ATTACHMENT C
30-DAY FOLLOW-UP NOTIFICATION REPORT FORM
CONTRA COSTA HEALTH SERVICES

For CCHS Use Only:
Received By:
Date Received: 1/27/24
Incident Number: 23112702
Copied To:
Event Classification Level: 1

ATTENTION: Nicole Heath
Hazardous Materials Program Director
Contra Costa Health Services Department
4585 Pacheco Boulevard Suite 100
Martinez, CA 94553

INCIDENT DATE: November 27th, 2023
INCIDENT TIME: 3:30pm
FACILITY: Chevron Richmond Refinery

PERSON TO CONTACT FOR ADDITIONAL INFORMATION
Laura Leeds (510) 242-3887

There is updated information available to correct the 72-hour report for *Section V. Identity of Material Released and Estimated or Known Quantity* to reflect the known measured values using mass spectrometer. Emissions from flaring associated with the event are summarized below. Vent gases were combusted with at least 98% combustion efficiency.

Flare Emissions	
Vent Gas Volume (SCF)	3,502,878
SO2 (lbs)	9,724.4
Methane (lbs)	1606.1
Non-Methane Hydrocarbon(lbs)	4652.0
H2S (lbs)	51.7

I. INCIDENT INVESTIGATION RESULTS

The facility's electrical system, like many other critical equipment systems within the facility, are designed with redundancies that help ensure continual operation in the event of a malfunction or routine maintenance. On 11/27/2023, at approximately 11:30am, an electrical line feeding a portion of the facility tripped open, eliminating the designed electrical redundancy, or backup power, to a segment of the facility. Personnel were dispatched to identify the root cause of the electrical line failure so that power could be restored to the redundant system. During this time, facility operations were not impacted as the secondary electrical line feeding the same systems was still operational.

At 3:25pm, during the inspection of the electrical line failure, the secondary power line experienced a failure. Power was unexpectedly lost, impacting a portion of the facility, including a steam generating system. The loss of power and reduced steam availability resulted in the activation of the facility's safety systems and significant visible flaring. Operations personnel worked quickly to stabilize the impacted operating equipment and redirect and preserve available steam to minimize and eventually stop the flaring event.

No injuries or loss of containment occurred as a result of the event.

Two investigations were conducted for the two separate incidents, one investigation for the 11:30am electrical line tripping open, where no operation or environmental impact occurred, and the second investigation for the 3:25pm secondary power line experiencing a failure that resulted in portions of the refinery losing power and steam, resulting in activation of safety systems and significant flaring.

For the first investigation into the electrical line that tripped open at 11:30am, the following item have been identified as the primary cause, including corrective actions:

- Primary Cause: A receiver card on the trip relay system malfunctioned and sent spurious incorrect signals for the relay to trip open.

    - Corrective Actions:
        1. The receiver card that malfunctioned has been replaced, the trip system was tested multiple times by electrical specialists and confirmed the system had been restored.

For the second investigation into the secondary power line failure at 3:25pm, during efforts to identify the cause of the 11:30am electrical line tripping open, personnel needed to assess condition of several relays associated with the system. During this inspection, a relay improperly self-activated and tripped the electrical banks causing the complete loss of power to the substation that led to the shutdown of portions of the refinery causing the flaring event. The following items have been identified as key primary cause, contributing cause, and corrective actions:

- Primary Cause: An auxiliary relay did not operate as designed. During a visual inspection, the relay improperly self-activated.
    - Corrective Actions:
        1. Evaluate potential permanent removal of certain auxiliary relays to simplify the electrical system design. Due Date: 12/30/2024
        2. If removal is not pursued, replace applicable relays to a design with glass window cover to allow for inspection without removing the cover. Additionally, perform an engineering review to evaluate the appropriate gap sensitivity on the relay contacts. Due date: 12/30/2024

- Contributing Cause: The labeling nomenclature for certain auxiliary relays reflected prior standards. Updated nomenclature likely would have aided in the efficacy of troubleshooting performed by electrical technician responding to the incident.

    - Corrective Action:
        1. Update labeling nomenclature on certain electrical components to better algin with updated standards. Due Date: 6/30/2024