U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

APR 2 8 2014

Mr. Mahendra D. Rana, P.E., ASME Life Fellow,
Praxair Engineering Fellow
Praxair, Inc.
175 East Park Drive
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Ref. No. 14-0038

Dear Mr. Rana:

This responds to your Febraury 27, 2014 letter regarding the requalification testing 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 if the hydrostatic volumetric expansion test is an authorized testing method for requalifying an "H" marked seamless steel UN cylinder with a tensile strength of < 950 MPa.

The answer to your question is yes. Section 180.207(d)(1) requires that each seamless steel UN pressure receptacle is requalified in accordance with *ISO 6406: Seamless Steel Gas Cylinders—Periodic Inspection and Testing* (see § 171.7), but that UN cylinders with a tensile strength ≥ 950 MPa must be requalified only by ultrasonic examination. *ISO 6406* requires that each cylinder is submitted for either a pressure test or an ultrasonic examination. The pressure test may be either the hydrostatic volumetric expansion or the hydraulic proof pressure test.

ISO 11114–1: Transportable gas cylinders, Compatibility of cylinder and valve materials with gas contents provides guidance in the selection and evaluation of compatibility between UN seamless steel and the gas content. Specifically, *ISO 11114–1* states that UN seamless steel cylinders with a tensile strength ≤ 950 MPa, are compatible with hydrogen, hydrogen mixtures and hydrogen bearing compounds including hydrides. Section 173.301b(f) requires that cylinders compatable with hydrogen, hydrogen mixtures, and hydrogen bearing compounds bear an 'H' mark.

In a final rulemaking (HM-220E; 71 FR 33858, 33870; June 12, 2006) PHMSA stated that those cylinders bearing an "H" mark may be pressure tested and those bearing no "H" mark must be requalified by ultrasonic examination in accordance with ISO 6406 by an approved requalifier.

Therefore, "H" marked seamless steel UN cylinders may be pressure tested or subjected to an ultrasonic examination. PHMSA recognizes that as currently written §180.207(d)(1) conflicts with ISO 11114–1 with regard to the tensile strength values and the required requalification method. It was PHMSA's intention that those cylinders bearing an "H"

mark may be pressure tested and those not bearing the 'H' mark must be requalified by ultrasonic examination in accordance with ISO 6406 by an approved requalifier. We intend to clarify the tensile strength values referenced in § 180.207(d)(1) in a future rulemaking. A related letter of interpretation (Reference No. 13-0137) is attached for your reference.

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)(1)
Cylinders
14-0038

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2/27/14
To: Director of Standards Division
Office of Hazardous Materials Technology & Research
US Department of Transportation

Subject: Interpretation Request on Requalification UN cylinders

The present §180.207 (d) (1) on the requalification of UN pressure receptacles requires that UN cylinders with a tensile strength **greater than or equal** to 950 MPa must be requalified by ultrasonic examination in accordance with ISO 6406. UN cylinders designed and constructed to ISO 9809-1 H mark have tensile strength **less than or equal** to 950 MPa. Present wording in the above paragraph (d)(1) precludes the requalification of the H marked cylinders by hydrostatic test with tensile strength equal to 950 MPa. We are requesting the following interpretation.

Question: For H marked UN cylinders, can hydrostatic test be used in lieu of the specified ultrasonic test in §180.207 (d) (1).

Answer: Yes, UN cylinders with H mark may be requlified by hydrostatic test.

Very truly yours,

M D Rana

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