U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

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

MAY 15 2006

Ms. Pamela J. Jackson
Director of Marketing
SeQual Technologies Inc.
11436 Sorrento Valley Road
San Diego, CA 92121

Ref. No.: 06-0015

Dear Ms. Jackson:

This is in response to your January 19, 2006 letter regarding the applicability of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to a device that your company calls the Eclipse Oxygen System that contains lithium ion batteries.

According to your letter, the battery pack for your Eclipse Oxygen System device contains twenty-four (24), 2.2 ampere-hour lithium ion cells. The battery pack consists of two, independent, 12-cell batteries. Both batteries are housed in a single plastic enclosure that are electrically isolated and mechanically separated from the other. The two batteries in the enclosure are not electrically connected together by permanent means. Each battery has 7.90 grams of equivalent lithium content.

The lithium ion battery has been tested pursuant to the United Nations Manual of Tests and Criteria. The battery pack's electrical connectors are designed to allow independent electrical access *(battery connectors A and B shown in your Drawing No. 3782)* to each of the two 12-cell batteries in the enclosures. When the battery pack is inserted into the battery compartment of your device, the two separate 12-cell batteries within the pack are electrically connected by circuitry that is part of the internal power management system, but external to and separate from the battery pack. You asked whether the lithium ion batteries in your device are subject to the requirements of the HMR or the ICAO Technical Instructions.

Based on the information provided, it appears that your Eclipse Oxygen System device that contains lithium ion batteries that are "designed to allow independent electrical access *(battery connectors A and B shown in the diagram)* to each of the two 12-cell batteries in the enclosures is not subject to the HMR or the ICAO Technical Instructions because:

- The cells contain not more than 1.5g of lithium equivalent content;
- The batteries contains not more than 8g of lithium-equivalent content;

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- Each battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;
- Cells and batteries are separated so as to prevent short circuits and are packed in strong packagings. (See 49 CFR 173.185(b) and Special provision A45 of the ICAO Technical Instructions.)

Additional requirements under Special provision A45 of the ICAO Technical Instructions state except when installed in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must meet the following requirements:

- Each package must be marked indicating that it contains lithium batteries and that special procedures should be followed in the event that the package is damaged;
- Each shipment must be accompanied with a document indicating that packages contain lithium batteries and that special procedures should be followed in the event a package is damaged;
- Each package is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained and without shifting of the contents so as to allow battery-to battery (or cell-to cell) contact and without release of contents; and
- Except in the case of lithium batteries packed with equipment, packages may not exceed a gross weight of 30 kg.

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

Sincerely,

John A. Gale
Chief, Standards Development
Office of Hazardous Materials Standards

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§173.185
Lithium Battery
06-0015

SeQual Technologies Inc.
11436 Sorrento Valley Rd. • San Diego, CA 92121-1306 • 858/202-3100 • FAX 858/558-1915

January 19, 2006

Mr. John Gale
Chief, Standards Development
Office of Hazardous Materials Standards
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
400 Seventh Street SW
Washington, DC 20590-0001

Re: Clarification on SeQual Technologies' Lithium ion Battery

Dear Mr. Gale:

I am writing to request a clarification from the Pipeline and Hazardous Materials Safety Administration (PHMSA) regarding the lithium ion batteries that will be used in the Eclipse™ Oxygen System.

On November 30, 2005, PHMSA issued a letter to SeQual Technologies that confirmed the battery described in our letter to PHMSA dated August 30, 2005 is not subject to the U.S. hazardous materials regulations (HMR). However, our August 30th letter may not have clearly defined the configuration and design of the batteries that power the Eclipse™ Oxygen System.

As noted in our letter of August 30, the battery pack for the Eclipse Oxygen System contains twenty-four (24), 2.2 ampere-hour lithium ion cells. However, our letter failed to point out the battery pack actually consists of two, independent, 12-cell batteries. Although both batteries are housed in a single plastic enclosure, each battery in the enclosure is electrically isolated and mechanically separated from the other. The two batteries in the enclosure are not electrically connected together by permanent means. Each battery has 7.90 grams of equivalent lithium content and each battery has been individually tested for compliance with the UN Manual of Tests and Criteria.

The battery pack's electrical connectors are designed to allow independent electrical access to each of the two 12-cell batteries in the enclosure. When the battery pack is inserted into the battery compartment of the Eclipse Oxygen System, the two separate 12-cell batteries within the pack are electrically connected by circuitry that is part of the Eclipse's internal power management system, but external to and separate from the battery pack itself. Therefore, SeQual views the battery pack for the Eclipse Oxygen System as being comprised of two separate batteries, each with less than 8 grams of equivalent lithium. Three drawings are attached, two showing the configuration of the cells in each battery (Battery A and Battery B) and the third showing an exploded view of the complete Battery Pack Assembly.

Exceptions in HMR and ICAO Technical Instructions

Based on the requirements contained in 49 CFR 173.185(b) of the U.S. HMR and Special Provision A45 of the ICAO Technical Instructions, it is our opinion that SeQual Technologies' lithium ion batteries designed for use in the Eclipse Oxygen System are not subject to the HMR or ICAO Technical Instructions for the following reasons:

1. The cells contain not more than 1.5 grams of equivalent lithium content;
2. The batteries contain not more than 8 grams of equivalent lithium content;
3. Each battery is of the type proven to be non-dangerous by testing in accordance with tests in the UN Manual of Tests and Criteria, 4th Revised Edition; and
4. The batteries will be packed in such a way to prevent short circuits when offered for transport carried onboard passenger aircraft.

I would appreciate PHMSA providing written confirmation that the batteries, as described herein, are not subject to the HMR or ICAO Technical Instructions.

Should you need additional information or have any questions regarding our product, please do not hesitate to contact me.

Respectfully,

Pamela J. Jackson

Pamela J. Jackson
Director of Marketing
SeQual Technologies Inc.
11436 Sorrento Valley Road
San Diego, CA 92121

Phone: 858-202-3144
FAX: 858-558-1915
Cell: 760-805-9000
Email: pjackson@sequal.com

cc: Robert Schneider, Vice President Business Development, SeQual Technologies Inc.
Edward Radtke, Vice President Sales and Marketing, SeQual Technologies Inc.
James Bixby, CEO and President, SeQual Technologies Inc.