

# SAFETY ALERT



**Safety Alert No. 374**  
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## Air Compressor Flaws Lead to Engine Fire



*Photo 1 – PSV Weep Hole*



*Photo 2 – Relief Line Leading to Skid*

On July 3, 2019, a fire occurred on a production platform located in the Gulf of Mexico when fluid from an air compressor ignited. No personnel were injured and there was no impact to the environment as a result of the incident.

During water blasting and painting operations, smoke began rising from the engine side of the air compressor. The Emergency Shutdown on the compressor was pulled; however, the unit continued to smoke. When the engine compartment door was opened, a small fire was observed. It was quickly extinguished with a nearby fire hose.

The inadvertent release of hydraulic fluid and air throughout the engine housing caused the fire. Due to deterioration over time, the diaphragm in the regulator on the compressor's separator tank ruptured. As a result, the hydraulic fluid regulator seal failed, which rapidly increased the pressure in the unit and subsequently activated the Pressure Safety Valve (PSV). The fluids were released through two separate locations:

1. PSV weep hole (*Photo 1*) directly onto the air compressor engine; and,
2. PSV relief piping into the compressor skid (*Photo 2*), which was then drawn up by the compressor engine fan through louvers onto the engine.

The fluids accumulated on the engine housing after the PSV was opened. Since the engine exhaust manifold remained hot after the unit was shut down, the fluids ignited.

**Therefore, BSEE recommends that operators consider the following:**

- Examine adding a step in the Job Safety Analysis for assessing the overall condition of the compressor prior to start-up;
- Continuously monitor surrounding equipment during blasting and painting operations;
- Avoid leaving equipment in the immediate vicinity of the work area unattended while operational;
- Consider installing a pressure switch as an additional barrier on the separator tank below the PSV set point in order to shut down the unit if pressure exceeds the operating regulator setting;
- Align the drain piping to a secondary discharge containment pan below the unit to trap any potential hydraulic fluid leaking from the PSV;
- Cover the PSV body with a shroud in order to confine a hydraulic fluid release to a controlled discharge location;
- Include periodic inspections for the pressure regulator diaphragm as part of your preventative maintenance program to confirm an adequate seal is in place; and,
- Verify work orders are completed in accordance with scheduled maintenance if the compressor is a rental unit.

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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.