



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

Report:	Valero McKee Propane Fire (Sunray, TX)
Recommendation Number:	2007-05-I-TX-R6
Date Issued:	July 9, 2008
Recipient:	Valero Energy Corporation
New Status:	Closed- Acceptable Action
Date of Status Change:	March 24, 2017

Recommendation Text:

Establish corporate requirements for written freeze protection programs at Valero refineries subject to freezing temperatures, including identification, mitigation, MOC, and audit requirements.

Board Status Change Decision:

A. Rationale for Recommendation

On February 16, 2007, a propane fire erupted in the propane deasphalting (PDA) unit at the Valero McKee Refinery near Sunray, Texas. Three employees and a contractor were injured in the fire and extensive equipment damage resulted in the evacuation and total shutdown of the refinery. The refinery remained shut down for two months; the PDA unit was rebuilt and resumed operation nearly a year later. Direct losses attributed to the fire were reported in excess of \$50 million.

The CSB's investigation found that the propane release began with the freeze-related failure of high-pressure piping in an out-of-service control station that had been left connected to the process, forming a "dead-leg."¹ Water in the piping accumulated at a low point and froze during cold weather prior to the incident, which cracked an inlet pipe elbow. As the air temperature rose on the day of the incident, ice that was sealing the failed pipe from the process melted, allowing 4,500 pounds of liquid propane per minute to escape. The rapidly expanding vapor cloud contacted an ignition source, triggering the fire.

The CSB's investigation concluded that the Valero Energy Corporation (Valero) did not have corporate requirements for formal, written freeze protections at refineries subject to freezing temperatures. The McKee refinery had an unwritten practice of reviewing existing freeze protection measures every fall, but did not review units to identify dead-legs and other idle/infrequently used piping systems, or other areas where water could collect.

B. Response to the Recommendation

Valero has taken a number of actions in response to the CSB's recommendation, including:

- Implementation of the corporate procedure, "Inspection and Analysis of Piping Deadlegs and Stagnant Zones" at all of its U.S. refineries;
- Implementation of the corporate procedure, "Periodic Inspection, Testing, and Maintenance (IT&M) of Fire Protection Systems and Equipment" at all U.S. refineries;

¹ A dead-leg is a section of piping connected to the process that has no flow through it.

- Use of auditing programs to ensure compliance with corporate procedures;
- Assessment of Valero refineries in cold weather climates;
- Completion of process hazard recognition for employees, including information about deadlegs, stagnant zones and freeze protection practices; and
- Development and distribution of winterization literature for refineries.

C. Board Analysis and Decision

As Valero has taken actions that are consistent with the intent of this recommendation, the Board voted to change the status of **Recommendation No. 2007-05-I-TX-R6** to “**Closed- Acceptable Action.**”