



3485 Pacheco Boulevard
Martinez, CA 94553

VIA UPS

May 26, 2023

Bay Area Air Quality Management District
ATTN: Mail Stop FM1
375 Beale Street, Suite 600
San Francisco, CA 94105

**Subject: March 2023 Reportable FXG Flaring Event Incident Report for Flexicoker Startup
-Public Version**

To Whom It May Concern:

Pursuant to Regulation 12 Rule 12 Section 406, Martinez Refining Company LLC submits the following information regarding a reportable flaring event as defined in Regulation 12-12-208 that occurred during startup of the flexicoker from March 6 through March 9, 2023. The attached report discusses the cause of the flaring event and any prevention measures considered to prevent recurrence of the event.

Should you have any questions or concerns regarding this report, please contact Ms. Katie Hoffmann at (925) 313-5161 / kaitlyn.hoffmann@pbfenergy.com, or you may contact me at the numbers below.

Sincerely,

A handwritten signature in blue ink that reads "Michael Marlowe".

Michael Marlowe
Manager, Environmental Affairs
Martinez Refining Company LLC
3485 Pacheco Boulevard
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Attachment

cc: ccrowley@baaqmd.gov

Regulation 12 Rule 12 Reportable Flaring Event Causal Analysis Report

1. **Report Date:** May 29, 2023
2. **Refinery Name and Site Number:** Martinez Refining Company - BAAQMD Site # A0011
3. **Refinery Contact and Phone Number:** Katie Hoffmann (925) 313-5161
4. **Flare Identification:** Flexigas Flare [REDACTED]
5. **Flaring Event Duration – Flexicoker Startup:**
 - a. **Date:** March 06, 2023 - March 09, 2023
 - i. **Start Time:** March 06, 2023, 2:09 am
 - ii. **End Time:** March 09, 2023, 3:50 pm
 - iii. **Total Duration of Event:** 85 Hours 41 Mins
6. **Brief Description of Flaring Event:**

Flexigas (FXG) is a low-BTU fuel gas made in the Flexicoker and burned in the refinery heaters along with refinery fuel gas. During startup, FXG was sent to the FXG flare resulting in flaring greater than 0.5 MMSCFD. [REDACTED]
7. **Process Flow Diagram:** see attached process flow diagram
8. **Volume of Gas Flared:** 244,515,809 SCF
 - a. **Volume flared on 03/06/2023:** 47,886,785 SCF
 - b. **Volume flared on 03/07/2023:** 64,948,496 SCF
 - c. **Volume flared on 03/08/2023:** 95,558,805 SCF
 - d. **Volume flared on 03/09/2023:** 36,121,723 SCF
9. **Total Emissions due to flaring based on Regulation 12 Rule 11 Methodology**
 - a. 19,988 lbs of methane
 - b. 457 lbs of non-methane hydrocarbons
 - c. 1,438 lbs of sulfur dioxide

Emissions by Date

03/06/2023

- a. 3,356 lbs of methane
- b. 43 lbs of non-methane hydrocarbons
- c. 37 lbs of sulfur dioxide

03/07/2023

- a. 5,824 lbs of methane
- b. 121 lbs of non-methane hydrocarbons
- c. 111 lbs of sulfur dioxide

03/08/2023

- a. 8,565 lbs of methane
- b. 199 lbs of non-methane hydrocarbons
- c. 538 lbs of sulfur dioxide

03/09/2023

- a. 2,243 lbs of methane
- b. 94 lbs of non-methane hydrocarbons
- c. 752 lbs of sulfur dioxide

10. **Was the Gas Scrubbed?** The vent gas that went to the flare was not scrubbed.

11. **Primary Cause of Flaring Event including Detailed Description of the Cause and Contributing Factors:**

Flexicoking is a thermal-cracking process in which crude oil residues are cracked at high temperature and low pressure to produce lighter stocks and petroleum coke. In addition, a low heating value fuel gas called Flexigas (FXG) is produced and burned in the refinery heaters. The Flexicoker must be shut down on a regular cycle for major maintenance to ensure safe and reliable operation. The primary cause of the FXG flaring is the basic design of the Flexicoker and how it must be shut down and started up.

During start-up, the unit is inventoried with coke and slowly heated up. [REDACTED]

[REDACTED]. Gas formed by the initial ignition of the coke is mostly nitrogen, oxygen and CO₂ and must be flared because it does not have any heat content value. Feed is started to the unit as startup progresses. The gas being produced must be flared until it meets the specification of "flexigas" (based on composition and BTU value) and the composition is stable enough to be burned in refinery heaters as fuel gas without risk of causing upset to the heaters. The FXG produced by the unit is burned in the refinery heaters as soon as possible during startup while ensuring safe, stable operation of the refinery heaters.

When the gas is first formed from the ignition of the coke, it contains too much oxygen to allow processing in the Flexisorb Unit for sulfur removal. Oxygen above the vendor-specified limit will cause poisoning of the Flexisorb catalyst. Once the gas oxygen content is below the limit, it is treated in Flexisorb for sulfur removal prior to flaring.

12. **Immediate Corrective Actions Taken:**

To minimize flaring, the FXG was put back into the heaters as soon as possible after startup of the Flexicoker.

13. **Was the Flaring the Result of an Emergency?**

No, the flaring was required as part of a planned startup of the unit for turnaround.

14. **Was the Flaring Consistent with an Approved FMP?**

Yes, the flaring was consistent with Martinez Refining Company ("MRC") approved Flare Management Plan (FMP). As stated on page 3-1 of the FMP, MRC believes the key to flare minimization is careful planning to avoid flaring coupled with evaluation of any flaring events that occur and incorporation of lessons learned back into the planning process to further reduce flaring. As part of the FMP, MRC developed procedures to implement this process. As stated on page 3-1 of the FMP, "When these procedures are followed, any flaring is consistent with the FMP." Operations followed procedure C(F)-21 – Flaring Due to Unit Startup, Unit Shutdown, Major Maintenance, or Turnaround Activities and C(F)-22 – Fuel System Management during Flaring Events. Also see discussion under Section 401.4 on page 4-84 of the FMP

15. **Was the Flaring due to a Regulatory Mandate to Vent to a Flare?**

The flaring was not due to a regulatory mandate to vent to the flare.

16. **Prevention Measures Considered to Minimize Flaring from this Type of Flaring Event**

The flaring of Flexigas during Flexicoker shut down could not be eliminated but was minimized in the following ways:

- Operations and Process Engineering carefully reviewed the startup procedures to minimize the amount of flaring while ensuring the stable operation of the heaters that combust FXG.
- [REDACTED] As required by the developer of the Flexsorb process, flexigas must be removed from Flexsorb at a certain oxygen concentration to avoid poisoning the Flexsorb solution

Any learnings from this turnaround will be incorporated into the shutdown and startup procedures to assure there is continuous improvement [REDACTED].

Figure 1: Process Flow Diagram

[This figure has been redacted from the Public Version as it contains Business Confidential Information/ Trade Secrets]

Signature: 
[Ed Giacometti \(Jun 14, 2023 16:51 PDT\)](#)

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Signature: 

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