SAFETY ALERT

Gas release due to failure of incorrect seal ring material installed on clamp connector resulting in galvanic corrosion

Description of Process:

The failure occurred on a proprietary type clamp connector installed on a spacer spool between the lower and upper master valve of a gas condensate producing topsides' Christmas tree.

The 6" diameter spacer spool was connected to a 5-1/8" gate valve lower master valve in turn connected to the riser tubing hanger. The master valve and spacer spool were constructed from martensitic stainless steel with a size 52 clamp connector and seal ring connecting the two components.

Description of Incident:

A gas release occurred on a normally unmanned installation (NUI). On investigation the release was coming from a proprietary size 52 clamp connector joint between

the lower master valve and spacer spool on one of the platforms gas condensate producing wells.

It is believed the seal ring was installed as a carbon steel material specification approximately 15 years previously during a well work-over program in 2002. The seal ring lost a significant amount of material thickness due to internal CO2 and galvanic corrosion at the carbon steel to stainless steel interfaces, resulting in a perforation of the ring and gas release from the Christmas tree.

The adjacent downstream clamp connector between the spacer spool and upper master valve was inspected and found to have a correct martensitic stainless steel material seal ring.

Good Practice Guidance:

It is intended that this alert is used to raise the awareness of an already known industry issue, additionally highlighting that the use of clamp connectors is not solely limited to topside process pipework but also well heads and Christmas tree components.

The potential consequences of installing an incorrect material specification seal ring gasket can lead to catastrophic in-service failure and operators should ensure proactive projects are in place to identify all clamp connectors, ensure that associated seal rings are to correct specification and remain fit for continued service.

Further details can be found at:

http://www.hse.gov.uk/safetybulletins/clampconnector.htm