



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

FEB 07 2018

Mr. Tom Ferguson
Director of Technical Services
Currie Associates, Inc.
Queensbury, NY 12804

Reference No. 17-0024

Dear Mr. Ferguson:

This is in response to your March 8, 2017, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the testing of a lithium ion battery design in accordance with the United Nations (UN) Manual of Tests and Criteria (MTC). In your email, you describe two scenarios in which the original component cells of a lithium ion battery that were successfully tested in accordance with the provisions of part III, sub-section 38.3 of the UN MTC are replaced with new cells and ask whether the battery design would be considered a new type and require testing.

You provide two scenarios where a battery manufacturer is no longer able to obtain component cells from the cell manufacturer used in the original battery design. In the first scenario, the battery manufacturer will develop cells for use in their battery. The new cells are constructed to the same design as the cells in the previously tested battery design. In the second scenario, replacement cells from another manufacturer will be used. In this scenario, the materials used for the anode and cathode have a slightly different composition from those of the original design while maintaining the same performance criteria as the original cell with regards to nominal energy, size, weight, etc.

For both scenarios, you ask if the lithium ion battery design, that was previously successfully tested, requires retesting if the component cells are replaced with cells manufactured to the *same or similar cell design* specifications, but are built by a different manufacturer and independently tested in accordance with the provisions of part III, sub-section 38.3 of the UN MTC?

Based on the information provided, this Office cannot determine that the new component cells are identical to the old cells as there are various features inherent to the new cells (such as electrode makeups and a specific electrolyte) that may or may not be present in the old cells. The provisions in Section 38.3.2.2 are intended to provide a tolerance for minor differences from a

tested type but any change that would lead to failure of any of the tests prescribed in this section is considered a new type and must be subjected to the required tests. Section 38.3.2.2 also describes the types of changes that may be considered sufficiently different from a tested type so that it might lead to a failure of any of the test results.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Duane A. Pfund". The signature is fluid and cursive, with a large, stylized initial "D" and a long, sweeping horizontal stroke at the end.

Duane Pfund
International Program Coordinator
Standards and Rulemaking Division

Goodall, Shante CTR (PHMSA)

Wiener
173.185
Lithium Battery
17-0024

From: Kelley, Shane (PHMSA)
Sent: Wednesday, March 08, 2017 4:51 PM
To: Dodd, Alice (PHMSA); Goodall, Shante CTR (PHMSA)
Cc: Foster, Glenn (PHMSA); DerKinderen, Dirk (PHMSA); Nickels, Matthew (PHMSA); Pfund, Duane (PHMSA)
Subject: FW: Request for Letter of Interpretation
Attachments: UN38.3 Testing Clarification Request.pdf

Can we please log this in?

From: Tom Ferguson [mailto:Tom@currieassociates.com]
Sent: Wednesday, March 08, 2017 10:26 AM
To: Meidl, Rachel (PHMSA) <rachel.meidl@dot.gov>
Cc: DerKinderen, Dirk (PHMSA) <Dirk.DerKinderen@dot.gov>; Kelley, Shane (PHMSA) <shane.kelley@dot.gov>; Pfund, Duane (PHMSA) <Duane.Pfund@dot.gov>; Leary, Kevin (PHMSA) <Kevin.Leary@dot.gov>; Chris Yakush <Chris@currieassociates.com>; Lara Currie <Lara@currieassociates.com>
Subject: Request for Letter of Interpretation

Rachel,

Please find attached a request for a letter of interpretation regarding lithium battery testing. Given the recent changes in positions, I wasn't exactly sure to whom I should submit the request. Please forward as you deem appropriate.

Let me know if you need additional information.

Thank you and Best Regards,

Tom Ferguson, PG, CHMM, DGSA

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March 7, 2017

Pipeline and Hazardous Materials Safety Administration
Hazardous Materials Standards and Rulemaking Division PHH-10
1200 New Jersey Ave. SE
Washington DC 20590-0001

Re: Letter of Interpretation Regarding UN38.3 Testing for Lithium Batteries

Dear PHMSA:

On behalf of a major supplier of a lithium ion battery-powered equipment, we are requesting a Letter of Interpretation regarding the retest requirements for lithium ion batteries.

Question

1. Does a lithium ion battery design require retesting if the component cells are replaced with cells manufactured to the same cell design specifications but are manufactured by a different manufacturer and independently tested under the appropriate tests in the UN Manual of Tests and Criteria, Section 38.3?

Background

A battery manufacturer was recently informed that the component cells used in their battery design will no longer be available. Cell Manufacturer A who built Cell A will no longer be manufacturing cells. As a result, a new cell supplier was identified (the cells will actually be built in-house by the battery manufacturer), Cell Manufacturer B. The new cells (Cell B) are designed and constructed to the same cell design and with the same materials as Cell A. Therefore, only the manufacturer of the cells is changing, not the cell design. Cell Manufacturer B has tested the Cell B component cells in accordance with UN38.3, and the cell design passed.

Question

2. Does a lithium battery design require retesting if the component cells are replaced with cells manufactured to similar cell design specifications but manufactured by a different manufacturer and independently tested under the appropriate tests in the UN Manual of Tests and Criteria, Section 38.3?

Background

Similar to the scenario in question 1, Cell A (manufactured by Cell Manufacturer A) is no longer available and will be replaced by Cell B (manufactured by Cell Manufacturer B). However, the construction materials of the anode and/or cathode are changing slightly. The overall design is the same, but the materials used for the anode and cathode of Cell B have a slightly different composition from those of



Cell A. Cell B has the same performance criteria as Cell A (nominal energy, connections, size, weight, etc.). As in Question 1, Cell B has successfully passed all required tests under UN38.3.

Retesting of the battery designs impacted by these questions will cost in excess of \$100,000 (\$20,000+ per design x 5 designs). Therefore, it is important that the company understand PHMSA's opinion on these two questions.

The regulations do not appear to suggest a change in the manufacturer of the component cells automatically requires retesting of the assembled battery design if the cell design has not changed. However, it appears that changing the materials used for the anode and/or cathode could adversely impact the performance of the battery in ways not identifiable by testing of the component cells and would require retesting of the battery design in accordance with 38.3.2.1 of the UN Manual of Tests and Criteria.

As these questions will impact production times, we request this issue be reviewed as quickly as possible. Guidance on these questions would be greatly appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom Ferguson", followed by a horizontal line extending to the right.

Tom Ferguson
Director of Technical Services