

Attachment II

Causal Analysis Report

Chevron Richmond Refinery
Reportable Flaring Events

April 29, 2024

Flaring Due to Feed Compressor Shutdown

Refinery Flare Event – Cause Investigation Report

1. Date on which the report was drafted: June 26, 2024

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: Duy Nguyen
Contact Phone Number: (510) 242-3132

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)
H2 (S-6021)	Vent Gas Volume

5. The flaring event duration for each affected flare

Flare (Source Number): H2 (S-6021)

The Date(s) of the event: April 29, 2024

The start time of the event: 04/29/2024 10:37 AM

The end time of the event: 04/29/2024 11:20 AM

6. A brief description of the flaring event

On April 29, 2024, a crack in a feed compressor’s spillback line was identified. Operations immediately took this compressor out of service and placed the alternate feed compressor online. Separately, scheduled electrical maintenance work in the area inadvertently cut off the alternate compressor’s power supply. This action resulted in the temporary shutdown of the alternate compressor and subsequently flaring at the Hydrogen flare.

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

See Attachment IIa

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

Flare	Vent Gas Volume (MMSCF)
H2 (S-6021)	0.53

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

Flare	Calendar Day	CH4 (lbs.)	NMHC (lbs.)	SO2 (lbs.)
H2 (S-6021)	April 29, 2024	210	332	1.42

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: Expectations regarding contacting Chevron personnel for all switches were not adequately understood by contractors.

The primary contributor factor: Operations and Maintenance did not align on roles and responsibilities to provide oversight of the work.

The primary vent gas flow contributor is the H2 plant.

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 was able to restart the alternate feed compressor and managed the swings in the plant posture to avoid another trip and stopped the flaring.

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.

Flaring was consistent with Chevron's FMP Section 2.1 Table 2-4. Table 2-4 identifies sources that can be flared in non-emergency situations (e.g. start-up, shut-down).

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 a 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

Prevention measures have been considered and have or will be implemented.

1. Communicate with the on-site employees that all electrical switching must be done in alignment with appropriate Chevron operations group even when isolating all electrical sources.

Estimated Completion Date: 08/30/2024.

2. Assign clear written roles and responsibilities for work on critical electrical systems that could lead to a plant shutdown if an error is made. Communicate to affected personnel.

Estimated Completion Date: 11/30/2024.

3. Review standard work planning for electrical work to include safeguards to manage work going on for different jobs in adjacent cabinets as part of the pre-requisite to starting work.

Estimated Completion Date: 06/30/2025