

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



PROVIDING ENERGY. IMPROVING LIVES.

December 22, 2020

ESDR-467-20
 02-E-01-B

Via E-Mail at Compliance@BAAQMD.gov

Mail Stop FM1
 Bay Area Air Quality Management District
 939 Ellis Street
 San Francisco, CA 94109

**Subject: Determination and Reporting of Cause:
 Main Flare (S-296) October 25, 2020
 BAAQMD 12-12-406
 Phillips 66, San Francisco Refinery (Plant 16)**

As required by BAAQMD Rule 12-12-406, a Causal Analysis was conducted for flaring that occurred intermittently from October 25, 2020 3:16 a.m. until 8:56 p.m. A Causal Analysis is required when the volume flared exceeds 0.5 MMSCF or sulfur dioxide emissions are greater than 500 pounds. For this flaring activity the 0.5 MMSCF reporting threshold was exceeded on October 25, 2020. The report contents are based on requirements of the BAAQMD June 25, 2007 Compliance Advisory (BCA) and are referenced as such.

- The BAAQMD and Consent Decree 500 lb SO₂ report threshold was not exceeded.
- The BAAQMD 500,000 scf/calendar day flow threshold was exceeded on October 25, 2020.

Total Volume and Emissions from Affected Flares [BCA 4, 5, 8, 9]:

Main Flare (S-296):

Date/Flare	Start Time	End Time	Duration (Hrs:Min)	Gas Flow Rate, MSCF	Avg. H ₂ S Mole %	SO ₂ , lb	CH ₄ , lb	NMHC, lb
10/25/2020	3:16 AM	8:56 PM	17:40 int	823	0.01%	4	7	10
Total				823	0.01%	4	7	10

SO₂ emissions are calculated using the following equation:

$$\text{SO}_2 \text{ (lb)} = (\text{FR}) * (\text{H}_2\text{S conc.}) * (0.1689)$$

FR = total flow rate during flaring, scf

H₂S conc. = Average concentration of Hydrogen Sulfide in gas during flaring

$$0.1689 = [\text{lb-mol H}_2\text{S}/379 \text{ scf H}_2\text{S}] * [64 \text{ lb SO}_2/\text{mol H}_2\text{S}]$$

¹ Conservative value utilized for assessing SO₂ emissions.

Flaring Event Description [BCA 6, 7, 10, 11]

On October 25, 2020 Unit 240 Plant 2 was being shut down for maintenance work as a result of issues related to the October 16, 2020 unplanned 3rd party Hydrogen plant shutdown. As part of the unit shutdown, and to prepare for maintenance and equipment entry, the unit was depressured and purged. As designed, the purged material was vented directly to the Main Flare which resulted in the flaring of unscrubbed gases.

Primary Cause and Contributing Factors [BAAQMD 12-12-406.1, BCA 11]:

The depressuring and purging was conducted to take Unit 240 Plant 2 and associated equipment out of service. The purged material was vented directly to the Main Flare. By venting directly to the flare, the need to shut down the Flare Gas Recovery Compressor(s) is avoided and overall flare emissions are minimized.

Measures to Limit Duration/Quantity [BCA 10, 11, 12]

Planning was conducted in advance to identify means to reduce flaring in volume and duration. These purging and steaming activities were designed so that they could be vented directly to the flare, rather than in association with streams recovered by the Flare Gas Recovery Compressor(s). This minimizes the overall amount of volume of materials that may have been vented to the flare.

Prevention Measures [BAAQMD 12-12-406.2, BCA 16]:

No new prevention measures or corrective actions were identified. These activities were planned maintenance activities that will re-occur in the future.

Was the Flaring the Result of an Emergency [BAAQMD 12-12-406.4, BCA 13]:

No.

Was flaring due to a Regulatory Mandate to Vent to a Flare [BAAQMD 12-12-406.4, BCA 15]:

No.

Consistency with Flare Minimization Plan (FMP) [BAAQMD 12-12-406.3, BCA 14]:

The activities described that resulted in flaring are consistent with activities included in the Phillips 66 Flare Minimization Plan. Specifically, these activities can be found described in the FMP in more detail in Section 4.2.1.1 as described below:

- Maintenance, Turnaround, Startup, and Shutdown – Equipment Preparation for Maintenance, Depressuring and Purging



Please contact Jennifer Ahlskog at (510) 245-5856 if you have any questions.

Sincerely,



**Brent Eastep
Environmental Team Leader**

Attachments

PFD Refinery Flare & Blowdown System (RVR-ENVRNM-YF-FLRE-001)

cc:

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