

1.11.19. THE IMPORTANCE OF NON-DESTRUCTIVE TESTING AND INSPECTION OF PIPELINES

Garland P.J., OSG TESTING (PTY) LTD, Johannesburg, South Africa

A buried pipeline may be out of sight, but for those responsible for the oil or gas delivery it is never out of mind. Pipelines are operating 24 hours a day, 365 days a year, to meet the needs of the customer for the lifetime of the pipeline which could be 30 years or longer. Therefore inspection and nondestructive testing is a necessity.

While initial capital cost is important, the ongoing operating costs of a pipeline can far outweigh any savings made by selecting a pipeline with a lower installation cost but a high risk of failure and a limited working life. Hence the need for Non-destructive testing and inspection during the manufacturing stage, the construction stage and the operation stage.

Many factors affect the actual life of a pipeline and the most important is the progressive deterioration of the pipe material sometimes caused by corrosion and the product carried.

As pipes are welded structures the quality of the welding is important and must be inspected. The protective coating must last for the life of the pipeline. The pipes must not be damaged during pre shipment handling, transportation to site and handling on site. Pipe fit up, welding and trench-laying must be controlled. Inspection is necessary at all stages to ensure the pipeline quality and integrity. The correct material must be used for back filling operations to prevent coating damage. Operation maintenance and inspection will include cathodic corrosion protection and intelligent pigging, which may allow repairs to be made before a failure occurs which could result in serious environmental damage.

The customer needs are uninterrupted flow, constant pressure and lowest delivery cost, while the service provider needs are maximum pipeline life, minimum risk of failure and lowest life operating cost which can all be achieved by adequate inspection and non-destructive testing.