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Aviation Law Made Simple

BY JASON DICKSTEIN
AEA GENERAL COUNSEL

Be Wary of Batteries

Hazmat violations can be very expensive. It is not unusual to see a proposed civil penalty for a hazmat violation exceed $100,000. Can you imagine paying a civil penalty at this level for one incorrectly shipped hazmat?

Avionics repair stations have a number of special concerns under the hazmat regulations, but perhaps the most serious hazmat issue facing avionics repair stations is shipping batteries. This month, we examine some strategies to make sure your battery shipments remain in compliance with the regulations, so you can avoid hefty civil penalties.

There are many batteries in an aircraft, and they include stand-alone batteries as well as batteries found in avionics equipment. For example, they may be found as back-up power for avionics units in the event of a main power bus failure.

Traditional lead acid batteries are regulated for shipping purposes, but there are significant exceptions that can give some persons in the industry the impression that they are unregulated. Don't be fooled – most traditional lead acid batteries are regulated under the proper shipping name "batteries, wet, non-spillable." There is a significant set of requirements for shipping these batteries, including requirements for special packaging, special markings and special labels.

Many of these complicated requirements can be waived by making use of the exceptions that apply to these sorts of batteries. Non-spillable wet cell batteries, like lead acid batteries, can be shipped in non-specification packaging as long as:

> ...Because batteries are intrinsically hazardous materials, they should only be packaged and shipped by persons with specific hazmat shipping training.

1. The non-spillable batteries are securely packed in strong outer packaging.
2. The batteries are prepared and packaged for transport in a manner calculated to prevent a dangerous evolution of heat (i.e., an amount of heat sufficient to be dangerous to packaging or personal safety – this includes charring of packaging, melting of packaging, scorching of packaging, or other evidence).
3. The batteries are prepared and packaged for transport in a manner calculated to prevent short circuits.
4. Both the battery and the outer packaging must be plainly and durably marked "non-spillable" or "non-spillable battery." This is a very important factor that is often forgotten, and it can mean the difference between a compliant shipment and a non-compliant shipment.
5. The battery must not contain any unabsorbed free-flowing liquid, and it must be designed so that electrolyte will not flow from a ruptured or cracked case.

When a shipper takes advantage of this exception, the non-spillable batteries are excepted from the other requirements of the hazmat regulations. This means there is no need to apply labels or markings, and there is no need to complete formal hazmat-compliant shipping papers.

Imagine that a customer ships you an avionics unit for calibration or inspection. It turns out this is a unit you cannot calibrate, because you do not have the right calibration equipment, it is not on your capability list or it is simply

outside your repair station's expertise. If the same customer asks you to return the unit, can you do so?

The short answer is you should slow down and analyze the facts surrounding the unit before you return it. If you are shipping the item from your own facility, then you become the shipper, even though you are merely returning an item that was improperly sent to your facility.

If the avionics unit has an internal battery, then you may need to take steps to assure compliance with the hazmat regulations. Because, sometimes an avionics unit may have back-up battery power, which may cause the unit to be treated as a hazardous material.

There is a growing trend toward the use of lithium batteries in aircraft electronics. Lithium batteries are divided into six different proper shipping names, so it is important to start the analysis by identifying the right shipping name and configuration. Lithium batteries can be shipped as lithium metal or lithium ion batteries, and they can be shipped as just batteries, batteries packed with equipment (removed but shipped in the same container) or batteries packed in equipment (for cases where it is impractical or impossible to remove the battery from the equipment).

Lithium battery packing instructions usually distinguish two different packaging configurations. Most section one packing instructions are for greater amounts of lithium, and they tend to apply all of the traditional compliance requirements (marking, labeling and packaging). Section two of each of the lithium packing instructions is for smaller amounts of lithium, and they tend to permit non-specification packaging, and only limited marking and labeling.

In all cases, batteries should be shipped with sufficient cushioning material to prevent them from moving inside the packaging. The shipper should take steps to prevent short circuits and to protect the terminals from damage. Non-conductive caps are one way to help meet these requirements. Other strategies can include packaging each battery in fully enclosed inner packaging made of non-conductive material, or separating the batteries in a way that prevents contact with other batteries or conductive materials in the package.

In addition, any shipper who intends to make use of an exception to the rules should bear in mind that the shipper needs to carefully read the regulatory language in order to assure the shipper is properly meeting all applicable requirements of the regulations.

Finally, because batteries are intrinsically hazardous materials, they should only be packaged and shipped by persons with specific hazmat shipping training. If the shipper ships the batteries correctly, but has failed to obtain appropriate training, then the shipper can still be subject to a civil penalty for violating the hazmat training regulations. ❑