Eskom

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Date:
24 March 2020

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

Dear Ms Nembilwi

KRIEL POWER STATION'S MONTHLY STACK EMISSIONS REPORT FOR THE MONTH OF FEBRUARY 2020

This serves as the monthly report required in terms of Section 7.2.1 in Kriel Power Station's Atmospheric Emission License 17/4/AEL/MP312/11/09. The emissions are for the month of February 2020. Verified emissions of particulates matter, SO_2 and NO_x (as NO_2) are also included.

Raw Materials and Products

Table 1: Quantity of Raw Materials and Products used/produced for the month of February 2020

Raw Materials and Products used	Raw Material Type	Units	Maximum Permitted Consumption/ Rate (Quantity)	Consumption/ Rate in Month of February 2020
	Coal	Tons/month	1 227 600	616 164
	Fuel Oil	Tons/month	5 000	3 584.05
Production Rates	**Product/ By-Product Name**	**Unit**	**Maximum Production Capacity Permitted (Quantity)**	**Production Rate in Month of February 2020**
	Ash	Tons/month	not specified	555.53
	RE PM	kg/MWh	not specified	0.46

1/…

Abatement Technology

Table 2: Abatement Equipment Control Technology for February 2020

Associated Unit/Stack	Technology Type	Actual Efficiency (%) February 2020
Unit 1	ESP	100%
Unit 2	ESP	93.3%
Unit 3	ESP	98.3%
Unit 4	ESP	99.4%
Unit 5	ESP	95.0%
Unit 6	ESP	96.3%

Energy Source Characteristics

Table 3: Energy Source Material Characteristics for the month of February 2020

Characteristic	Stipulated Range (Unit)	Monthly Average Content
CV Content	18-24 (MJ/kg)	
Sulphur Content	0.6-1.2 (%)	0.84
Ash Content	27-32 (%)	25.01

Monthly Monitor Reliability

Associated Unit/Stack	PM (%)	SOx (%)	NOx (%)
North	97.7%	99.4%	99.4%
South	100%	64.2%	64.2%

Emissions Reporting

GRAPH LEGEND	
	Final daily emissions average in mg/Nm3 released within a particular day
	Final monthly emissions average in mg/Nm3 released within the whole month
	Emissions limit as per the AEL

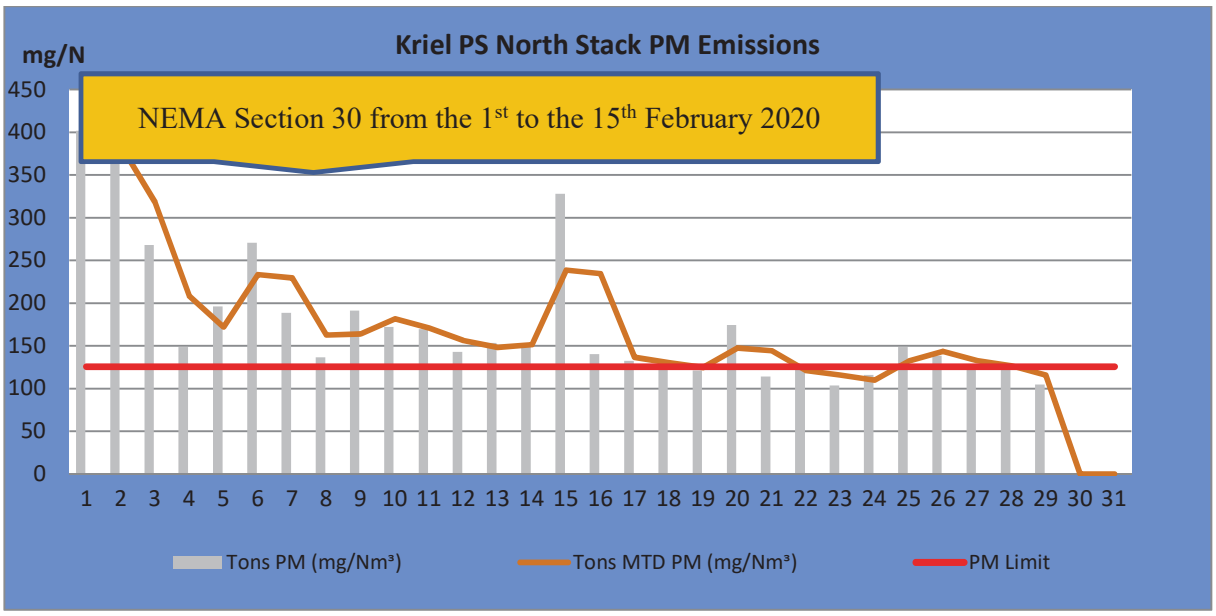

Figure 1: PM emissions (daily averages) for the month of February 2020 against emission limit for the North Stack

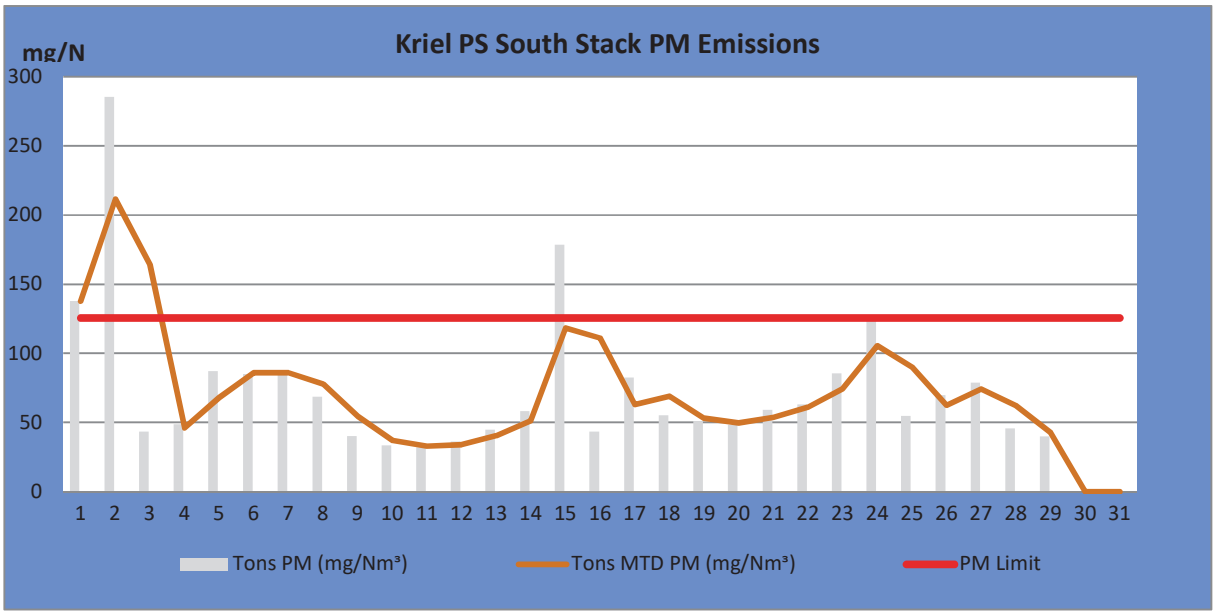

Figure 2: PM emissions (daily averages) for the month of February 2020 against emission limit for the South Stack

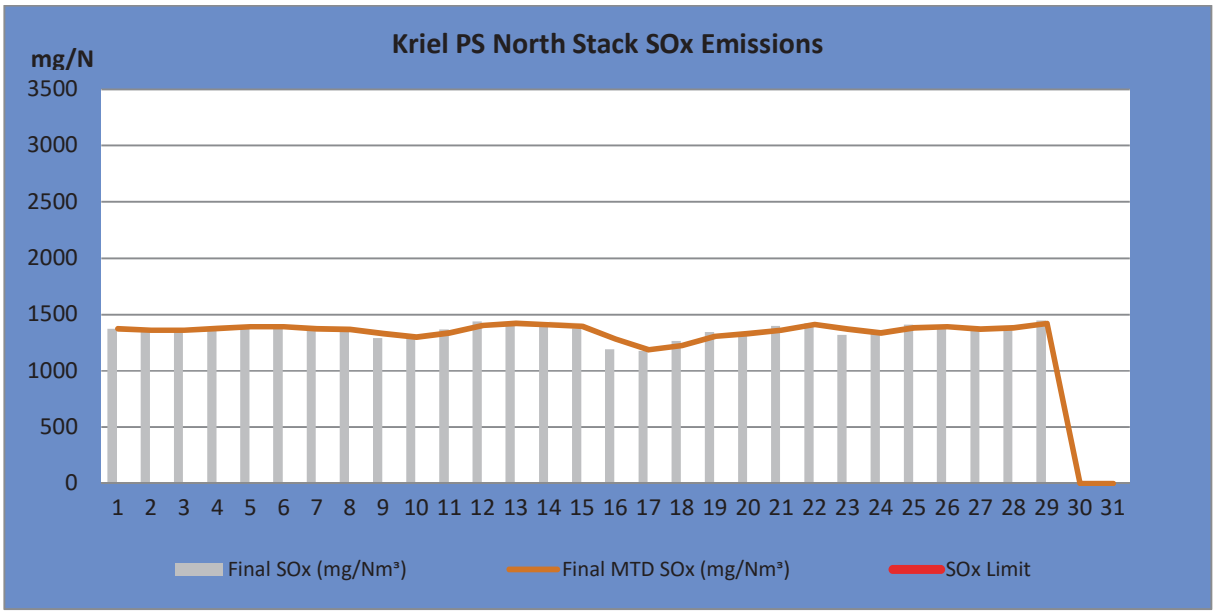

Figure 3. SO2 emissions (daily averages) for the month of February 2020 against emission limit for the North Stack. SOx permitted maximum release rate is 3 500mg/Nm3

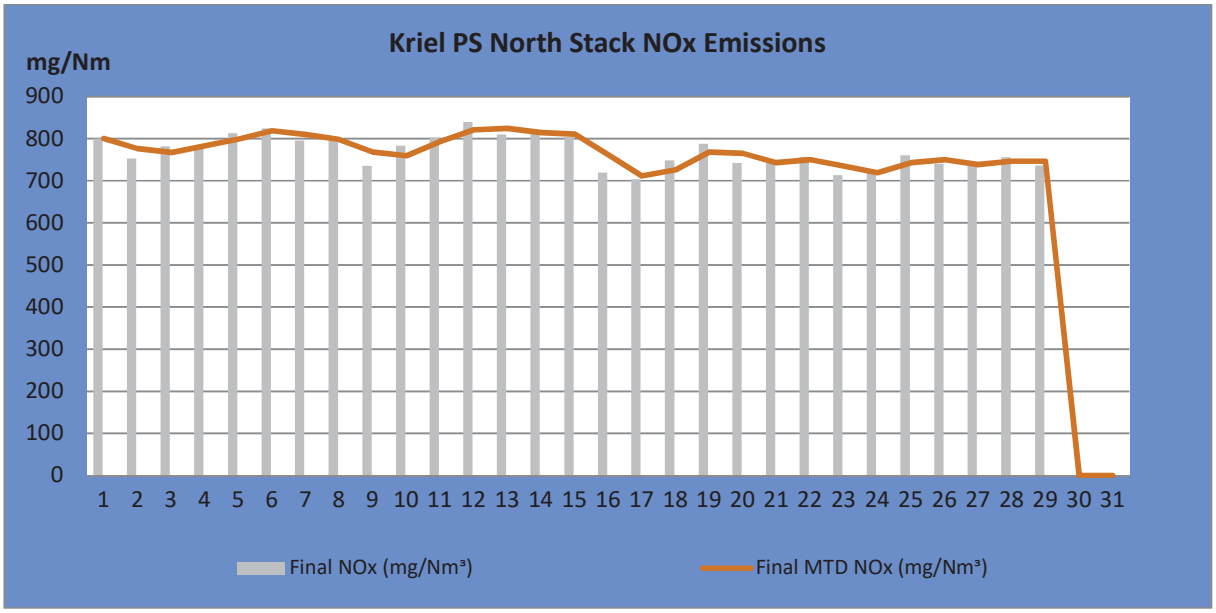

Figure 4. NO2 emissions (daily averages) for the month of February 2020 against emission limit for the North Stack. NOx permitted maximum release rate is 1 600mg/Nm3

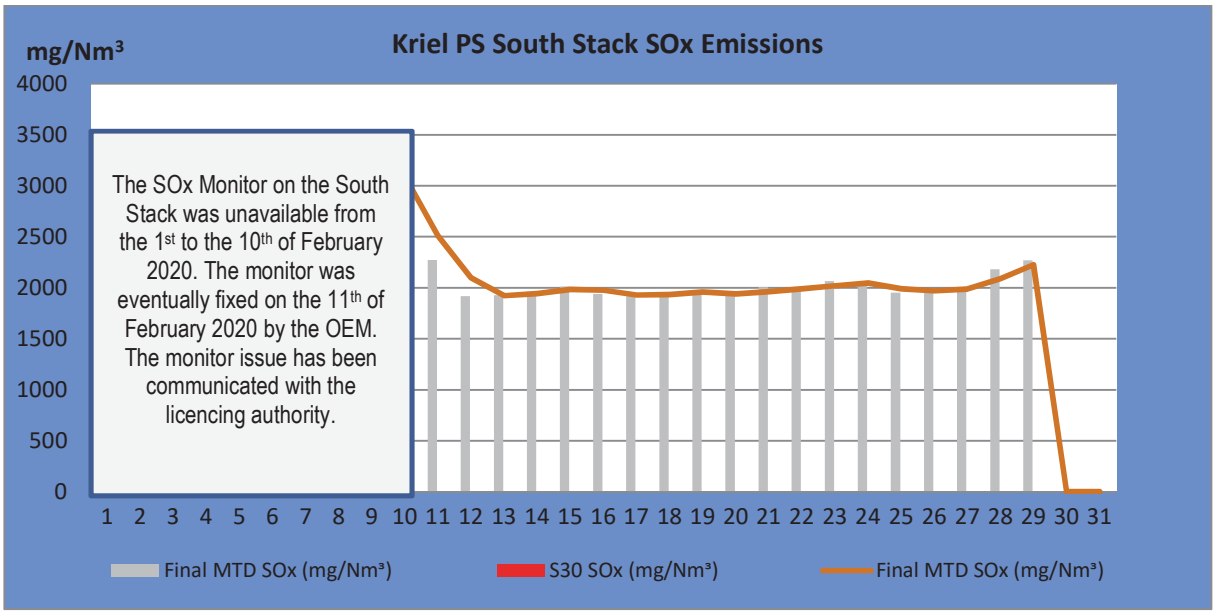

Figure5. SO2 emissions (daily averages) for the month of February 2020 against emission limit for the South Stack. SOx permitted maximum release rate is 3 500mg/Nm3

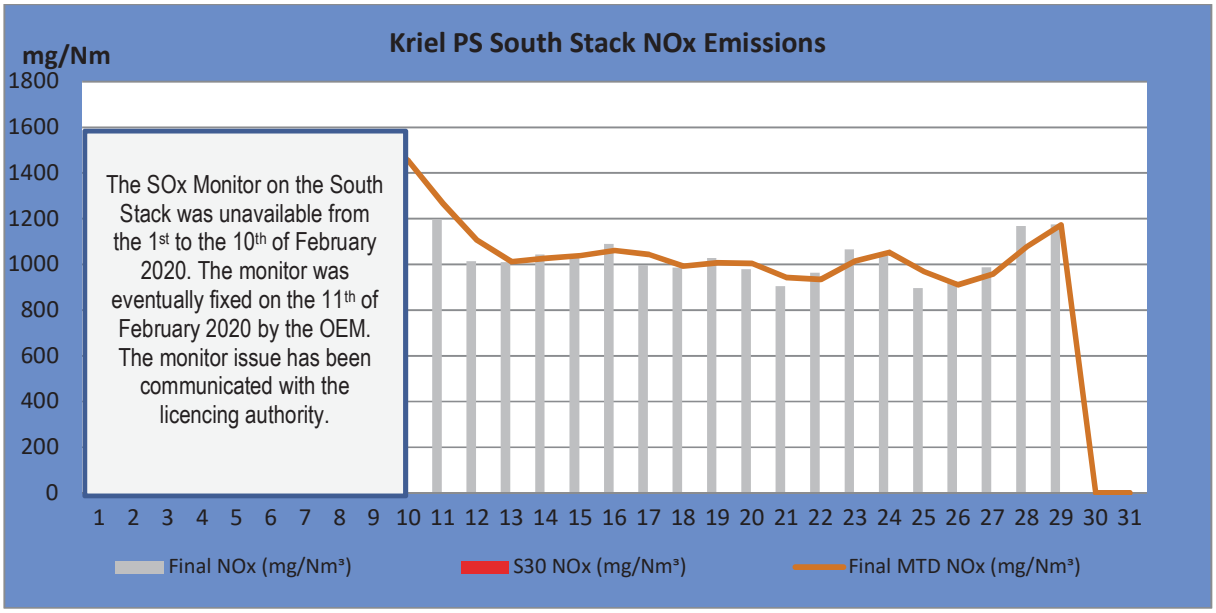

Figure 6. NO2 emissions (daily averages) for the month of February 2020 against emission limit for the South Stack. NOx permitted maximum release rate is 1 600mg/Nm3

Table 4: Monthly tonnages for the month February 2020

Unit	PM (tons)	SO_2 (tons)	NO_2 (tons)	CO_2 (tons)
1	135.7	1 096.3	617.6	
2	120.7	946.7	538.9	
3	158.3	1 272.3	721.0	
4	78.0	2 574.0	1 251.7	
5	0.0	0.0	0.0	
6	62.9	2 223.7	1 079.7	
SUM	555.5	8 112.9	4 208.8	

	Operating Days (DD:HH:MM)			
Unit	Normal operation	In grace period	Under S 30	Unit off load
1	25:11:55	00:00:00	00:00:00	03:12:05
2	23:19:55	00:00:00	00:00:00	05:04:05
3	28:11:15	00:00:00	00:00:00	00:12:45
4	29:00:00	00:00:00	00:00:00	00:00:00
5	00:00:00	00:00:00	00:00:00	29:00:00
6	28:14:25	00:00:00	00:00:00	00:09:35

Light up information

Table 6: PM Start-up information for the month of February 2020

North Stack	Event 2		Event 3		Event 4	
Unit No.	Unit 1		Unit 2		Unit 2	
Fires in	11:05 PM	2020/ 02/13	8:55 AM	2020/ 02/17	1:05 AM	2020/ 02/26
Synchronisation with Grid	5:40 AM	2020/ 02/14	1:40 PM	2020/ 02/17	6:35 PM	2020/ 02/27
Emissions below limit from Sync (Date and Time)						
Fires in to synchronization	00:06:35		00:04:45		01:17:30	
Synchronization to < limit (Duration	did not go above limit		did not go above limit		did not go above limit	

NB: No events on the South Stack.

Table 7. Point Source emissions released during start-up (fires-in) for the month of February 2020 in mg/Nm3

North Stack Emission Average from Fires-in to Synchronisation (Date and Time)							
Unit	**Fires-In**		**Synchronisation**		**PM**	**SO_2**	**NO_x**
Unit 1	2020/02/13	11:05 PM	2020/02/14	5:40 AM	333.7	1086.8	596.1
Unit 2	2020/02/17	8:55 AM	2020/02/17	1:40 PM	396.3	1032.3	607.9
Unit 2	2020/02/26	1:05 AM	2020/02/27	6:35 PM	262.5	1320.1	711.7

South Stack Emission Average from Fires-in to Synchronisation (Date and Time)					
Unit	**Fires-In**	**Synchronisation**	**PM**	**SO_2**	**NO_x**
No event					

Table 8. Point Source emissions released during Shut-down (SD) for the month of February 2020 in mg/Nm3

North Stack Emission Average Breaker Open (BO) to Draft Group Shut Down (SD) (Date & Time)							
Unit	**Breaker Open**		**DG SD**		**PM**	**SO_2**	**NO_x**
Unit 1	2020/02/10	5:40 PM	2020/02/11	8:10 AM	174.6	918.4	532.1
Unit 2	2020/02/15	11:25 PM	2020/02/16	1:30 AM	143.8	1030.9	613.6
Unit 2	2020/02/24	4:50 AM	2020/02/24	8:00 PM	222.9	1029.8	546.7

South Stack Emission Average Breaker Open (BO) to Draft Group Shut Down (SD) (Date & Time)					
Unit	**Breaker Open**	**DG SD**	**PM**	**SO_2**	**NO_x**
No event					

Complaints Register

Table 9: Complaints for the month of February 2020

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 2020					

General

The particulate matter emissions on the South Stack was within the Limit however North Common Stack was above the limit during the month of February 2020. The daily averages for gaseous emissions (NOx & SOx) were within the limit for both stacks in February 2020.

North Common Stack – NEMA Section 30 Summary for February 2020:

The emissions were high on the north stack from the 31st of January 2020 to the 15th of February 2020 due to low heater temperature on the SO3 plant. Hereunder is the brief summary of the incident.

- During the investigation, it was found that all North (Unit 1- 3) common SO3 plants had suffered a communication fault at the Human Machine Interface (HMI) monitoring system resulting into the system receiving erratic performance data on the status of the SO3 plant pumps. The system was indicating a healthy plant performance while the plant was actually off. The defect on the communication fault was eventually addressed the same day; however, the system started converting optimally from the 4th of February 2020.
- On the 4th of February 2020, Unit 02 experienced another separate upset condition when a heater control card became faulty resulting in high particulate emissions in the north common stack. The Maintenance team was called out to investigate the matter and the issue was eventually resolved on the 07th of February 2020. The emissions on the North common stack started showing a downward trend on the 15th of February 2020.

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