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Open Letter to Industry

RE: Most portable aircraft fire extinguishers are currently illegal to ship

Dear aircraft owner, operator, maintainer, trade association representative, or agency employee,

An urgent issue has been presented to anyone who owns, operates, and/or maintains aircraft of any substantial size. This includes air carriers and repair stations. Please share this information for the benefit of the aviation industry and forward this letter to any interested parties. Please encourage them to reach out to me using the contact information above for more information.

It has recently come to the attention of the aviation industry that there is a regulatory problem when shipping fire extinguishers that have non-specification cylinders and liquified compressed gas extinguishing agents such as Halon and Halotron. The issue specifically relates to 49CFR 173.309(c)(2) which states the following:

*The internal volume of each cylinder may not exceed 18 L (1,100 cubic inches). For fire extinguishers not exceeding 900 mL (55 cubic inches) capacity, the liquid portion of the gas plus any additional liquid or solid must not completely fill the container at 55 °C (130 °F). **Fire extinguishers exceeding 900 mL (55 cubic inches) capacity may not contain any liquefied compressed gas;***

The issue is related specifically to the statement in bold type above.

The problem is that portable fire extinguishers in the cabin and cockpit of most commercial and general aviation aircraft utilize Halon 1211 (Bromochlorodifluoromethane), Halocarbon (e.g. Halotron), or blends of similar compounds which are used as extinguishing agents. In most cases, these extinguishers contain quantities of agent that require a cylinder over 900ml internal volume. Almost all extinguishers of this size and type include a non-DOT (non-specification) cylinder. These agents are all considered liquefied compressed gases according to the applicable Safety Data Sheets (SDS) and chemical composition. **Therefore, almost all portable aircraft fire extinguishers in use today do not comply with 49CFR 173.309(c)(2).**

This means they are, and have always been, illegal to ship by air, ground, and water. **There are currently no exceptions to this rule that may be used by the industry.** No distributor, repair station, or airline may transport this essential safety equipment to or from inventory, stores, or repair stations. To this day, the most widely used portable aircraft fire extinguishers are even illegal to ship new from the factory.

This oversight was only recently realized by industry, spurred on by Emergency Special Permit DOT-SP 21460 recently approved by the US Department of Transportation (DOT). It is unfortunate that this SP did not cover all the fire extinguishers transported in commerce of this type and did not allow Party Status so that others may use it. However, it would be unreasonable to list each part number specifically, as there are too many manufacturers, sizes, models, agents, and installations going back 37 years, to at least 1987, which contain liquefied compressed gas in cylinders over 900ml. Therefore, it would be unreasonable to expect one manufacturer or end user to apply for a SP that covers all the units currently in use. Our submission for our own Special Permit aims to do so, based on our experience in the industry.

We are requesting to the DOT, in our Special Permit application, that all portable fire extinguishers that contain liquefied compressed gas in cylinders over 900ml, with detailed controls explained to the DOT, be included in one SP. We are also requesting relief from § 173.309(c)(6) in that subsequent shipments to appropriately rated FAA Repair Stations do not require compliance with the retest requirements of the Occupational Safety and Health Administration Regulations of the Department of Labor, 29 CFR 1910.157. This is to ensure that halon is properly recycled per EPA regulations, specifically 40 CFR 82.270(d) and 40 CFR 82.270(f), which occurs after the hydrostatic/ service limits have passed.

There are hundreds of thousands of affected units installed on almost every US and foreign transport-category aircraft, in addition to general aviation aircraft.

These fire extinguishers were manufactured and installed under the authority of the FAA, including Part Manufacturer Approvals (FAA-PMA), Type Certificate (TC), and Supplemental Type Certificates (STC). The part numbers and model types range widely by aircraft manufacturer, STC holder, and/or operator. There are many manufacturers of these extinguishers, both domestic and foreign, approved for use. They are on the minimum equipment list of most aircraft operated under 14CFR Part 121 and 135, which means aircraft will have to be “ferried” to a location with a fire extinguisher, without passengers, in the case one cannot be shipped to the aircraft’s location.

We know that the cylinders exceed 900ml based on technical data found in FAA-approved Instructions for Continued Airworthiness, such as CMMs. Where this doesn’t exist or is not available, the physical size of the cylinder required to contain the agent (calculated by weight) would indicate a size greater than 900ml. For example, the P/N 898052 is a 2.5lb halon 1211 extinguisher with a cylinder volume of 1606 sq. cm (1606 ml). This is typically the smallest size found on most aircraft. It would be technically infeasible for another 2.5lb extinguisher to be less than 900ml and still comply with the filling ratio to meet applicable requirements.

The quantity and size of extinguishers (agent weight) required is based on calculations determined during the aircraft design and approval process. The FAA has issued Advisory Circular AC 20-42D to describe an acceptable means to gain certification for fire extinguishers kept onboard aircraft and rotorcraft. No option is less than 2.5lbs agent weight. **This means that all extinguishers would be over 900ml in size** although we are familiar with some part numbers that are less, such as Amerex P/N A344.

It should be noted that the layman shipper, end user, or owner will not be able to ascertain the cylinder size without access to data tightly controlled by the manufacturer and not made available to the public or even those who have a right to it, in violation of 14CFR 21.50(b). For that reason, we insisted that this SP cover a broad category of fire extinguishers, rather than a specific part number, model, etc. knowing that the DOT would avoid using such a description.

These extinguishers are offered for transportation when sent for inspection, maintenance and requalification at 1-year, 6-year and 12-year intervals. They are also offered for transportation when disposed of, including for recycling of halon agents. They travel by air, ground, and less frequently sea, in great numbers, due to these maintenance and halon recycling requirements. Remember, each transport aircraft, such as a Boeing 737, has several of these units onboard. Also consider airline spares, distributor inventory, and articles undergoing maintenance.

To exacerbate this issue, halon 1211 and other halocarbons must be captured and recycled by a competent maintenance facility. Airlines and end users do not have the equipment, expertise, or training to “empty” these units for shipping. **Dispensing these extinguishers in a non-emergency is illegal based on 40 CFR 82.270(b) and so they must be shipped, including when past their requalification date.**

We are submitting our SP request on behalf of the entire industry, to the benefit of the entire industry. Tyms was elected and encouraged to do so by industry leaders because we have not shipped these articles previously. **Every entity that has ever used or maintained a portable aircraft fire extinguisher and has had to ship one has also unknowingly violated the law. This likely includes all 320 IATA member airlines and many of the approximately 5000 FAA approved Part 145 Repair Stations.**

To single out one airline, repair station, or shipper would be grossly unfair. We are offering to “take the brunt” on this issue because we are not in violation. We wish to promote an understanding of the issue with your organization so that those who request Party Status will not be unfairly punished. **We need industry organizations, owners, and operators to take this issue up with regulators so that the aviation industry may apply for and receive Party Status to the forthcoming Special Permit without undue penalties by the DOT Pipeline and Hazardous Materials Safety Administration and FAA Office of Hazardous Materials Safety.**

More information is available on our website. Please visit www.tymsllc.com and select “DOT-SP 21774” from the “Regulatory Resources” drop-down menu or click <https://tymsllc.com/solving-the-shipping-dilemma-for-aircraft-fire-extinguishers-over-900ml-tyms-dot-specialpermit-solution/>

Best Regards



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