Step Change Safety Alert

Alert Title

Condensate leak due to valve failure

Incident Date

17/09/2013

Location Type

Fixed Production Platform

Specific Equipment Involved

ESDV on gas compression system

Description of What Happened

Low level gas alarms appeared within a module several times and were investigated but personnel could not identify the cause, nor did their personal gas monitors detect any gas.

At 22:00 the gas detectors activated again and technicians identified a leak on ESDV2107. Quantities of condensate and vapour emanating from valve and ice build-up were witnessed on the deck. Soon after discovery the CRO reported three gas heads registering 40ppm in the vicinity and personnel returned to the CCR. Gas compression was shut down and depressurised.

The blow down valves for the HP loop were opened the decision was made to shut down production. Once the module was deemed safe, the investigation found a build-up of ice around the valve stem of the ESD Valve indicating a potential failure of the valve stem seals.

The investigation revealed that prior to the 2013 TAR a fault was identified on an electrical distribution board resulting in the board pulling too much current. A decision was taken to lighten the load by reducing demand and the longest trace heating tail was removed from the board.

Over the next few months a new distribution board was installed but the section of trace heating was not reinstated. On 16th Sept it was observed that the trace heating was still isolated and should be returned to service. The trace heating was reinstated on 17th Sept, allowing the ice build-up to melt and providing a path for the release from the seals.

Cause of Incident

The investigation found that the ESDV had suffered excessive wear to the valve stem seals due to the failure of an adjacent LCV. The instrument department had repaired the LCV previously and it is believed that with the LCV inoperative, the ESDV has been compensating.

The excessive wear caused a minor leak at the stem seal but, due to the fact that the trace heating was isolated during this period, an ice plug formed thus minimising any loss of containment. With the trace heating reinstated on 17th Sept the ice melted and allowed gas to pass the failed stem seal.

Incident Consequences

The leak was local and although gas was detected by nearby fixed systems it was monitored and controlled without progression to GPA. Other detectors in the vicinity did not alarm, indicating the HC had not been sudden & catastrophic or releasing for a prolonged period prior to discovery.

Lessons Learned

Low level alarms on the DCS system may not have been investigated at the initial failure of the LCV control. Immediate investigation may have identified that low level was present in the vessel and that the LCV was not maintaining the level above ESDV2107 trip and reset level, forcing the ESDV to compensate.

Recommendations/Actions

- Ensure all knock out high & low level alarms are active and monitored
- Ensure operational integrity of relevant LCVs

- Assess heat trace management across the site

Contact Details (Optional)

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