

HENDRINA POWER STATION MONTHLY EMISSIONS REPORT

Atmospheric Emission License 17/4/AEL/MP313/11/16



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1 RAW MATERIALS AND PRODUCTS

Raw Materials and Products	Raw Material Type	Units	Max. Permitted Consumption Rate	Consumption Rate Oct-2021
	Coal	Tons	820 000	218 830.0
Fuel Oil	Tons	3 200	765.12	

Production Rates	Product / By-Product Name	Units	Max. Production Capacity Permitted	Production Rate Oct-2021
	Energy	GWh	1488	345.90
Ash	Tons	290 000	56 020	
RE PM	kg/MWh	not specified	0.357	

2 ENERGY SOURCE CHARACTERISTICS

Coal Characteristics	Units	Stipulated Range	Monthly Average Content
Sulphur Content	%	0.6 to < 1	1.10
Ash Content	%	31 to < 35	25.60

3 EMISSION LIMITS (mg/Nm³)

Associated Unit/Stack	PM	SOx	NOx
North	75	3200	1200
South	75	3200	1200

4 ABATEMENT TECHNOLOGY (%)

Associated Unit/Stack	Technology Type	Efficiency Oct-2021
Unit 1	Fabric Filter Plant (FFP)	Unit Off-line
Unit 2	Fabric Filter Plant (FFP)	99.986%
Unit 3	Fabric Filter Plant (FFP)	Unit Off-line
Unit 4	Fabric Filter Plant (FFP)	99.977%
Unit 5	Fabric Filter Plant (FFP)	99.980%
Unit 6	Fabric Filter Plant (FFP)	99.991%
Unit 7	Fabric Filter Plant (FFP)	99.990%
Unit 8	Fabric Filter Plant (FFP)	Unit Off-line
Unit 9	Fabric Filter Plant (FFP)	Unit Off-line
Unit 10	Fabric Filter Plant (FFP)	100.000%

Note: Abatement plant does not have bypass mode operation, hence plant 100% Utilised.

5 MONITOR RELIABILITY (%)

Associated Unit/Stack	PM	SO ₂	NO	O ₂	CO ₂
North	91.7	69.2	90.2	40.5	85.2
South	99.3	97.3	98.0	92.2	88.4

6 EMISSION PERFORMANCE

Table 6.1: Monthly tonnages for the month of October-2021

Associated Unit/Stack	PM (tons)	SOx (tons)	NOx (tons)	CO ₂ (tons)
North	3.8	736.8	387.0	113 710.9
South	119.6	4 509.5	2 280.3	285 921.7
SUM	123.4	5 246.3	2 667.3	399 632.6

Table 6.2: Operating days in compliance to PM AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average PM (mg/Nm ³)
North	22	0	0	0	0	6.7
South	31	0	0	0	0	49.1
SUM	53	0	0	0	0	

Comment: Normal days for PM determined according to section 7.3.5 of AEL (PM not reportable when unit is off or during start-ups/shutdowns. North Stack Units were totally offline for 8 days and affected by unit start-up on the 9th day. Total days not to be reported: 9 days

Table 6.3: Operating days in compliance to SO_x AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average SO _x (mg/Nm ³)
North	25	0	0	0	0	1 155.4
South	31	0	0	0	0	1 780.2
SUM	56	0	0	0	0	

Comment: Normal days determined by when gasses continued to be detected monitor. North Stack Gaseous emissions were not detected for total of 6 days.

Table 6.4: Operating days in compliance to NO_x AEL Limit - October 2021

Associated Unit/Stack	Normal	Grace	Section 30	Contravention	Total Exceedance	Average NO _x (mg/Nm ³)
North	25	0	0	0	0	579.9
South	31	0	0	0	0	895.9
SUM	56	0	0	0	0	

Comment: Normal days determined by when gasses continued to be detected monitor. North Stack Gaseous emissions were not detected for total of 6 days.

Table 6.5: 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

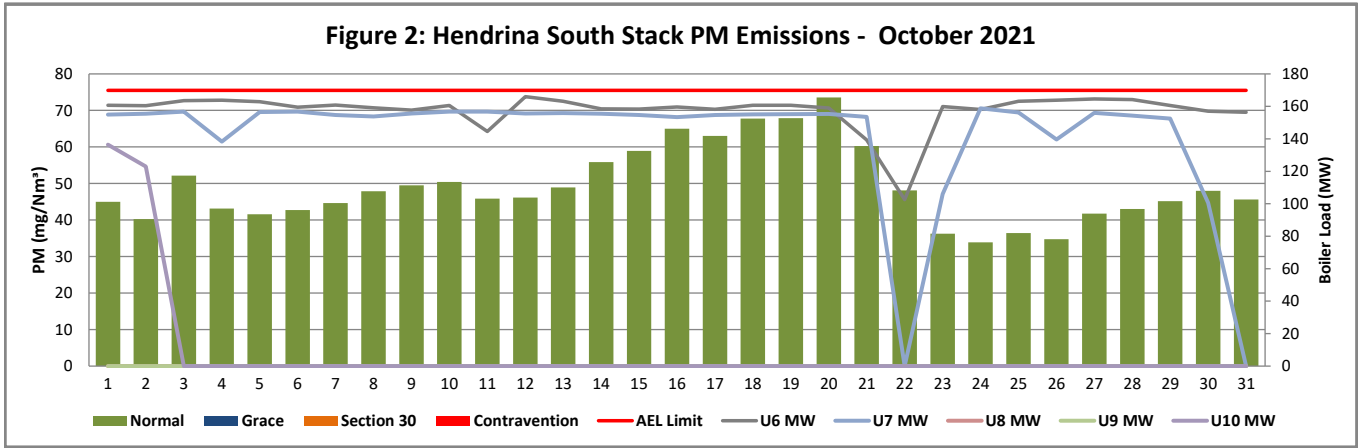
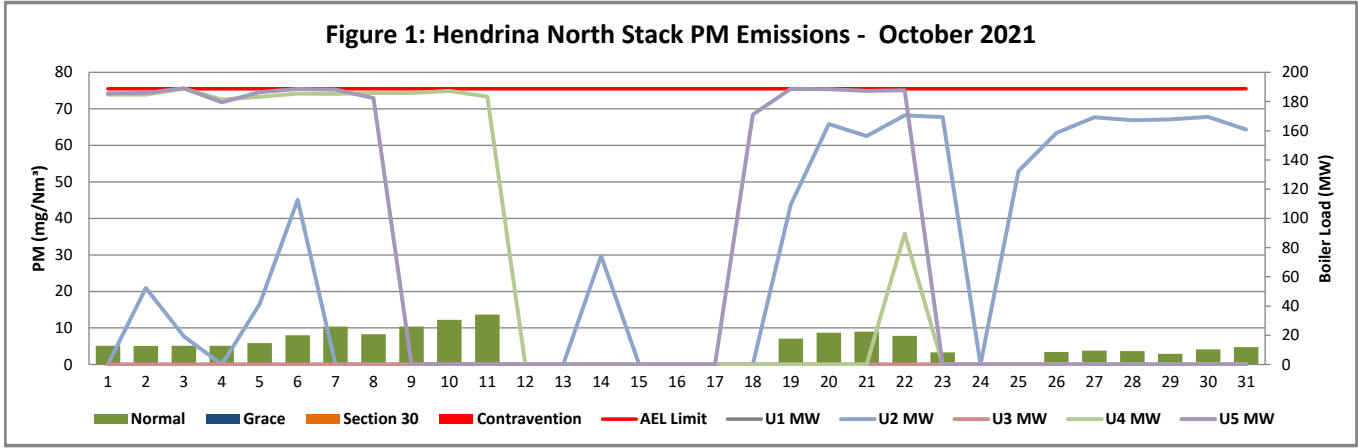


Figure 3: Hendrina North Stack SOx Emissions - October 2021

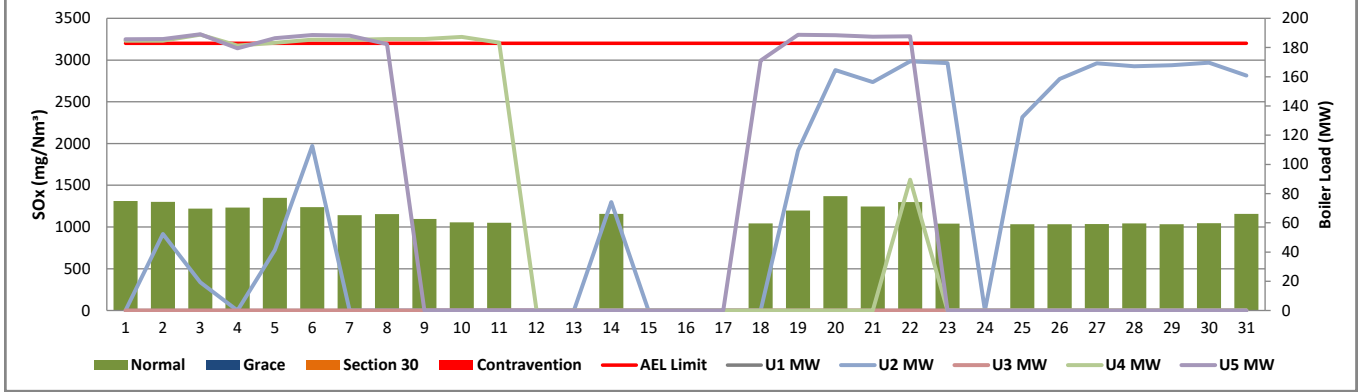


Figure 4: Hendrina South Stack SOx Emissions - October 2021

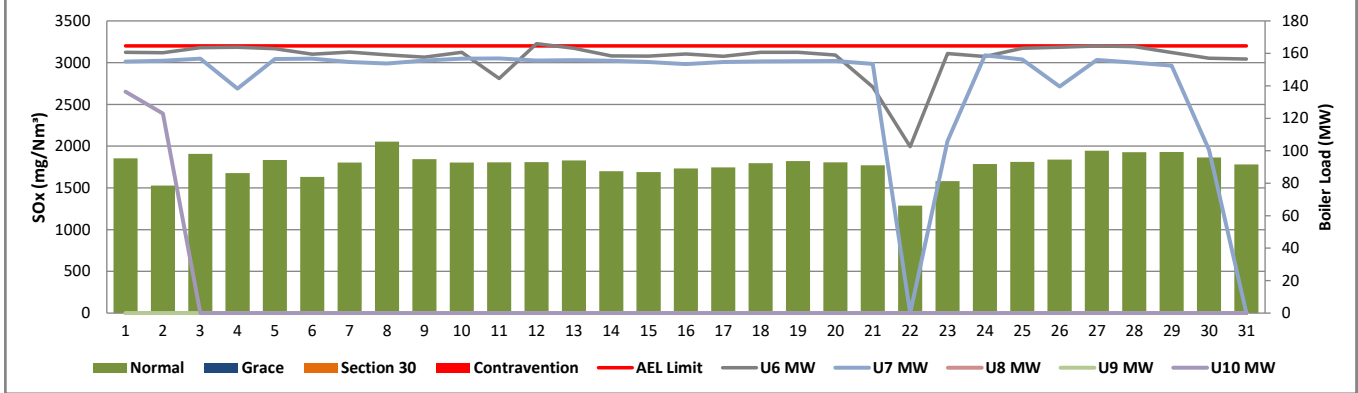


Figure 5: Hendrina North Stack NOx Emissions - October 2021

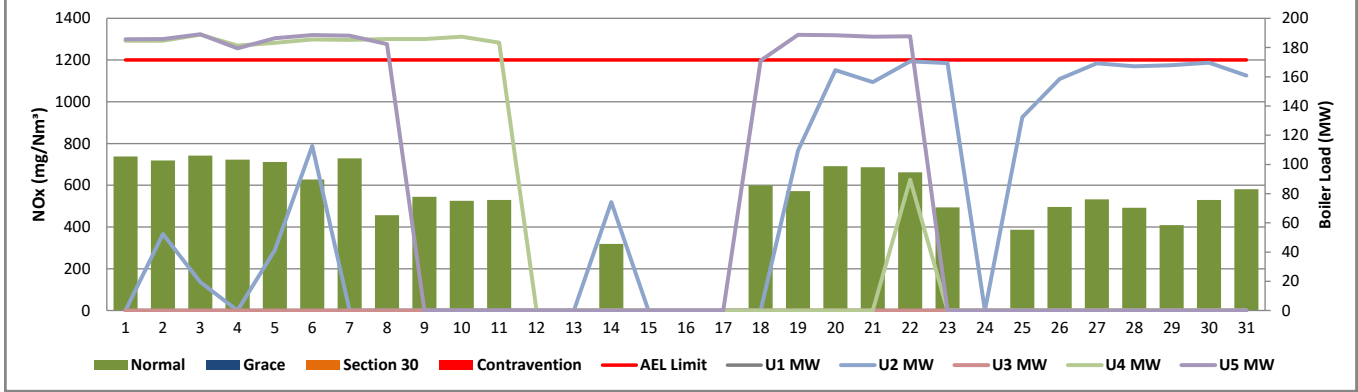
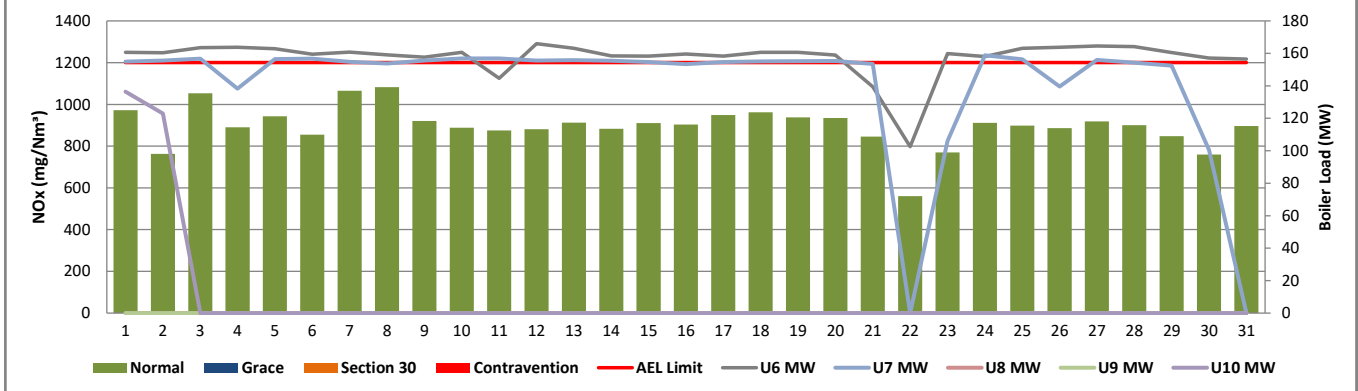


Figure 6: Hendrina South Stack NOx Emissions - October 2021



7 SHUT DOWN AND LIGHT UP INFORMATION

Table 7.1 PM Start-up information for the month of October-2021

North Stack	<i>Event 1</i>		<i>Event 2</i>		<i>Event 3</i>	
Unit No.	<i>Unit 2</i>		<i>Unit 2</i>		<i>Unit 4</i>	
Breaker Open (BO)	<i>BO previously</i>	<i>BO previously</i>	<i>11:15 pm</i>	<i>2021/10/23</i>	<i>11:55 pm</i>	<i>2021/10/11</i>
Draught Group (DG) Shut Down (SD)	<i>n/a</i>	<i>n/a</i>	<i>1:15 pm</i>	<i>2021/10/24</i>	<i>6:15 pm</i>	<i>2021/10/12</i>
BO to DG SD (duration)	<i>n/a</i>	DD:HH:MM	<i>00:14:00</i>	DD:HH:MM	<i>00:18:20</i>	DD:HH:MM
Fires in time	<i>2:10 am</i>	<i>2021/10/19</i>	<i>2021/10/25</i>	<i>2021/10/25</i>		
Synch. to Grid (or BC)	<i>2:10 pm</i>	<i>2021/10/19</i>	<i>7:40 pm</i>	<i>2021/10/25</i>		
Fires in to BC (duration)	<i>00:12:00</i>	DD:HH:MM	<i>00:12:00</i>	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>	<i>not > limit</i>	<i>not > limit</i>		
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM		DD:HH:MM

North Stack ...Continued	<i>Event 4</i>		<i>Event 5</i>	
Unit No.	<i>Unit 5</i>		<i>Unit 5</i>	
Breaker Open (BO)	<i>6:05 am</i>	<i>2021/10/08</i>	<i>5:55 pm</i>	<i>2021/10/22</i>
Draught Group (DG) Shut Down (SD)	<i>8:15 pm</i>	<i>2021/10/08</i>	<i>7:15 am</i>	<i>2021/10/23</i>
BO to DG SD (duration)	<i>00:14:10</i>	DD:HH:MM	<i>00:13:20</i>	DD:HH:MM
Fires in time	<i>2021/10/17</i>	<i>2021/10/17</i>		
Synch. to Grid (or BC)	<i>2:40 am</i>	<i>2021/10/18</i>		
Fires in to BC (duration)	<i>00:12:00</i>	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>		
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM		DD:HH:MM

South Stack	<i>Event 1</i>		<i>Event 2</i>		<i>Event 3</i>	
Unit No.	<i>Unit 6</i>		<i>Unit 7</i>		<i>Unit 10</i>	
Breaker Open (BO)	<i>10:35 pm</i>	<i>2021/10/20</i>	<i>6:05 pm</i>	<i>2021/10/21</i>	<i>12:35 am</i>	<i>2021/10/02</i>
Draught Group (DG) Shut Down (SD)	<i>6:05 pm</i>	<i>2021/10/21</i>	<i>7:35 pm</i>	<i>2021/10/21</i>	<i>7:05 pm</i>	<i>2021/10/02</i>
BO to DG SD (duration)	<i>00:19:30</i>	DD:HH:MM	<i>00:01:30</i>	DD:HH:MM	<i>00:18:30</i>	DD:HH:MM
Fires in time	<i>6:40 pm</i>	<i>2021/10/21</i>	<i>2021/10/23</i>	<i>2021/10/23</i>		
Synch. to Grid (or BC)	<i>11:40 pm</i>	<i>2021/10/21</i>	<i>5:40 pm</i>	<i>2021/10/23</i>		
Fires in to BC (duration)	<i>00:05:00</i>	DD:HH:MM	<i>00:05:00</i>	DD:HH:MM		DD:HH:MM
Emissions below limit from BC (end date)	<i>not > limit</i>	<i>not > limit</i>	<i>not > limit</i>	<i>not > limit</i>		
Emissions below limit from BC (duration)	<i>n/a</i>	DD:HH:MM	<i>n/a</i>	DD:HH:MM		DD:HH:MM

7.2: Point Source emissions released during start-up (fires-in) and Shut-down (SD) for the month of October-2021 in mg/Nm³

[[Include reference to once off test showing typical emissions rates during fires in and SD]]

8. Emergency Generation per unit for the month of October-2021

None

9. Complaints for the month of October-2021


None


10. S30 INCIDENT OR LEGAL CONTRAVENTION REGISTER

None


11 General


North Stack/side has experienced total unit shuts shut down for 8 days in October and PM emissions were only accounted for the days the units were onload, as according to section 7.3.5 of the station's AEL License. See comments in 6.2 above.

 25/11/2021
 Compiled: Environmental Officer Date

 25 November 2021
 Authorised by: GM (Act) Date
 A Van Greuning

Compiled by: Boiler Engineering Department
 For: Nkangala District Municipality
 Copies: Eskom Environmental Management
 Group Technology Engineering
 Hendrina Power Station:

 25/11/2021
 Boiler/ FFP Date
 Marco Cossa

 25/11/2021
 Validated by Manager: Boiler or Environmenta Date
 Ronewa Goliada or Justice Ramagoma

FFP SE/ Environmental Officer
 Air Qaulity Officer
 D Herbst
 B Mccourt
 R Rampiar
 E. Patel
 Engineering Manager
 Operating Manager
 Maintenance Manager
 Unit Production Manager
 Boiler Engineering Manager
 System Engineer: Boiler Engineering
 Environmental Officer
 C & I Engineering Manager
 Production Manager
 Environmental Manager
 PSM