



U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

AUG 29 2007

400 Seventh Street, S.W.
Washington, D.C. 20590

Mr. Greg McRae
Engineering and
Technical Director
Trinity Industries, Inc.
P.O. Box 56887
2525 Stemmons Freeway
Dallas, TX 75356

Ref. No. 06-0020

Dear Mr. McRae:

This responds to your letter regarding the repair of MC 331 cargo tanks under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). I apologize for the delay in responding and for any inconvenience it may have caused. Specifically, you inquire whether a dye penetrant examination is an acceptable alternative to a radiographed examination. Your questions are paraphrased and answered below.

Q1. Is a dye penetrant (liquid penetrant, PT) examination of a welded joint containing a backing bar in the shell or hemispherical head of an MC 331 cargo tank an acceptable alternative to Radiographic (RT) examination of a full penetration weld?

A1. No. The basis for this determination is the original construction requirements for an MC 331 cargo tank under § 178.337-1. This section mandates that the design, construction and certification of an MC 331 cargo tank be in accordance with the ASME Code which in turn requires radiographic examination of this type of weld. See ASME Section VIII, Div 1, Part UW-11; UW-12: Table UW-12. Further, because this action is considered a repair, the requirements for such a repair are mandated by § 180.413 and the National Board Inspection Code (NBIC). See NBIC RC 1090 and RD 2060. NBIC requires welding to be performed in accordance with the original code of construction, that is, if the original pressure vessel received an RT examination, the repaired pressure vessel would also need an RT examination. Any deviation from this



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requirement would be subject to the approval of the Inspector. Additional guidance is provided in RD 1020, which allows for welding methods as alternatives to post-weld heat treatment. In addition, this guidance specifies that if it is not practical to RT the weld, a successful (defect free) PT examination must be conducted and the maximum allowable working pressure (MAWP) of the pressure vessel must be re-evaluated by the jurisdiction.

Q2. If a repaired MC 331 cargo tank was fully radiographed when originally constructed and the repair weld is not radiographed, should the MAWP of the cargo tank be reduced based on lower joint efficiency?

A2. Yes, provided prior agreement is obtained from all parties involved. See reasoning in A1 above.

I trust this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Hattie L. Mitchell', with a long horizontal flourish extending to the right.

Hattie L. Mitchell
Chief, Regulatory Review and Reinvention
Office of Hazardous Materials Standards

180.407

TRINITY INDUSTRIES, INC.

Stevens
§ 180.407
Cargo Tanks
06-0020



January 26th, 2006

Office of Hazardous Material Safety
Research and Special Programs Administrator
Attn: DHM-10,
U.S. Department of Transportation
400 7th Street SW
Washington, DC 20509-0001

Re: Title 49 CFR, Part 180.407

Request for Interpretation

Background:

When making internal repairs to an MC-331 Cargo Tank constructed without a manway, the process for making such repairs involves cutting an access opening, in either, the shell or hemispherical head. After internal repairs are completed a backing bar is welded to the inside the cargo tank and the access opening plate welded in place, followed by dye penetrant examination of the weld.

Question 1:

Is Dye Penetrant examination of the weld surface an acceptable alternative for Radiographic examination inspection of a full penetration weld?

Question 2:

If, in the original cargo tank design and construction, the cargo tank is fully radiographed and stamped in accordance with ASME code requirements, should a non radiographed repair weld cause the MAWP to be reduced accordingly for a cargo tank with a lower joint efficiency.

Respectively,

Greg McRae
Engineering and Technical Director
Trinity Industries Inc.