Case Study

November 2008

Project: Civa modelling of the inspection of a nozzle to domed end weld on a production separator.

Problem: An inspection was required on a production separator in order to give confidence that no flaws were present within a nozzle weld following a dynamic loading event. Sonomatic were approached in order to validate the capability of the inspection approach.

Solution: In order to validate the inspection that was completed on the nozzle, cross sections based on the geometry of the nozzle (Figure 1) were created in the Civa modelling software (an example is shown in Figure 2).

Flaws were placed at several locations within the nozzle weld and results were simulated using a selection of shear wave angled probes (Figure 3 shows the results from a single scan).

The results were used to determine an inspection strategy that would provide the greatest probability of detection for the flaws under consideration.

Benefits: Analysis of the results determined the likelihood of detection for each of the flaws within the weld and was used to validate the inspection techniques applied to the nozzle.

The use of modelling allowed the techniques to be developed rapidly with confidence in capability provided before deployment offshore. This allowed a rapid deployment of the inspection technique offshore. Downtime before the separator was returned to service was thereby significantly reduced and the operator benefited through minimisation of associated lost production. The Civa modelling, along with the inspection results obtained, formed a key element of the operator's case for continued operation of the production separator.

Figure 1:

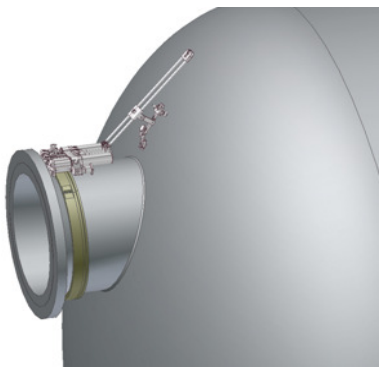

Figure 2:

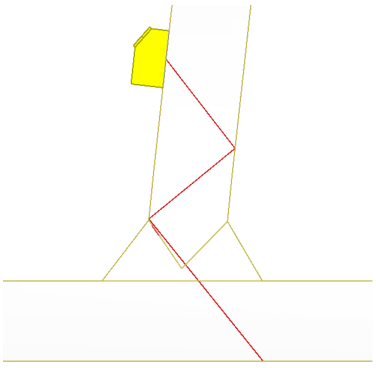

Figure 3: