

Emergency Shutdown due to Gas Detection

Description of Incident (October 27, 2024)

An offshore production facility went into alarm status, including a platform Emergency Shut Down, due to gas detection on three detectors in the process area. The investigation revealed a leak around the HP Separator sight glass. This resulted in active fire protection activation in the area (deluge release).

The sight glass and ball check valves are original facility equipment and have been in service for over thirty years. Onshore inspection found the sight glass to be generally in good condition with no signs of excessive corrosion or pitting.

What Went Wrong

- The breaking torque of all bolts holding the glass to the body of the sight glass was found to be less than 20 ft. lbs. which is less than required. According to Original Equipment Manufacturer specifications, the torque valve should be 45-50 ft. lbs. This resulted in gas leaking between the house and the body.
- A gasket section was missing/damaged and there were signs of hydrocarbon release near the top section of the sight glass.
- The imprint of the gasket is visible on the main body, indicating that it was intact prior to release. This indicates that the gasket was not a contributing factor in the gas release. All other gaskets were in acceptable condition.
- The root cause was determined to be suspected thermal cycling over time, which led to bolts becoming loose, leading to release.

Corrective Actions & Recommendations

The following corrective actions were recommended and are being implemented:

- Check and re-torque as required all similar sight glasses beginning with sight glasses in hydrocarbon service.
- Implement routine preventative maintenance for torque checks based on findings from initial re-torque.

The operator recommends readers consider the following learning questions for error prone situations:

- Has your risk assessment considered all potential risks?
- How can your procedure be improved to make the task easier to get right and harder to get wrong?

Applicable Lifesaving Rule

There is no lifesaving rule applicable to this incident.

Posted on May 1, 2025.

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Related Images



Figure 1: Leak Location

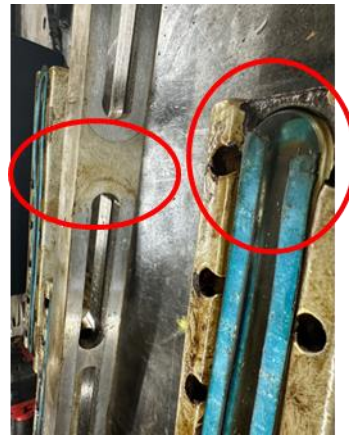


Figure 2: Failed Gasket

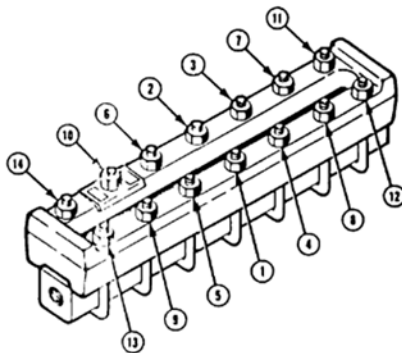


Figure 3: Nut tightening sequence as per Original Equipment Manufacturer