



U.S. 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: Amanda Johnson
Adam Henson
Leadership Team

Subject: Board Action Report – Notation Item 2025-6

Date: October 23, 2024

On October 23, 2024, the Board approved Notation Item 2025-6, thereby designating Recommendation 2017-04-I-MO-R8, to the National Board of Boiler and Pressure Vessel Inspectors, from the Loy-Lange Company Pressure Vessel Explosion investigation (2017-04-I-MO), with the status of Open – Acceptable Response or Alternate Response.

Voting Summary – Notation Item 2025-6

Disposition: APPROVED

Disposition date: October 23, 2024

	Approve	Disapprove	Calendar	Not Participating	Date
S. Johnson	X				10/21/2024
S. Owens	X				10/23/2024
C. Sandoval	X				10/21/2024



U. S. Chemical Safety and Hazard Investigation Board

RECOMMENDATION STATUS CHANGE

SUMMARY

Report:	Loy-Lange Box Company Pressure Vessel Explosion
Recommendation Number:	2017-04-I-MO-R8
Date Issued:	July 29, 2022
Recipient:	National Board of Boiler and Pressure Vessel Inspectors (NBBI)
New Status:	Open – Acceptable Response or Alternate Response
Date of Status Change:	October 23, 2024

Recommendation Text:

Update NB-263 Rules for Commissioned Inspectors to include prescriptive elements in the boiler and pressure vessel repair and alteration inspection and acceptance process that would prevent the acceptance of a non-conforming repair.

Board Status Change Decision:

A. Rationale for Recommendation

On April 3, 2017, an explosion occurred at the Loy-Lange Box Company (Loy-Lange) in St. Louis, Missouri when the bottom head of a pressure vessel (called a Semi-Closed Receiver (SCR)) catastrophically failed. The pressure vessel failure caused a boiling liquid expanding vapor explosion (BLEVE) which fatally injured a Loy-Lange employee working nearby. The pressure vessel then launched from the Loy-Lange building into the air and crashed through the roof of a nearby business, fatally injuring three members of the public.

The U.S. Chemical Safety and Hazard Investigation Board (CSB) investigated the incident and found that the failed pressure vessel resulted from oxygen pitting corrosion and generalized corrosion which thinned the pressure vessel bottom head until it could no longer contain the pressure inside the vessel. The CSB determined that the cause of the incident was deficiencies in Loy-Lange's operations, policies, and process safety practices that failed to prevent or mitigate chronic corrosion in the pressure vessel as well as Kickham Boiler and Engineering, Inc.'s performance of an inadequate repair to the SCR in 2012 that left damaged material in place. The CSB identified additional issues in their overall regulatory compliance as well as with their records and data management. As a result of these findings, the CSB issued one recommendation to the National Board of Boiler and Pressure Vessel Inspectors (NBBI). This status change summary addresses CSB Recommendation No. 2017-04-I-MO-R8.

B. Response to the Recommendation

NBBI has notified the CSB that language intended to meet the recommendation has been approved for the 2025 edition of NB-263 Rules for Commissioned Inspectors. The next edition of NB-263 Rules for Commissioned Inspectors will be effective January 1, 2025. Once the updated version becomes effective the CSB can evaluate this recommendation for closure.

C. Board Analysis and Decision

Based upon the information above, the Board voted to change the status of CSB Recommendation No. 2017-04-I-MO-R8 to: “Open – Acceptable Response or Alternate Response.”