Technical Comments

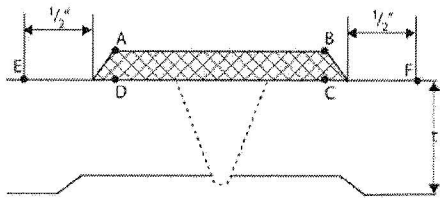
Comment 1: On p 19, lines 5-7, the SER states "The NRC staff notes that PSI of the overlaid DMW needs to achieve 100 percent examination coverage of the required examination volume. The NRC staff would allow the "essentially 100 percent" examination coverage for the ISI, but not for the PSI. This position is reiterated in item 13 of Section 4.0, Limitations and Conditions (p26, lines 29-32).

The industry does not understand the logic for requiring different examination coverage requirements for PSI versus ISI. The same examination volume applies to both of these exams (Figure 7-1b) in MRP-169, Rev. 1, reproduced below), and if there are physical restrictions that limit the ability to achieve 100 percent examination coverage (rather than "essentially 100 percent"), then those restrictions will affect both PSI and ISI. However, if this statement applies to the weld overlay acceptance examination, for which the applicable examination volume is A-B-C-D in Figure 7-1a) below, then this is consistent with the coverage requirements of Section 7.1 of MRP-169-1: "For the overlay acceptance examination, 100% of the required UT and PT exam volumes in Figure 7-1a) shall be examined. For post-overlay pre- and inservice inspections, essentially 100% (>90%) of the required exam volume in Figure 7-1b) shall be examined, but shall include no less than 100% of any PWSCC susceptible material within the exam volume."

a) Initial Acceptance Examination

Surface: Liquid penetrant examination of overlay material surface + ½ inch of base metal on either side of overlay (E-A-B-F)

Volumetric: Ultrasonic examination of overlay material (A-B-C-D) plus underlying HAZ (C-D) for fabrication welding defects

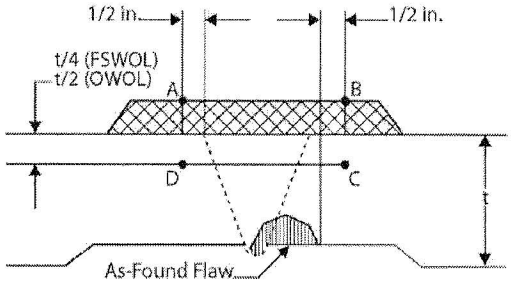


WOL Acceptance Examination Volume A-B-C-D

b) Preservice and Subsequent Inservice Inspections

Surface: Liquid penetrant examination of overlay material surface

Volumetric: Overlay directly over original PWSCC susceptible weldment (including nozzle, buttering, DMW and PWSCC susceptible safe-end if present) plus ½ inch to either side, to a depth of the outer 25% (FSWOL) or 50% (OWOL) of underlying material . (A-B-C-D)



Preservice and Inservice Examination Volume A-B-C-D

Figure 7-1
Inspection Requirements for Weld Overlays

Also pertinent to this topic are the examination coverage requirements currently contained in Code Case N-770, Article -2500 (c). These are as follows:

> *(c)* For axial and circumferential flaws, examination shall be performed to the maximum extent practical using qualified personnel and procedures. If 100% coverage of the required volume for axial and circumferential flaws cannot be met, but essentially 100% coverage for circumferential flaws (100% of the susceptible material volume) can be achieved, the examination for axial flaws shall be completed to achieve the maximum coverage practical, with any limitations noted in the examination report. The examination coverage requirements shall be considered to be satisfied.

In accordance with Article -2220 of that Code Case, these requirements apply to pre-service examinations of mitigated locations, prior to return to service, including "mitigation by weld overlay, stress improvement with welding, inlay, or onlay, or by mitigation using non-welded stress improvement methods". *Page 21, Lines 35-38 of the SER states "In the meantime, the NRC staff requests that licensees planning to apply weld overlays submit a plant-specific relief request based on inspection requirements that are consistent with the inspection requirements of the latest version of Code Cases N-754, N-740-2, and N-770 and the latest NRC-approved weld overlay relief requests."* Since the above-stated examination coverage requirements of MRP-169-1 are consistent with (actually more conservative than) those contained in N-770, it appears that the SER is inconsistent on this point.

<u>Comment 2</u>: *On p 19, lines 5-7 the SER states "The NRC staff finds that if the examination is performed from the inside surface of the DMW, a UT examination must also be performed from the outside surface of the pipe and the examination volume must satisfy Figure 7-1(b) of TR MRP-169."*

The logic for this additional requirement is also unclear. There would be no benefit to performing an examination of the standard ASME Section XI ISI examination volume (i.e. inner 1/3 of the DMW wall thickness) from the inside surface if there is also a requirement to perform an examination from the outside surface of the Figure 7-1b) examination volume. Performing the inside surface examination, as specified in MRP-169-1, with additional demonstration or qualification on weld overlay mockups to demonstrate that ID connected flaws are still detectable after application of the overlay, will ensure that there are no ID connected flaws in the PWSCC susceptible material that could propagate to the point that they would violate the overlay design basis.

This additional requirement is also inconsistent with the current requirements of Code Case N-770. Footnote 8 to Table 1 in that Code Case (Inservice Inspection of Full Structural Weld Overlays), paragraph (c) states that: "As an alternative to (a) for inservice inspection, the weld examination volume in Figure 1 (i.e. the standard ASME Section XI inner 1/3 ISI examination volume) may be ultrasonically examined. If cracking is detected extending beyond the weld examination volume, the weld examinations of (a) and (b) above shall be performed (i.e. the weld overlay exam volume, outer 25% of DMW wall thickness) to determine the acceptability of the weld overlay." So N-770 only requires additional inspections from the outside surface to be performed if the inside surface exams detect cracking that extends beyond the inside surface exam volume. The current version of N-770 also contains similar wording in Footnote 13(c) for optimized weld overlays (denoted "stress improvement by weld overlay" in that document).

Editorial Comments

We believe these editorial changes would aid the readability of the of the final SE on Topical report MRP-169.

1) Page 7, line 25 – suggest inserting the word "original" in front of the word "wall" inside the parentheses.

2) Page 7, line 28 - suggest inserting the word "original" in front of the word "wall".

3) Page 18, line 29 – suggest deleting the words "and potentially violate the overlay design basis".

4) Page 22, line 22 – need to add the word "susceptible" after "PWSCC".

5) Page 23, line 47 – suggest adding the words "that terminates" between the words "
1. overlay" and "on".

6) Page 24, line 2 – suggest adding the words "that terminates on the safe-end" between the words "overlay" and "may".

7) Page 27, line 24 – suggest adding the words "into the outer 25 percent of the original wall" between the words "depth" and "plus".