



Deaerator Inspection/Condition Assessment Brief Description

In the early 1980's several incidents involved Deaerator "in-service failures" resulting in serious injury and tragic loss of life prompting the National Board of Boiler and Pressure Vessel Inspectors to issue a Bulletin to all jurisdictions in the United States and Canada.

After an initial root cause analysis, a comprehensive accident investigation was performed by industry, and advisory committees were formed. These committees were comprised of The National Board of Boiler & Pressure Vessel Inspectors, the National Association of Corrosion Engineers [NACE], and the Technical Association of the Pulp and Paper Industry [TAPPI]. The results of all of these investigations revealed that the major culprit in the Deaerator failures was corrosion fatigue cracking in the major pressure retaining welds on the Deaerator.

It was discovered that between 30% and 50% of all of the Deaerators inspected had some form of cracking associated with either original fabrication, or actual corrosion fatigue cracking of the same type that lead to the catastrophic failures and loss of life. In each case these best detection of these critical flaws was proven to be the use of Wet Fluorescent Magnetic Particle Testing.

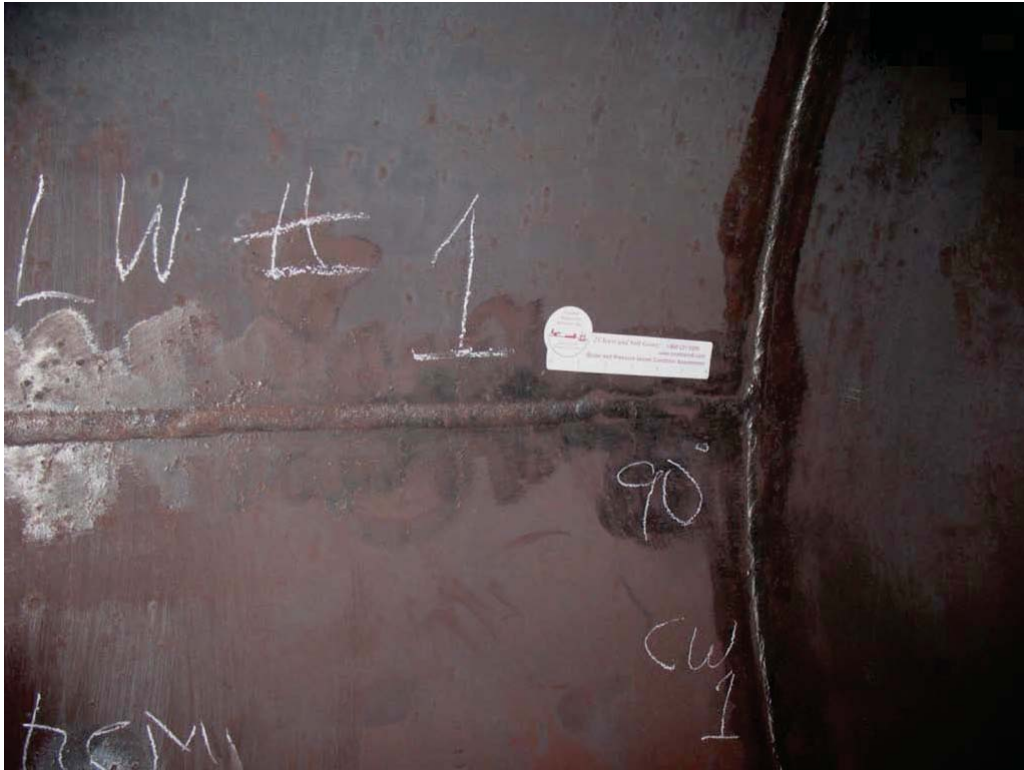
Today OSHA, NACE, DOD, and the National Board Inspection Code [NBIC] recommend periodic Deaerator inspection using WFMT. Coastal Inspection Services has inspected over 500 Deaerators and supervised the on-site welded repairs, as well as the return of the Deaerator to safe service.



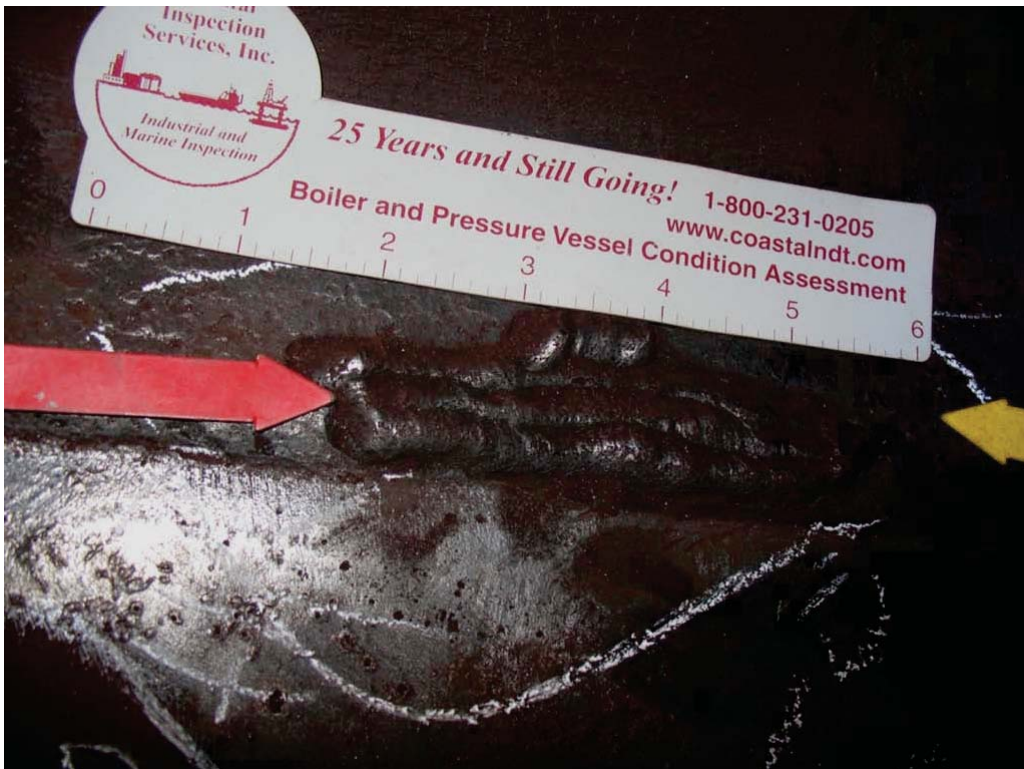
The initial task in Deaerator Inspection is cleaning all major pressure boundary welds.



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The next step is to clearly mark all major welds for photographic documentation.



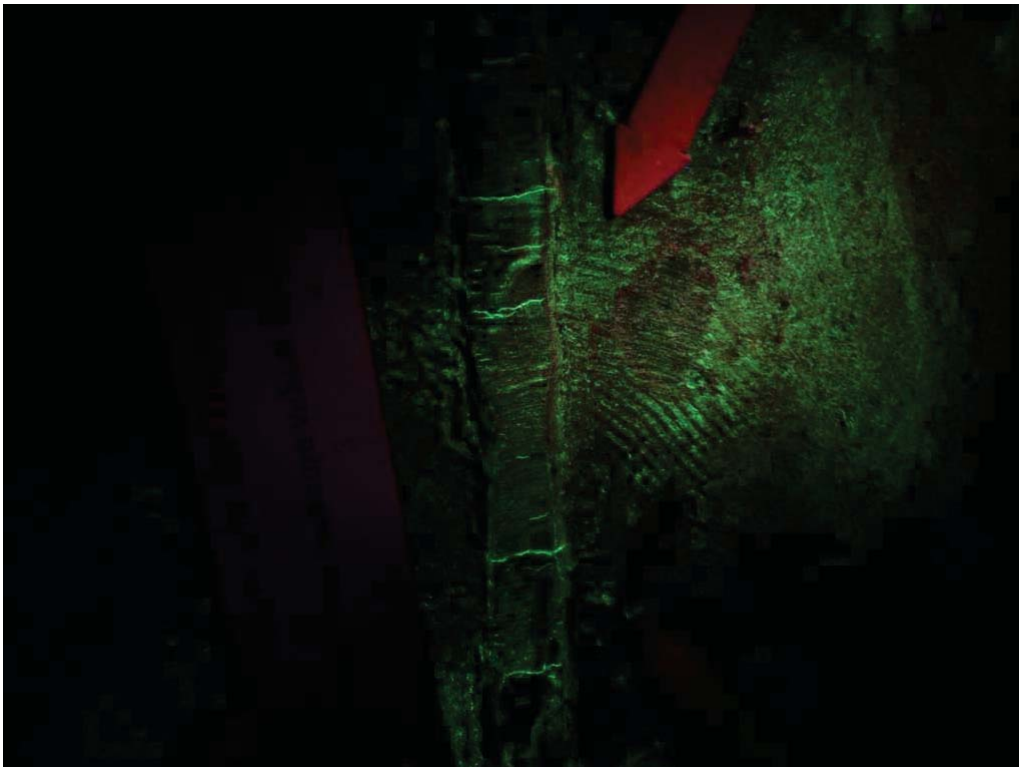
Previous seam repairs are of particular interest during the Deaerator Inspection.



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Previous repairs are often the location of additional cracking revealed in Deaerators.



Once cracks are located the minimum wall is calculated using the ASME Code, and the weld is ground to remove all flaws. Repairs are supervised by a National Board Commissioned Inspector.