



FUELS INDUSTRY
Association of South Africa

Sasol – Sulphuric acid. Jan 2025

2024



INCIDENT DESCRIPTION

Description of Incident: A leak from a sulphuric acid line resulted in a nearby 40 bar steam line failure. This resulted in residual sulphuric acid being dispersed around the immediate environment.



Sulphuric acid pipeline

Sulphuric acid leaked flange



Steam pipeline(leaked inside the culvert)





INCIDENT UNDERLYING AND ROOT CAUSE

Potential root causes:

The gasket blowout resulted from the following potential root causes:

- Inadequate Gasket Installation: There is no Quality Control Procedure (QCP) for for flange F10 to verify if the gasket was installed correctly during 2018 project.
- Deviation from Design Requirements: A lack of records indicates that the required 12-month torque verification, as specified in the ISO drawing – SDY-250-0804PT2 on Note 7, may not have been performed.
- Due to PTFE's low recovery rate, the subsequent re-torquing, performed after missing the scheduled interval, may have contributed to the gasket failure

Potential Design Specification Gap:

- Even though the PIP PN01LT0F01 Piping material specification 1LT0F01 Class 150, PTFE-lined carbon steel process) provides a recommendation to use a PTFE gasket for mating plastic-lined components to non-lined components, it doesn't provide a detailed calculation methods for determine torque as this is a unique flange configuration.

The validity of torque calculations done by the Engineering Contractor will be verified by testing of various flange configurations as well as the influence of pressure/temperature cycles on the prolonged tightness of the flange joint



INCIDENT LEARNINGS

- Evaluate flanges inside the culvert that might results in a leak of corrosive material and review the risk that this may introduce of impacting other pipeline integrity
- Review the minimum QCP requirements used by SO and P&E to determine if it is adequate or not.
- Compile culvert flange list of all flanges inside culverts to prioritize removal and develop a plan to relocate flanges to a safe area where any potential acid leakage will be easy to identify without delay.
- Ensure adequate understanding of the escalation protocol from area to works emergency.
- Do consultations with the gasket OEM and PTFE lined pipeline OEM to confirm if the gasket is required for this application (Alloy 20 vs PTFE lined)
- Investigate from the gasket OEM and PTFE lined pipeline OEM to confirm if the correct gasket (width, size and material type) is used for this application (Alloy 20 vs PTFE lined)



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Thank You

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