U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

JUN 04 2012

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

Ref. No. 12-0040

Dear Mr. Foucher:

This responds to your January 27, 2012 email and subsequent telephone conversation with a member of my staff requesting clarification of the requirements in the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to design type testing requirements for a lithium ion battery. The requirements you address are contained in Section 38.3 of the 5th Revised Edition of the United Nations (UN) Manual of Test and Criteria and are implemented through the provisions of § 173.185 of the HMR.

As provided by 38.3.2.1 of the UN Manual of Tests and Criteria, in the event that a cell or battery design type does not meet one or more of the test requirements, steps shall be taken to correct the deficiency or deficiencies that caused the failure before such cell or battery type is retested. In your letter you present three scenarios and pose several questions in response to these scenarios.

Scenario 1: A battery design does not meet the T3 test requirement because the open circuit voltage of the test battery was less than 90% of its voltage immediately prior to this procedure. Corrections must be incorporated into each of the batteries.

Q1. Can the same batteries that initially failed the T3 test be reused for the design type tests if the deficiency that caused the failure is corrected?

A1. In this scenario, the entire battery design must be evaluated to determine the cause of the failure. In general, we recommend against reusing batteries that do not pass the design type tests. The decision on whether to repair and reuse test cells or test batteries in this case depends on the how and why the cell or battery design failed to pass the test.

Q2. If the original batteries may be used for subsequent testing, can we begin at test T3 without repeating tests T1 and T2?

A2. No. The defect described in Scenario 1 is present in each of the batteries. Since correcting the defect would materially affect the test results, this change would constitute a new design type. The new battery design type must be subjected to each of the required tests beginning with test T1.

Scenario 2: A single battery does not meet the T2 test requirement. An analysis reveals that the failure is due to a workmanship issue and not a design flaw.

Q3. Is it acceptable to repair or replace only the single failed battery, subject that battery to tests T1 and T2 and then continue testing all the batteries from test T3?

A3. Provided you can ensure that the cause of the failure was the result of a workmanship issue associated with a single battery and not a deficiency in the battery design you may replace the failed battery and subject it to the tests you outline above. Since a failure of the T2 test may result in damage to the test battery, the decision on whether to repair a single test cell or battery depends on the nature and extent of the damage and must not impact the test results.

Scenario 3: Between the T3 test and the T4 test, one of the batteries is damaged during handling. The battery meets all of the design type tests to this point, but cannot be submitted to the Test T4.

Q4. Is it acceptable to repair or replace only the single failed battery, submit that battery to tests T1 through T3 and continue testing all the batteries from test T4?

A4. Since the damage to this battery is not a result of a design defect you may repair or replace the failed battery and subject it to the tests you outline above. The decision on whether to repair or replace a single test cell or battery damaged during handling depends on the nature and extent of the damage and must not impact the test results.

I hope this information is helpful. If you have further questions, please contact this office.

Sincerely,

Ben Supko
Senior Regulations Officer
Standards and Rulemaking Division

Leary
§ 173.185
Lithium Batteries
12-0040

Drakeford, Carolyn (PHMSA)

From: INFOCNTR (PHMSA)
Sent: Monday, January 30, 2012 12:34 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: 49 CFR 173.185 Interpretation Request

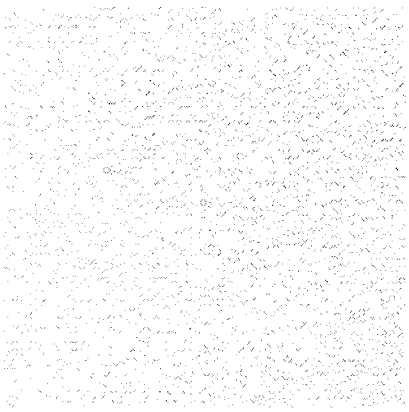
Hi Carolyn,

We received the following request for a letter of interpretation.

Thanks,
Victoria

Victoria Lehman
Hazmat Information Center (HMIC)
http://phmsa.dot.gov/hazmat/info-center
(202) 366-1035

From: George Foucher [mailto:GFoucher@maifl.com]
Sent: Friday, January 27, 2012 3:53 PM
To: INFOCNTR (PHMSA)
Subject: 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 38.3.2.2, excerpt:

"In the event that a cell or battery type does not meet one or more of the test requirements, steps shall be taken to correct the deficiency or deficiencies that caused the failure before such cell or battery type is retested."

Questions:

A) Scenario I – A battery fails test T3 and corrections need to be incorporated into all of the batteries. If the batteries are able to be disassembled, have the correction made and be reassembled, is it acceptable to use the same batteries? If so, would we be able to perform test T3 and then continue with T4 or do we have to start back at test T1?

B) Scenario II – A battery fails test T2. A failure analysis reveals that there is no design flaw but that the failure was due to a "workmanship" issue (such as a cold solder joint or insufficient weld). There will be no change in design. Any subsequent batteries will be manufactured to be identical to the batteries tested to this point. Is it acceptable to repair / replace only the failed unit, subject it to tests T1 and T2 and then continue with test T3 with the entire lot?

C) Scenario III – Between tests T3 and T4, one of the batteries is damaged during handling. It has met all of the test requirements up to that point. Since the damaged unit cannot be submitted to test T4, Is it acceptable to repair / replace only the failed unit, subject it to tests T1, T2 and T3 and then continue with test T4 with the entire lot?

Thank you,

George J. Foucher
Vice President Quality Assurance

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