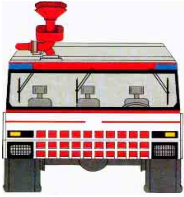


BACK TO BASICS

AIRCRAFT VENTILATION FOR ARFF



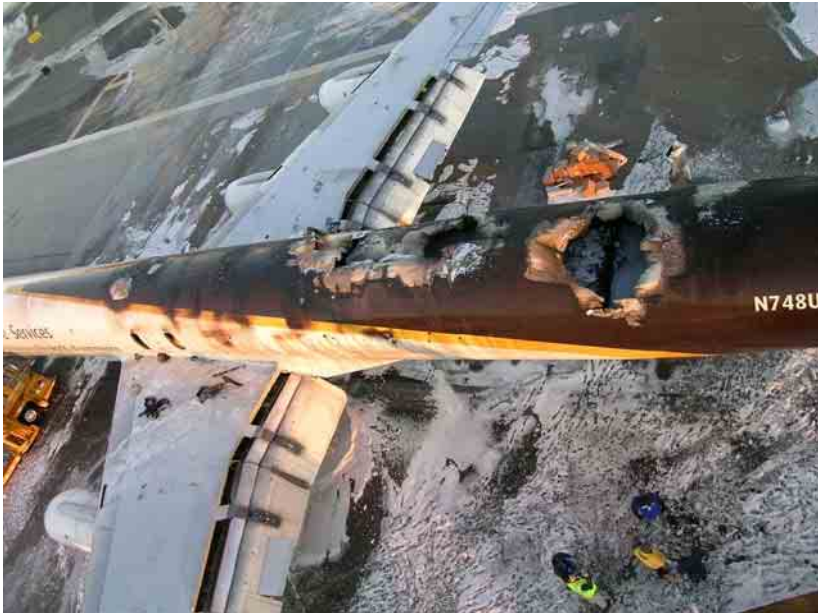
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WHY AIRCRAFT VENTILATION IS NEEDED

As airport firefighters we already know that ventilation is an integral component of effective firefighting. It is performed in order to remove smoke and other toxic gases from the interior of an aircraft. This helps us make a quicker rescue if needed and perform rapid fire suppression. In many cases, if effective ventilation is not performed immediately when

ARFF units get on scene, the ability to rescue persons inside of the cabin who are incapacitated and the ability to rapidly extinguish the fire inside may be compromised.



Generally speaking, if the aircraft is not ventilated rapidly, because of the fragile aluminum alloy skin used in aircraft construction, the fire may vent itself by burning through the top of the fuselage rather quickly. This was observed by the Philadelphia Fire Department on a UPS DC-8 fire that recently occurred (*PHOTO LEFT*). Fortunately there was no loss of life on this incident.

SIMILAR TECHNIQUES

Ventilation can be performed on aircraft as it is performed on buildings. The same methods used for structural ventilation have pretty much the same effects for aircraft. However, unlike

buildings it is difficult (and very dangerous) to place a firefighter on the top of the aircraft fuselage to perform vertical ventilation with a rotary saw over the fire. Horizontal ventilation should be the preferred method implemented using existing door openings. On large passenger aircraft, if a fire occurs and the aircraft has been evacuated, the doors and hatches will probably all have been opened by passengers leaving the aircraft. If they have not, firefighters could assume that incapacitated victims may be behind doors that were not opened successfully. In low impact accidents, one or more doors may be jammed as was recently demonstrated in an Airbus A-340 runway overrun incident in Toronto.

PPV

Positive Pressure Ventilation (PPV) is a very effective method for aircraft ventilation. Tests conducted have shown that large passenger and cargo aircraft may be ventilated so that there is good visibility from the flight deck to the rear of the cabin in less than 2 minutes. 24-inch and 27-inch blowers were used for these tests. Of course, the bigger fan works better. It was noted that the length of the fan shroud should equal the diameter of the fan blade as well for better results. Natural ventilation proved ineffective to clear the aircraft with 10 knot winds blowing directly across the cabin with all of the doors and two over wing hatches opened. The tra-

