Coffee Break Training - Fire Protection Series

Portable Fire Extinguisher Agent Selection for Use Around Aircraft

No. FP-2014-47 December 8, 2014

Learning Objective: *The student shall be able to understand which extinguishing agents are appropriate for use in close proximity to aircraft (on vehicles or structures)*

At the airport gate, as I look out the window waiting for my plane to arrive, I can see four extinguishers in the ramp area. There is a wheeled extinguisher tucked near the building under a stairwell. The other three I can see are handheld extinguishers mounted on the air conditioning cart, the fueling cart, and the tug. Out another window to my right, I see two more handheld extinguishers, one on a portable air stairs and one on a de-icing truck. It is primarily these handheld extinguishers which have come into significant focus lately as it has become common that these extinguishers contain ABC dry chemical (mono-ammonium phosphate based dry chemical).

Airport Ramp Area. Arrows Indicate Extinguishers.

The National Fire Protection Association (NFPA) rarely issues Temporary Interim Amendments, but did so for the 2012 edition of NFPA 407, *Standard for Aircraft Fuel Servicing*. Temporary Interim Amendments are issued only when important changes are required and cannot be held up until the next revision cycle. For NFPA 407, the urgency was to stop the increasing use of ABC dry chemical on aircraft fueling vehicles, airport fuel servicing ramps, airport aprons, and airport fuel facilities.

An ABC dry chemical extinguisher is the most economical option in terms of initial cost, which is the primary reason for their common use, but the damage they cause to aircraft is significant. Commentary on Section 11, *Aviation Facilities*, of the 2009 International Fire Code (IFC) expands further, "*This agent [ABC dry chemical] will melt and flow when it comes into contact with heated surfaces and, once it comes into contact with hot aluminum and works its way into the structural joints and crevices, it cannot be flushed out as the B:C-dry chemical agents [sodium or potassium bicarbonate] can.*"

A 2005 Service Letter[1] from a major aircraft manufacturer recommends the use of suitably rated water, carbon dioxide, aqueous film-forming foam (AFFF), or clean agent fire extinguisher for use around aircraft. This list comprises extinguishing agents that do not damage aircraft structure, and either require no cleaning or just a rinse with water. While Purple K (potassium bicarbonate) is not endorsed, its use around aircraft is common due to its effectiveness on aviation fuel fires, and it is the current recommendation by equipment manufacturers for fueling carts and other airport vehicles requiring a 20B:C minimum rated handheld extinguisher, whereas many of the other agent options are not available with this rating in handheld size. Purple K is not specifically endorsed by airframe manufacturers due to the level of cleaning and downtime required. However, it can be cleaned whereas the use of ABC dry chemical may result in a significant loss. The take away here is that if you are placing a handheld on a vehicle that operates on airport ramp areas, or on the wall in aircraft service areas, avoid "ABC dry chemical" and evaluate other available agent options.

1. Boeing Commercial Aviation Services, Service Letter, ATA 0300-00, 2620-00, *Avoid Use of Dry Chemical Fire Extinguishers On Airplanes*, August 16, 2005.