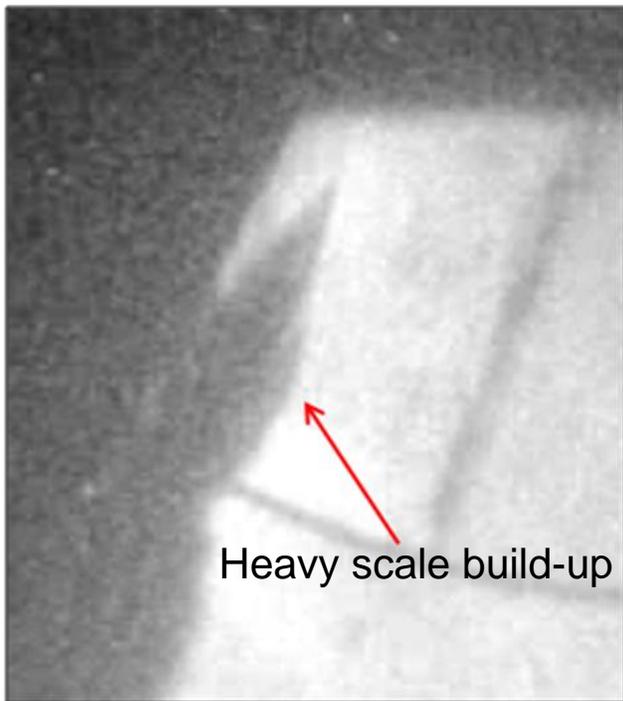


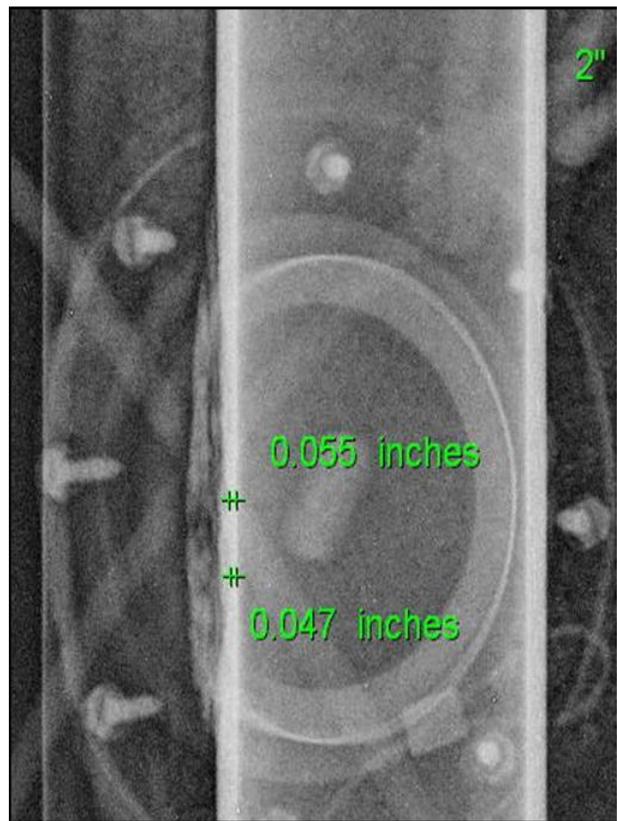
Looking under the covers for Corrosion Under Insulation - RTR

Often insulation is stripped to assess where corrosion under insulation (CUI) has developed. Damaged insulation is taken as a sign of potential CUI, but this is not always correct. However, insulation removal can be time consuming and labour intensive. Today's NDT tools can help us hone in on suspect areas without stripping insulation. Specifically, the portable real-time X-ray digital detector array (DDA) system referred to as real time radiography (RTR) helps to look under the insulation covers. With RTR we obtain an electronic rather than a film image almost instantly (in real time) as we expose the surfaces under examination to radiation.

The RTR image below shows heavy scale build up on the pipe. The RTR is followed by computed radiography (CR to the right) or other forms of RT to assess the remaining thickness without removing insulation. This is of particular importance with asbestos insulation.



The pipe remaining thickness was below the minimum required thickness for the service. The insulation was removed and the damage shown in the photographs below was identified.



IRISNDT applies RTR:

- To identify weld locations under insulation.
- To quickly pre-screen suspect lines.
- To provide a clear view and an image of the outside surface of pipe.

We often follow the RTR flagged areas with detailed profile radiography. Based on the profile radiography, we calculate the remaining thickness without removing insulation.

Looking under the covers for Corrosion Under Insulation - RTR

RTR advantages:

1. RTR identifies weld locations under insulation.
2. Results are obtained on-the-spot with experienced technicians performing analysis.
3. X-ray based system is safe when power is off and while operating the radiation dose is low, even for the operator.

Limitations:

1. Complementary inspection methods are needed to determine the remaining wall thickness.
2. Typically, the girth of the pipe and its insulation must be less than 30 inch.

Pipe shown in the CR image in the previous page after stripping insulation. As the CR showed, losses were extensive.



RTR Fundamentals

The RTR units have a low energy x-ray tube that generates a radiation beam directed towards a DDA. The X-ray tube and the DDA are mounted on opposite sides of a C-arm, separated by a distance. The radiation is strong enough to pass through pipe jacketing and insulation and to provide a real time image of the pipe's OD surface. It is not strong enough to penetrate the pipe wall.