



Development of a Risk Based Asset Management Tool

Value Tracking Case Study



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Background

High-pressure natural gas transmission pipelines present potential major hazards (fires) in the unlikely event of accidental releases of gas, due to a range of threats including accidental interference damage by third parties. Under the Pipeline Safety Regulations, National Gas is required to manage the risks associated with these assets effectively and to be able to demonstrate that risks are As Low As Reasonably Practicable (ALARP)

A project undertaken with Network Innovation Allowance (NIA) funding helped to assist National Gas in discharging its compliance obligations by building on risk methodologies developed previously for gas transmission pipelines, coupled with a powerful Pipeline Integrity Management System (PIMS). The combined tool was designed to provide a convenient means of accessing and displaying information on the variation in risk across the pipeline network, to support decision-making on pipeline safety and integrity issues, to promote greater efficiency in conducting risk assessments and to maintain a record of the audit trail for safety-related decisions. National Gas Transmission utilises a PIMS ("Uptime") to assist with the management and storage of detailed information on gas transmission pipelines. Uptime is a powerful tool, capable of a wide range of applications. National Gas identified a potential benefit in using the tool to streamline the process associated with affirmation of Maximum Operating Pressure surveys (in accordance with the IGEM/TD/I pipeline standard) to facilitate site specific risk assessments of pipeline infringements, carried out using the PIPESAFE risk assessment package for onshore gas transmission pipelines, and to

visualise risk profiles across the National Transmission System (NTS).

What's new?

A risk-based asset management tool has been developed, which provides a risk overview of the NTS based on expectation values, hazard distances and emergency planning distances across the NTS, tables of IGEM/TD/I infringements and links to the associated TD/I reports. The tool also generates input files for site specific assessment Quantitative Risk Assessments (QRA5) with PIPESAFE. Previously pipeline risk assessment was limited to infringement locations and involved significant levels of effort to gather and validate the data required. This tool streamlines existing business processes and delivers efficiencies. The resulting network risk profiles will provide input into investment and planning decisions.

The benefits

The tool streamlines the post survey process by facilitating site specific risk assessments of TD/I infringements. The tool is the repository for National Gas Transmission pipeline data. This data can be used in subsequent surveys and as source data for input into industry databases. The combined tool allows National Gas to collectively manage the risks across all sections of the Network, and an automatically updated risk-profile can be obtained. This risk data can assist National Gas with, for example, investment decisions. Novel ways of displaying the output data from risk assessments are incorporated. This provides up-to-date and readily accessible information for the user. The tool provides a new feature in that risk assessments can be undertaken along the pipe, pipe networks, or the whole system, not just at infringement points as previously.



Implementation

The tool has been rolled out across National Gas Transmission with outputs to be tracked. Outputs will be reviewed for further opportunities and further work enabled in future investment planning.

