

TECHNICAL



InterCorr®
International, Inc.
Services, Systems, & Software

April 21, 1999

Test Report: L983562KT

TEST REPORT - CUI SSC TESTS AISI 304 STAINLESS STEEL

Corrosion under insulation (CUI) tests were conducted by *InterCorr* International, Inc.. These tests were conducted on stressed U-bend specimens made from AISI 304 stainless steel. Duplicate specimens were exposed in the untreated condition and also following application of **RG-2400®**. Both untreated specimens exhibited evidence of localized corrosion and stress corrosion cracking (SCC). By comparison the specimens treated with **RG-2400®** were free of localized corrosion and cracking in the same test exposure.

MATERIALS AND SPECIMENS

Four U-bend specimens were made from AISI 304 stainless steel. These specimens were given a sanitization heat treatment at 1200 F (650 C) for 8 hours prior to stressing and exposure. Two specimens were left untreated and two were treated with EDC 2000. Six defected areas were made in the **RG-2400®** layer and cotton wicks were placed in these regions to retain moisture.

TEST PROCEDURE

The U-bend specimens were placed over a stainless steel pipe section and stressed. The exposure sequence was similar to that described in ASTM C692. This consisted of applying foam glass thermal insulation around the U-bend specimens that conformed to their shape. Once assembled, a 1500 Cl⁻ solution (2.473 g/L NaCl) was continuously introduced to the tension surface of the specimens through holes in the insulation. The flow rate was regulated to achieve partial wet/dry conditions on the test specimen. The pipe section was internally heated using a cartridge heater and a heat transfer fluid and test temperature controlled at 160 F. The test was run for a period 100 hours followed by examination of the test specimens.

RESULTS

Both untreated U-bend specimens showed evidence of SCC originating from regions of localized corrosion on the tension surface. The cracks are shown in Figure 1 which indicate the branched nature of the cracking. By comparison, as indicated in Figure 2, neither of the two U-bend specimens treated with **RG-2400®** showed any evidence of localized corrosion or SCC.

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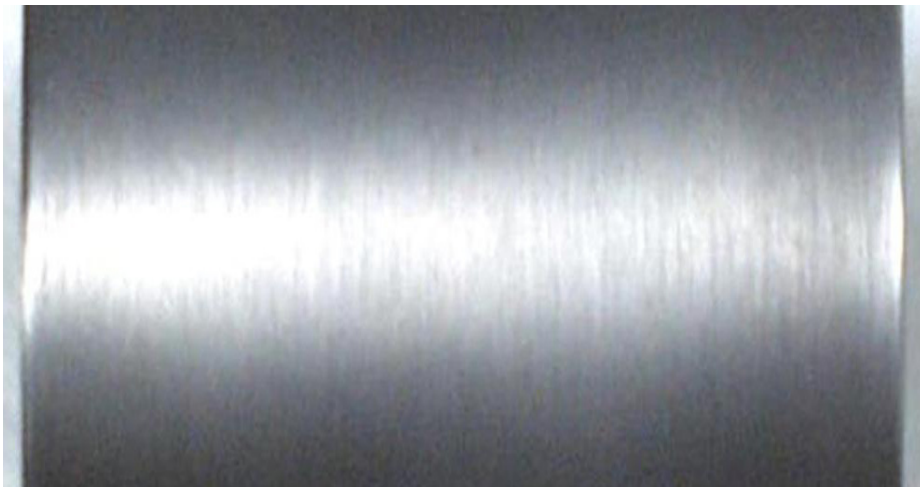


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UNCOATED SPECIMEN #6190-1

Figure 1 - Untreated U-bend specimens following CUI exposure.
Note branched SCC originating from localized corrosion sites.



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COATED SPECIMEN #6190-3

Figure 2 - RG-2400® treated U-bend specimens
following CUI exposure. No SCC observed

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- American Natl. Standards Institute
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