Handheld Extinguisher Guidelines Task Group Meeting
International Aircraft Systems Fire Protection Working Group Meeting
Grenoble, France 21 June 2004

Discussion on the Handheld Guidelines during the meeting was extensive enough that it was decided to hold a task group meeting. Members of the handheld task group present were Bradford Colton (American Pacific) and Howard Hammel (DuPont). Other interested persons taking part in the working group discussion included airframe manufacturers, contractors, airlines, and the Pilot's Assoc.

There were several topics of discussion: Toxicity Guidelines, Commercial aircraft vs. Small/Private aircraft, 2B:C portables, ventilation and stratification, requiring a hose on the extinguisher.

Toxicity Guidelines: The concern was that the new AC would restrict the size and type of handheld for onboard aircraft that would compromise the fire protection. For many years Halon handhelds have been onboard aircraft. Alternatives for the Halons have been developed that pass the criteria of the FAA MPS (DOT/FAA/AR-01/37). All of the alternatives offer the same fire protection and have better toxicity values then Halon. So why restrict the alternatives more than Halon? The consensus was to give all the information for the options, then allow the operator to make choice based on risk. This would require a revision to the current draft revision of AC 20-42C as it deviates from attempting to apply NFPA 2001 to an aircraft exposure profile.

Commercial Aircraft vs. Small/Private aircraft: Commercial aircraft have larger total volume but have small confined spaces. This can be dealt with through procedures training or as simple as leaving the area. The flight deck has breathing air available if needed. Small aircraft are different. The pilot/passenger area can be too small for safe use of a 5B:C handheld based on toxicity and there is no larger area for them to migrate to, but clearly fire protection is needed. For this case a 2B:C rated portable should be allowed. The current draft revision of AC 20-42C allows the use of a 2B in a volume of 90 ft3 or less. The NFPA 408 standard allows the use of a 2B in a four-seat aircraft. Four-seat aircraft can have cabins larger than 90ft3, and typically a four seat aircraft can be configured to seat six people. The group discussed the origins of the requirement for the 2B rated unit and it was

believed that the allowance for the 2B unit in a four-seat aircraft was historically based on the toxicity exposure expected versus fire testing in small aircraft. It was determined that more discussion should take place to review the historical requirements to determine the appropriate size aircraft to allow a 2B extinguisher.

Stratification and Ventilation: All aircraft have ventilation, it is just a matter of how much. If the aircraft is designed for low altitude, ventilation is required to maintain a breathable comfortable atmosphere. For pressurized aircraft, ventilation is required to maintain a breathable comfortable atmosphere and for regulating the cabin pressure. Stratification of the agent will occur. All of the Halon alternative halocarbons have vapor densities similar to Halon, so they will migrate downward in air. Also there is cooling from the agent vaporizing as it leaves the extinguisher resulting in some agent being discharged as a liquid that will not be available to significantly contribute to airborne concentrations. This will add to the stratification and the combined effect will result in a much reduced exposure. Any new exposure guidelines should take this into account as it has been determined to be an important parameter in assessing the safe use of halon 1211 onboard smaller aircraft.

Extinguisher Hardware (Requiring a hose): It was determined that it many cases it is desirable to have a hose on the extinguisher, but it should not be mandatory. A hose allows for more versatility. It provides better access to underseat, overhead, and other difficult to reach locations and an extinguisher with a discharge hose is more likely to result in the extinguisher being properly held in an upright position during use. But, in some instances it is desirable that the extinguisher is capable of being discharged with one hand. For this application a fixed nozzle is required. It was noted that historically the U.S. military has required use of a fixed nozzle in combat aircraft for the ability to operate an extinguisher one handed.

Bradford Colton (American Pacific)
Howard Hammel (DuPont)