



U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety
Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

NOV 15 2017

George Doggett
Radiation Safety Officer
C&J Energy Services Ltd.
3990 Rogerdale
Houston, TX 77042

Reference No. 16-0198

Dear Mr. Doggett:

This letter is in response to your December 8, 2016, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to marking and labeling. Specifically, you ask about marking and labeling requirements and the applicability of using a tag for a nuclear density gauge that contains a Class 7 radioactive material.

We have paraphrased and answered your questions as follows:

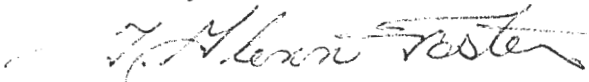
- Q1. You ask if the character height requirement in § 172.301(a)(1) that was introduced in a final rule entitled “Hazardous Materials: Harmonization with International Standards (RRR) under Docket PHMSA-2012-0027 (HM-215L) [78 FR 65453] applies to proper shipping names in addition to United Nations (UN) identification numbers.
- A1. The answer is no. The character height requirement only lists UN, North America (NA), and International Civil Aviation Organization (ICAO) identification numbers as having a new standard size. This requirement does not apply to proper shipping names.
- Q2. You ask what is the minimum character height for proper shipping names.
- A2. The HMR do not specifically prescribe a minimum character height for proper shipping name markings.
- Q3. You ask if your company could be allowed a “variance” from the HMR in order to affix only one Yellow II Class 7 label due to the product in question being a special form radioactive material.
- A3. The answer is no. Section 172.406(e) does not provide any exceptions for the placement of labels for special form materials. However, special permits may authorize relief from any requirement in the HMR, provided the applicant demonstrates an equivalent level of safety to that intended by the regulation. To apply, you must submit an application to the Associate Administrator for Hazardous Materials Safety in conformance with the

requirements prescribed in 49 CFR Part 107, Subpart B. You may obtain information on the special permit application process from our website at: <http://www.phmsa.dot.gov/hazmat/regs/sp-a>. In addition, according to information provided by the manufacturer, the type A package is the entire device including source housing, and detector housing both mounted to pipe in opposing positions meaning the entire device may be used for marking and labeling purposes.

- Q4. If the answer to Q3 is no, you ask if it is possible to affix a tag, on which the proper shipping name and UN number are printed, to the device in a manner that will preclude its easy removal in order to save space on the gauge to affix the two required labels.
- A4. Section 172.304 states that markings must be durable, in English, and printed on or affixed to the surface of a package or on a label, tag, or sign. The marking must be displayed on a sharply contrasting background, unobscured by labels or attachments, and located away from any other marking that could substantially reduce its effectiveness. If these requirements are met, a tag could be used to meet the requirements of § 172.301(a)(1).

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in cursive script that reads "T. Glenn Foster".

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

Goodall, Shante CTR (PHMSA)

Wolcott
172.301
HAZARDOUS Substances
16-0198

From: INFOCNTR (PHMSA)
Sent: Tuesday, December 13, 2016 9:49 AM
To: Hazmat Interps
Subject: FW: Clarification request
Attachments: Scanned Letter to PHMSA requesting clarification 12-4-16 (CH).pdf

Hi Shante/Alice,

Please submit this as a letter of interpretation. Mr. Doggett spoke with Eamonn.

Please let me know if you have any questions.

Thanks,
Jordan

From: George Doggett [<mailto:George.Doggett@casedhole-solutions.com>]
Sent: Thursday, December 08, 2016 6:13 PM
To: INFOCNTR (PHMSA)
Subject: Clarification request

Please find attached a request for clarification of the HAZMAT regulations for marks and labels on a nuclear density gauge transported by Company vehicle on public roads and highway.
Thanks



George Doggett
Sr. Director QHSE Drilling & Completions
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C&J Energy Services

Sunday, December 04, 2016

Standards and Rulemaking Division,
Pipeline and Hazardous Materials Safety Administration,
Attn: PHH-10, U.S. Department of Transportation, East Building,
1200 New Jersey Avenue, SE.,
Washington, DC 20590-001

E-mail: infocntr@dot.gov

Re: Clarification of certain requirements for compliance under Title 49, CFR Parts 100-185

To Whom It May Concern,

C&J Energy Services Ltd. (along with its subsidiaries, collectively "C&J") is a leading provider of well construction, well completions and well services to the oil and gas industry. C&J provides a suite of services for the entire life cycle of the well, including cementing; directional drilling; fracturing; coiled tubing; wireline; rig services; fluids management; and numerous complementary services. C&J corporate offices are in Houston, Texas and we have multiple facilities throughout the United States. Our domestic locations include offices in Texas, Louisiana, Oklahoma, New Mexico, Colorado, North Dakota, Wyoming, Utah, Montana, West Virginia, Ohio, Pennsylvania and California. - See more at: <http://www.cjenergy.com>.

Hydraulic fracturing is a well stimulation technique used in shale reservoirs that forces water, chemicals and proppant into the formation. The mix is applied under high pressure to penetrate cracks and open or fracture new flow channels, allowing hydrocarbons to flow back into the well.

Our fracturing group utilizes nuclear gamma radiation gauges to determine the density of fracturing fluids and mixtures. These gauges employ a Cs-137, 200 millicurie sealed source (Transport Index 0.4 Yellow II Label Code) and are manufactured by Thermo Fisher Scientific. The gauge is considered a "fixed gauge" by the Nuclear Regulatory Commission even though it is mounted on a mobile vehicle. Therefore, Hazardous Materials Regulations come into effect when transported by vehicle.

The SGD-O consists of three components: a source, a detector, and an electronics unit that incorporates the power supply and the signal handling and readout circuitry. The source is mounted opposite the detector at a convenient measuring point and emits low-energy gamma rays that pass through the pipe.



These rays are absorbed by the fluid in the pipe in proportion to the material's density, with the remaining rays producing a signal inversely proportional to the density of the fluid running through the pipe. When the density decreases, the detector's signal increases. Measurement is constant. The continuous signal is relayed to the transmitter which provides a clear readout on a digital display. With a response time of two seconds, operators can react quickly to any deviation in the predetermined density.

The HAZMAT regulations specify the marks and labels that must be displayed on the nuclear gamma radiation density gauges. The 172.101 Table identifies the material as:

Radioactive material, Type A package, special form UN3332.

My questions have to do with the marks and labels specified and referenced as follows:

1. 172.301(a)(1) indicates that "... each person who offer a hazardous material for transportation in a non-bulk packaging must mark the package with the proper shipping name and identification number ... for the material shown in the §172.101 Hazardous Materials Table. The identification number marking preceded by "UN", "NA", or "ID" as appropriate must be marked in characters at least 12 mm (0.47 inches) high. ..."

Does the character height apply to the proper shipping name as well or only the "UN" number? If not, what is the minimum character height for the proper shipping name?

2. 172.310(a)(b)(c) are self-explanatory and I have no questions about this section.
3. 172.400(a)(b) are self-explanatory and I have no questions about this section.
4. 172.403 is self-explanatory and I have no questions about this section.
5. 172.406 Placement of Labels:

(a) General

(1) Except as provided in paragraphs (b) and (e) of this section, each label required by this subpart must –

- (i) Be printed on or affixed to a surface (other than the bottom) of the package or containment device containing the hazardous material; and
- (ii) Be located on the same surface of the package and near the proper shipping name marking, if the package dimensions are adequate.

(2) Except as required in paragraph (e) of this section, duplicate labeling is not required on a package or containment device (such as to satisfy redundant labeling requirements).

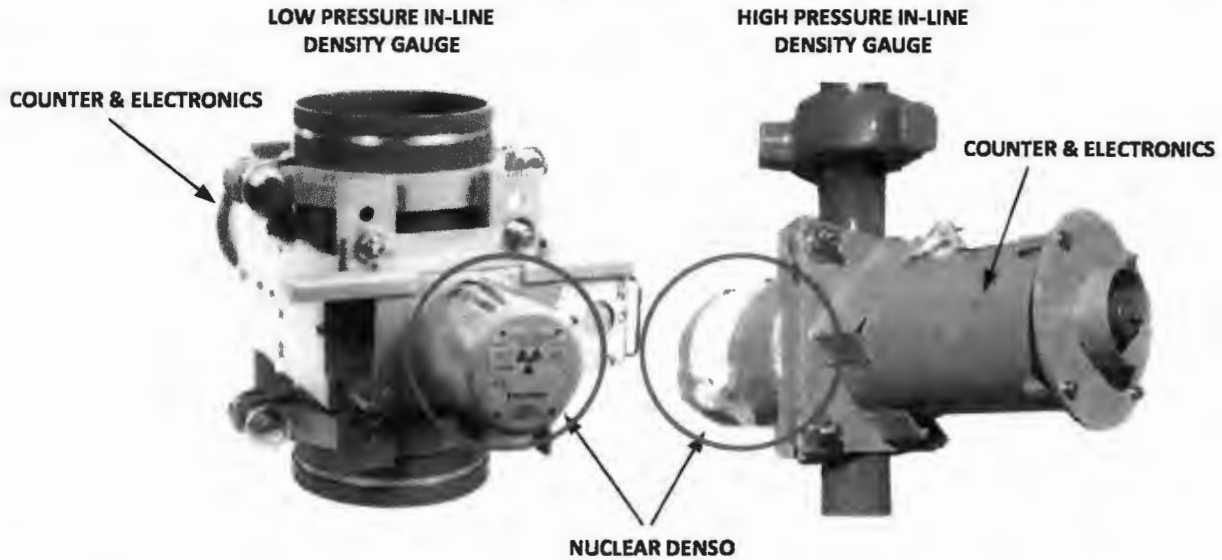
(b) Exceptions. A label may be printed on or placed on a securely affixed tag, or may be affixed by other suitable means to:

- (1) A package that contains no radioactive material and which has dimensions less than those of the required label;
- (2) A cylinder; and
- (3) A package which has such an irregular surface that a label cannot be satisfactorily affixed.



Please examine the drawings which depict the nuclear density gauges used by C&J. The gauges and configuration presented is not unique to C&J.

THERMO FISHER SCIENTIFIC NUCLEAR DENSITY GAUGES

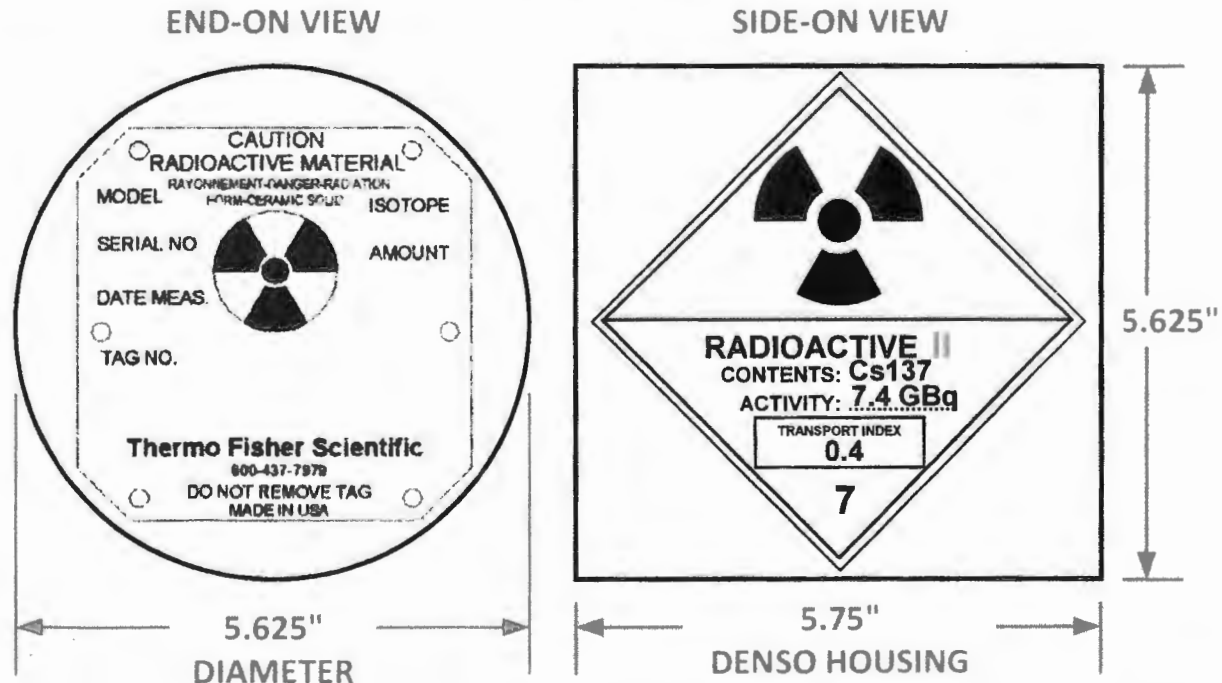


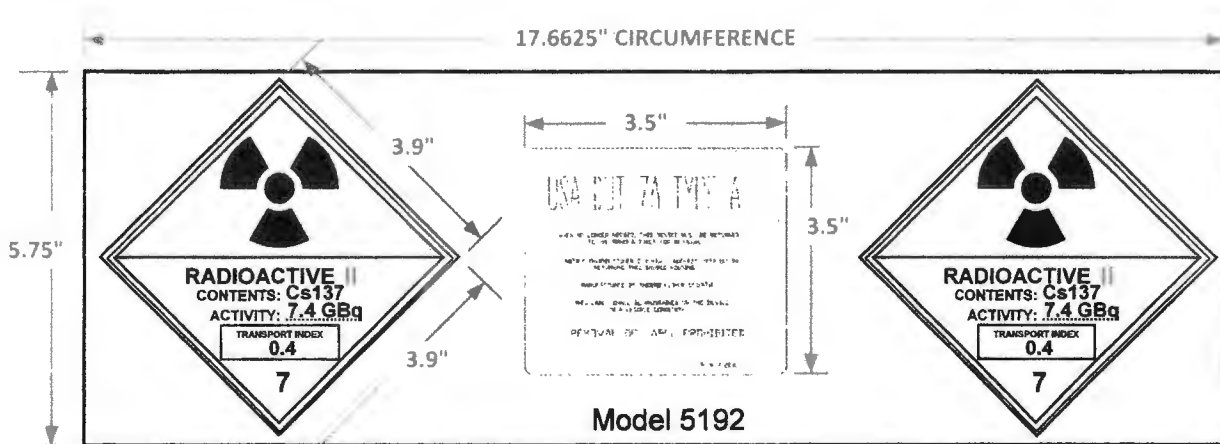
It is the Company's understanding that the nuclear gauge itself is required to be marked and labeled and not any other components that make up the assembly. I have circled the special form nuclear component of the gauges typically used in Fracking operations.

The Company uses two different models:

Model 5192 – 5.625 inches diameter with a depth of 5.75 inches.

Model 5190 – 4.75 inches diameter with a depth of 4.75 inches.





When reviewing the regulations referenced above, Company has the following questions:

1. Since this is a special form radioactive material source, Company is requesting a variance in order to affix only one Yellow II label. This will provide additional space to accommodate the proper shipping name and UN number on the gauge. If variance is declined, then:
2. Because the dimensions are minimal, e.g. 5.75 inches by 17.6625 inches for the larger of the two models, it is difficult to affix all of the marks and labels that are required.
 - (a) Thermo Fisher has installed a "DO NOT REMOVE LABEL" which includes the "USA DOT 7A TYPE A" mark which is specified to be at least 0.5 inches.
 - (b) Company is requesting the possibility of using a TAG with the proper shipping name and UN number that is affixed to the source in a manner that will preclude its easy removal. The lettering on the TAG will be at least 0.47 inches high. The TAG will be weather resistant.

As the corporate RSO for C&J you may contact me regarding any questions concerning this request for clarification.

Sincerely,

George Doggett
Sr. Director QHSE
Radiation Safety Officer
Gdoggett@cjes.com
713-325-6053 (office)
832-954-8914 (mobile)