



FUELS INDUSTRY
Association of South Africa

LEARNING FROM SULPHURIC ACID INCIDENT



INCIDENT DESCRIPTION

Sulphuric acid was released from a flange and accumulate inside a culvert. Rainwater mixed with the sulphuric acid inside the culvert and result in corrosion of the pipelines inside the culvert. This causes a 40-bar steam line to fail releasing the steam. Residual sulphuric acid being dispersed around the immediate environment causing 113 first aid cases and 11 incidents. There was a leaking flange due to lose bolting where PTFE and alloy 20 spool merge.



PHOTOS



Steam line

Flange that leaked





INCIDENT ROOT CAUSES

The gasket blowout resulted from the following potential root causes:

- **Inadequate Gasket Installation:** There is no installation Quality Control Plan (QCP) for this flange to verify if the gasket was installed correctly during project
- **Deviation from Design Requirements:** A lack of records indicates that the required 12-month torque verification, as specified have been performed. Missing the re-torquing schedule may have contributed to the gasket failure.
- **Design Specification Gap:** No detailed calculation methods for determining torque settings, as this is a unique flange configuration.
- **Inadequate End of job documentation handover process** - Quality control plan not available and it cannot be proven or confirm if the boxing of the flange gasket was done as required by the procedure.



LESSONS LEARN

- Evaluate flanges inside the culvert that might results in a leak of corrosive material and review the risk of these flanges to prevent introduction of secondary hazards that would affect other pipelines.
- Develop and make use of a QCP when working on flange joints.
- Proper hand over and end of job documentation to be in place before commission a project.
- Update maintenance strategies and ensure all requirements are addresses in the maintenance strategy.



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Thank You

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