U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

DEC 18 2013

Mr. Mark Griffin
Western Sales and Testing, Inc.
114 E. 46th, P.O. Box 2446
Amarillo, TX 79105

Ref. No. 13-0137

Dear Mr. Griffin:

This responds to your June 24, 2013 email regarding the requalification requirements for a seamless steel UN pressure receptacle (cylinder) under § 180.207(d)(1) of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask whether use of the water jacket volumetric expansion test (i.e., a hydraulic pressure test) is authorized for a seamless steel UN cylinder with a tensile strength ≥ 950 MPa.

Your interpretation of § 180.207(d)(1) is that ultrasonic examination using ISO standard 6406 is required for a seamless steel UN cylinder with a tensile strength ≥ 950 MPa. However, you question why the HMR requires this ultrasonic examination and does not authorize the hydraulic pressure test. You note that the UN Recommendations on the Transport of Dangerous Goods (Model Regulations) allow for use of an acoustic emission or an ultrasound test method instead of a hydraulic pressure test upon approval by the competent authority (re: 6.2.1.5 Note 2).

Your understanding is correct. As currently required by the HMR under § 180.207(d)(1), a seamless steel UN cylinder with a tensile strength ≥ 950 MPa must be requalified using ultrasonic examination in accordance with ISO 6406 (2005). Note that the reference citation in the UN Model Regulations for periodic inspection and testing of a seamless steel gas cylinder authorizing the replacement of the hydraulic pressure test with ultrasonic examination in accordance with ISO 6406 has been revised (see 6.2.1.6.1 Note 3). It still does not include a criterion for required use of ultrasonic examination.

Regarding requirements under the HMR, in a rulemaking entitled "Hazardous Materials: Requirements for UN Cylinders" (HM-220E) we originally proposed in new § 180.207(d)(1) that UN cylinders made of high strength steel with tensile strength < 950 MPa must be requalified in accordance with ISO 6406 and those with tensile strength ≥ 950 MPa must be requalified as specified in § 180.209 or in accordance with procedures approved by the Associate Administrator. For example, as was proposed, UN cylinders constructed to ISO 9809–1 or ISO 9809–2 with a tensile strength ≥ 950 MPa could be examined by a nondestructive method that is approved by the Associate Administrator (see HM-220E; 70 FR 11774, 11799; March 9, 2005).

In response to this proposal, industry representatives submitted comments requesting PHMSA to require all seamless steel UN cylinders to be requalified in accordance with ISO 6406. The representatives asserted that requalifiers would not be able to determine the 950 MPa limitation because the tensile strength is not required to be marked on a cylinder. We noted that UN seamless steel cylinders with a tensile strength < 950 MPa will bear an "H" mark to indicate compatibility of the steel with corrosive or embrittling gases. Thus, we stated that those cylinders bearing an "H" mark may be tested hydrostaticly and those bearing no "H" mark must be requalified by ultrasonic examination in accordance with ISO 6406 by an approved requalifier. However, the regulatory text adopted in the final rule did not fully reflect this preamble discussion. PHMSA adopted language that required requalification in accordance with ISO 6406 or procedures approved by the Associate Administrator (see HM-220E; 71 FR 33870, 33895; June 12, 2006).

Subsequently, in a final rule entitled "Minor Editorial Corrections and Clarifications" (HM-189Z), we revised § 180.207(d)(1) to reflect our intent in the preamble discussion of final rule HM-220E. Specifically, we adopted the requirement that UN cylinders with a tensile strength ≥ 950 MPa must be requalified using ultrasonic examination in accordance with ISO 6406 (HM-189Z; 71 FR 54397; September 14, 2006).

I hope this information is helpful. If you have further questions, please contact this office.

Sincerely,

Robert Benedict
Chief, Standards Development Branch
Standards and Rulemaking Division

Der Kinderen
§180.207(d)(7)
Cylinders
13-0137

Drakeford, Carolyn (PHMSA)

From: Supko, Ben (PHMSA)
Sent: Monday, June 24, 2013 11:15 AM
To: Drakeford, Carolyn (PHMSA)
Cc: Betts, Charles (PHMSA)
Subject: FW: Requalification of UN Pressure Receptacles

Carolyn,

Please log as an interp.

Thank you,

Ben

From: Cassidy, Duane (PHMSA)
Sent: Monday, June 24, 2013 11:12 AM
To: Supko, Ben (PHMSA)
Cc: Toughiry, Mark (PHMSA); Cooper, Linda (PHMSA); Paquet, Ryan (PHMSA)
Subject: FW: Requalification of UN Pressure Receptacles

Ben,

Please see the email below regarding clarification of our regulations regarding the requalification of DOT-approved UN ISO cylinders. I believe that this requires an official interpretation from PHMSA. My response is below, stating that I have forwarded for an official review of the language. If you are not the correct POC for this, please let me know, or forward accordingly to the correct POC.

Thanks, and please let me know if you have any questions/concerns.

Regards,

Duane

From: Cassidy, Duane (PHMSA)
Sent: Monday, June 24, 2013 11:07 AM
To: 'Mark Griffin'; Toughiry, Mark (PHMSA)
Cc: Steve Aderholt; JIM MITCHEL (mitcheng@aol.com); Paquet, Ryan (PHMSA); Cooper, Linda (PHMSA); Mallard, Isreal (PHMSA)
Subject: RE: Requalification of UN Pressure Receptacles

Mark,

I am forwarding your email to PHMSA's Office of Hazmat Standards to start the Interpretation process to get an official interpretation of this language from PHMSA. That way, this issue is reviewed by PHMSA's Office of Standards, the Engineers from our Tech office, as well as by the Transportation Specialists in my office for proper clarification and response. I'm personally not sure what our official position is on this issue yet, but I agree that the language may need to be clarified.

Regards,

Duane Cassidy
Chief, Pressure Vessels Branch
Approvals and Permits Division
OHMS, PHMSA, U.S. DOT
202-366-5794

From: Mark Griffin [mailto:mgriffin@westernsalesinc.com]
Sent: Monday, June 24, 2013 10:45 AM
To: Cassidy, Duane (PHMSA); Toughiry, Mark (PHMSA)
Cc: Steve Aderholt; JIM MITCHEL (mitcheng@aol.com)
Subject: Requalification of UN Pressure Receptacles

Gentlemen,

We are seeking a clarification of 49 CFR 180.207,d,(1). Specifically the following statement from referenced section:

"However, UN cylinders with a tensile strength greater than or equal to 950 MPa **must** (emphasis added) be requalified by ultrasonic examination in accordance with ISO 6406."

Are we to interpret from this that the "water jacket volumetric expansion test" may not be utilized on seamless steel gas cylinders meeting the above criteria? If so, why? We offer no argument that ultrasonic examination be allowed as an alternative test method, but why eliminate the hydraulic test? We recognize that *UN Model Regulations* in section 6.2.1.5 stipulate in NOTE 2: "With the agreement of the competent authority, the hydraulic pressure test of cylinders or tubes may be replaced by an equivalent method based on acoustic emission or ultrasound." We have not interpreted the UN section to mean to the exclusion of the hydraulic test, but merely as an approved alternative method. However, the current CFR reference definitely seems to exclude the hydraulic test as written.

We respectfully await your timely response to this request for clarification as it could possibly pose a significant economic impact on our current and future operations.

Regards,
Mark Griffin

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