BAAQMD received 12/22/23

FLARE CAUSAL ANALYSIS REPORT

1. **Date on which the report was drafted:** December 19, 2023

2. **The refinery name and site number.**
   Martinez Refinery, Plant # B2758

3. **The assigned refinery contact name and phone number.**
   Sharon Lim, (925) 335-3467

4. **Identification of the flare(s) at which the reportable event occurred by reviewing the water seal monitoring data to determine which seals were breached during the event.**
   The reportable event was for the exceedance of vent gas volume of greater than 500,000 SCF. The flares that processed the vent gas were West Air Flare **S1012;** Coker Flare **S1517;**

5. **The flaring event duration for each affected flare**

   West Air Flare
   a. **The date(s) of the event:** October 25 – November 7, 2023
   b. **The start time of the event:** 10/25/2023 5:34 AM
   c. **The end time of the event:** 11/7/2023 6:46 AM

   Coker Flare – intermittent use
   a. **The date(s) of the event:** October 25, 27, and November 3, 2023
   b. **The start time of the event:** 10/25/2023 4:22 PM
   c. **The end time of the event:** 11/3/2023 6:45 PM

6. **A brief description of the flaring event**

   No. 1 H2 Plant, #3 HDO, and Isom Unit began starting up on October 25, 2023. The Facility followed its FMP and startup procedures and routed hydrogen to the flare blowdown system initially and vented excess gases to the flares.

7. **A process flow diagram showing the equipment and process units that were the primary cause of the event.**
   Process Flow Diagrams redacted

8. **The total volume of vent gas flared (SCF) throughout the event.**
   79,174,040 SCF

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

Date	Flow (SCF)	Methane (lbs)	Non-methane (lbs)	SO2 (lbs)
10/25	5,844,535	395	146	11
10/26	6,567,100	270	42	12
10/27	8,307,571	324	52	16
10/28	8,818,827	433	54	16
10/29	8,414,465	391	46	15

10/30	7,554,105	381	52	14
10/31	5,136,068	275	175	9
11/1	3,196,573	336	300	7
11/2	5,069,294	296	185	19
11/3	5,236,032	1187	746	12
11/4	6,018,798	2184	1383	14
11/5	6,963,376	3023	1797	16
11/6	1,419,273	191	267	3
11/7	628,023	81	54	6
Total	79,174,040	9,765	5,296	172

Assumptions used to calculate emissions associated with the flaring event were based on the methodology 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 scrubbing was performed.**
    The gas that was flared 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: As part of the Facility's startup procedures, gases are required to vent to the flare. The first unit to be started up after the 5 Gas Plant and hot oil system is the hydrogen plant. About 75% of the flared vent gas was hydrogen.

    H2 Plant, #3 HDO, and Isom Unit were the sources of vent gas flow to the flare header.

12. **Describe all immediate corrective actions to stabilize the flaring event, and to reduce or eliminate emissions (flared 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 recovered maximum amount of gases possible and the 5 Gas Plant and Heater F-78 were started up first to minimize amount of gas sent to the flares.

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?**
    No, this was not classified as an emergency.

"Emergency: 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 is caused by sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment, excluding power curtailment due to an interruptible power service agreement from a utility."

14. **If not the result of an emergency and necessary to prevent an accident, hazard or release to 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.**
    Yes, the flaring was consistent with the FMP. Startup of units is covered under Section 3.4.1 of the FMP.

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

16. **Identify and describe in detail each preventative measure (PM) considered to minimize the flaring from the type of reportable flaring event that occurred:**
    a. **State whether the PM is feasible (and will be implemented), or not feasible**

    Flaring cannot be prevented during startup due to facility and relief system design. The hydrogen plant is started up prior to users so excess hydrogen is vented to the flare system. Operational activities were consistent with startup procedures.

    We also had additional Safety Instrumented Systems testing to verify that the emergency shutdown systems worked. This increased the amount of flaring as the entire process units were purged to verify that the hydrocarbons were evacuated in the allotted time.

    b. Explain why the PM is not feasible, if applicable
    Not applicable.