

Attachment II

Causal Analysis Report

Chevron Richmond Refinery
Reportable Flaring Events

December 10, 2020
Flaring Due to Faulty Breaker in Pump

Refinery Flare Event – Cause Investigation Report

1. Date on which the report was drafted: June 16, 2021

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: (925) 394-8773

Is this a rescission/modification of a previous report: Yes

Date of initial report: 3/1/2021

Reason for rescission/modification: Addition of Attachment 2

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)
NISO (S-6013)	SO ₂

5. The flaring event duration for each affected flare

Flare (Source Number): NISO (S-6013)

The Date(s) of the event: December 10, 2020

The start time of the event: 1:42 AM

The end time of the event: 2:45 AM

The net duration of event (in hours and minutes): 1 hour, 3 minutes

6. A brief description of the flaring event –

On December 10th, 2020, a unit in the Hydroprocessing Area Business Unit (ABU) initiated a shutdown. During this process, Operations attempted to shutdown a pump per procedure, but a faulty breaker prevented the pump from shutting down. The unit was subsequently de-pressured, sending flows to the Flare Gas Recovery (FGR) system exceeding FGR capacity, and process gases were sent to the flare relief system. Operations immediately responded, successfully executing a manual shutdown of the pump, which stopped the flow to relief.

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	Volume (MMSCF)
NISO	0.4

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

Flare	Calendar Day	CH4 (lbs.)	NMHC (lbs.)	SO2 (lbs.)
NISO	December 10, 2020	126	173	765

Assumptions used to calculate some of the 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.

Root cause: Faulty breaker at pump.

The main contributor of vent gas flow during this event originated from the Hydroprocessing 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 immediately responded, successfully executing a manual shutdown of the pump. This stopped the flow to relief.

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?

The flaring was the result of an emergency, as defined in Regulation 12-12 (a condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that was caused by a sudden, infrequent and not reasonably preventable equipment failure). The flaring was necessary to prevent an unabated release to the atmosphere.

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

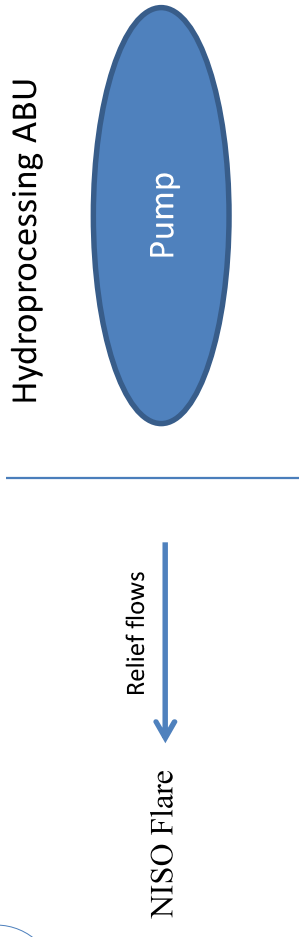
b) Explain why the PM is not feasible, if applicable

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

1. Replace faulty breaker in pump.
 - a. Completed on 1/13/2021
2. Inspect internal components of pump to ensure proper future operation.
 - a. Completion date: 6/30/2021

Flaring Due to Faulty Breaker in Pump

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