

COS SAFETY SHARE

WHAT WILL WE DO TO PREVENT THIS FROM HAPPENING HERE?

Misdirected Blowdown to Maintenance Vent through 3-Way Valve Resulting in Flammable Gas Release

What happened?

Operators were returning a Vapor Recovery Unit (VRU) compressor back to service. While returning the isolation points back to their normal state, a 3-way valve was transitioned from the vent (maintenance) position back to the flare (normal) position.

During the 3-way valve transition, the platform was flaring gas from another location which imposed approximately 8 psi of pressure on the flare system. When the valve was near the 35% position, gas from the flare system traveled through the 3-way valve and exited the VRU maintenance vent pole above the production deck. Wind then blew the vented gas back toward the platform where it was measured by two separate gas detectors. The safety system registered the gas levels from two separate detectors and took action to close all shutdown valves, sound the muster alarm, and open all blowdown valves. When the muster alarm sounded, the personnel operating the 3-way valve left it at the 35% transit position and moved to their assigned muster location and the remainder of the volume vented.

What went wrong?

When the blowdown occurred, the 3-way valve was in transit and had an open path to the vent pole. The additional flow path allowed a large volume of gas to escape through the VRU vent pole during the blowdown event.

Why did it happen?

The 3-way valve is of a “trans-flo” design meaning all three ports are in communication during transitioning from one position to another.

What areas were identified for improvement?

Consider possible mechanical changes to isolate compressor flare and vent systems:

- Remove vent pole
- Remove 3-way valve and install gear operated valves, interlocked with compressor run status, isolating flare and vent
- Add an additional valve isolating from the flare system

Develop procedures for compressor Lock out Tag Outs (LOTO) which include stepwise order of operations for isolation and deisolation and train operations staff doing this work.

- If platform has a “trans-flo” style 3-way valve, consider impact of manipulating while actively flaring.
- If available, use isolation points other than the 3-way valve to isolate flare and vent.

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