Phillips 66
San Francisco Refinery
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Rodeo, CA 94572
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January 26, 2018

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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: Phillips 66 San Francisco Refinery – Plant No. A0016
Six-month Monitoring Report for July 1, 2017 through December 31, 2017

Director:

Phillips 66 is submitting its Monitoring Report covering the period of July 1, 2017 through December 31, 2017 as required by Section I.F in its Title V permit.

If you have any questions, or require additional information on the information contained in this report, please contact Mr. Brent Eastep at (510) 245-4672.

Sincerely,

Don Bristol, Superintendent
Environmental Department

Attachment

cc: Ms. Ying Yu, BAAQMD inspector via e-mail (YYu@baaqmd.gov)

BAAQMD Title V Permit
6 Month Deviation Summary Report
From 7/1/2017 to 12/31/2017
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	Mark Evans	Refinery Manager	1/26/18
Signature of Responsible Official	Print Name	Title	Date

BAAQMD Title V Permit
6 Month Deviation Summary Report

From 7/1/2017 *to* 12/31/2017

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: Brent Eastep Title: Environmental Engineer Phone (510) 245-4672

Title V deviations for the reporting period are summarized below:

			May have resulted in a deviation from:
Deviation No: 022-17	Source Number(s): 307		Permit:
Event Started: 7/7/2017 12:00 PM	Abatement Device(s) :		AQMD: 8-2-301
Stopped: 7/11/2017 7:00 PM	Emission Point(s):		Other:

Event Description: While the Unit 240 Plant 2 hydrocracker was shut down, hydrogen from the Unit 244 reformer was sent to the Unit 240 Plant 4 hydrogen vent (hydrogen vent). The Unit 244 reformer hydrogen is comprised of approximately 90% hydrogen and approximately 10% VOCs, leading to a release of VOCs to the atmosphere in excess of the limits in Regulation 8 Rule 2. During normal refinery operation, a limited amount of hydrogen from the Air Liquide Plant is sent to the hydrogen vent. The Air Liquide produced hydrogen is a pure hydrogen stream. The hydrogen produced by the Unit 244 reformer is approximately 90% hydrogen with the remaining 10% consisting of methane and other hydrocarbons. Historically, during planned, routine shutdowns of the Plant 2 hydrocracker, the Unit 244 reformer is also shut down for maintenance. In this instance, however, the Plant 2 hydrocracker was shut down for a non-routine catalyst skim and Unit 244 was kept on-line. Initially, refinery personnel did not realize that operating Unit 244 while Plant 2 was shut down would lead to hydrogen from Unit 244 being sent to the hydrogen vent. Upon realizing that the Unit 244 hydrogen was being vented, and that the hydrogen contains some amount of VOCs, refinery personnel shut Unit 244 down to stop the venting of that hydrogen to atmosphere.

Probable Cause: Unit 244 hydrogen, which includes VOCs, was unknowingly released to atmosphere from the Unit 240 hydrogen vent.

Corrective actions or preventative steps taken: Upon realizing that the Unit 244 hydrogen was being vented, and that the hydrogen contains some amount of VOCs, refinery personnel shut Unit 244 down to stop the venting of that hydrogen to atmosphere.

May have resulted in a deviation from:

Deviation No: 026-17	Source Number(s): 1010	Permit: 23125-14
Event Started: 7/26/2017	Abatement Device(s) : 424	AQMD:
Stopped: 7/26/2017	Emission Point(s):	Other:

Event Description: At approximately 2:15 am on 7/26/17 the incinerator temperature at U235 dropped below the minimum temperature allowed (1409 F) for approximately 18 minutes. The temperature dropped when the combustion air blower suddenly and unexpectedly shut down, causing the incinerator flame to be extinguished. The blower shutdown was caused by a failed resistance temperature detector (RTD), which is a safety device built into the blower motor. The motor has 6 RTDs in the motor winding, five of which showed a normal temperature and one of which showed an unexpectedly high temperature during the event.

Probable Cause: An RTD sensor failed, sending a high temperature signal which caused the blower motor to shut down. The loss of the blower caused the incinerator flame to be extinguished, which led to the sudden temperature drop.

Corrective actions or preventative steps taken: The RTD in question was deemed unreliable and removed from the control loop of the blower motor. The RTD was left physically in place because the RTDs are built in to the motor windings and there is no way to remove, repair, or even access the RTDs without completely disassembling the motor windings. Also, the control system was reprogrammed to require two high temperature alarms from the RTDs to shut down rather than one as currently programmed.

Further details on the event, probable cause, and corrective actions are included in the breakdown report.

May have resulted in a deviation from:

Deviation No: 031-17	Source Number(s): 456	Permit: 22122 Part 7a
Event Started: 1/24/2017	Abatement Device(s) :	AQMD:
Stopped: 3/23/2017	Emission Point(s):	Other:

Event Description: Title V Permit Condition 22122, Part 7a requires that Phillips 66 keep record of the visual inspection of a cooling tower water sample taken on a daily basis. The visual inspection is required for the Unit 110 cooling tower (S456) under Condition 22122, Part 1. The records logging this activity for some portions of the period of 1/24/2017-3/23/2017 have been misplaced.
The practice of taking a cooling tower water sample and visually inspecting it is conducted on a daily basis as part of Phillips 66's daily operator rounds for Unit 110. Thus, Phillips 66 has no doubt that these rounds were conducted, including the subject visual inspection of cooling tower water. Further, not only do Phillips 66 operators monitor the cooling tower water for signs of hydrocarbon intrusion but Phillips 66 also employs full time contractors to monitor the operational chemistry of onsite cooling towers, including S-456. Thus, Phillips 66 believes that this permit deviation is solely administrative and caused no environmental risk or harm.

Probable Cause: Phillips 66 has a systematic process for handling the records associated with Permit Condition 22122, Part 7a. This includes collecting batches of records for file keeping. In this case, it appears that the batch records encompassing affected period of time was misplaced, presumably because it was not handled according to standard system practices.

Corrective actions or preventative steps taken: The recordkeeping requirement under Permit Condition 22122, Part 7a and the associated records handling process has been reviewed and reinforced with Unit 110 operations personnel.

May have resulted in a deviation from:

Deviation No: 035-17	Source Number(s):	Permit:
Event Started: 8/2/2016	Abatement Device(s) :	AQMD: 8-44-301.2; 8-44-304; 8-44-501.1.8
Stopped: 8/2/2016	Emission Point(s):	Other:

Event Description: On September 7, 2017 the BAAQMD issued NOV A56369 alleging that the requirements in BAAQMD Regulation 8-44-301.2 and 8-44-304 were violated by Phillips 66 during loading of the Silver Euplecta on 8/2/2016. Phillips 66 is submitting this 10 and 30 Day Title V Deviation Report in response to the issuance of NOV A56369. Phillips 66 however, disputes any deviation from the facility's Title V Permit occurred during the loading event. All information made available to Phillips 66 by the vessel owner indicates that no violation of Regulation 8-44 occurred.

On October 24, 2017 the BAAQMD issued NOV A56370 for not inspecting the Silver Euplecta and insufficient records of tank condition per Regulation 8-44-501.1.8.

Probable Cause: BAAQMD issued an NOV and the probable cause of the impacts is not known to Phillips 66. Information directly obtained by Phillips 66 indicates that no deviation occurred.

Corrective actions or preventative steps taken: No corrective steps were taken because Phillips 66 was notified over a year after the event by BAAQMD that there was an alleged violation during the loading event.

May have resulted in a deviation from:

Deviation No: 043-17	Source Number(s): 29	Permit: 21235 6a
Event Started: 1/17/2016	Abatement Device(s) :	AQMD:
Stopped: 1/18/2016	Emission Point(s):	Other:

Event Description: NOV received for failure to replicate out of NOx Box operating conditions during subsequent source test.

Probable Cause: Heater U200 B-5 operated out of its NOx box on 1/17/16 due to a unit upset during startup. The heater was shutdown on 1/15/16 and startup was begun on 1/16/16. During the heater startup O2 levels were brought under control as firing was increased, but due to the upset the process could not be completed quickly enough to bring the average O2 levels for the day within the NOx box. The out of box conditions were 85 MMBtu/hr at 6.68% O2. During the subsequent required source test, operations only reached 81 MMBtu/hr at 6.01% O2, which is not within the +/- 5% internal guideline used by BAAQMD staff to determine replication.

Corrective actions or preventative steps taken: The heater was brought within normal operating conditions as quickly as safely possible after startup and upset.

May have resulted in a deviation from:

Deviation No: 044-17	Source Number(s): 11	Permit: 21235 6a
Event Started: 2/26/2016	Abatement Device(s) :	AQMD:
Stopped: 2/29/2016	Emission Point(s):	Other:

Event Description: NOV received for failure to replicate out of NOx Box operating conditions during subsequent source test.

Probable Cause: Heater U240 B-201 operated out of its NOx box on 2/26 to 2/28 2016 due to a unit upset during startup. The unicracker unit, where the source is located, underwent a major turnaround from early January to late February. The U240 B-201 heater was initially started up on 2/21, but issues during the unit startup caused B-201 to be nearly shutdown again then restarted on 2/24. Continued issues and upsets with the unit during startup caused the heater to operate at abnormal conditions. These conditions could not be safely replicated later when the unit was operating normally and so the source test did not take place within the +/- 5% internal guideline used by BAAQMD staff to determine replication.

Corrective actions or preventative steps taken: The unit was brought under control as quickly as safely possible, allowing the heater to resume normal operations.

May have resulted in a deviation from:

Deviation No: 045-17	Source Number(s): 30	Permit: 21235 6a
Event Started: 4/23/2015	Abatement Device(s) :	AQMD:
Stopped: 5/28/2015	Emission Point(s):	Other:

Event Description: NOV received for failure to replicate out of NOx Box operating conditions during subsequent source test.

Probable Cause: Heater U200 B-101 operated out of its NOx box in May 2015 due to an unexpected and long term loss of a steam turbine. The steam turbines are major users of fuel gas, and the extended downtime resulted in extra fuel gas. In order to prevent flaring other fuel users, such as the process heaters, were run at higher rates. This heater operated outside of the box, and a source test was performed to check NOx emissions at the out of box (OOB) conditions. The OOB conditions varied 42 to 43.3 MMBtu/hr and 2.4 to 3.3% O2. The source test was conducted at 43 MMBtu/hr and 3.0% O2, with a NOx emission factor less than the one in use during normal operation. The source test conditions were judged to not be within the +/- 5% internal guideline used by BAAQMD staff to determine replication.

Corrective actions or preventative steps taken: The turbine was reinstalled in May 2015 after extensive repairs off site, and the heater was able to return to normal operations.

		May have resulted in a deviation from:
Deviation No: 046-17	Source Number(s): 461	Permit:
Event Started: 10/2/2017	Abatement Device(s) :	AQMD: 1-522.4
Stopped: 10/3/2017	Emission Point(s):	Other:

Event Description: The sample line to CEMs system at U250 B-701 became plugged at approximately 10:00 am on 10/2/17. Phillips 66 CEMs technicians did not become aware of the plugging until 10/3/17, at which time the system was cleared. The CEMs was returned to service at approximately 1:00 pm on 10/3.
There was no change to the heater operation or ammonia injection during this time, and there is no reason (operational or otherwise) to believe that any emissions limits were exceeded.

Probable Cause: The CEMs technicians did not inform environmental department personnel, who are tasked with filing inoperative monitor reports with the District, about the plugged sample line and its effect on CEMs operation.

Corrective actions or preventative steps taken: District requirements regarding the reporting of inoperative monitors and the need for timely internal communication were reviewed with the CEMs technicians.

BAAQMD Title V Permit
6 Month Monitoring Report

A0016 Phillips 66 Company San Francisco Refinery

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Zip Code: 94572-

Contact: Brent Eastep Title: Environmental Engineer Phone (510) 245-4672

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#)
7/1/2017	11:57 AM	7/3/2017	10:11 AM	☑	021-17			

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: Inoperative monitor U233 fuel gas H2S analyzer down >24 hours

7/15/2017	3:59 PM	7/17/2017	10:01 AM	☑	023-17	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: SPP B NOx and O2 analyzers inoperative >24 hours

NOx 07D90 reference ID
O2 07D89 reference ID

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
8/26/2017	8/29/2017	☑	032-17			

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: At approximately 6:00 am on 8/26/17 the U233 H2S monitor became inoperative. As of 9:45 am on 8/29 it is still inoperative, having exceeded 24 hours of inoperation at 6:00 am on 8/27.

The analyzer was repaired and online at approximately 4:00 pm on 8/29.

9/8/2017	9:20 PM	9/11/2017	8:30 AM	☑	034-17		

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.
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Event Description: At approximately 9:20 pm on 9/8/17 the output from the SPP B NOx analyzer was lost. Troubleshooting was performed and repairs were made. However, further repairs were required and parts were ordered.

9/23/2017	1:45 PM	9/23/2017		☑	037-17		

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.
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Event Description: An inoperative monitor report was filed for the period beginning on 9/23/17 at around 1:45 pm as event number 07E65. After extensive troubleshooting and investigation, it is believed that the analyzer was working correctly during this period. The analyzer should not have been reported as inoperative.

9/27/2017	8:04 AM	9/29/2017	5:00 PM	☑	038-17	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: At around 8 am the NOx analyzer at U228 B520 and B521 (371, S372) failed. The monitor is considered inoperative for 24 hours as of 8 am on 9/28/17.

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
9/30/2017	9/30/2017	☑	049-17	352		

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 at SPP A was inoperative from approximately midnight on 9/29 to noon on 9/30.

10/3/2017	10/3/2017	☑	050-17	461		

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 at U250 B-701 became inoperative at approximately 10:30 am on 10/2, and was repaired at approximately 1:00 pm on 10/3.

10/8/2017	10/9/2017	☑	051-17			

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.
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Event Description: The H2S analyzer at U233 failed to calibrate on schedule at noon on 10/7 and 10/8. The analyzer was repaired and back in service at around 9:00 am on 10/9.

10/22/2017	10/23/2017	☑	052-17			

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.
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Event Description: The H2S analyzer at U233 began showing incorrect readings at around noon on 10/21. The analyzer was repoaired and back in service at approximately 9:00 am on 10/23.

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
10/29/2017	10/30/2017	☑	053-17			

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.
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Event Description: At approximately 3:20 am on 10/28 the NOx analyzer at SPP A became inoperative. It was repaired and back in service at approximately 10:30 am on 10/30.

11/3/2017	11/6/2017		☑	041-17		

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: Inop For Hillcrest GLMs (power outage)
At approximately 7:27 pm on 11/3/2017, a power outage occurred at the Hillcrest GLM shelter. This power outage remained until personnel responded the morning of Monday 11/6/2017. The H2S and SO2 monitors at this location are considered inoperative for 24 hours as of approximately 7:27pm on 11/4. Power was restored around 7:15am on 11/6/2017 and the monitors returned to normal operation around 7:55am on 11/6/2017.

11/3/2017	7:29 PM	11/8/2017	11:50 AM	☑	042-17	

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: Inop for East Refinery H2S GLM Malfunction initiated by power outage
At approximately 7:27 pm on 11/3/2017, a power outage occurred at the East Refinery GLM shelter.
The power outage was less than 24 hours in duration but appears to have caused the H2S monitor at this location to malfunction. The H2S monitor is considered inoperative for 24 hours as of approximately 7:27pm on 11/4. Troubleshooting began the morning of Monday, 11/6/2017.

Started	Stopped		Deviation #	Source (S#)	Abatement Device (A#)	Emission Point (P#)
11/17/2017	11/20/2017	☑	054-17	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: At around 3:30 pm on 11/17 the sample line at U200 B-202 failed. The line was temporarily repaired and the analyzer back in service at approximately 1:00 pm on 11/20. A new sample line has been ordered and will be installed later.

11/24/2017	11/27/2017	☑	055-17	303		

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.
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Event Description: The O2 analyzer at U238 failed at approximately 12:30 pm on 11/24. It was repaired and back in service at approximately 9:30 am on 11/27.