

**Incident description: Gas leak 2013**

During Preventive Maintenance (PM) of a high pressure (HP) reciprocating compressor valve cover in 2012, a scheduled bolt replacement was not completed due to unavailable parts. The old bolts were inspected by a technician and put back into service. The critical PM was closed without changing the bolts according to fatigue life considerations. No deviation was established and no risk assessment of reusing the old bolts was performed. A new workorder for PM was established and scheduled for 2014 execution.

In 2013, 5 of the 8 bolts broke due to fatigue/corrosion during normal operation. This resulted in a sudden gas release of 390 – 450 kg gas. Most of the release happened within 60 seconds after the failure. Confirmed gas was detected which resulted in immediate automatic production shut down.

**Causes**Direct cause:

Fatigue initiated by corrosion at threaded bolt surfaces.

Root causes:

- Scheduled bolt replacement not completed due to unavailable parts.
- The critical PM in was closed without changing the bolts. Had it been kept open, the bolts would have been replaced sooner and/or a risk assessment had been performed.
- New bolts arrived about one month after the PM in 2012.
- Deviation process for postponing a critical PM was not followed.
- No risk assessments was conducted for extending the use of the old bolts.

**Learning points and recommendations:**

- Ensure adequate systems for management of change (including risk assessments) are known and complied with to ensure that relevant competence is involved in the process.