



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

Report:	Gas Well Blowout and Fire at Pryor Trust Well 1H-9
Recommendation Number:	2018-01-I-OK-R17
Date Issued:	June 12, 2019
Recipient:	National Oilwell Varco (NOV)
New Status:	Closed – Acceptable Action
Date of Status Change:	October 26, 2021

Recommendation Text:

Design the M/D Totco user interface to allow drilling contractors to pre-set different alarms for different operations (e.g., different alarm configurations for drilling, tripping, circulating, and surface operations in a “state-based” alarm system).

Board Status Change Decision:

A. Rationale for Recommendation

On January 22, 2018, a blowout and rig fire occurred at Pryor Trust 0718 gas well number 1H-9, located in Pittsburg County, Oklahoma. The fire resulted in the fatalities of five workers, who were inside the driller’s cabin on the rig floor. They died from thermal burn injuries and smoke and soot inhalation. The blowout occurred approximately three-and-a-half hours after removing drill pipe (“tripping”) out of the well. The cause of the blowout and rig fire was the failure of both the primary barrier (hydrostatic pressure produced by drilling mud) and the secondary barrier (human detection of influx and activation of the blowout preventer) which were intended to be in place to prevent a blowout.

As a part of its investigation, the U.S. Chemical Safety and Hazard Investigation Board (CSB) determined that the alarms for the electronic drilling data system for the Pryor Trust well drilling rig were turned off at the time of the incident. While it is unknown why both drillers might have elected to turn off the alarm system. A plausible reason to turn off an alarm system—and to keep it off for tripping, circulating, and surface operations—is that the alarm settings for the drilling operation are perceived as irrelevant or a nuisance for other operations. The data indicates that had the alarm system been on, most of the alarms that would have activated from 6:45 pm on January 21 through the incident would have been irrelevant to detecting the well control event. In addition, the ability to review and analyze alarm data was not included as part of the data package supplied to the driller

Consequently, the CSB determined there is a need for alarm system providers to design the user interface to allow for easy navigation between the state-based alarm operations and thus the Board issued recommendations (e.g., 2018-01-I-OK-R15 and R17) to Pason Systems Corp. (Pason) and National Oilwell Varco (NOV), two major suppliers of electronic drilling data systems, to redesign their user interfaces to preset different alarms for different operations.

Moreover, as alarm data could provide valuable insight into alarm performance, providing the basis for improving alarm management for drilling contractors, the Board also issued recommendations (e.g., 2018-01-I-OK-R16 and R18) to Pason and NOV to include alarm information with their electronic data drilling systems. This status change summary only addresses the recommendation issued to NOV for state-based alarm operations (e.g., R17).

B. Response to the Recommendation

In September of 2021, NOV supplied the CSB with sufficient information showing how recent enhancements to the M/D Totco RigSense Kick Monitoring Detection (KMD) module allows for different alarm configurations for various modes of drilling operations.

C. Board Analysis and Decision

As the changes made by NOV to its RigSense software meet the intent of the CSB recommendation, the Board voted to change the status of CSB Recommendation No. 2018-01-I-OK-R17 to: “Closed—Acceptable Action.”