Case Study

Project: Pipeline Integrity Assessment

Scope: Detailed statistical analysis following ultrasonic pigging inspection of a section of line

Equipment: Subsea pipelines transporting produced fluids.

Solution:

Operational considerations meant it was possible to get access for ultrasonic (UT) intelligent pigging inspection to only one quarter of the total length of a subsea pipeline system. The lines were known to be suffering degradation hence it was necessary to use the data from the section inspected to make estimates for the total length of line.

The full set of measurement data from the UT pig run, i.e. the thickness and stand off at each measurement point, was used to characterise the degradation with Sonomatic's wall thickness distribution methods of analysis. The statistical analysis, along with consideration of the expected similarity in conditions for the full line, indicated the data collected was suitable for making overall estimates. The results indicated a low probability of unacceptable wall loss and provided a basis for continued operation without repair or replacement.

Benefits:

The Sonomatic analysis formed the basis for a case for continued operation, including the sections of line for which ultrasonic pigging inspection was not possible. This meant the cost facilitating access for a full inspection did not have to be incurred.

The statistical analysis highlighted improvements in defect definition that allowed a more representative FFP case resulting in a upward revision of safe remaining life with significant savings in replacement cost.

The statistical analysis provides the basis for improved estimates of corrosion rates, compared to feature by feature methods, when the UT pigging inspection is repeated.
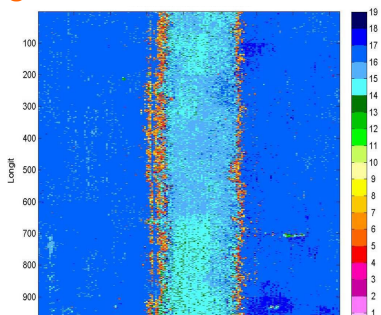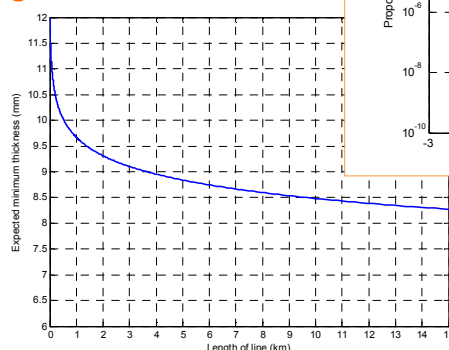
Figure 2:

Figure 1:

Figure 3: