Case Study

June 2008

Project: Evaluation of inspection capability by Civa modelling of inspection techniques to be applied to a subsea Gooseneck connector.

Problem: Fatigue analysis of a subsea Gooseneck connector revealed that inspection was required to give confidence that no flaws were present that may propagate to failure within the remaining life of the item. Sonomatic were employed in order to assess possible inspection methods on the Gooseneck.

Solution: In order to assess the different inspection methods available for the Gooseneck, cross sections based on the connector (Figure 1) were created in the Civa modelling software (an example is shown in Figure2).

Flaws with different orientations were created at the weld root and results were simulated using: angle shear wave inspection, time of flight diffraction and phased array inspection (Figure 3 shows the results from a single scan).

The results from the selected inspection techniques were compared in order to determine a strategy that would provide the greatest probability of detection and sizing accuracy for each of the flaws considered.

Benefits: The analysis provided confidence that the inspection deployed would meet the detection and sizing requirements. It also allowed a more cost effective development and qualification programme, reducing the number of physical trial samples needed for this complex geometry item. The benefits of Civa modelling with Sonomatic are:

- **Accurate representation of the specific geometry under consideration;**
- **Validation of a range of inspection techniques and development of optimal inspection strategies;**
- **Cost effective assurance of capability of inspection strategies with a reduced number of physical test samples.**

Figure 1:

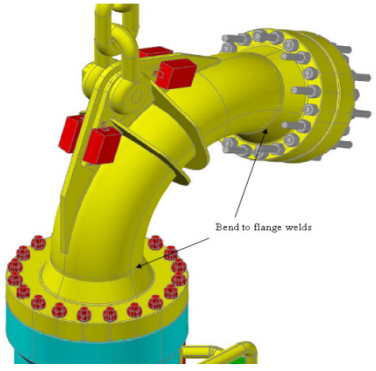

Figure 2:

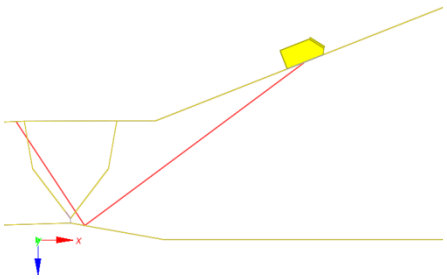

Figure 3: