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HES Manager, Richmond Refinery

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BAY AREA AIR QUALITY
MANAGEMENT DISTRICT

November 26, 2019

Bay Area Air Quality Management District
Mail Stop FM 1
375 Beale Street, Suite 600
San Francisco, CA 94105

NEKO

**Chevron Richmond Refinery
September 2019 Flaring Causal Analysis Report**

To Whom It May Concern:

Attached is the flaring causal analysis report for September 2019 for Chevron's Richmond Refinery. This report is submitted pursuant to Regulation 12, Rule 12, Section 12-12-406. The report is due within 60 days of the end of September 2019 for any reportable flaring events that occurred during the month of September 2019. There was one reportable flaring event that occurred in September 2019.

If you have any questions regarding this report, please contact Laura Kurt at (510) 242-5219.

Sincerely,

Shawn Lee

Attachment

Attachment I

Causal Analysis Report

Chevron Richmond Refinery
Reportable Flaring Events

September 4, 2019

TKC Flaring Due to Seal Oil System Malfunction

Refinery Flare Event – Cause Investigation Report

1. Date on which the report was drafted: November 25, 2019

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: Laura Kurt
Contact Phone Number: (510) 242-5219

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

Date of initial report: N/A

Reason for rescission/modification: N/A

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)	SO2, Vent Gas Volume
SISO (S-6012)	None
FCC (S-6016)	None

5. The flaring event duration for each affected flare

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

The Date(s) of the event: September 4, 2019

The start time of the event: 9:38AM

The end time of the event: 7:45PM

The net duration of event (in hours and minutes): 8 hours and 56 minutes (Intermittent)

Flare (Source Number): SISO (S-6012)

The Date(s) of the event: September 4, 2019

The start time of the event: 9:53AM

The end time of the event: 9:55AM

The net duration of event (in hours and minutes): 2 minutes

Flare (Source Number): FCC (S-6016)

The Date(s) of the event: September 4, 2019

The start time of the event: 9:35AM

The end time of the event: 1:30PM

The net duration of event (in hours and minutes): 1 hour and 34 minutes (Intermittent)

6. A brief description of the flaring event –

On September 4, 2019, operators in the Hydroprocessing Area Business Unit identified abnormal conditions on the seal oil system of a hydrogen recycle compressor. The compressor was manually shutdown and the unit was depressured to relief per procedure. Flaring began at approximately 9:35AM at the North Isomax (NISO), South Isomax (SISO) and Fluid Catalytic Cracking (FCC) flares. The primary source of vent gas flared during this event was process material from the Taylor Katalytic Converter (TKC) unit of the Hydroprocessing Area Business Unit. Flaring continued intermittently as the unit was stabilized and as efforts were made to evaluate and restart the compressor. Flaring ceased on September 4, 2019 at approximately 7:45PM. The sulfur dioxide (SO2) emissions from the NISO flare exceeded 500 pounds (lbs) and the vent gas volume exceeded 500,000 standard cubic feet from the NISO flare on the September 4, 2019 calendar day.

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

See Attachment Ia

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

Flare	Volume (MMSCF)
NISO	4.19
SISO	0.02
FCC	0.21

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

Flare	Calendar Day	CH4 (lbs.)	NMHC (lbs.)	SO2 (lbs.)
NISO	September 4, 2019	1099.9	977.3	4938.9
SISO	September 4, 2019	7.7	23.8	180.8
FCC	September 4, 2019	27.9	58.7	0.1

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.

Root cause: Malfunction of the positioner on the seal oil tank level control valve, leading to abnormal seal oil system flows and the decision to shut down the compressor

Contributing cause: After identifying the malfunctioning positioner, a replacement part was ordered. In this case, a replacement part could have been sourced from local inventory and the repair accomplished more quickly but there is not an existing process to confirm if a part is available in local inventory.

The main contributor of vent gas flow during this event originated from TKC reactor vessels.

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.

TKC vent gas was routed to the flare gas recovery compressors as feasible to minimize flared volume. At times during the flaring event, flare gas conditions (low molecular weight) required the vent gas be routed to the flare per procedure.

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

The flaring was not due to an Emergency (defined in Regulation 12-12-201) as interpreted by the BAAQMD. However, the root cause of the flaring was due to malfunction, which resulted in the sudden flow of gas to relief.

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 analyzed through a TapRoot® investigation 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 positioner on seal oil tank level control valve.

Completion Date: 9/4/2019

2. Develop work process for maintenance crews to check local inventory prior to ordering a replacement part.

Project Completion Date: 3/15/2020

TKC Flaring Due to Seal Oil System Malfunction

On September 4, 2019, operators in the Hydroprocessing Area Business Unit identified abnormal conditions on the seal oil system of a hydrogen recycle compressor. The compressor was manually shutdown and the unit was depressured to relief per procedure. Flaring began at approximately 9:35AM at the North Isomax (NISO), South Isomax (SISO) and Fluid Catalytic Cracking (FCC) flares. The primary source of vent gas flared during this event was process material from the Taylor Katalytic Converter (TKC) unit of the Hydroprocessing Area Business Unit. Flaring continued intermittently as the unit was stabilized and as efforts were made to evaluate and restart the compressor. Flaring ceased on September 4, 2019 at approximately 7:45PM. The sulfur dioxide (SO₂) emissions from the NISO flare exceeded 500 pounds (lbs) and the vent gas volume exceeded 500,000 standard cubic feet from the NISO flare on the September 4, 2019 calendar day.

