Federal Aviation Administration

Memorandum

Date: March 30, 2011

To: John Duncan, Manager, Air Transportation Division,
Flight Standards Service, AFS-200

From: Rebecca B. MacPherson, Assistant Chief Counsel for Regulations, AGC-200

Subject: Fire Extinguisher Placement on the Flight Deck

On January 5, 2011 you forwarded a joint Memorandum presenting the position of both AIR and AFS on the placement of the hand fire extinguisher on the flight deck as required by 14 C.F.R. § 121.309(c)(4). You indicated that defining your position was necessary to respond to NTSB Accident/Incident Investigation Support Request Number 10-225, dated June 23, 2010. Through that request, the NTSB was seeking responses to how the FAA was implementing findings made in an AGC Legal Interpretation Memorandum sent to your attention on November 12, 2008 that reviewed the requirements of §121.309(c)(4). AGC has reviewed the joint Memorandum and our analysis and recommendation follows.

I. Legal Interpretations at Issue

In a November 12, 2008 Legal Interpretation, the Office of the Chief Counsel (AGC), in looking at the requirements of 14 C.F.R. § 121.309(c)(4) determined that:

> "The flightcrew compartment on the aircraft must contain at least one fire extinguisher. That fire extinguisher must be reachable by at least one flightcrew member from that crewmember's seated position at all times, to include those instances when flightcrew members have donned oxygen masks."

The interpretation restated a position in a March 18, 1981 interpretation that "since the preamble to 14 C.F.R. § 121.309 did not specify definitions for the terms "accessible" and "readily," the FAA chooses to use the common meanings for these terms." *See* FAA Legal Interpretation 1981-23.

A further review of the original March 18, 1981 interpretation and the request that it was responding to shows that it reached a much different conclusion in applying the common meanings for those terms:

> "While these definitions are not precise, they would support your view that, as used in the FARs, 'readily accessible' and 'immediate availability' connote a shorter time period than

'accessible.' A *reasonable time frame* would be supported by these definitions." FAA Legal Interpretation 1981-23 (emphasis added).

The 1981 Interpretation presented the dictionary definitions as guidance for determining what would be considered "reasonable," not as specific definitions for the terms as used in the Federal Aviation Regulations. As a result, these two interpretations appear to be in conflict and should be distinguished and clarified in relationship to your new Memorandum.

II. The Regulation

As noted in the November 12, 2008 interpretation, § 121.309(c)(4) must be read together with § 121.309(b)(2). Below is the text of these two Sections, with the pertinent parts emphasized:

> § 121.309 **Emergency equipment.**
> ...
> (b) Each item of emergency and flotation equipment listed in this section and in §§ 121.310, 121.339, and 121.340--
> ...
> (2) Must be **readily accessible to the crew and**, with regard to equipment located in the passenger compartment, **to passengers**;
> ...
> (c) *Hand fire extinguishers for crew, passenger, cargo, and galley compartments.* Hand fire extinguishers of an approved type must be provided for use in crew, passenger, cargo, and galley compartments in accordance with the following:
>
> (4) *Flightcrew compartment.* At least one hand fire extinguisher must be **conveniently located** on the flight deck for use by the flightcrew.

The use of "conveniently located" in § 121.309(c)(4) above does not expressly require an ability to reach a fire extinguisher from a pilot's seat. It is reasonable to conclude that the regulation was drafted to allow for differing cockpit designs in locating fire extinguishers on the flight deck. In fact, as pointed out in your January 5 Memorandum, moving a hand fire extinguisher to one side or the other in a flightcrew compartment in order to locate it within reach of one of the seated pilots, may have the unintended consequence of making it neither "convenient" nor "readily accessible" to the other pilot. Further, in the case of more than two flight crewmembers or others occupying the jumpseat on the flight deck, the "convenient" location may be entirely different.

At first glance, the "readily accessible" language in § 121.309(b)(2) appears to be more restrictive. However, it is instructive to look at the additional requirement that the equipment also be "readily accessible" to passengers. It would be difficult to make an equivalent argument that fire extinguishers located in the passenger compartment would then need to be within reach of every passenger while seated. For example, § 121.309(c)(5) lists the numbers of fire extinguishers required based upon the number of seats in the aircraft. An aircraft with 175 seats must have three hand fire extinguishers. It would be impossible to locate those within an aircraft passenger compartment so that they would be "within reach" from a seated position for all 175 passengers and flight attendants.

In contrast, where the emergency-related regulations in part 121 desire a more specific response, more specific language is used, as in:

- § 121.318 **Public address system.**
  ...
  (e) Is capable of operation within 10 seconds by a flight attendant...

- §121.319 **Crewmember interphone system.**
  ...
  (b)(2) It must be accessible for immediate use from each of two flight crew member stations in the pilot compartment;
  ...
  (b)(4) It must be capable of operation within 10 seconds by a flight attendant at those stations in each passenger compartment from which its use is accessible...

- §121.333 **Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pressurized cabins.**
  ...
  (c) *Use of oxygen masks by flight crewmembers.*
  ... When it is not being used at flight altitudes above flight level 250, the oxygen mask must be kept in condition for ready use and located so as to be within the immediate reach of the flight crewmember at his duty station.

Thus, general common use definitions for the terms "conveniently located" and "readily accessible" would seem best suited for use as guidance in determining the best way to implement regulations in instances where specific definitions do not appear in the regulation itself. The ultimate responsibility for developing guidance in response to regulations rests with the program office responsible for that area of the FAA's regulations.

III. Aircraft Certification Issues

Part 25 – Airworthiness Standards: Transport Category Airplanes places the certification guidelines for hand fire extinguishers in § 25.851:

- § 25.851 *Fire Extinguishers.*
  (a) Hand fire extinguishers.
  (1) The following number of hand fire extinguishers must be conveniently located and evenly distributed in passenger compartments... (table ranging from 1 to 8 fire extinguishers depending on passenger capacity).
  (2) At least one hand fire extinguisher must be conveniently located in the pilot compartment.

The language used in § 25.851 mirrors the requirements of § 121.309(c)(4). As a result, all transport category airplanes are certified to this standard and the placement of hand fire extinguishers to ensure their accessibility is a requirement that must be demonstrated and met in

order to obtain a type certificate for an aircraft. There are eleven part 25 regulations that use similar language.

On January 14, 2011, Aircraft Certification Service issued Advisory Circular 20-42D – Hand Fire Extinguishers for Use in Aircraft. Chapter 5, Section 2 – How to Locate and Mount Hand Fire Extinguishers in Flight Deck Compartments presents new guidance for location of fire extinguishers:

> **2. How to Locate and Mount Hand Fire Extinguishers in Flight Deck Compartments**
> Consider using the following criteria if you install a fire extinguisher in the flight deck compartment:
>
> (a). Each hand fire extinguisher should be conveniently located, readily accessible, and its location obvious.
>
> (b). Hand fire extinguishers should be mounted for easy release and removal. For aircraft designed for single pilot operation, the hand fire extinguisher should be located for release and removal by the pilot in the seated position.
>
> ...

The AC continues on with specific guidance regarding how the fire extinguisher should be mounted.

IV. Conclusion

Based upon the above analysis, it is reasonable to conclude that the guidance issued by Advisory Circular 20-40D meets the requirements of § 121.309(c)(4). Given the complexity of aircraft type design, the standards used for determining the proper location for such emergency equipment is best handled through the type certification process under part 21. Aircraft Certification Service has the ability to physically evaluate installations for compliance to applicable part 25 regulations. Additionally, Advisory Circular 25-17, Crashworthiness Handbook, provides guidance for evaluations of compliance.

Therefore, as long as the hand fire extinguisher is located on the flight deck and clearly marked with unobstructed access for retrieval by the flight crewmembers, it would meet the requirements of § 121.309 and the guidance given by AC 20-40D. The new guidance makes a reasonable distinction between one pilot and two pilot flight crew compartments, taking into consideration operational realities.