

FLARE CAUSAL ANALYSIS REPORT*No. 1 H2 Plant Startup – Public*

- 1. Date on which the report was drafted.**
March 18, 2023
- 2. The refinery name and site number.**
Marathon's Tesoro Martinez Refinery, Plant # B2758
- 3. The assigned refinery contact name and phone number.**
Sharon Lim, Advance HES Professional
- 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.**
Coker Flare, **S1517**, and West Air Flare, **S1012**
- 5. The flaring event duration for each affected flare:**
 - a. The date(s) of the event**
1/17/2023 – 1/18/2023
 - b. The start and end time of the event**
Start time: 15:30
End Time: 16:15

The net duration of the event
1 day and 45 minutes
- 6. A brief description of the flaring event**
The refinery has been shutdown since April 2020. This is the initial restart of Phase 1 of the Renewable Fuels Facility. Startup of No. 1 H2 Plant was the primary cause of flaring and is the second unit to be started up as hydrogen is needed before the No. 3 HDO can be started up.
- 7. A process flow diagram showing the equipment and process units that were the primary cause of the event.**
No. 1 H2 Plant simplified process flow diagram is redacted in public copy.
- 8. The total volume of vent gas flared (MMSCF) throughout the event.**
About 3.2 MMSCF was flared during this flaring event.
- 9. The emissions associated with the flaring event per calendar day:**
 - a. # methane emitted**
Please see Table 1.
 - b. # non-methane hydrocarbon emitted**
Please see Table 1.
 - c. # SO₂ emitted**
Please see Table 1.

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Table 1

Date	Methane (lbs/D)	NonMethane (lbs/D)	SO2 (lbs/D)
1/17/2023	228	9	6
1/18/2023	176	2	2

Also provide the assumptions used to calculate emissions associated with the flaring event if they are different from those used for reporting under Regulation 12 Rule 11.

The emissions associated with this 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 vented gas was not scrubbed but was combusted at the flares. We used the flare gas recovery compressors to recycle vent gas to 5 Gas Plant when 5 Gas compressor temperatures and BTU content of the fuel gas allowed.

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.

The primary cause was the startup of No. 1 H2 Plant. Procedures were followed. Nitrogen was used to air free units. When we introduced hydrocarbon, the mixture was vented to flare.

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 started up the units per procedure. Flare Gas Recovery compressors were also used to recycle flare gas to 5 Gas Plant. We had one heater F-78 (S-1511) and it processed as much gas without going to too low of BTU content.

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 the result of an Emergency.

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"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, this is consistent with our FMP. Please see Section 3.4.1 Startup and Shutdown of Process Units.

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.

15. 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

The following prevention measures were feasible and executed:

5 Gas Plant was started up first so that the flare gas compressors had a place to send the recovered flare gas. 5 Gas Plant compresses the gas for use in the fuel gas system and removes H₂S in its adsorbers.

For Phase 3 startup, we will have more heaters online to process more fuel gas and buffer fuel gas system from swings in heating value.

The remainder of the startup procedure for the No. 1 H₂ Plant Cold Shift Reactor portion was put on hold until No. 3 HDO was ready to startup as more hydrogen is produced after this step.

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

Not applicable.

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