CASE STUDY

RISER INSPECTION PLANNING AND EVALUATION

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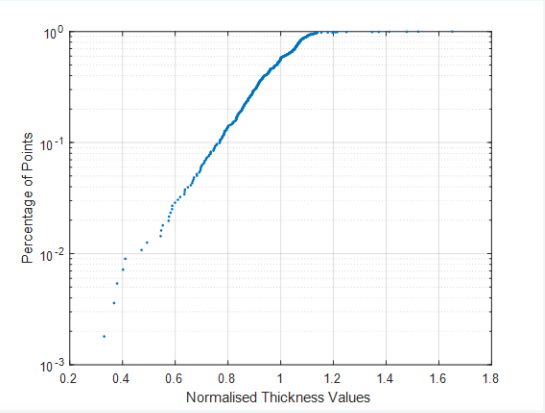
INTRODUCTION

Sonomatic were asked to assess historical riser data to provide coverage options for an upcoming inspection then perform a post-inspection evaluation of the data.

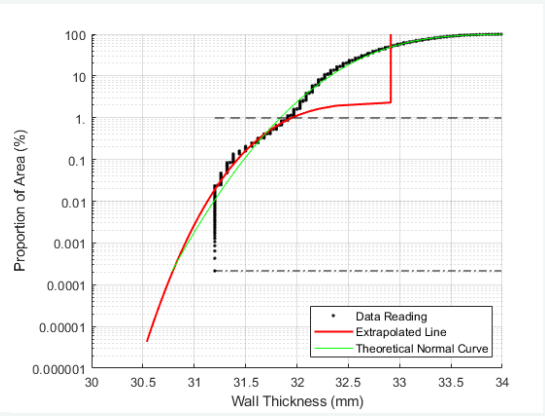
PROCESS

The client did not have any previous data from the riser and could only provide UT data from adjacent top side components. This data was analysed to establish any corrosion trends and quantify existing levels of degradation. A statistical evaluation calculated several wall thickness thresholds along with the coverage required to identify defects below each threshold at a range of probabilities.



After initial base case coverages were developed using the method above, an in-depth analysis of the credible degradation mechanisms to determine a scaling factor that to be applied to modify the base case coverage. These factors were based on several considerations including the spatial homogeneity of the most credible degradation mechanisms, the tolerance of the riser to degradation, and the accuracy of any technique to be deployed.

Once the inspection had been performed, a post-inspection evaluation was conducted, treating the riser as several zones that were determined based on operating conditions and whether corrosion was anticipated or identified within each zone.



Where corrosion was absent, and not anticipated, a Bayesian analysis was performed to verify the probability of detection (POD) and increase the confidence levels in degradation being absent in uninspected areas.

Where corrosion was present, statistical distribution curves were used to establish a data trend. This trend was extrapolated based on a factor relative to the percentage coverage to determine the minimum in uninspected areas and produce a probability of the true minimum being different to calculated value.

OUTCOME

The client was hugely appreciative of the planning and analysis. The results enabled the client to, firstly, best target the areas of most concern to them and, secondly, extracting the most value from the inspection data. The statistical results enabled them to use the optimal information for future inspection planning.