



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

SEP 06 2013

Mr. George Foucher
Vice President Quality Assurance
Matthews Associates, Inc.
220 Power Court
Sanford, FL 32771

Ref. No.: 13-0156

Dear Mr. Foucher:

This is in response to your email dated July 26, 2013, concerning requirements under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) for testing of lithium ion batteries. The specific requirements you address are contained in Section 38.3 of the United Nations (UN) Manual of Tests and Criteria and are implemented through the provisions of § 173.185. Specifically you ask whether a failure of a test chamber to maintain the conditions specified in the test procedure constitute a “no test” or an “under test” and what actions are required.

The UN Manual of Test and Criteria describe procedures for conducting a series of tests designed to simulate certain transport and abuse conditions. Test T.1 (Altitude Simulation) simulates air transport under low-pressure conditions. The procedure requires test cells and batteries to be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5 °C). In your letter, you stated that while performing an annual calibration of the altitude chamber, it was determined that the pressure sensor had a 3% error and the pressure during tests reached 11.95 kPa during the 6 hour test. This increased pressure was not constant during the entire 6 hour test rather it was the maximum observed pressure during the test.

The procedure for the altitude simulation test requires the cells or batteries to be stored at a pressure of 11.6 kPa or less for 6 hours. The test procedure permits lower pressures, but not higher pressures. Results from tests conducted on cells at a higher than permitted pressures are not valid. To compensate for a known percentage error in the test sensor, you may consider subjecting cells and batteries to a lower pressure or conducting more frequent calibration of test equipment to ensure accuracy.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

Delmer Billings
Senior Regulatory Advisor
Standards and Rulemaking Division

Drakeford, Carolyn (PHMSA)

Leary
§ 173.185
Lithium Batteries

From: INFOCNTR (PHMSA)
Sent: Monday, July 29, 2013 2:24 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: 49 CFR 173.185 Interpretation Request

13-0156

Hi Carolyn,

This caller requested we submit this e-mail as a formal letter of interpretation.

Thanks,
Victoria

From: George Foucher [<mailto:GFoucher@maifl.com>]
Sent: Friday, July 26, 2013 4:18 PM
To: INFOCNTR (PHMSA)
Cc: Arvin Blank; Phil Perreault; Judy Perreault
Subject: RE: 49 CFR 173.185 Interpretation Request

Dear Sir or Madam,

Please respond with your interpretation of the following:

Company Information:

Mathews Associates, Inc. manufactures battery assemblies, including both lithium metal (primary) and lithium-ion (rechargeable). We also perform testing in accordance with "The Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria", Section 38.3 "Lithium metal and Lithium-ion batteries in our "A2Z" test lab.

Relevant Reference from "The Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria", Revision 5, Amendment 1, Section 38.3.4 excerpt:

38.3.4.1 Test T.1: Altitude simulation

38.3.4.1.1 Purpose

This test simulates air transport under low-pressure conditions.

38.3.4.1.2 Test procedure

Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours

at ambient temperature (20 ± 5 °C).

38.3.4.1.3 Requirement

Cells and batteries meet this requirement if there is no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.

Situation:

When performing our annual calibration of the altitude chamber, it was shown that the pressure sensor was off 3% at the 11.6 kPa pressure (50,000 feet) required for T1 altitude. Based on the 3% sensor deviation, the actual pressure made excursions up to a pressure of almost 11.95kpa (49,200 ft) during the 6 hour test. This pressure was not constant during the entire 6 hour test due to the vacuum pump cycling but was the maximum pressure realized during the test.

Question:

We would like to know if this would be classified as a no test or under test and what actions by Mathews, if any, are needed?

Thank you,

George J. Foucher
Vice President Quality Assurance

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