

Attachment 10

to Operational / Human Factors Group Report

DCA07MA310

**Safety Alert for Operators (SAFO) – Fire Handle
Characteristics, DC-9, MD-80, and MD-90
Airplanes**



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

SAFO 08018
DATE: 8/5/08

Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Fire Handle Characteristics, DC-9, MD-80 and MD-90 Airplanes

Purpose: This SAFO alerts operators of the DC-9, MD-80 and MD-90s of the need to ensure their training curriculums, aircraft systems manuals and checklists properly address the characteristics of the fire handle.

Background: An operator of a Model MD-83 reported that shortly after takeoff, a start valve opened. Subsequently, the start valve light illuminated and an engine fire ensued. The crew executed emergency procedures, pulled the fire handle and returned for landing. However, after landing, in order to obtain conditioned air while on the ground, the crew opened the pneumatic cross-feed lever on the affected engine. This action retracted the fire handle and reactivated all the systems the fire handle had shut off, which reignited the fire.

Discussion: Pulling the fire handle to the fully extended position silences the aural warning, shuts off associated engine fuel at the wing spar, shuts off associated engine hydraulic pump supply line, trips the generator control relay, and mechanically closes the pneumatic cross-feed valve.

The pneumatic cross-feed lever is mechanically connected to the fire handle. If an engine has been shut down by pulling the fire handle, the pneumatic cross-feed lever will simultaneously be pulled to the closed position, if open. Conversely, moving the pneumatic cross-feed lever of the affected engine to the open position will in turn retract the fire handle and re-introduce fuel to the engine.

The fire handle connects to a cable pulley system, which runs the length of the airplane. Up to 20 lbs of pressure may be required to fully extend the fire handle. At fire handle full extension, there are detents which allow the rotation of the handle counterclockwise (or clockwise) in order to activate the extinguisher agent. Because of the length of the fire handle cabling, the fire handle may retract slightly once pulled. This would prevent the fire handle from meeting the detents, which allow the fire handle to rotate and discharge the respective fire-extinguishing agent into

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the engine cowling. Flightcrews should ensure the handle is *fully extended* before attempting to fire the bottles.

If airfoil anti-ice is required after an engine fire handle is pulled, guidance must be made available to the flightcrew to ensure that correct procedures are followed to obtain airfoil anti-ice, i.e., *pneumatic cross-feed* closed on the side of the affected engine. Otherwise, incorrect procedures would inadvertently push the fire handle in.

Recommended Action: Directors of Safety, Directors of Operations, Chief Pilots, and Training Managers of Boeing Models DC-9, MD-80 and MD-90 airplanes should review their training syllabus to ensure they effectively present the design and interrelationship of the systems affected by the fire handle. This would include that issues mentioned in the above Discussion Section are described in the Aircrew Operating Manual (ACOM). It is also recommended to add a note at the end of the Engine Fire/Damage /Separation Checklist, and Engine Failure/Inflight Shutdown Checklist, cautioning that, "The pneumatic cross-feed lever is mechanically connected to the fire handle. Opening the pneumatic cross-feed will retract the fire handle and potentially re-introduce fuel to a fire." Additionally, flightcrews should obtain proficiency in pneumatic cross-feed operation during simulator training, including the need for airfoil anti-ice during engine-out training.