



Benicia Refinery • Valero Refining Company - California
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Via Email Notification

November 25, 2025

Reportable Flaring Event Causal Analysis
September 11, 2025
Plant No. B2626

Dr. Philip Fine
Bay Area Air District
Bay Area Metro Center
375 Beale Street, Suite 600
San Francisco, CA 94105

Dear Dr. Fine:

A reportable flaring event occurred on September 11, 2025 at the Valero Refining Company – California, Benicia Refinery (Valero Refinery) (Id. No. B2626). The following Causal Analysis for this Reportable Flaring Event is provided to the Bay Area Air Quality Management District (District) pursuant to and in accordance with Section 12-12-406 and the District's Compliance Advisory dated June 25, 2007.

1. *Date on which the report was drafted (12-12-406).*
September 24, 2025
2. *The refinery name and site number (12-12-406).*
Valero Refinery, Id. No. B2626
3. *The assigned refinery contact name and phone number (12-12-406).*
Taryn Goodwin at (707) 745-7475
4. *Identification of the flare(s) at which the reportable event occurred by reviewing water seal monitoring data to determine which seals were breached during the event (12-12-406).*
North (S-19) Flare
South (S-18) Flare
5. *The flaring event duration for each affected flare (12-12-406.1):*
 - a) *The date(s) of the event;*
 - b) *The start and end time of the event; and*
 - c) *The net duration of event (in hours and minutes).*

Item	South Flare (S-18)	North Flare (S-19)	Flare Event Total
Start Date	9/11/2025	9/11/2025	9/11/2025
Start Time (hh:mm)	17:10	17:10	17:10
End Date	9/15/2025	9/14/2025	9/15/2025
End Time (hh:mm)	04:43	20:22	04:43
Duration (hh:mm)	83:33*	75:12*	83:33*

*Flaring was intermittent during this time period

6. *A brief description of the flaring event (12-12-406.1) (e.g., “flaring due to turnaround maintenance”).*

Flaring was caused due to an unplanned shutdown and subsequent start-up of the Fluidized Catalytic Cracking Unit (S-5).

7. *A process flow diagram showing the equipment and process units that were the primary cause of the event (12-12-406.1).*

The relevant process flow diagrams (PFDs) are attached and highlighted.

Please note that the attached PFD contains information that the Valero Refinery considers to be trade secret and confidential business information (CBI) as defined by the California Public Records Act, Government Code § 6254.7 et seq., and the Freedom of Information Act, 40 CFR Part 2 (40 CFR § 2.105(a)(4)), 5 USC 552(b)(4), and 18 USC 1905. Because of the sensitive and competitive nature of this information, the Valero Refinery requests that the District afford the information CBI status and treatment indefinitely.

8. *The total volume of vent gas flared (MMSCF) throughout the event (12-12-406.5).*

Item	South Flare (S-18)	North Flare (S-19)	Flare Event Total
9/11/2025			
Volume (MMSCF)	0.151	0.523	0.674
9/12/2025			
Volume (MMSCF)	0.274	0.323	0.597
9/13/2025			
Volume (MMSCF)	0.029	0.289	0.318
9/14/2025			
Volume (MMSCF)	0.899	1.386	2.285
9/15/2025			
Volume (MMSCF)	0.007	0.000	0.007
Flare Event Total			
Volume (MMSCF)	1.360	2.521	3.881

9. *The emissions associated with the flaring event per calendar day (12-12-406.5):*

- a) # methane (CH₄) emitted;
- b) # non-methane hydrocarbon emitted; and
- c) # SO₂ emitted.

Also provide the assumptions used to calculate emissions associated with the flaring event if they are different from those used for reporting under Regulation 12, Rule 11.

Item	South Flare (S-18)	North Flare (S-19)	Daily Total
9/11/2025			
CH4 (lbs)	192	486	678
NMHC's (lbs)	266	452	718
SO2 (lbs)	405	999	1,404
9/12/2025			
CH4 (lbs)	1837	261	2,098
NMHC's (lbs)	696	109	805
SO2 (lbs)	797	298	1,095
9/13/2025			
CH4 (lbs)	108	322	430
NMHC's (lbs)	22	179	201
SO2 (lbs)	13	446	459
9/14/2025			
CH4 (lbs)	698	1,190	1,888
NMHC's (lbs)	949	1,213	2,162
SO2 (lbs)	505	4,321	4,826
9/15/2025			
CH4 (lbs)	18	0	18
NMHC's (lbs)	13	0	13
SO2 (lbs)	1	0	1
Flare Event Total			
CH4 (lbs)	2,853	2,259	5,112
NMHC's (lbs)	1,946	1,953	3,899
SO2 (lbs)	1,721	6,065	7,786

The assumptions used to calculate emissions associated with the flaring event are consistent with those used for reporting under Regulation 12, Rule 11.

10. A statement as to whether or not the gas was scrubbed to eliminate or reduce any entrained compounds and a list of the compounds for which the scrubbing was performed (12-12-406.1).

The vent gases flared during this event were not scrubbed.

The refinery does not have the capability to scrub process unit vent gases that are sent to the flare. During typical operating conditions, the gases routed to the flare header are recovered. However, when the gases routed to the flare header exceed

the capacity of the flare header, the gases must be combusted using the flare to maintain safe and environmentally compliant operations.

11. *The primary cause of the flaring event including a detailed description of the cause and all contributing factors. Also identify the upstream process units that contributed vent gas flow to the flare header and provide other flow instrumentation data, where available (12-12-406.1).*

The primary cause of flaring was the unplanned shutdown of the Fluid Catalytic Cracking Unit (FCCU). Feed pump P-701 to the FCCU unit tripped offline due to water contained in the feed material. The wet feed was attributed to cooler temperatures of the Cat Feed Hydrofiner Unit (CFHU) during the planned shutdown, condensing steam that accumulated in the low pressure, back end of the CFHU unit.

12. *Describe all immediate corrective actions to stabilize the flaring event, and to reduce or eliminate emissions (flare gas recovered or stored to minimize flaring during the event). If a decision was made not to store or recover flare gas, explain why (12-12-406.1).*

The shutdown operations followed established procedures. These procedures are intended to minimize flaring consistent with District regulations and Valero's Flare Minimization Plan (FMP), while ensuring the safety of the community, refinery personnel, and equipment.

The Valero Refinery does not have the ability to store flare gas. Per Section 4.2 of the FMP, the ability to store flare gas is not a cost effective prevention measure.

13. *Was the flaring the result of an emergency (See definition in Reg. 12-12-201)? If so, was the flaring necessary to prevent an accident, hazard or release to the atmosphere (12-12-406.4)?*

This section is not applicable, as this flaring incident was not the result of an emergency.

14. *If not the result of an emergency and necessary to prevent an accident, hazard or release to the atmosphere, was the flaring consistent with an approved FMP? If yes, provide a citation to the facility's FMP and any explanation necessary to understand the basis for this determination (12-12-406.3).*

Pursuant to Regulation 12-12-301, flaring is prohibited unless it is consistent with an approved FMP. This series of events is consistent with Sections 2.2.3 and 2.2.1 of the approved Valero Refinery FMP, Equipment Failure and Malfunction and Planned and Unplanned Maintenance Activities.

15. *If the flaring was due to a regulatory mandate to vent to a flare, why couldn't the gas be recovered, treated, and used as fuel gas (12-12-406.4)?*

The flaring was not due to a regulatory mandate to vent to a flare. The flaring was consistent with the Valero Refinery's approved FMP (Revision No. 20.0, Submitted September 27, 2024).

16. Identify and describe in detail each prevention measure (PM) considered to minimize flaring from the type of reportable flaring event that occurred (12-12-406.2):

- a) State whether the PM is feasible (and will be implemented), or not feasible.
- b) Explain why the PM is not feasible, if applicable.

During a post-incident review of the flaring event, the following additional prevention measures were identified in order to prevent a similar flaring event from reoccurring in the future:

- a) Modified procedures to check CFHU product temperature, pressure, and moisture content before sending product to FCCU.
 - i. Completed September 24, 2025

Please contact Taryn Goodwin at (707) 745-7475 if you have any questions on this reportable flare event.

Sincerely,



Taryn Goodwin
Manager – Environmental Engineering

TG

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Enclosures: (1 P&IDs)
36-000-03E-73503 – Confidential Business Information (CBI)