

### Incident description: oil leak 2015

A flowmeter on the test separator was to be repaired. A work order was established for this but had to be postponed because of other jobs, and the work permit (WP) was automatically closed. A new WP was established the following day, and was again postponed and the WP closed. A copy of the closed WP was retrieved the day after, and reviewed and signed by the operations and maintenance (D&V) supervisor without a shutdown plan established or requirements for double block and bleed specified. The job started and double block and bleed was established, even though this was not required in the WP. However, no shutdown plan was established and closed valves were not marked.

The maintenance operator uninstalled the flowmeter and the pipe segment upstream from the last isolation valve, and took these to the workshop. They were opened up and prepared for installing the flowmeter. A mechanic agreed to assist with flange tightening on the flowmeter during installation since the maintenance operator had not taken a course in such work. The flowmeter and pipe segment with valves were reassembled in the analysis cabinet. The mechanic carried out torque tightening of bolts on the flowmeter. Some diffuse leakage from the fittings of the final outlet valve from the analysis cabinet was observed by the operator.

The latter tried to tighten the fittings, and the 25mm tubing came loose. Unstabilised oil at 55 barg and 53°C flowed out and hit the operator's hard hat. A total of 538kg was spilt, comprising 91kg of gas and 447kg of oil. Gas flashing off formed a flammable gas cloud. The initial discharge rate was 6.9kg/s. No oil was registered on the sea, and it was probably all collected in the closed drain system.

ESD, deluge and blowdown were initiated, and personnel mustered in accordance with the alarm instructions. The emergency lasted for about 30 minutes. No personal injuries were suffered.



**Figure: The red circle shows the site of diffuse leakage from the fittings on the analysis cabinet's final outlet valve. The 25mm tubing came loose when the operator tried to tighten the fittings. Oil and gas flowed out.**

## **Causes**

### Direct causes

The work was carried out without a WP. Work was done on a connection outside the closed pipe segment.

### Underlying causes

- Inadequate preparations before repair work. Lack of an isolation plan and marking.
- Lack of confirmatory communication between the operator performing the work and the person in charge of the area led to differing perceptions of what had been isolated and blown down.
- Insufficient attention paid – the safety talk was carried out the day before. Experience from previous jobs in the cabinet was not adequately reviewed.
- Work outside the content of the WP.

## **Lessons and recommendations**

- Better quality of conversations in the field between people doing work and the person in charge of the area. Training on safety talks, with attention concentrated on the risk posed by altered assumptions.
- Greater management control over compliance with requirements for WPs.
- Review processes for work on systems which are normally pressurised, with particular attention paid to responsibilities and roles in connection with shutdown.
- Introduce an isolation plan and marking as standard practice for this type of job.
- When work is being done on a pressurised system, the technician responsible for the area must show the work team where the barriers are located. Those doing the work must confirm their understanding of this by showing where the barriers are located.