U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

OCT 1 2 2011

Mr. Daniel G. Shelton
HazMat Resources Inc.
124 Rainbow Drive, # 2471
Livingston, TX 77399

Reference No.: 11-0059

Dear Mr. Shelton:

This responds to your letter regarding the requirement for the removal of the upper coupler assembly during various tests and inspections of cargo tank motor vehicles (CTMV) under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you describe two scenarios and ask several specific questions for each scenario. The questions regarding both non-insulated and insulated cargo tanks transporting a lading corrosive to the tank are paraphrased and answered as follows:

For non-insulated cargo tanks transporting a lading corrosive to the tank:

Q1: Is the upper coupler required to be removed to perform the external visual inspection?

A1: In accordance with § 180.407(d)(2)(ix), as part of the external visual inspection test for CTMVs transporting lading corrosive to the tank, an upper coupler must be removed from the CTMV and areas of the cargo tank covered by the upper coupler must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. However, as stated in a previous letter of interpretation (Reference No.: 02-0290, see attached), an upper coupler may remain on the cargo tank under the following specific conditions:

1. The upper coupler must allow a complete external visual inspection of the area of the cargo tank that is directly above the upper coupler. The visual inspection must be as effective as performing an external visual inspection of this area if the turntable were to be removed.

2. The external visual inspection and pressure test must be conducted by directly viewing the tank; therefore, the use of a device that creates an image of the tank (i.e., mirrors, cameras, or fiber optics) is prohibited.

3. All major appurtenances and structural attachments on the cargo tank that can be inspected without dismantling the turntable assembly must be

inspected for any corrosion or damage that might prevent safe operation (§ 180.407(d)(2)(viii)).

4. Areas covered by the turntable assembly must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that render the cargo tank unsafe for transportation service (§ 180.407(g)(1)(iii)).

Q2. Is the upper coupler required to be removed to perform the pressure test?

A2: The answer is yes, unless all the conditions and criteria in A1, 1 through 4 are met. The requirement to remove the upper coupler assembly as part of a pressure test for CTMVs was adopted into the HMR under final rule HM-183A on September 9, 1990 [55 FR 37041]. As specified in § 180.407(g)(1)(iii), except for cargo tanks carrying lading corrosive to the tank, as part of a pressure test for CTMVs, an upper coupler must be removed from the CTMV, and areas of the cargo tank covered by the upper coupler must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the cargo tank unsafe for transportation. Although this requirement states "except for cargo tanks carrying material corrosive to the tank" it was not the intention of HM-183A to except these materials from removing the upper coupler during the pressure test. Instead, it was the intent to limit the requirement to remove the upper coupler for pressure testing to only CMTVs carrying material corrosive to the tank.

Q3: Is a "UC" marking, indicating the upper coupler has been inspected, required to be applied to the CTMV?

A3: The answer is no. Each cargo tank successfully completing the test and inspection requirements contained in § 180.407 must be marked as specified in § 180.415. There is no requirement in this section to mark a CTMV that has been successfully tested and inspected with "UC" marking.

For insulated cargo tanks transporting a lading corrosive to the tank:

Q4: Is the upper coupler required to be removed to perform the external visual inspection?

A4: The answer is no. In accordance with § 180.407(d)(2)(ix), as part of the external visual inspection test for CTMVs transporting lading corrosive to the tank, an upper coupler must be removed from the CTMV and areas of the cargo tank covered by the upper coupler must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. However, there is no requirement to remove the insulation and jacketing covering the area of the cargo tank shell above the upper coupler. Therefore, if one did remove the upper coupler, finding any of the conditions identified in § 180.407(d)(2)(ix) would be impossible without removing the jacketing and insulation.

Q5: Is the jacketing and insulation above the upper coupler required to be removed so the shell of the cargo tank can be inspected?

A5: The answer is no. In accordance with § 180.407(d)(1), where insulation precludes a complete external visual inspection as required by paragraphs § 180.407(d)(2)-(6), the cargo tank also must be given an internal visual inspection as specified in § 180.407(e). If an internal visual inspection is precluded because the cargo tank is lined, coated, or designed so as to prevent access for internal inspection, the tank must be hydrostatically or pneumatically tested in accordance with § 180.407(g)(1)(iv).

Q6: Is the upper coupler required to be removed to perform the pressure test?

A6: The answer is no. In accordance with § 180.407(g)(1)(iii), except for cargo tanks carrying lading corrosive to the tank, areas covered by the upper coupler (fifth wheel) assembly must be inspected for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. The upper coupler (fifth wheel) assembly must be removed from the cargo tank for this inspection. However, since insulation and jacketing cover the area of the cargo tank above the upper coupler and there is no requirement to remove the insulation and jacketing, unless it is otherwise impossible to reach test pressure and maintain a condition of pressure equilibrium after the test pressure is reached or the vacuum integrity of the insulation space cannot be maintained, there are no requirements to remove the upper coupler to inspect areas of the cargo tank shell above the upper coupler that are not visible.

Q7: Is the jacketing and insulation above the upper coupler required to be removed so the shell of the cargo tank can be inspected?

A7: The answer is no. In accordance with § 180.407(g)(2), when pressure testing an insulated cargo tank, the insulation and jacketing need not be removed unless it is otherwise impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached, or the vacuum integrity cannot be maintained in the insulation space.

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

Sincerely,

T. Glenn Foster

T. Glenn Foster
Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division

Benedict
§ 180.407
Cargo Tanks
11-0059

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Mr. Charles Betts
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Mr. Betts,

Please accept this letter as a request for an interpretation of the requirement for the removal of the upper coupler assembly during various tests and inspections of cargo tank motor vehicles. There has been great debate and some confusion regarding the requirement to remove the and inspect the upper coupler and some facilities even go so far as to mark the tank with a UC indicating the upper coupler was inspected. The hazardous materials regulations have no requirement to inspect an upper coupler but the regulations do require that those elements of the upper coupler assembly that can be inspected without dismantling the upper coupler must be inspected.

External Visual Inspection

- 180.407(d)(2)(viii) All major appurtenances and structural attachments on the cargo tank including, but not limited to, suspension system attachments, connecting structures, and those elements of the upper coupler (fifth wheel) assembly that can be inspected without dismantling the upper coupler (fifth wheel) assembly must be inspected for any corrosion or damage which might prevent safe operation;

The section goes on to say that cargo tanks transporting lading that is corrosive to the tank, those areas covered by the upper coupler assembly must be inspected at least once every two years and the upper coupler must be removed from the tank to perform this inspection. We believe those words mean if there is any area of the cargo tank that is covered by the upper coupler and prohibits an external visual inspection of the cargo tank wall, then the upper coupler must be removed for this inspection.

- 180.407(d)(2)(ix) For cargo tanks transporting lading ***"corrosive to the tank"***, areas covered by the upper coupler (fifth wheel) assembly must be inspected at least once in each two year period for corroded and abraded areas, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. The upper coupler (fifth wheel) assembly must be removed from the cargo tank for this inspection.

The section goes on to say that cargo tanks transporting lading that is corrosive to the tank, those areas covered by the upper coupler assembly must be inspected at least once every two years and the upper coupler must be removed from the tank to perform this inspection. We believe those words mean if there is any area of the cargo tank that is covered by the upper coupler and prohibits an external visual inspection of the cargo tank wall, then the upper coupler must be removed for this inspection.

Pressure Test

- 180.407(g)(1)(iii) – Except for cargo tanks carrying lading ***"corrosive to the tank"***, areas covered by the upper coupler (fifth wheel) assembly must be inspected for corroded and abraded ares, dents, distortions, defects in welds, and any other condition that might render the tank unsafe for transportation service. The upper coupler (fifth wheel) assembly must be removed from the cargo tank for this inspection.

We believe those words mean if there is any area of the cargo tank that is covered by the upper coupler and prohibits an external visual inspection of the cargo tank wall while the cargo tank is under pressure test pressure, then the upper coupler must be removed in order to perform a proper pressure test.

- 180.407(g)(2) When testing an insulated cargo tank, the insulation and jacketing need not be removed unless it is otherwise impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached, or the vacuum integrity cannot be maintained in the insulation space. If an MC 338 cargo tank used for the transportation of a flammable gas or oxygen, refrigerated liquid is opened for any reason, the cleanliness must be verified prior to closure using the procedures contained in §178.338-15 of this subchapter.

When a person is performing an external visual inspection on an insulated cargo tank motor vehicle, Note 4 in 180.407(c) states there is an option to perform either an internal visual inspection in conjunction with the external visual inspection or to perform a pressure test. This is because the Department has recognized that insulation and jacketing covers the external surface of the cargo tank, including those areas of the cargo tank covered by the upper coupler and merely inspecting the jacketing would not be an effective external visual

inspection. The Department has also recognized there is a tremendous expense associated with the removal of the jacketing and insulation in order to inspect the external shell and heads of the cargo tank wall. The Department has noted under the pressure test requirement that the insulation and jacketing are not required to be removed unless the test pressure cannot be attained.

For the record it should be noted that the vehicle inspection requirements are identified in 49 CFR Appendix G To Subchapter B Of Chapter III--Minimum Periodic Inspection Standards and this requires an inspection of the upper coupler on an annual basis. It would be helpful if the Federal Motor Carrier Safety Administration (FMCSA) would expand on the inspection requirements for upper couplers instead of simply saying coupling devices.

Scenario 1

A motor carrier offers a DOT 407 non-insulated cargo tank transporting a lading corrosive to the tank to a cargo tank test and inspection facility for an external visual, internal visual, thickness, leakage and pressure test and the area of the cargo tank above the upper coupler can be visually inspected without removal of the upper coupler.

Please provide responses to the following questions:

1. Is the upper coupler required to be removed to perform the external visual inspection?
2. Is the upper coupler required to be removed to perform the pressure test?
3. Is the UC marking required to be applied to cargo tank motor vehicle?

Scenario 2

A motor carrier offers a DOT 407 insulated cargo tank transporting a lading corrosive to the tank to a cargo tank test and inspection facility for an external visual, internal visual, thickness, leakage and pressure test and the area of the cargo tank above the upper coupler cannot be visually inspected without removal of the upper coupler.

1. Is the upper coupler required to be removed to perform the external visual inspection?
2. If the answer to question number one is yes, is the jacketing and insulation above the upper coupler required to be removed so the shell of the cargo tank can be inspected.
3. Is the upper coupler required to be removed to perform the pressure test?
4. If the answer to question number three is yes, is the jacketing and insulation above the upper coupler required to be removed so the shell of the cargo tank can be inspected.

5. Other than the requirement in 180.407(g)(2), is there ever a requirement for the facility to remove the insulation and jacketing?

Thank you in advance for your timely reply.

Sincerely

Daniel G. Shelton
President
HazMat Resources, Inc.

"Adding value and creating wealth for your organization thru our commitment to personalized customer service"

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