



Safety Alert No. 484

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Improperly Depressurizing Piping to Remove a Hydrate Causes Injury

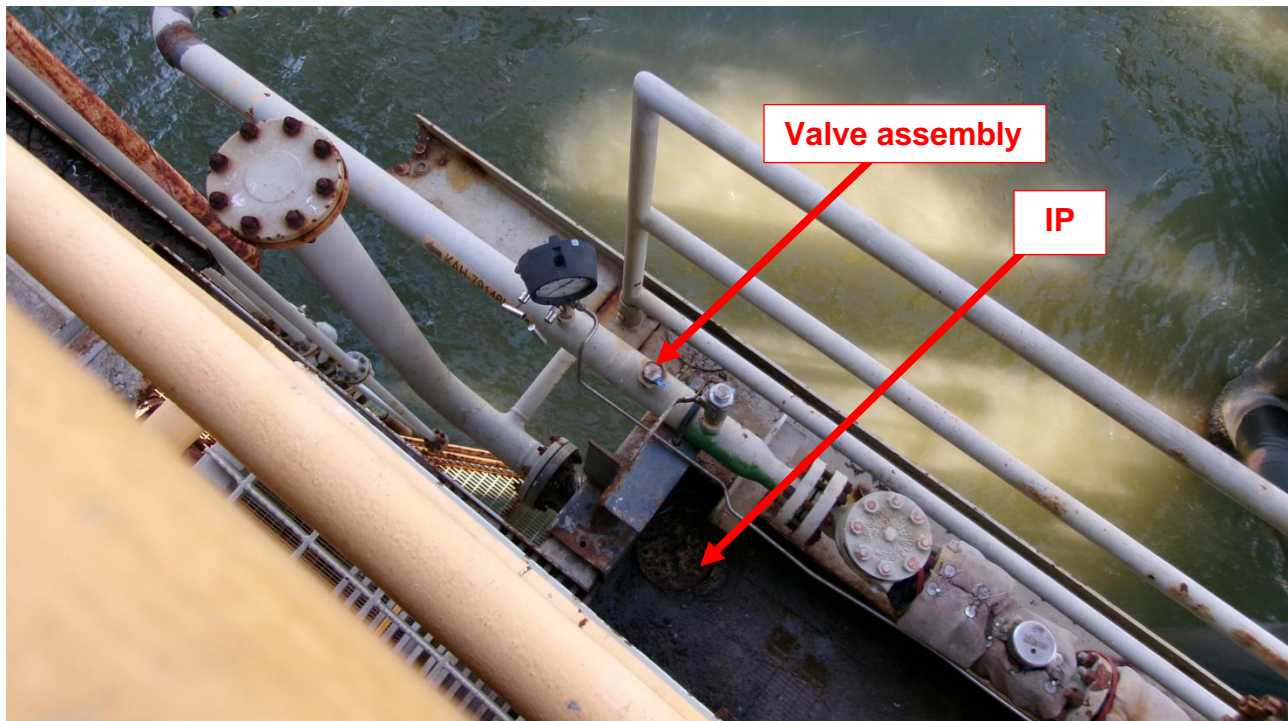


Figure 1: Location of Injured Person (IP) and valve assembly

The following incident serves as a precautionary example of the potential hazards associated with improperly depressurizing piping to remove a hydrate.

During production operations, a control room operator observed a decrease in gas lift pressure that was supplied through a pipeline to a remote well location. The control room operator notified the onboard platform operators of the pressure drop and the possibility of a hydrate forming inside of the 3-inch gas lift piping. To remove the possible hydrate, the control room operator and platform operators planned to isolate and bleed the pressure. From his station, the control room operator closed the pipeline shutdown valve (SDV) upstream of the manual flow control valve. Additionally, the platform operators physically closed the manual isolation valve upstream of the SDV, assumed hydrate location, and departing pipeline. The platform operators then started to relieve the pressure downstream of the hydrate location to atmospheric pressure,

without properly isolating the pipeline from the bleed point, through a ball valve assembly attached to the 3-inch gas lift piping. The ball valve assembly consisted of a threadolet, threaded steel pipe nipples, two 1-inch ball valves inline, and a 90-degree elbow that pointed upward. With approximately 900 psi trapped behind the valve, the assembly separated from the threadolet, striking one of the platform operators under the left arm pit area, causing bruising and swelling. The injured offshore worker was sent for medical treatment and was later released to full duty. The valve assembly could not be found and is suspected to have fallen overboard after striking the worker.

Hydrates can form inside a pipe from a concentration of impurities, natural gas, flow conditions, high pressure, and low temperature. At the time of the incident, the operators onboard the facility were injecting methanol at a rate of 5 quarts per day to prevent hydrate formation. A Job Safety Analysis (JSA) was not performed, so the hazards of relieving pressure to remove a hydrate were never discussed. The cause of the dislodged valve assembly is still under investigation.

BSEE recommends that operators and their contractors, where appropriate, consider doing the following:

- Isolating all energy sources; then bleeding pressure upstream and downstream of the hydrate simultaneously, maintaining the same amount of pressure so that the hydrate does not move and cause a pressure surge, which could damage associated piping.
- Verifying that JSAs identify potential hazards and mitigating those hazards for the task being performed.
- Ensuring that when changes to equipment are made all hazards are identified and mitigated through the Management of Change process, and updating facility information and informing all personnel affected by the change(s).
- Using gas dehydration systems to remove water vapors to reduce the risk of hydrate formation inside of piping.
- Verifying current platform configurations are reflected on piping and instrumentation diagrams.

– BSEE –

A **Safety Alert** is a tool used by BSEE to inform the offshore oil and gas industry of the circumstances surrounding a potential safety issue. It also contains recommendations that could assist avoiding potential incidents on the Outer Continental Shelf.

Category: Process piping