



Chemical Safety and Hazard Investigation Board

OFFICE OF GENERAL COUNSEL

Memorandum

To: Board Members

From: Christopher M. Lyon
Acting General Counsel *Christopher M. Lyon*

Cc: Leadership Team
Amanda Johnson
Adam Henson

Subject: Board Action Report - Notation Items 2024-54

Date: February 16, 2024

On February 16, 2024, the Board approved Notation Items 2024-54, thereby designating Recommendation 2018-02-I-WI-R7, to the Cenovus Superior Refinery, from the Husky Energy Superior Refinery Explosion and Fire investigation (2018-02-I-WI), with the status of Closed – Acceptable Action.

Voting Summary – Notation Item 2024-54

Disposition: APPROVED

Disposition date: February 16, 2024

	Approve	Disapprove	Calendar	Not Participating	Date
S. Johnson	X				2/15/2024
S. Owens	X				2/16/2024
C. Sandoval	X				2/15/2024



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE

SUMMARY

Report:	Husky Energy Superior Refinery Explosion and Fire
Recommendation Number:	2018-02-I-WI-R7
Date Issued:	December 23, 2022
Recipient:	Cenovus Superior Refinery
New Status:	Closed – Acceptable Action
Date of Status Change:	February 16, 2024

Recommendation Text:

Incorporate lessons learned from this incident into the appropriate training materials for the Cenovus Superior Refinery Emergency Response Team. At a minimum, topics shall include the proper response to liquids potentially stored above their flash point, such as asphalt, and the ignition risk of pyrophoric material inside asphalt storage tanks.

Board Status Change Decision:

A. Rationale for Recommendation

On the morning of April 26, 2018, the primary and sponge absorber of the Husky Energy Superior Refinery exploded during the planned shutdown of the facility's fluidized catalytic cracking (FCC) unit. Debris from the explosion struck an asphalt storage tank approximately 200 feet away. Asphalt leaked from the damaged tank and over the containment wall spreading into the FCC and crude unit operating areas before eventually catching fire. Husky Superior Refinery reported that 39,000 pounds of a flammable hydrocarbon vapor mixture as well as approximately 17,000 barrels of asphalt were released during the incident.

36 refinery and contract workers received medical treatment as the result of the incident. Of those 36 injuries, 11 met the criteria to be considered an Occupational Safety and Health Administration (OSHA) recordable injury. None of the injuries suffered were deemed life-threatening. It was reported that the explosion shook buildings up to a mile away. The plume from the burning asphalt was visible from neighboring communities. An evacuation order was issued by county officials to protect the public from the smoke plume and as a precaution for fear the incident would escalate.

As a result of the incident the facility was destroyed. The incident resulted in \$550 million of onsite and \$110,000 of off-site property damage. This incident was recorded as having the 33rd largest adjusted property damage loss in the hydrocarbon extraction, transport, and processing industry since 1974¹. In September 2019 a permit was issued to rebuild the refinery and construction began soon after. Husky Energy merged with Cenovus Energy, Inc., a Canadian oil

¹ Marsh JLT Specialty, "100 Largest Losses in the Hydrocarbon Industry," 2022. [Online]. Available: <https://www.marsh.com/us/insights/research/100-largest-losses-hydrocarbons-industry-html>. [Accessed 5 October 2022].

and natural gas company, on January 1, 2021. The refinery is expected to resume operations in 2023 as Cenovus Superior Refinery.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found several safety issues including ineffective transient operation safeguards, a lack of process knowledge, ineffective process safety management systems, a lack of available industry knowledge and guidance, and failures in emergency preparedness. As a result of these findings, the CSB issued one recommendation to Cenovus Superior Refinery (Cenovus). This status change summary addresses CSB Recommendation No. 2018-02-I-WI-R7.

B. Response to the Recommendation

Cenovus notified the CSB on November 8, 2023, that they had successfully implemented the recommendation and provided the necessary documentation to support their claim. Cenovus incorporated the lessons learned from the 2018 incident into their training program for the refinery's emergency response team (ERT). Amongst other topics, the proper response to liquids potentially stored above their flash points, such as asphalt, and the ignition risk of pyrophoric material inside asphalt storage tanks are addressed. In addition to developing training slides they also participated in functional firefighting exercises, developed tactical guidance applicable to their facility, and hosted training for their ERT, the local fire department, and others.

Board Analysis and Decision

Based upon the information above, the Board voted to change CSB Recommendation No. 2018-02-I-WI-R7 to: "Closed – Acceptable Action."