



## U. S. Chemical Safety and Hazard Investigation Board RECOMMENDATIONS STATUS CHANGE SUMMARY

<b>Report:</b>	Chevron Refinery Fire
<b>Recommendation Number:</b>	2012-3-I-CA-R34
<b>Date Issued:</b>	January 28, 2015
<b>Recipient:</b>	Chevron USA
<b>New Status:</b>	Closed – Acceptable Action
<b>Date of Status Change:</b>	September 25, 2017

### Recommendation Text:

*Develop an auditable process to be available for all recommended turnaround work items necessary to address mechanical integrity deficiencies or inspection recommendations that are denied or deferred. This process shall provide the submitter of the denied or deferred recommendation with the option to seek further review by his or her manager, who can further elevate and discuss the recommendation with higher level management, such as the Area Business Unit Manager. Maintain an auditable log of each of these potential turnaround work items, including the ultimate determination of approval, deferral, or rejection, justification determination, and the person or team responsible for that decision.*

### Board Status Change Decision:

#### A. Rationale for Recommendation

On August 6, 2012, the Chevron Refinery in Richmond, California, experienced a catastrophic pipe failure in a crude unit, causing the release of a flammable hydrocarbon process fluid which partially vaporized into a large cloud which later ignited. 19 Chevron employees were engulfed by the vapor cloud. 18 of those 19 employees safely escaped from the vapor cloud just before ignition. The remaining employee, a Chevron refinery firefighter, was wearing firefighting protective clothing/equipment and was able to make his way through the flames to safety. Six Chevron employees suffered minor injuries during the incident.

The ignition and subsequent continued burning of the hydrocarbon process fluid resulted in a large plume of unknown particulates and vapor. Approximately 15,000 people from the surrounding area sought medical treatment in the weeks following the incident. The CSB's investigation found that the pipe failure resulted from sulfidation corrosion; a damage mechanism that causes piping walls to thin over time.

The CSB's investigation identified several contributing causes of the incident relating to the Chevron Richmond Refinery's safety culture, including decision-making that encouraged continued operation of the unit despite hazardous leaks, reluctance among employees to use their Stop Work Authority, and substandard equipment maintenance practices.

Among other findings, the investigation identified that turnaround managers repeatedly denied piping upgrade recommendations stemming from inspection findings without a process for the requester to appeal this adverse decision to higher-level management. The CSB issued a recommendation to Chevron USA (CUSA) to develop an auditable process for resolving turnaround work items, and to ensure that employees have the ability to seek further review of denied or deferred inspection and mechanical integrity turnaround work item recommendations.

#### B. Response to the Recommendation

In June of 2016, CUSA informed the CSB that their Richmond and El Segundo refineries developed and implemented a process for tracking turnaround work items necessary to address inspection recommendations concerning fixed equipment (e.g., process piping) identified by the their API certified inspectors, including any turnaround work items that are denied or deferred. They stated that these refineries maintain a Turnaround Database of work items that include the ultimate determination of deferral or rejection of turnaround work items. This database allows personnel to search the status of any turnaround work item, generate a report that demonstrates the approval status of turnaround work items, and review any denied or deferred work items. The database also identifies the name of the supervisor and the name of employee(s) who provided comments or made a determination regarding approval status. When action is taken on a Living Worklist (“LWL”) item, the originator receives an email notification regarding the change in status. CUSA informed the CSB that it would continue to make improvements to the Turnaround Database with the goal of successfully implementing the CSB’s recommendation.

In August of 2017, CUSA confirmed the implementation of additional improvements to the turnaround item tracking process as well as to guidance materials that further emphasize the ability of the originator to seek additional review of deferred or denied turnaround work items. According to CUSA, the company achieved these improvements through a turnaround tracking database upgrade implemented at El Segundo and Richmond on or before June 19, 2017. CUSA also confirmed that this upgraded Turnaround Database had also been implemented at the company’s other two U.S. refineries – Pascagoula and Salt Lake City.

#### C. Board Analysis and Decision

Based on CUSA’s implementation of and upgrades to their Turnaround Database as detailed above, the Board voted to designate **CSB Recommendation No. 2012-03-I-CA-R34** as: **“Closed – Acceptable Action.”**