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

INSTRUCTIONS: A hardcopy and an electronic copy of this report is to be submitted for all Level 2 and 3 incidents or when requested by CCHS. See Attachment C-1 for suggestions regarding the type of information to be included in the report. Attach additional sheets as necessary. This form is to be used for update reports after the initial 30-day report has been submitted. Forward the completed form to:

For CCHS Use Only:

Received By: _____
Date Received: _____
Incident Number: _____
Copied To: _____
Event Classification Level: _____

ATTENTION: Matt Kaufmann
Hazardous Materials Program Director
Contra Costa Health Services Department
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553-2229

INCIDENT DATE: May 14, 2021
INCIDENT TIME: 04:40
FACILITY: Chevron Richmond Refinery

PERSON TO CONTACT FOR ADDITIONAL INFORMATION Patricia Roberts
Phone number (510) 242-3887 (office)

PROVIDE ANY ADDITIONAL INFORMATION THAT WAS NOT INCLUDED IN THE 72-HOUR REPORT WHEN THE 72-HOUR REPORT WAS SUBMITTED, INCLUDING MATERIAL RELEASED AND ESTIMATED OR KNOWN QUANTITIES**,** COMMUNITY IMPACT, INJURIES, ETC.:

I. **INCIDENT INVESTIGATION RESULTS**
Is the investigation of the incident complete at this time? _____X__Yes ____ ___ No
If the answer is no, when do you expect completion of the Investigation?

If the answer is yes, complete the following:

SUMMARIZE INVESTIGATION RESULTS BELOW OR ATTACH COPY OF REPORT:

On the morning of May 14, 2021, operators at a process unit received audible alarms, and upon investigation, discovered a fire at a pump within the process unit. Operators made immediate notifications to plant personnel and activated in-plant fire suppression systems. The Refinery's Fire Department was notified and responded to extinguish the fire. Operators pulled feed from the impacted unit and placed it in a controlled stable posture. The area safety flares activated at approximately 05:32 during the plant shutdown. There were no injuries or off-site impact as a result of the fire.

SUMMARIZE PREVENTATIVE MEASURES TO BE TAKEN TO PREVENT RECURRENCE INCLUDING MILESTONE AND COMPLETION DATES FOR IMPLEMENTATION:

Causal Factor 1

1. Upgrading of the seal system design (Next Major Turnaround)

2. Improving operator rounds pertaining to monitoring of the seal system of the pump (December 4, 2021)
3. Assuring appropriate groups are communicating (nuisance alarms, operational concerns, pump monitoring) in the proper forums. (April 30, 2022)

Causal Factor 2

1. Reinforcing the use of shift turnovers to document when the vibration trip systems are disarmed. (January 31, 2022)
2. Management actions to reinforce appropriate management of the vibration trip system. (April 30, 2022)

Causal Factor 3

1. Additional training regarding the suction air operated valves. (January 31, 2022)

Causal Factor 4

1. Redesign the piping system using current design tools. This measure is complete as of July of 2021.

STATE AND DESCRIBE THE ROOT-CAUSE(S) OF THE INCIDENT:

There were 4 causal factors identified in this incident.

1. The primary cause that initiated this event was the lack of sufficient seal flush to the pump. Lack of seal flush led to seal face damage that opened a leak path. After the seal failed, the pump bearings failed.
2. The pump vibration trip system was disarmed and thereby did not trip the motor. The vibration trip system would not have avoided the release, but it would likely have tripped the pump earlier during the event, thereby reducing the release.
3. The pump suction air operated valves remained open for part of the event allowing process fluid to reach the failed pump. Operators attempted to close the valves immediately but were unsuccessful.
4. A nearby flange leaked during the event. The flange leak was a result of multiple causes: (1) high pipe stress,(2) high heat from the fire combined with stress relaxed and plastically deformed two of the studs at that flange, and (3) high vibrations from the pump running on failed bearings likely contributed to weakening the assembly.