



U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

FEB 15 2007

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

Mr. Robert A. Stewart
UPS Component Shop Supervisor
UPS Hydrostatic Shop
UPS Aircraft Maintenance Hangar
750 Grade Lane
Louisville, KY 40213

Ref. No.: 07-0002

Dear Mr. Stewart:

This is in reference to your January 4, 2007 letter to Mr. Frazer C. Hilder, Pipeline and Hazardous Materials Safety Administration's Office of the Chief Counsel, regarding the cylinder requalification requirements contained in § 180.205(g) of the Hazardous Materials Regulations (49 CFR Parts 171-180; HMR). Specifically, you ask whether the 1% resolution and $\pm 1\%$ accuracy tolerances of the expansion indicating device (EID), as specified in § 180.205(g)(2) and (g)(3)(ii), apply to the permanent expansion reading specified in § 180.205(g)(4)?

The answer is no. The EID is used to verify the accuracy of the test equipment system. The permanent expansion reading is used to evaluate the acceptance or rejection of a given tested cylinder.

Paragraph (g)(2) prescribes a resolution standard for an EID. In accordance with paragraph (g)(2), an EID must permit incremental reading of the cylinder expansion to 1% of the total expansion of each cylinder tested. Paragraph (g)(3)(ii) prescribes an accuracy standard for an EID. In accordance with paragraph (g)(3)(ii), an EID must provide a stable reading of a cylinder's expansion and must be accurate to $\pm 1.0\%$ of the total expansion of any cylinder tested that day.

Each day before retesting, the requalifier must use a calibrated cylinder, or other method authorized in writing by the Associate Administrator for Hazardous Materials Safety, to verify the accuracy of the test system. The test equipment must be verified to be accurate to within $\pm 1.0\%$ of the calibrated cylinder's certificate values (see § 180.209(g)(4)). This can be accomplished using the EID by bringing the total expansion to the selected value shown on the calibrated cylinder certificate. Alternatively, this can be accomplished using the pressure indicating device by bringing the pressure to the selected value shown on the calibrated cylinder certificate. Regardless of the procedure used, the calibrated cylinder must



070002

180.205(g)

show no permanent expansion. When the pressure is released, the EID must show zero (0) cc. If the pressure fails to return to zero (0) cc, the test system has not been proven to be accurate. The retester is not authorized to test cylinders to determine their suitability for service until the test system is proven to be accurate.

I hope this information is helpful. Please contact us if you have additional questions.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Hattie L. Mitchell".

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

Mitchell
§ 180.205(g)
Cylinders
07-0002

January 4, 2007

Frazer C. Hilder, Attorney
Pipeline and Hazardous Materials Safety Administration
Office of the Chief Counsel (PHC-10)
Room 8417
U.S. Department of Transportation
400 Seventh Street, S.W.
Washington, DC 20590-0001

RE: Informal Response
Case No.: 06-0257-CRS-CE

Dear Mr. Hilder:

Please be advised that this letter is United Parcel Service Co.'s (UPS) request for written interpretation resulting from the informal conference call held on December 19, 2006. Please provide interpretation to the following:

1. Does the 1% resolution and $\pm 1\%$ accuracy tolerances of the expansion indicating device, specified in 49 CFR 180.205 paragraphs (g)(2) and (g)(3)(ii), apply to the permanent expansion reading of paragraph (g)(4)?
2. If not, what is the requirement for the expansion indicating device, and where do we find this new tolerance definition in the CFR?

It seems to be an arbitrary decision of PHMSA to state that the written definition of the tolerance requirements of the device do not pertain to certain readings (i.e. the permanent expansion reading of the calibrated cylinder). Please clarify specifically when the stated tolerances apply, and when they do not apply. And, for any reading to which the stated tolerance requirements do not apply, please provide the tolerance requirement for that reading.

You indicated that this issue was settled in a verbal conversation with Darrell Garton. I spoke with Mr. Garton, and he stated that the issue was not resolved. He indicated that there was no final resolution, but that PHMSA personnel were going to work on it. He said that there was some agreement that the "0.0cc" interpretation was not correct, however PHMSA did not want to allow the full $\pm 1\%$ of Total Expansion. He said that Mr. Richard Tarr stated, "Well, we might give you 0.1cc or 0.2cc, but that's all I'm willing to go."

Mr. Garton sent me an email immediately after the meeting you referenced. In it he stated:

**From: Darrell Garton [mailto:darrell@montrose.net]
Sent: Thursday, July 20, 2006 11:26 AM
To: 'rastewart@ups.com'
Subject: RE: DOT Meeting?**

Hi Robbie,

Unfortunately, no. There were no definite answers given. However, there was a good deal of positive agreement to work toward a solution.

As you can see, there obviously remains some disagreement regarding this issue. If you have given any direction, verbal or written, please provide it and publish it so that this industry has clear direction for the tolerance requirements of the expansion indicating device of the testing apparatus.

Per our conversation with you and Ms. Mitchell about the Expansion Measurement System, you referenced to the Compressed Gas Association (CGA) C-1. C-1 was not incorporated into the CFR, and therefore we do not see the relevance to this case. However, since you brought it into the discussion.

According to CGA C-1, Paragraph 4.4

- h) Once stabilization is accomplished, release the pressure from the system. With the pressure release valve open, the expansion measurement device should indicate zero (If the expansion measurement device does indicate zero, the system is proven accurate and ready for testing cylinders).

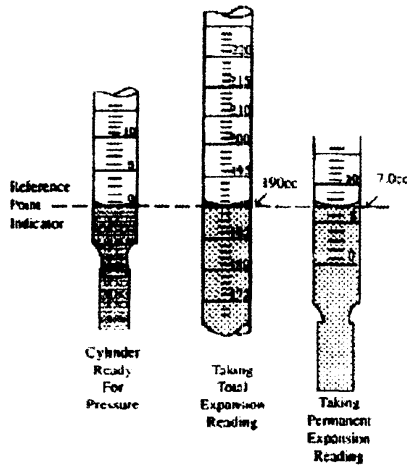
While I agree with CGA C-1 Paragraph 4.4, h) that we should ensure that the expansion measurement is zero, there is still room for interpretation on what is "Zero". With a Burette system, for expansions above 100cc, anything below .5cc (.1cc, .2cc, .3cc, .4cc) is read as "Zero". The Galiso hydrostatic test system owned by UPS utilizes a device of high precision that is capable of reading to 0.1cc through its full range. When the UPS system reads .1cc it records .1cc, whereas the Burette system would read "Zero".

The Burette system would be considered calibrated with (.1cc, .2cc, .3cc, .4cc) expansion at "Zero". The UPS system would not be considered in calibrated due to the electronic display of the expansion.

This appears to be a "Double Standard" (Burette vs. Electronic) on what is "Zero".

For all readings, the adjustable panel shall be moved so that the meniscus of the water column in the graduated burette is at the same level as the reference point indicator of the test panel.

The BOTTOM of the water meniscus is used for all readings as shown below:



Burette reading (at bottom of meniscus) is read to the nearest of:

- 1) Marked increment
- or:
- 2) Midpoint between marked increments



Bottom of meniscus half way between 2.0 and 3.0
 Record as 2.5cc



Bottom of meniscus is above 2.0 and below 2.5, but closer to 2.0
 Record as 2.0cc

Select and use burette to ensure total expansion reading can be read to an accuracy of 1%

4.2.1.2.1 Burette systems

For burette systems, all measurements must be taken at the same reference level and from the bottom of the meniscus (see figure 5).

The reference point indicator should be positioned so that measurements can be taken conveniently at eye level. The burette assembly shall be moveable so that the water level in the burette will be at the same height when reading zero, total expansion, and permanent expansion. This water level should be above the highest point of water in the water jacket and its connecting piping.

If the total expansion of the calibrated cylinder was 50 cc, the required accuracy of the device would be +/- 0.5 cc (1% of the total expansion) as per the specified accuracy of the device, detailed in 180.205(g)(3)(ii). Our Galiso hydrostatic test system was within $\pm 1\%$ accuracy of the total expansion of the cylinder tested on the following dates;

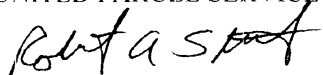
<u>Test record, date</u>	<u>Number of cylinders</u>	<u>Perm expansion</u>	<u>+1.0% of system accuracy</u>
January 26, 2006	(3 cylinders retested)	0.4cc	0.8%
January 30, 2006	(2 cylinders retested)	0.2cc	0.4%
March 3, 2006	(4 cylinders retested)	0.2cc	0.4%

Page 4
Frazer C. Hilder
January 4, 2007

Please provide a written interpretation resulting from the informal conference on the questions ask within the first paragraph.

Best Regards,

UNITED PARCEL SERVICE CO.

A handwritten signature in black ink, appearing to read "Robert A. Stewart". The signature is written in a cursive, somewhat stylized font.

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