

Kern Oil & Refining Co.

Incident Investigation of the July 19, 2018 Platformer Unit Pool Fire

1 BACKGROUND

1.1 Introduction and Overview

On July 19, 2018, a pool fire occurred in the Platformer Unit (“Incident”), while personnel were preparing to do turnaround work in the area. No one was injured, and the Unit was down at the time. Electrical and control equipment were damaged as a result, however. No reportable substances were released to atmosphere, and there were no off-site impact or injuries as a result of the Incident.

Response Actions: When the fire occurred, a Kern Oil & Refining Co. (“Refinery”) operator raised the alarm by radio. While contractors evacuated the area, several Kern employees activated fire monitors and hoses. By approximately 12:51 pm, the fire was extinguished and the source of fuel isolated by closing the drain valve by Compressor 3528.07.

Agency Notification and Response: The Kern County Fire Department (“KCFD”) arrived at approximately 12:50pm, and remained onsite for precautionary monitoring. Kern County Environmental Health Department also responded to the Incident.

1.2 Investigation Team Composition

Kern Oil initiated the incident investigation at approximately 1:30 p.m. July 19, 2018. Investigation team members included representatives from Kern’s Safety, Engineering, Operations, and Maintenance departments, as well as a third-party expert in the root cause analysis and incident investigation. Participation of employees of major contractors were repeatedly requested, but contractors did not make their employees available to the Kern Oil Investigation Team.

1.3 Root Cause Analysis Methodology and Materials Reviewed

The investigation team applied a Root Cause “five why” methodology. In connection with its investigation, the team reviewed the Platformer Unit 2018 Damage Mechanism Review (“DMR”) Report, Platformer Unit 2018 Hazard Controls Analysis (“HCA”) Report, and the November 8, 2016 Platformer Process Hazards Analysis (“PHA”).

2 ROOT CAUSE ANALYSIS, CONCLUSIONS, AND RECOMMENDATIONS

2.1 Analysis and Findings

1. Conduit appears to have been broken at some time during July 18/19, 2018. With multiple tasks (e.g., scaffolding erection and heat exchanger head and tube bundle removal) taking place in a congested area, it is highly likely that one or more of these activities were responsible for the damage. The broken conduit produced sparks from its live wiring. This particular circuit originally supplied a chemical pump that was removed a number of years ago, but the circuit was inadvertently left in an energized state.
2. A small pool of liquid (water with some light hydrocarbon on the surface) was present near the conduit, which most likely developed from the use of a water hose to flush liquid containing hydrocarbon to the Refinery's concrete draining pad. The conduit sparked when touched and ignited the hydrocarbon on the surface of the small pool of liquid. A vapor cloud ignited and flashed back igniting the light hydrocarbon floating on top of the water in the Platformer aisle, compressors, and around the drain at the Platformer Control Room.

2.2 Conclusion and Root Causes

While the Refinery Maintenance Department has a daily practice to meet with contractors before work commences, Turnaround supervision did not have a practice to hold a formal start of shift meeting with all contractors to discuss job plan and hazards such as the broken conduit. Additionally, liquid containing hydrocarbons was drained to ground without following a formal line breaking procedure or conducting a job safety analysis ("JSA").

2.3 Interim Measures and Recommendations

Interim Measures: The Refinery provided Line and Equipment Breaking training to refinery employees between July 31 and August 4, 2018.

JSA training was conducted for all refinery Operations employees, and JSA refresher training was conducted for all refinery Maintenance employees between July 31 and August 4, 2018.

Refresher training was conducted for all refinery employees between July 31 and August 4, 2018 in the following topics:

- Hot Work,
- Lock Out/Tag Out,

- Emergency Response
- Hazard Materials Release – Control and Prevention, and
- Stop Work Authority

Six industrial circuit testers were acquired on September 26, 2018 to help investigate and analyze electrical problems.

Recommendations:

- Emphasize that all managers and other persons in a position of authority/supervision have a duty to enforce Kern Oil policies and procedures (including safe work practices) at all times [Completion due December 2019].
- Establish a Safe Work Permit (or Cold Work Permit) practice to cover all non-routine tasks, including turnarounds, not covered by a risk-assessed procedure or other type of work permit [Completion due April 2020].
- Develop and implement Job Safety Analysis (JSA) or equivalent form of task risk assessment to supplement work permits (including Safe Work Permit) for non-routine work [Completed on December 31, 2018].
- Develop and implement a Simultaneous Operations (SIMOPS) practice to manage the risk of multiple activities occurring in close proximity to each other, including during future turnarounds [Completed on December 31, 2018].
- Enhance oversight of contractors performing turnaround tasks within the refinery. The extent of oversight should be related to the hazards/risks associated with the task. Consider identifying a Contract Manager (or Person Leading Work) for each contract company to ensure that contractor performance meets Kern Oil expectations [Completion due by April 2020].
- Inspect all conduit on the Platformer Unit to ensure that it meets code, and rectify any wiring using the neutral as ground [Completion due August 30, 2019].
- Add conduit on the Platformer Unit to the asset integrity program and inspect for corrosion at ground level. [Completion due August 30, 2019].
- Enhance refinery practices regarding retired equipment to ensure that it is adequately de-energized [Completion due April 2020].
- Check all out of service equipment on the Platformer Unit to ensure that it is de-energized [Completion due August 30, 2019].
- Review labeling of electrical equipment in the Platformer Control Room, and rectify any poor or missing labels. Enhance refinery practices for labeling of electrical equipment [Completion due by August 30, 2019].