U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

April 11, 2024

Mr. Jon Davignon
VP Sales and Service Manager
Galiso, Inc.
22 Ponderosa Ct
Montrose, CO 81401

Reference No. 23-0042

Dear Mr. Davignon:

This letter is in response to your April 21, 2023, email requesting clarification of the Hazardous
Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to cylinder calibration testing
systems. In your email, you cite paragraph (g) of Section 7.3.2 of Compressed Gas Association
(CGA) publication C-1-2016, "Methods for Pressure Testing Compressed Gas Cylinders,
Eleventh Edition" for the proof pressure method, which indicates that the 30 second hold is only
required at the highest verification pressure. You ask whether it is permitted to advance to the
subsequent verification pressure during cylinder calibration once the current verification pressure
is reached, rather than waiting the full minimum of 30 seconds as indicated in paragraph (h) of
Section 5.5.2 of CGA C-1-2016 for the water jacket method.

The answer is no. The water jacket and proof pressure methods have separate calibration testing
criteria specified in CGA C-1-2016. For the water jacket method, Section 5.2.1 of CGA C-1-
2016 states that "the cylinder shall maintain test pressure for at least 30 seconds and as much
longer as may be necessary to ensure its complete expansion." Section 5.5.2 of CGA C-1-2016
states that "it is not required to release the pressure after each verification pressure is
reached. Once the pressure and expansion readings stabilize and the total expansion reading is
recorded, the pressure may be increased to the next verification point." Section 5.5.2(h) also
states that the tester must "stop the pressurization and hold for a minimum of 30 seconds when
the selected verification pressure is reached." This means that pressure need not be released after
stabilization, and that the 30 second hold applies at each verification pressure, not only the
highest verification pressure.

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

Sincerely,

Steven W. Andrews Jr.
Acting Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division

U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration
1200 New Jersey Avenue SE
Washington, DC 20590

April 21,2023

To Whom It May Concern:

Galiso Incorporated would like to receive an interpretation as to the requirements of CGA C-1(IBR) Section 5.5.2 Verification Procedure.

h)   Stop the pressurization and hold for a minimum of 30 seconds when the selected verification pressure is reached. Once the pressure and expansion readings stabilize, record the total expansion reading. The total expansion reading shall be within ±1% of the total expansion value shown on the calibrated cylinder certificate corresponding to the selected verification pressure. If the reading does not match within ±1% at each verification pressure, the system is not calibrated.

It is not required to release the pressure after each verification pressure is reached. Once the pressure and expansion readings stabilize and the total expansion reading is recorded, the pressure may be increased to the next verification point

Specifically the last paragraph that states once you have reading stabilized pressure may be increased to next verification point.

 Subsection e) of 5.5.2 states:

NOTE—Some expansion systems need up to 5 seconds to verify that they are stabilized.

We take that to mean when calibrating a test system using the calibration cylinder with multiple points it is allowable to hold on a pressurization point until stabilized and then proceed to the next pressure point. The final point is then held for the 30 second requirement.

Additionally in the proof pressure section of C-1 it makes the same statement but more clearly defined:
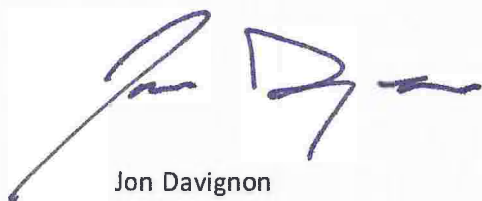
Section 7.3.2

g)   Maintain the verification pressure in the cylinder for at least 30 seconds. The actual test pressure shall be stable by the end of the hold time.

If multiple verification pressures are used, it is not required to hold 30 seconds at every verification pressure nor is it required to release the pressure after each verification pressure. Once the pressure reading stabilizes, the pressure may be released or increased to the next verification point. The integrity of the pressure system shall be demonstrated by holding the highest verification pressure for at least 30 seconds. The pressure shall stabilize within 30 seconds; and

We wish to confirm that during calibration it is acceptable to stabilize at multiple points during the same pressurization period and verify system is stable, record expansion point, increase to next pressurization point. Hold only at the highest verification point for at least 30 seconds. There is not a need to hold for 30 seconds at each stabilized pressure in the same pressurization cycle.

Sincerely,

Jon Davignon

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