

## Case Study

12 February 2010

**Project:** TOFD for sizing remaining wall under External Blisters prior to Fabric Maintenance

### Problem:

External blisters were identified during a visual inspection of process pipe work on board a North Sea platform. Fabric maintenance is required to rectify these defects, however, until the thickness of remaining steel under blisters is confirmed, there is a potential that any remedial work to the external surface could cause leakage or failure of the pipe section.

### Solution:

Sonomatic Ltd was approached to devise a technique to depth size visually identified external blisters on 18" diameter 30mm wall thickness pipe work. TOFD is one of the most accurate techniques for sizing defects. The technique was adapted for sizing external defects as part of Sonomatic's ongoing R & D program.

This technique was carried out on a live line.

A test sample was manufactured with machined defects of 1 mm, 2 mm and 3 mm to simulate external defects, these were sized to an extremely small tolerance. Further investigation was made into sizing larger defects with a ligament of 5 mm, 10 mm and 15 mm. These were also found and sized using the same technique, This technique has now been used effectively in the field (See Figures 2 & 3).

**Benefits:** Major benefits of this technique are:

- **Non Intrusive Method of Defect Sizing**
- **No need to shut down - Inspection can be carried out on a live line**
- **Low risk of further damage to defect area**
- **Accurate Sizing of Defects**
- **Confidence in remaining material thickness to allow fabric maintenance to proceed**



Figure 1  
Photograph of visually identified external blister

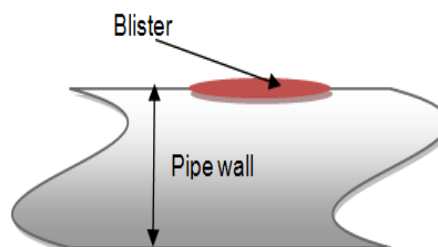


Figure 2  
External blister of unknown depth.

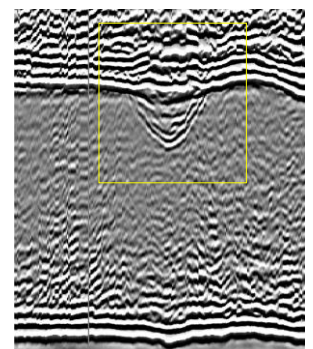


Figure 3  
TOFD Image of blister on pipe work