

Attachment IV

Causal Analysis Report

Chevron Richmond Refinery
Reportable Flaring Events

November 14, 2021
Flaring Due to Flange Leak

Refinery Flare Event – Cause Investigation Report

1. Date on which the report was drafted: January 27, 2022

2. The refinery name and site number:

Refinery: Chevron Richmond Refinery
Refinery Site Number: A0010

3. The assigned refinery contact name and phone number:

Contact Name: Brandon Sutter
Contact Phone Number: (510) 242-5212

Is this a rescission/modification of a previous report: No

Date of initial report: Not Applicable

Reason for rescission/modification: Not Applicable

4. Identification of flare(s) at which the reportable event occurred by reviewing water seal monitoring data to determine which seals were breached during the event

Flare	Reportable Event (SO2 or Vent Gas Volume)
LSFO (S-6010)	Vent Gas Volume

5. The flaring event duration for each affected flare

Flare (Source Number): LSFO (S-6010)

The Date(s) of the event: November 14, 2021

The start time of the event: 11/14/2021 7:55 AM

The end time of the event: 11/14/2021 11:05 AM

6. A brief description of the flaring event –

On November 14, 2021, the diesel hydrotreater (DHT) was starting up when a flange leak was discovered at an exchanger in the DHT. Operations responded by safely shutting down the DHT per procedure. Process gases flowed to the Flare Gas Recovery (FGR) System, and flows exceeded FGR capacity. The gas was routed to the flare relief system, and flaring occurred.

7. A process flow diagram showing the equipment and process units that were the primary cause of the event.

See Attachment IVa.

8. The total volume of vent gas flared (MMSCF) throughout the event

Flare	Volume (MMSCF)
LSFO	1.4

9. The emissions associated with the flaring event per calendar day

Flare	Calendar Day	CH4 (lbs.)	NMHC (lbs.)	SO2 (lbs.)
LSFO	November 14, 2021	37.9	99.6	42.4

Assumptions used to calculate emissions – consistent with the reporting under Reg. 12-11.

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.

The vent gas was not scrubbed to eliminate or reduce any entrained compounds.

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.

Primary Causal Factor: Leak at a flange at a diesel hydrotreater exchanger.

The main contributor of vent gas flow during this event was the diesel hydrotreater in the Distillation & Reforming Area Business Unit (D&R ABU).

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.

Operations responded by safety shutting down the diesel hydrotreater per procedure.

13. Was the flaring the result of an emergency? If so, was the flaring necessary to prevent an accident, hazard or release to the atmosphere?

Flaring was not due to an Emergency (defined in Regulation 12-12-201) as interpreted by the BAAQMD.

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.

The flaring was consistent with Chevron's FMP Section 5.4 Figure 5-1. This event was unplanned. Causes for the flaring were investigated and the corrective actions have already been or will be implemented to reduce the likelihood of a recurrence of flaring resulting from the same causes.

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

N/A. Flaring was not due to regulatory mandate.

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

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

All prevention measures have been considered and have or will be implemented.

1. Replace and tighten flange gasket to aid in the prevention of a reoccurrence. This work was completed on 11/14/2021.

Flaring Due to Flange Leak

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