



INSPECTION BULLETIN

ARI 300 Underframe Structural Inspection

The information contained in this Inspection Bulletin is a fundamental explanation of the inspection and acceptance criteria for the structural integrity of the ARI style 300 stub sill underframe as specified in 49 CFR Part 180, Subpart F, (SP 12095).

HM-201 requires the inspection of many areas common to all tank cars. These areas are clearly outlined in 49 CFR Part 180.509. The requirements for a focused inspection, which may be considered specific to the ARI style 300 stub sill underframe, are outlined in the “INSPECTION” section. Additional inspection requirements should be performed per the car owner’s maintenance program specifications.

The ARI style 300 underframe is fabricated by assembling standard plate components to form a center sill and a 1/2” thick by 22” wide sill cradle pad. The production of this design was started approximately in 1997 and is currently the ARI standard underframe. The areas with the highest loads are the ends (inboard and outboard) of the sill cradle pad attachments to the tank and the ends (inboard and outboard) of the sill attachments to the sill cradle pad.

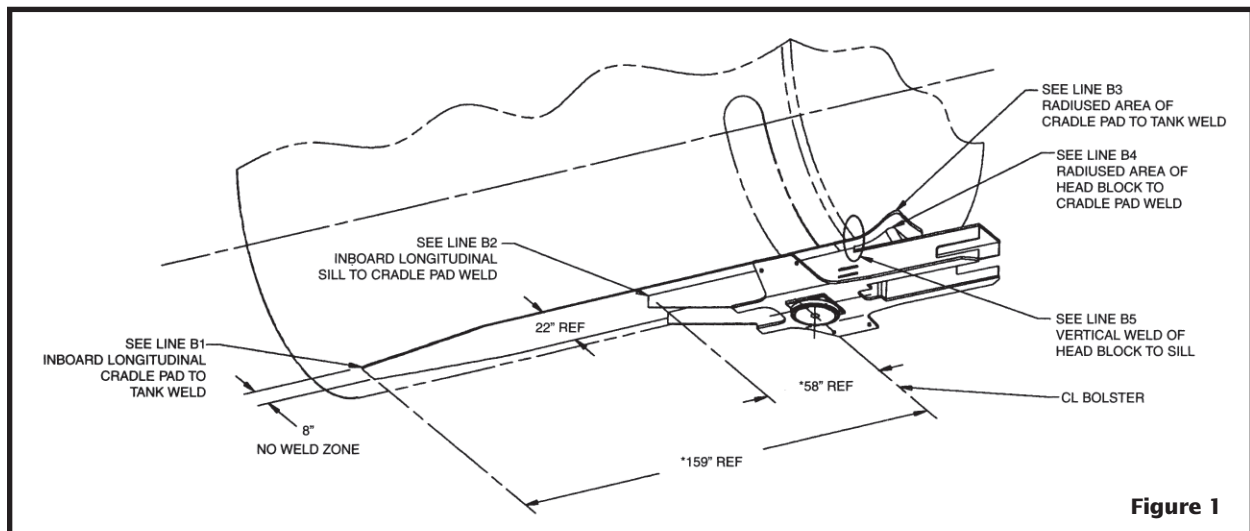
Reference the AAR Manual of Standards and Recommended Practices, Specifications for Tank Cars, M-1002, the AAR Field Manual, the AWS Railroad Welding Specification D15.1 and the 49 CFR as applicable. If any difference should exist, then the aforementioned manuals shall take all precedence, unless superseded by written instructions from American Railcar Industries, Inc. Contact ARI with any questions or when differences occur.



Inspection

A. Inspect the underframe for evidence of abrasion, corrosion, cracks, dents, distortion, weld defects or any other condition that makes the tank car unsafe for transportation using one of the following inspection and test procedures:

1. Dye penetrant test
2. Radiography test
3. Magnetic particle test
4. Ultrasonic test
5. Direct or remote visual inspection
6. Other applicable techniques which are authorized



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OVERVIEW OF THE ARI STYLE 300 UNDERFRAME

*This dimension may vary depending upon service conditions.
Contact ARI Product Engineering to verify stub sill termination dimensions.
Body bolster web omitted for clarity.

B. Inspect the structural tank attachment welds for cold-rolled terminations, cracks, undercuts and all other defects. The dimensions referenced in **Figure 1** may be used as guidelines when cutting inspection ports on jacketed cars.

Note: Methods indicated in the following paragraphs are recommended methods and should not be interpreted as the only acceptable method.

1. Visually inspect, from the tank exterior, the last 3” of the inboard longitudinal fillet weld of the cradle pad to tank, (B1). Inspect adjacent cradle pad and tank parent metals (4 places per car).
See Figure 1.

*Note: This inspection area only applies to cars not equipped with continuous cradle pad.
Contact the maintenance responsible party with questions regarding the cradle pad configuration.*

2. Visually inspect, from the tank exterior, the last 3” of the inboard longitudinal fillet weld of the sill web to cradle pad, (B2). Inspect adjacent sill web and cradle pad parent metals (4 places per car). **See Figure 1.**

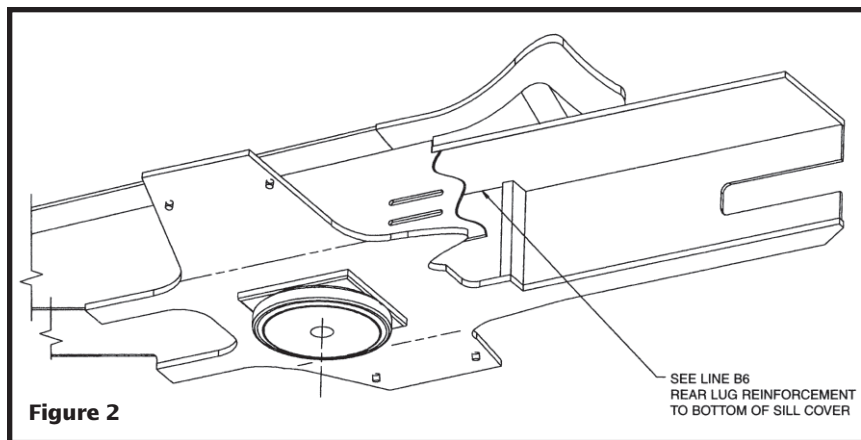
See Figure 1.

3. Visually inspect, from the tank exterior, the radiused area of the outboard cradle pad (head pad) to tank head fillet weld, (B3). Inspect adjacent cradle pad and tank parent metals (4 places per car). **See Figure 1.**

See Figure 1.

4. Visually inspect, from the tank exterior, the radiused area of the outboard head block to cradle pad (head pad) fillet weld, (B4). Inspect adjacent head block and cradle pad parent metals (4 places per car). **See Figure 1.**

See Figure 1.



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OVERVIEW OF “OUTBOARD” WELD AREA ARI STYLE 300 UNDERFRAME

Body bolster bottom cover plate omitted for clarity.

5. Visually inspect, from the tank exterior, the vertical groove weld, which attaches the head block to the sill web, (B5). Weld length is approximately 1” long. Inspect adjacent head block and sill web parent metals (4 places per car). **See Figure 1.**

6. Visually inspect, from the tank exterior, the longitudinal rear lug reinforcement to the bottom of the sill top cover fillet weld, (B6). Inspect adjacent rear lug reinforcement and sill top cover parent metals (4 places per car). **See Figure 2.**

7. Ultrasonically inspect, from the tank interior, the cradle pad (head pad) window to tank head fillet weld. The cradle pad (head pad) window size is approximately 8.00” transversely by 14.60” longitudinally. The start of the window is located outboard of the tank head weld seam approximately 4.25” and is centered about the bottom center line of the tank (2 places per car).

C. Defect acceptance criteria for the tank shell welding is to be in accordance with AAR Appendix W. All other non-tank welding is to be in accordance with AWS D15.1. If questions arise concerning the integrity of any weld or the parent metal, then a more extensive test or inspection may be required to obtain an accurate conclusion about the integrity of the area in question.

D. If defects are present contact the maintenance responsible party for repair procedures.



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