



# U. S. Chemical Safety and Hazard Investigation Board

## RECOMMENDATIONS STATUS CHANGE

### SUMMARY

<b>Report:</b>	Valero Refinery Propane Fire
<b>Recommendation Number(s):</b>	2007-5-I-TX-R7
<b>Date Issued:</b>	July 9, 2008
<b>Recipient:</b>	Valero Energy Corporation
<b>New Status:</b>	Closed – Acceptable Alternative Action
<b>Date of Status Change:</b>	December 29, 2015

#### **Recommendation Text(s):**

*Revise Valero standards, including Fire Proofing Specifications, to require evaluation of jet fire scenarios and, as a minimum, ensure more protective fireproofing for pipe rack support steel near process units containing highly pressurized flammables.*

#### **Board Status Change Decision:**

##### A. Rationale for Recommendation

The U.S. Chemical Safety and Hazard Investigation Board (CSB) conducted an investigation of a fire that injured four workers and caused the total shutdown and evacuation of the Valero McKee Refinery in Sunray, Texas, in February 2007. The investigation concluded that water leaked through a valve, froze, and cracked an out-of-service section of piping in the propane deasphalting unit (PDA), causing a release of high pressure liquid propane. Direct losses attributed to the fire reported to exceed \$50 million. The investigation concluded that the refinery lacked several major safety components that would have reduced the severity of the incident. A non-fireproofed structural support for a pipe bridge collapsed early in the incident and significantly increased the duration and size of the fire. As a result of the investigation, the CSB issued five recommendations to Valero Energy Corporation (Valero) including a recommendation that Valero revise its fire proofing standards to require evaluation of jet fire scenarios and require more protective fireproofing for pipe rack support steel. This status change summary addresses only Recommendation No. 2007-5-I-TX-R7.

##### B. Response to the Recommendation

Since the incident, Valero has outfitted the McKee PDA unit pipe rack with additional fire proofing during the unit rebuild. In November 2014, Valero adopted Design and Engineering Practice (DEP), Assessment of the Fire Safety of Onshore Installations, 80.47.10.30-GenValero, which is a Shell Global Solutions engineering standard with Valero specific overlays. At the time of the incident, Valero used its internal Fire Proofing Specifications. Rather than a separate specification, Valero's fireproofing requirements are now included in its broader adopted DEP. Overall, the document is more specific than those requirements in place at the time of the incident.

Regarding the first part of the recommendation, the DEP does now require the evaluation of jet fire scenarios in fireproofing and states that fire testing should reproduce potential conditions as far as practicable. The second part of the CSB's recommendation is to ensure more protective fire proofing for pipe rack support steel near process units containing highly pressurized flammables. While the new standard does not incorporate this requirement, it does have expanded requirements for fireproofing of

pipe rack support. In addition, the standard also requires consideration of the potential impact of endangered workers and the environment when assessing fireproofing.

Although Valero has not required fireproofing on pipe rack support near all highly pressurized flammables, CSB believes that the standards that Valero has adopted since the incident are improved to those used at the time of the incident. Selection of passive fire protection does require consideration of potential jet fires; fire testing of jet fires must reproduce potential jet fire scenarios as far as practicable; criteria for fireproofing of pipe rack support has been expanded; and assessment of fireproofing for steel supporting structures must consider danger for personnel and the environment.

#### C. Board Analysis and Decision

Based on Valero's revised corporate standards, the Board voted to change the status of **Recommendation No. 2007-5-I-TX-R7** to **"Closed – Acceptable Alternative Action."**