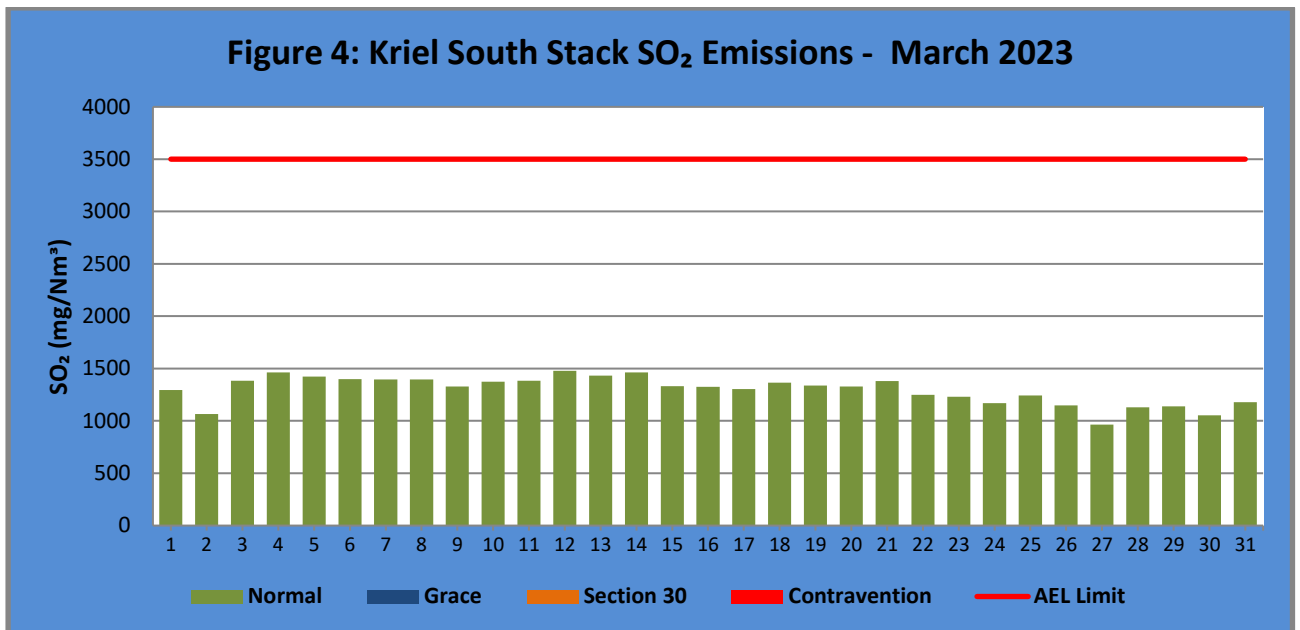


Figure 4. SO₂ emissions for the month of March 2023 against emission limit for the South Stack. The SO₂ Limit is 3500 mg/Nm³.

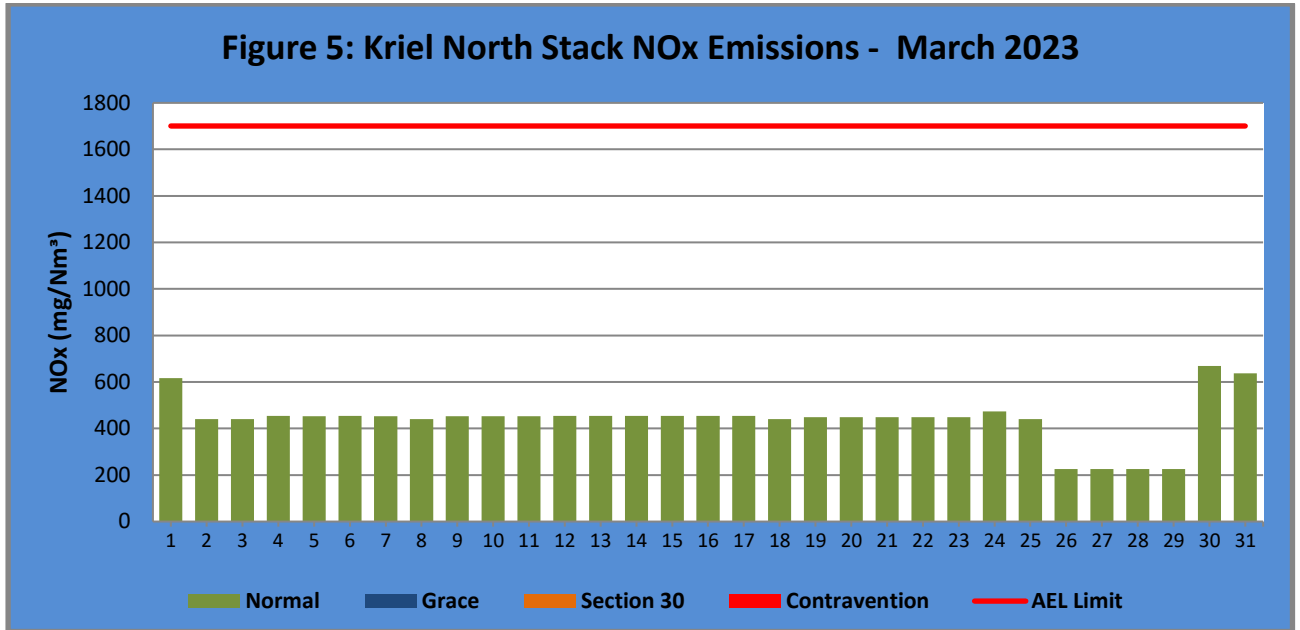


Figure 5. NO₂ emissions for the month of March 2023 against emission limit for the North Stack. The NO_x Limit is 1600 mg/Nm³.

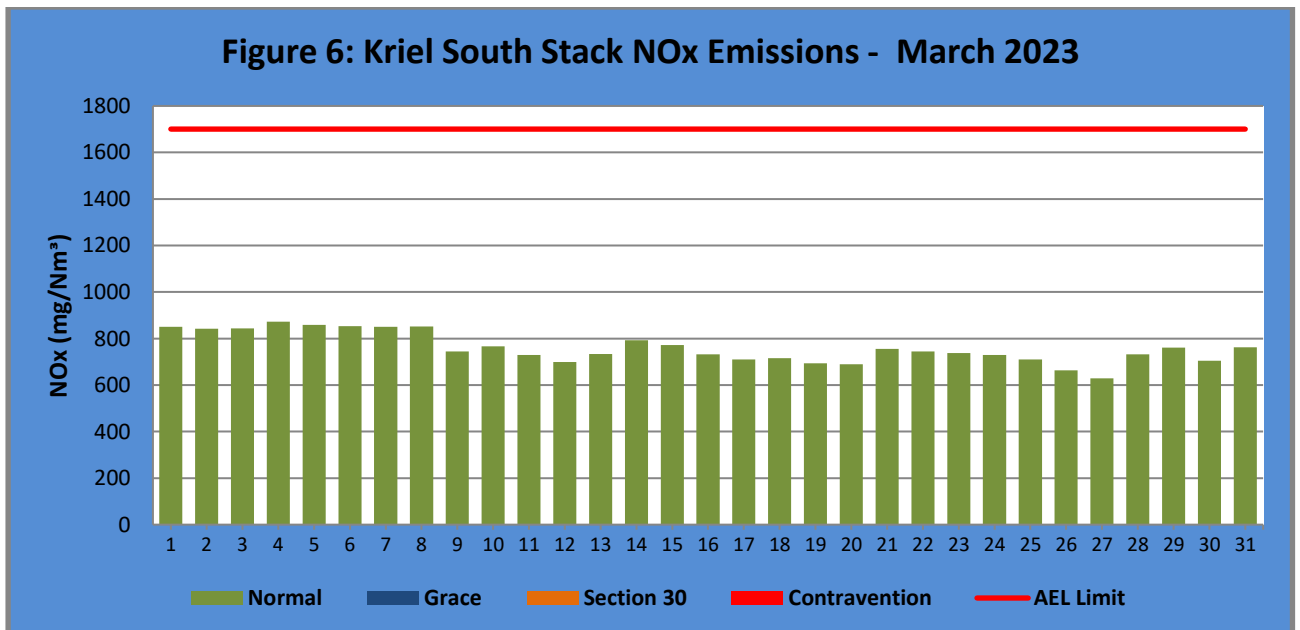


Figure 6. NO₂ emissions for the month of March 2023 against emission limit for the South Stack. The NO_x Limit is 1600 mg/Nm³.

Table 4: Monthly tonnages for the month March 2023

Unit	PM (tons)	SO ₂ (tons)	NO ₂ (tons)
sum	900.3	6 251.3	3 083.4

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

Table 5.1: Operating days in compliance to PM AEL Limit – March 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Monthly Limit Exceedance	Average PM (mg/Nm ³)
North	21	8	0	0	8	101.8
South	14	0	17	0	17	289.6

Table 5.2: Operating days in compliance to SOx AEL Limit - March 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SOx (mg/Nm ³)
North	31	0	0	0	0	1 155.6
South	31	0	0	0	0	1 295.3

Table 5.3: Operating days in compliance to NOx AEL Limit – March 2023

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NOx (mg/Nm ³)
North	31	0	0	0	0	440.0
South	31	0	0	0	0	759.3

Light up information

Table 6: PM Start-up information for the month of March 2023

North Stack	Event 1		Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 1		Unit 1		Unit 3	
Breaker Open (BO)	11:40 pm	2023/03/04	1:10 pm	2023/03/12	9:50 pm	2023/03/19	6:05 am	2023/03/26
Draught Group (DG) Shut Down (SD)	6:00 am	2023/03/05	2:05 am	2023/03/13	10:45 pm	2023/03/19	6:05 am	2023/03/26
BO to DG SD (duration)	00:06:20	DD:HH:MM	00:12:55	DD:HH:MM	00:00:55	DD:HH:MM	00:00:00	DD:HH:MM
Fires in time	8:20 pm	2023/03/09	10:50 pm	2023/03/15	2:15 am	2023/03/20	3:45 am	2023/03/28
Synch. to Grid (or BC)	5:05 am	2023/03/10	6:10 am	2023/03/16	7:45 am	2023/03/20	9:50 am	2023/03/28
Fires in to BC (duration)	00:08:45	DD:HH:MM	00:07:20	DD:HH:MM	00:05:30	DD:HH:MM	00:06:05	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM	n/a	DD:HH:MM

North Stack	Event 5		Event 6	
Unit No.	Unit 3		Unit 2	
Breaker Open (BO)	6:45 pm	2023/03/13	8:10 am	2023/03/16
Draught Group (DG) Shut Down (SD)	DG did not trip or SD	DG did not trip or SD	9:30 pm	2023/03/16
BO to DG SD (duration)	n/a	DD:HH:MM	00:13:20	DD:HH:MM
Fires in time	6:45 pm	2023/03/13	2:40 pm	2023/03/22
Synch. to Grid (or BC)	12:15 pm	2023/03/14	7:15 am	2023/03/23
Fires in to BC (duration)	00:17:30	DD:HH:MM	00:16:35	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	6:45 pm	2023/03/13	n/a	DD:HH:MM

South Stack	Event 1		Event 2	
Unit No.	Unit 4		Unit 5	
Breaker Open (BO)	7:50 pm	2023/03/04	BO previously	BO previously
Draught Group (DG) Shut Down (SD)	9:35 am	2023/03/05	n/a	n/a
BO to DG SD (duration)	00:13:45	DD:HH:MM	n/a	DD:HH:MM
Fires in time	6:25 pm	2023/03/07	12:40 am	2023/03/05
Synch. to Grid (or BC)	1:50 am	2023/03/08	6:10 pm	2023/03/06
Fires in to BC (duration)	00:07:25	DD:HH:MM	01:17:30	DD:HH:MM
Emissions below limit from BC (end date)	not > limit	not > limit	not > limit	not > limit
Emissions below limit from BC (duration)	n/a	DD:HH:MM	n/a	DD:HH:MM

Complaints Register

Table 9: Complaints for the month of March 2023.

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 March 2023.					

General

The particulate matter (PM10) emissions on the North Common Stack were within the **monthly limit**; North stack recorded the monthly PM10 average emissions figure of **101.8 mg/Nm³** while South Common Stack exceeded the **monthly limit** and recorded PM10 monthly average figure of **289.6 mg/Nm³**. The gaseous (NOx & SOx) emissions on the north and south common stack were also within the **daily limit** during the month of March 2023; refer to graphs above.

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

Kriel Power Station's List of NEMA Section 30 Incidents for 2022/2023 Financial Year

Month	Description of Section 30 Incidents - including the reference number	Root Cause (s)	Status of S30 Incident with DEFF (open or closed)	Remarks
April-2023	None			
March - 2023	None			
March - 2023	None			
March - 2023	None			
Aug - 2023	None			
Sep - 2023	None			
Oct - 2023	None			
Nov - 2023	Upset condition in units 4, 5 & 6 exceeded 48hours grace period.	Unit 5-A malfunction on one of the converter electronics cards	Open	
Dec - 2023	Upset condition in units 4, 5 & 6 exceeded 48hours grace period.	Section 30: 22-29th March 11KV ash conveyor board to incomer cables were burnt	Open	
Jan - 2023	Upset condition in units 4, 5 & 6 exceeded 48hours grace period.	compressor trip and the subsequent trip of all the ash conveying lines at all the units.	Open	
Feb - 2023	High South Stack Emissions exceedance	18 A and B ash conveyor belts tripped on the belt tear and ash spillage	Open	
Mar - 2023	High South Stack Emissions exceedance	Unit 4 and 6 A EFP plant breakdown causing half load condition which calls for operation unit with fuel oil support to badly impacting the stack emissions	Open	