Benicia Refinery • Valero Refining Company - California
3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7339

Via Email Notification

April 24, 2025

Reportable Flaring Event Causal Analysis
February 25th, 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 February 25th, 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 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).*

   March 18, 2025

2. *The refinery name and site number (12-12-406).*

   Valero Benicia Refinery, Id. No. B2626

3. *The assigned refinery contact name and phone number (12-12-406).*

   Rina Putnam at (707) 745-7940

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 Flare (S-19)

   South Flare (S-18)

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	North Flare (S-19)	South Flare (S-18)
Start Date	2/25/2025	2/25/2025
Start Time (hh:mm)	14:16	14:16
End Date	2/25/2025	2/25/2025
End Time (hh:mm)	16:55	15:47
Duration (hh:mm)	02:39	01:31

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

   Flaring from the North Flare and South Flare occurred due to the trip of Fuel Gas compressor C-2201A.

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 piping and instrumentation diagrams (P&IDs) are attached.

   Please note that the attached P&ID 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	North Flare (S-19)	South Flare (S-18)	Total Flow (S-19) & (S-18)
Volume (MMSCF)	0.526	0.198	0.724

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

   a) *# methane (CH_4) emitted;*

   b) *# non-methane hydrocarbon emitted; and*

   c) *# SO_2 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	North Flare (S-19)	South Flare (S-18)
CH4 (lbs)	162	94
NMHC's (lbs)	98	55
SO2 (lbs)	158	1

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.

    During non-emergency operations, the Valero Refinery recovers gases routed to the flare header for treatment. The Refinery does not have the capability of scrubbing process unit vent gases that are sent to the flare header during an emergency.

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).*

    This flaring event was due to C-2201A tripping on high discharge temperature. (C-2201B was out of service for an overhaul.) The trip of C-2201A resulted in low pressure fuel gas letting down into the flare system. Due to treat gas letting down to low pressure fuel gas, Safety Valve SV110 lifted to the flare, and F-104 tripped on high fuel gas pressure. Flare gas recovery compressor C-2101B (A-70) then tripped on high discharge temperature. Flare gas recovery compressor C-2101A (A-13) was operating but could not reduce the flare header pressure due to its discharge is lined up to Low Pressure Fuel Gas which was letting down to the flare header due to high pressure.

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).*

    Operations acted immediately to minimize flaring by increasing treat gas flow to the H2U trains to decrease treat gas to LPFG to reduce LPFG pressure. Moves were made to restart compressor C-2201A in accordance with site procedures. Once C-2201A was restarted and lined out, treat gas flows were normalized and flaring stopped.

    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. The current approved FMP is Revision 20.0 dated September 30, 2024. This series of events is consistent with Section 2.2.3 of the Valero Refinery FMP, Equipment Failure and Malfunction.

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.

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):*

    The 1st stage high discharge temperature set point for C-2201A was increased to 315 degrees Fahrenheit. The temperature switch was calibrated and a work order issued to replace the temperature trip switches in the compressor.

Please contact Rina Putnam at (707) 745-7940 if you have any questions on this reportable flare event.

Sincerely,

Rina Putnam

Rina Putnam
Manager – Environmental Engineering

ecc:
Compliance@baaqmd.gov;
Anthony Smith anthony.smith@baaqmd.gov;
Colby La Place CSLaPlace@Solanocounty.com

Enclosures: (1 P&ID)
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