PHILLIPS 66
SAN FRANCISCO REFINERY
1380 San Pablo Avenue
Rodeo, CA 94572

PROVIDING ENERGY. IMPROVING LIVES.

July 14, 2023

ESDR-278-23
05-B-01-C

TV Tracking #: 740

1. ☐ RECEIVED IN ENFORCEMENT: 07/14/2023

Via E-Mail – Compliance@BAAQMD.gov

Director of Compliance and Enforcement
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105

Attn: Title V Reports

Subject: Six-month Monitoring Report for January 1, 2023 through June 30, 2023 Phillips 66 Company - San Francisco Refinery – Plant No. A0016

Director:

Phillips 66 Company is submitting its Monitoring Report covering the period of January 1, 2023 through June 30, 2023 as required by Section I.F in its Title V permit.

If you have any questions or require additional information, please contact me at (510) 245-5856.

Sincerely,

Jennifer Ahlskog, Team Leader
Environmental Department

Attachments

cc: Mr. Jeremy Kearns, BAAQMD Inspector, via e-mail (JKearns@baaqmd.gov)
Ms. Roshni Brahmbhatt, Manager, Air Enforcement Section (ENF 2-1)
Enforcement and Compliance Assurance Division,
U.S. Environmental Protection Agency, Region 9
Air Enforcement Section, via e-mail (AEO_R9@epa.gov)

BAAQMD Title V Permit
6 Month Deviation Summary Report
From 1/1/2023 to 6/30/2023
San Francisco Refinery, A0016

Certification Statement

I certify under penalty of law that based on the information and belief formed after reasonable inquiry, the statements and information in this document and in all attachments and other materials are true, accurate, and complete.

x _____	Jolie A. Rhinehart	Vice President	7/13/23
Signature of Responsible Official	Print Name	Title	Date

BAAQMD Title V Permit
6 Month Deviation Summary Report

From 1/1/2023 *to* 6/30/2023

A0016 Phillips 66 Company San Francisco Refinery

Facility Address:		Mailing Address:	
	1380 San Pablo Ave		1380 San Pablo Ave
City:	Rodeo	City:	Rodeo
State:	CA	State:	CA
Zip Code:	94572-	Zip Code:	94572-

Contact: Wilma Dreessen Title: Senior Environmental Cons Phone: (510) 245-5893

Title V deviations for the reporting period are summarized below:

May have resulted in a deviation from:

Deviation No:	006-23	Source Number(s):	296; 354; 357	Permit:	
Event Started:	1/21/2023 10:34 PM	Abatement Device(s) :		AQMD:	6-1-301; 9-9-301.1.3
Stopped:	1/22/2023 7:45 AM	Emission Point(s):		Other:	40 CFR 63.670(c); 40 CFR 63.670(e)

Event Description: The Steam Power Plant (SPP) C (S-354/357) Turbine experienced a NOx increase on January 21, 2023, following a utility upset (BAAQMD ID 08Q27). This NOx increase resulted in an exceedance of the 9 ppm NOx limit @ 15% O2 (3-hour average). The NOx level during the exceedance was upper range of monitor at 13.00 ppm (+4.00 ppm) but reduced to within the permit limit by 1/22/23 at 3:00 a.m. There was a period of excess emissions for a 3-hour period. An excess emission was reported as a Reportable Compliance Activity (RCA) to BAAQMD on 1/25/2022 (BAAQMD ID 08Q36). The RCA reported levels were based on operational limits of CEMs spans values.

Intermittent flaring occurred at the Main Flare (S296) on January 21, 2023 from 10:30 p.m. to January 22, 2023 7:35 a.m. due to a utility system upset. The EPA Refinery Sector Rule (RSR) requires that the Net Heating Value Combustion Zone (NHVcz) be at or above 270 Btu/scf (15-min avg) during periods of greater than 15 minutes of continuous flaring. There are thirteen intermittent 15-minute flaring periods between 2:30 a.m. until 7:30 a.m. when the minimum NHVcz limit of 270 Btu/scf was not met. For the periods <270 Btu/scf the values calculated were between 262 Btu/scf (-3% of limit) and 185 Btu/scf (-32% of limit) respectively.

During the flare activity there were intermittent periods of visible emissions observed. The visible emissions of the flare occurred intermittently from approximately January 21, 2023, at 10:34 P.M to 12:16 A.M. The total time for visible emissions observed is estimated at 41 minutes.

Probable Cause: Prior to the event, SPP A (S-352/355) was taken out of service for a planned, scheduled brief maintenance period. Two of the SPP Turbines B and C were still in service. On the day of the event, SPP B experienced an unplanned shutdown due to two failed speed probes at the turbine. The speed probes are part of the overspeed trip equipment protection of the turbines. The unplanned shutdown decreased a portion of the steam supply to the refinery. The insufficient steam supply resulted in visible emissions of the flare. Each of the turbines utilize steam and ammonia injection for NOx control. To minimize additional site impacts, critical steam is conserved (i.e. steam curtailment) to prevent further process upsets and to maintain the operation of critical equipment. As part of steam curtailment response, the steam from the SPP

C burners was automatically removed. Ammonia injection was still present at SPP C but there was an exceedance of the NOx limit without both steam and ammonia present for NOx control.

Corrective actions or preventative steps taken: Due to the loss of steam, most of the refinery units were shut down or run at reduced rates due to the reduction in steam supply. Units were re-started in a sequence to restore the steam supply and minimize flaring. During flare activity no excess emissions were detected by the BAAQMD 9-1, 9-2 Ground Level Monitors (GLM) or the BAAQMD 12-15 fenceline monitoring system. Immediately after the event, the SPP B speed probes were inspected and it was determined the coil inside the speed probes failed. The failed speed probes were replaced while SPP B was shutdown. Per normal practice, the speed probes had been previously checked during a prior major turnaround. SPP B was restarted on January 22, 2023. SPP A which had been down for minor, maintenance work was returned to service on January 25, 2023.

May have resulted in a deviation from:

Deviation No:	009-23	Source Number(s):	296	Permit:	
Event Started:	1/21/2023 8:03 AM	Abatement Device(s) :		AQMD:	6-1-301
Stopped:	1/21/2023 8:47 AM	Emission Point(s):		Other:	40 CFR 63.670(c)

Event Description: There were periods of intermittent flaring at the Main Flare (S296) from 08:04 a.m. to approximately 08:47 a.m. on January 21, 2023 due to a Unicracker Complex upset. During the flare activity there was a period of visible emissions observed. The visible emissions of the flare occurred intermittently from approximately 08:03 a.m. to 08:08 a.m. on January 21, 2023. The total time for visible emissions observed is 3 minutes 47 seconds.

Probable Cause: The Unit 246 recycle hydrogen compressor (GB-803B) has a General Electric 6200 HP Horizontal Synchronous motor. On 1/21/22 at approximately 07:58 a.m., the Unit 246 recycle hydrogen compressor (GB-803B) shut down due to an internal failure in the micro-Programmable Logic Controller (PLC). As a result, the hydrogen system over pressured and relieved into the flare gas system, which pressured up and caused PIC6400 to open, resulting in two subsequent flaring events at ~08:03 a.m. and at 08:38 a.m. During flare activity there are two objectives, which are to: (1) ensure compliance with the EPA Net Heating Value Combustion Zone (NHVcz) limit; and (2) limit smoke formation. These two objectives have competing priorities for the use of steam. For this incidence there were short periods of time when steam could not be quickly optimized to minimize smoke formation because of the competing priority to ensure compliance with the EPA Net Heating Value Combustion Zone limit.

Corrective actions or preventative steps taken: Operations personnel worked to stabilize Unit 246 operation by cutting rate while using the single operating hydrogen compressor (GB-803A). The hydrogen system was also stabilized due to rapid change in hydrogen demand.

The electrical department is working to repair the micro-PLC in the synchronous motor in the GB-803B compressor. A replacement micro-PLC is also being ordered (in case the existing micro-PLC cannot be repaired).

May have resulted in a deviation from:

Deviation No:	011-23	Source Number(s):	36	Permit:	21097.3b
Event Started:	1/5/2023 7:59 PM	Abatement Device(s) :		AQMD:	1-522.7
Stopped:	1/5/2023 8:59 PM	Emission Point(s):		Other:	

Event Description: On 1/5/2023 U200 B102 (S36) experienced a NOx excess during a period of severe weather. The NOx excess began on 1/5/2023 at 7:59 p.m. and cleared at 1/5/2023 at 8:59 p.m. The 3-hour rolling emission limit was exceeded for a period of 1 hour. Emissions during the period of excess reached a maximum of 10.81 ppm (+0.81 ppm, +8.1%). In accordance with BAAQMD 1-522.7, any indicated excess of emissions must be reported within 96 hours of the occurrence. This excess was discovered while compiling the monthly CEMs report on 2/15/2023 and was reported as a Reportable Compliance Activity (RCA) to BAAQMD on 2/16/22 (BAAQMD ID 08Q84), which exceeded the 96-hour deadline.

Probable Cause: Prior to this incident the unit operator had put ammonia flow in manual control operation to ensure NOx stayed below regulatory limits. At approximately 4:30 p.m. there was a need to reduce crude rate at Unit 200. This resulted in a corresponding heater firing rate reduction at the U200 B102 heater. The reduced firing rate increased both the O2 and NOx. With the ammonia addition still in manual operation insufficient ammonia was added to control the NOx at the new operating parameters. Instantaneous emissions above 10 ppm @ 3% O2 occurred for a period of approximately 45 minutes. This resulted in the 3-hour average exceeding the 10 ppm limit. An inadvertent communication breakdown resulted in the excess not being found and reported by 1/9/23 (96-hour deadline).

Corrective actions or preventative steps taken: Operations personnel decreased the NOx by increasing the ammonia flow. Once this occurred, NOx levels were restored within the permitted limit. Coaching on the lessons learned from this incident will take place. NOx excess alarming will also be reviewed for this heater against permitted limits.

May have resulted in a deviation from:

Deviation No:	016-23	Source Number(s):	352; 353; 354; 355; 356; 357	Permit:	18629-IX-D.3
Event Started:	2/27/2023 9:00 AM	Abatement Device(s) :		AQMD:	
Stopped:	2/27/2023 10:00 AM	Emission Point(s):		Other:	

Event Description: On February 27, 2023 the Steam Power Plant (SPP) gas turbines and duct burners exceeded their combined firing rate duty limit of 1,048 MMBtu/hr for a period of approximately 1 hour. This brief exceedance occurred during the 02/27/2023 09:00-09:59 a.m. clock hour. The total duty was determined to be 1,053 MMBtu/hr (+5 MMBtu/hr, +0.5%). This event occurred during a period of accelerated rainfall which began around 8:30 AM. During this period the ambient temperature dropped 5 F between 8 a.m. and 10 a.m. The individual limit of 466 MMBtu/hr for each Turbine/Duct Burner set was not exceeded. There were no other permit or regulatory exceedances during these periods at SPP.

Probable Cause: Due to the rain induced cooling and rapid change in ambient temperature this resulted in an increase in steam demand within the refinery. Per design, when there is additional steam demand at the refinery the SPP supplies additional steam through immediate, increased firing. The brief production of additional steam resulted in the exceedance of the combined firing limit for the turbines.

Corrective actions or preventative steps taken: Measures were taken to reduce some steam demand from refinery steam consumers. Measures included the following: reducing steam usage at for some steam operating equipment, shutting down some steam operating unit equipment, reducing steam usage at some steam preheaters, etc., and reduction in SPP firing below its combined firing rate limit of 1,048 MMBtu/hr. In order to provide additional awareness for the potential for a duty exceedance additional alarming will be added for the control board.

May have resulted in a deviation from:

Deviation No:	018-23	Source Number(s):	1002	Permit:	
Event Started:	3/4/2023 6:01 AM	Abatement Device(s) :		AQMD:	1-522.4
Stopped:	3/10/2023 1:50 PM	Emission Point(s):		Other:	

Event Description: The Unit 236 (S1002) O2 CEMs was inoperative on 3/4/23 from 6:01 AM through approximately 3/10/23 1:50 PM. The O2 CEMS was validating each day but indicating ambient O2 conditions throughout the day. During that period the raw SO2 was less than 5 ppm, but often corrected SO2 showed elevated or negative readings. At times concentrations falsely appeared to have exceeded limits of 250 ppm SO2 @ 0% O2, 12-hour average. In accordance with BAAQMD 1-522.4 any monitor inoperative for greater than 24 hours must be reported within 24-hours next business day. This inoperative monitor was discovered on 3/15/2023 and was reported as a Reportable Compliance Activity (RCA) to BAAQMD on 3/16/22 (BAAQMD ID 08R58 and 08R59). However, the monitor had been inoperative for greater than 24-hours.

Probable Cause: While the O2 CEMS was inoperative and reading ambient conditions, it was validating each day. This daily validation caused confusion on the operation status of the analyzer. The analyzer reading ambient conditions of 20-21% O2 caused the corrected SO2 to mathematically exceed the permitted limits of 250 ppm SO2 @ 0% O2, 12-hour average on occasions. During other periods the corrected SO2 indicated negative values. During both periods of elevated and negative corrected SO2 the raw SO2 was below 5 ppm. The U236 incinerator stack was, and is currently, on stand-by with no feed. This may have resulted in some confusion about the operating status of the CEMs.

Corrective actions or preventative steps taken: Maintenance personal fixed the issue by manually calibrating and revalidating the O2 CEMs. Once this occurred, the elevated O2 readings were no longer present and the normal corrected SO2 levels were restored. Coaching on the lessons learned from this incident will take place.

May have resulted in a deviation from:

Deviation No:	021-23	Source Number(s):	1003; 1010; 11; 12; 13; 15; 16; 17; 18; 19; 2; 20; 22; 29; 296; 3; 30; 31; 336; 337; 338; 351; 353; 356; 371; 372; 4; 43; 5; 7; 9	Permit:	12122.9C; 18629-IX-F; 23125-21
Event Started:	4/11/2023 4:42 PM	Abatement Device(s) :		AQMD:	1-301; 1-520.4; 6-1-301; 9-1-502; 9-2-301.1.3; 9-9-501
Stopped:	4/12/2023 11:00 AM	Emission Point(s):		Other:	40 CFR 60.104 (a)(1); 40 CFR 63.670(c); 40 CFR.103a(h); 40 CFR.107a(a)(2); 40 CFR.60.106a; 40 CFR.63.1572

Event Description: At approximately 4:42 p.m. on April 11, 2023, the A-Turbine of the Rodeo Refinery Steam Power Plant (SPP) tripped offline. This resulted in a steam utility upset along with multiple unit shutdowns. As the refinery began the controlled shutdown of several process units to stabilize conditions, flaring started at approximately 4:49 p.m. Intermittent flaring from the shutdown occurred until approximately April 12, 2023 at 3:59 a.m. BAAQMD was notified of the upset and a breakdown was filed (BAAQMD ID 08S02). On April 13, 2023, BAAQMD issued Notice of Violations, VN No. A61531, citing Regulation 1-301 for public nuisance and issued VN A61532 due to visible emissions, citing Regulation 6-1-301.

Probable Cause: On April 11, 2023, Steam Power Plant C (SPP C) was scheduled to be taken out of service due to planned maintenance. Two of the SPP Turbines A and B were still in service. Prior to the event, the refinery made changes to refinery operations (i.e reduced rates on units, increased fuel gas consumption) to accommodate the shutdown of SPP C. SPP uses a combination of Unit 233 fuel gas, RFG A fuel gas, and natural gas. Based on the incident review, Phillips 66 concluded that excess high pressure fuel gas in the system existed prior to the SPP C shutdown process, which caused the Steam Power Plant A (SPP A) to trip offline due to high combustor basket temperature. Although prior to the SPP C shutdown refinery operations personnel took steps to optimize refinery fuel gas to reduce fuel gas production, our investigation concluded, with the benefit of hindsight and learnings from the investigation, that the fuel gas pressure at the steam power plant had not been fully optimized.

Fuel gas pressure controllers (PV-1016 and FV-1603) at SPP A did not respond as expected. The SPP A pressure controllers should have acted to help divert excess fuel gas away from SPP A to reduce the potential for an unplanned shutdown. This is in comparison to SPP B controllers, which functioned as expected. Phillips 66 was unable to determine why the SPP A pressure controllers did not function as expected. The unplanned shutdown decreased a portion of the steam supply to the refinery. Following the unplanned SPP A shutdown the third-party hydrogen plant and steam supplier experienced a subsequent unplanned shutdown. This further limited steam supply to the refinery. To minimize additional site impacts, critical steam was conserved (i.e. steam curtailment) to prevent further process upsets and to maintain the operation of critical equipment.

The insufficient steam supply resulted in visible emissions of the flare; the amine regenerators at Unit 233 fuel gas system were not stripping hydrogen sulfide at normal rates which resulted in an exceedance of the 162 ppm of hydrogen sulfide (H2S) in the refinery fuel gas; and Sulfur Recovery Units 235 and 238 exceeded SO2 limit 250 ppm 1-hour average (U235), 250 ppm 12-hour (U235, U238) and 50 ppm 24-hour average (U235). Engineering evaluations were used in cases where the CEMs instrument failed or reached top-of-scale indications.

Each of the turbines utilize steam and ammonia injection for NOx control. As part of steam curtailment response, the steam from the SPP B burners was automatically removed. Ammonia injection was still present at SPP B but there was an exceedance of the NOx limit without both steam and ammonia present for NOx control.

Corrective actions or preventative steps taken: Due to the loss of steam, most of the refinery units were shut down or run at reduced rates due to the reduction in steam supply. These shutdowns and rate reductions also reduced the amount of hydrogen sulfide produced that would be sent to amine regeneration and SRUs. Units were re-started in a sequence to restore the steam supply and minimize flaring. SPP A was restarted on April 12, 2023 to restore steam production. SPP C was returned to service on April 17, 2023 after regulatory inspections had been completed and critical maintenance work was conducted.

Based on learnings from this incident, Phillips 66 will revise the SPP shutdown procedure to specify the SPP and refinery fuel gas system constraints and necessary conditions that limit SPP turbine operation on two-turbine operation. During future planned maintenance, the SPP A pneumatic controllers will be inspected, repaired and replaced as needed.

May have resulted in a deviation from:

Deviation No:	023-23	Source Number(s):	352; 355	Permit:	
Event Started:	3/18/2023 11:55 PM	Abatement Device(s) :		AQMD:	1-522.7
Stopped:	3/20/2023 8:40 AM	Emission Point(s):		Other:	

Event Description: On March 18, 2023 at 11:55 p.m., the NOX, O2 and CO Continuous Emissions Monitors (CEMS) at the Steam Power Plant A (SPP A) failed validation due to plugging in the sampling line. The line was cleaned, the analyzers were validated and returned to service on 03/20/2023 at 8:40 A.M. The CEMS was inoperative for more than 24 hours. Inadvertently, no inoperative monitor notification was submitted to BAAQMD by the next business day.

Probable Cause: The NOX, O2 and CO CEMS failed validation due to plugging in the sampling line. The line was cleaned, the analyzers were validated and returned to service on 03/20/2023 at 8:40 A.M. Internal administrative errors resulted in the inoperative monitor notification not being submitted to BAAQMD by the next business day. This missed reporting was discovered during monthly BAAQMD CEMs report preparation.

Corrective actions or preventative steps taken: Upon discovery of this issue, the inoperative monitor notification was submitted on April 20, 2023 (BAAQMD ID 08S23). The internal administrative process regarding instrument downtime will be reviewed to improve effectiveness.

May have resulted in a deviation from:

Deviation No:	024-23	Source Number(s):		Permit:	
Event Started:	4/26/2023	Abatement Device(s) :		AQMD:	
Stopped:	4/26/2023	Emission Point(s):		Other:	40 CFR 63.658(e)(1)

Event Description: EPA Benzene Fenceline Monitoring Station 13 was discovered to have three missing tubes during scheduled biweekly pickup on April 26, 2023. The three tubes are comprised of a sample tube, a duplicate tube, and a blank tube (cap closed). Station 13 is located in a busy area in the refinery. The tubes at Station 13 were deployed on April 12, 2023 without incident. On the April 26 scheduled sample collection day, the tubes were no longer present at Station 13. As a result, there will not be a sample result for Station 13 for the April 12, 2023 through April 26, 2023 sampling period. Meteorological data shows that Station 13 was generally upwind of the refinery during this time. Based on internal checks, Phillips 66 has verified that the tubes were deployed as scheduled on April 12 as required.

Probable Cause: We have conducted a thorough investigation to determine what happened to the tubes. Thus far, we have not discovered what happened. There was no damage or other indications of vandalism to the sampling station and the tubes were not found during a search of the immediate vicinity of Station 13.

Corrective actions or preventative steps taken: We deployed new tubes on April 26, 2023 for the next biweekly sample period. Signage will be posted next to Station 13 warning people not to disturb the sampling station. Going forward, the tubes at this location will be secured with zip-ties. We are exploring additional security measures to further secure the sample tubes.

May have resulted in a deviation from:

Deviation No:	031-23	Source Number(s):	352; 353; 354; 355; 356; 357	Permit:	18629-IX-F
Event Started:	6/18/2023 12:00 AM	Abatement Device(s) :		AQMD:	
Stopped:	6/19/2023 12:00 AM	Emission Point(s):		Other:	

Event Description: On 06/18/2023, the SPP A turbine (S-352/355), SPP B turbine (S-353/356), and SPP C turbine (S-354/357) exceeded the limit of 15.6 lb/hr per set SO2 3-hour average limit. The 44 lb/hr SO2 3-hour average limit for all three turbine and duct burner combinations (S-352 through 357) was also exceeded on 06/18/2023. The maximum 3-hour average SO2 emissions for the turbines was approximately; SPP A 17.95 lb/hr, SPP B 17.82 lb/hr, and SPP C 18.06 lb/hr. The 15.6 lb/hr SO2 3-hour limit was exceeded for a period of 19 hours at SPP A, 17 hours at SPP B, and 19 hours at SPP C. The maximum 3-hour average SO2 emissions for the combined SPP turbines were approximately 46.21 lb/hr and exceeded for a period of 5 hours.

Probable Cause: Fuel gas combusted at SPP had elevated sulfur concentrations on 06/18/2023. Due to internal miscommunications, the SPP fuel gas high sulfur content was not adjusted in a timely manner to prevent excess SO2 emissions from the SPP sources. Therefore, the refinery fuel gas had higher-than-usual sulfur content passed through to be combusted at downstream Turbine units. No other combustion sources exceeded SO2 or sulfur limits other than the units at SPP as listed above.

Corrective actions or preventative steps taken: Once the SPP fuel gas samples were determined to have high sulfur concentrations, more low sulfur fuel gas was routed to the turbines to lower SO2 emissions. Additional samples were taken after changes to the fuel composition were made to enhance monitoring of the event, and the SO2 emissions came into compliance for the A, B and C turbines. The internal administration process regarding elevated sulfur samples will be reviewed to improve effectiveness.

BAAQMD Title V Permit
6 Month Monitoring Report

A0016 Phillips 66 Company San Francisco Refinery

Facility Address:
1380 San Pablo Ave
City: Rodeo
State: CA
Zip Code: 94572-

Mailing Address:
1380 San Pablo Ave
City: Rodeo
State: CA
Zip Code: 94572-

Contact: Wilma Dreessen Title: Senior Environmental Cons Phone: (510) 245-5893

Inoperable monitors as defined by BAAQMD Regulations 1-522 and 1-523 for the reporting period are summarized below:

Started		Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
1/1/2023	6:32 AM	1/3/2023	8:56 AM	☑	002-23	36		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed span validation on 1/1/2023 at 6:32 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 1/3/2023 at 8:56 AM.

1/4/2023	5:36 PM	1/20/2023	2:20 PM	☑	001-23			

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☐	☑	☐	☐	☐	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The East Refinery GLM (BAAQMD site 2271 and 2371) lost readings at 05:36 pm on 1/04/23 due to a third-party power outage. 2271 was back online on 1/7/23 at 12:28 pm. 2371 was back online on 1/20/23 at 02:20 pm.

Started	Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
1/9/2023	4:40 PM	1/17/2023	12:20 PM	003-23	1010		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: Due to weather related conditions the Unit 235 SO2 CEMs became inoperative on 01/09/2023 at 4:40 PM. During this period the CO, SO2 and O2 showed erratic conditions (very high O2 readings of 21%, very low readings of SO2 & CO). Various repairs to the system were made and the analyzer was validated and returned to service on 1/17/2023 at 12:20 PM.

1/16/2023	7:09 AM	1/17/2023	10:38 AM	☑	004-23	353; 356	

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed span validation on 1/16/2023 at 7:09 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 1/17/2023 at 10:38 AM.

1/20/2023	9:48 AM	1/20/2023	2:09 PM	☑	005-23	371; 372	

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The U228 B520/521 NOx and O2 analyzers became inoperative due to X-ray activity in the unit on 1/20/2023 at 9:48 AM to 10:53 AM and then again from 1:18 PM to 2:09 PM. During these periods the NOx showed erratic conditions (dropping to low value then rapidly spiking or going to high scale). Due to the erratic values and top-of-scale readings, concentrations falsely appear to have exceeded the limit of 20 ppm @ 3% O2 of NOx 3-hour average. NOx average concentration showed a maximum value of 28.45 ppm. Once X-ray activity was completed the NOx and O2 readings stabilized and returned to the same levels earlier in the day.

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
1/21/2023	5:56 AM	1/23/2023 8:08 AM ☑	007-23	9		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The O2 analyzer failed span validation on 1/21/2023 at 5:56 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 1/23/2023 at 8:08 AM.

1/29/2023	6:25 AM	1/30/2023 9:03 AM ☑	008-23	351		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzers failed span validation on 1/29/2023 at 6:25 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 1/30/2023 at 9:03 AM.

2/4/2023	6:22 AM	2/6/2023 8:57 AM ☑	010-23	3		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed span validation on 02/04/2023 at 6:22 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 02/06/2023 at 8:57 AM.

2/17/2023	6:12 PM	2/20/2023 1:57 PM ☑	015-23	11		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzers failed span validation on 2/17/2023 at 6:12 PM. Various repairs to the system were made and the analyzers were validated and returned to service on 2/20/2023 at 1:57 PM.

Started	Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
2/24/2023	8:45 PM	2/27/2023	11:17 AM	012-23	36		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzers flatlined on 2/24/2023 at 8:45 PM. Various repairs to the system were made and the analyzers was validated and returned to service on 2/27/2023 at 11:17 AM.

2/27/2023	9:39 AM	2/28/2023	2:40 PM	033-23	1003		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The SO2 and O2 analyzers became inoperative on 2/27/2023 at 9:39 AM. Various repairs to the system were made and the analyzers were validated and returned to service on 2/28/2023 at 2:40 PM.

3/4/2023	7:11 AM	3/6/2023	8:00 AM	013-23	353; 356		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed span validation on 3/4/2023 at 7:11 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 3/6/2023 at 8:00 AM.

3/4/2023	6:41 AM	3/6/2023	7:55 AM	014-23	354; 357		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The CO analyzer failed span validation on 3/4/2023 at 6:41 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 3/6/2023 at 7:55 AM.

Started		Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
3/4/2023	6:01 AM	3/10/2023	1:50 PM	☑	018-23	1002		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The Unit 236 (S1002) O2 CEMs was inoperative on 3/4/23 from 6:01 AM through approximately 3/10/23 1:50 PM. The O2 CEMS was validating each day but indicating ambient O2 conditions throughout the day. During that period the raw SO2 was less than 5 ppm, but often corrected SO2 showed elevated or negative readings. At times concentrations falsely appeared to have exceeded limits of 250 ppm SO2 @ 0% O2, 12-hour average. In accordance with BAAQMD 1-522.4 any monitor inoperative for greater than 24 hours must be reported within 24-hours next business day. This inoperative monitor was discovered on 3/15/2023 and was reported as a Reportable Compliance Activity (RCA) to BAAQMD on 3/16/22 (BAAQMD ID 08R58 and 08R59). However, the monitor had been inoperative for greater than 24-hours.

3/15/2023	6:35 AM	3/16/2023	4:04 PM	☑	017-23			

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The Crockett GLM (BAAQMD site 2373) lost readings at 06:35 AM on 03/15/23 due to equipment failure. It was back online on 3/16/23 at 4:04 PM.

3/17/2023	9:15 AM	3/23/2023	2:28 PM	☑	019-23	338		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The H2S analyzer became inoperative on 3/17/2023 at 9:15 AM. It was found that the analyzer needed a new part, and an older part was put in temporarily. The new part was ordered from the vendor on 3/22/23 with a request for overnight shipping. The part arrived on 3/23/23 and was replaced later that day. Once all physical repairs to the analyzer were made analyzer returned to service.

Started		Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
3/18/2023	11:55 PM	3/20/2023	8:40 AM	☑	023-23	352; 355		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: On March 18, 2023 at 11:55 p.m., the NOX, O2 and CO Continuous Emissions Monitors (CEMS) at the Steam Power Plant A (SPP A) failed validation due to plugging in the sampling line. The line was cleaned, the analyzers were validated and returned to service on 03/20/2023 at 8:40 A.M. The CEMS was inoperative for more than 24 hours. Inadvertently, no inoperative monitor notification was submitted to BAAQMD by the next business day.

4/1/2023	7:00 AM	4/3/2023	9:10 AM	☑	020-23	43		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed span validation on 4/1/2023 at 7:00 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 4/3/2023 at 9:10 AM.

4/17/2023	8:59 AM	4/17/2023	9:59 AM	☑	025-23	1003		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The Unit 238 O2 CEMs became inoperative on 4/17/23 from 8:00 AM to approximately 4:00 PM. The O2 CEMS was showing top of scale values. During that period the corrected SO2 showed elevated or negative readings, concentrations falsely appear to have exceeded limits of 250 ppm @ 0% O2 of SO2 12-hour avg. SO2 average concentration showed a 1-hour excess of 281.53 ppm (+31.53 ppm). Once the O2 analyzer was manually calibrated and revalidated the corrected elevated readings were no longer present and CEMs returned to normal CEMs indication values.

4/24/2023	7:07 AM	4/24/2023	12:33 PM	☑	022-23	351		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzer became inoperative on 4/23/2023 at 7:07 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 4/24/2023 at 12:33 PM.

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
5/5/2023	8:13 PM	5/8/2023 8:50 AM ☑	026-23	12		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed on 5/5/2023 at 8:13 PM. Various repairs to the system were made and the analyzer was validated and returned to service on 5/8/2023 at 8:50 AM.

5/20/2023	7:45 AM	5/22/2023 10:55 AM ☑	027-23	1003		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The SO2 and O2 analyzers became inoperative on 05/20/2023 at 07:45 AM. Blew back sample line with water and air to clear plugging, calibrated analyzer with zero and span gas ran validation returned CEMS back to service. CEMS analyzer was returned to service at approximately 10:55 AM.

5/27/2023	8:47 AM	5/30/2023 9:00 AM ☑	028-23	3		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzers failed span validation on 5/27/2023 at 8:47 AM. Various repairs to the system were made and the analyzers were validated and returned to service on 5/30/2023 at 9:00 AM.

5/29/2023	7:43 AM	5/30/2023 2:50 PM ☑	029-23	5		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx and O2 analyzers failed span validation on 5/29/2023 at 7:43 AM. Various repairs to the system were made and the analyzers were validated and returned to service on 5/30/2023 at 2:50 PM.

Started		Stopped			Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
6/18/2023	7:43 AM	6/19/2023	8:08 AM	☑	030-23	12		

CEM	GLM	Fuel Gas	Parametric	NOx	SO2	CO	H2S	TRS	NH3	O2	CO2	H2O	Opacity/ LTA	Lead	Steam	Flow	Wind Dir.	Wind Speed	pH	Temp.	VOC.	Gauge Press.
☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Event Description: The NOx analyzer failed validation on 6/18/2023 at 7:43 AM. Various repairs to the system were made and the analyzer was validated and returned to service on 6/19/2023 at 8:08 AM.