Attachment 7

to Operational / Human Factors Group Report

DCA07MA310

FAA Response to NTSB Information Request 08-087

Federal Aviation Administration

Memorandum

Date: June 20, 2008

To: Director of Accident Investigation, AAI-1

Attn: Kim Burtch, AAI-220

From: James J. Ballough, Director, Flight Standards Service, AFS-1

Prepared by: Jeffrey Cupp, AFS-140 with input from Christopher MacWhorter, AFS-230

Subject: NTSB Information Request 08-087

This memorandum is in response to the NTSB's request for additional information regarding the even that involved American Airlines engine fire on take off (DCA07MA310).

Specifically, the Board is asking the following questions:

NTSB: Requesting a letter from the FAA stating if they are in for or against flight crews receiving multiple emergencies during a training event.

FAA Response: The FAA supports realistic flight crew training. It would be impossible to train for every combination of in-flight emergencies. Overloading a student with unrelated combinations of emergencies is counterproductive and generally considered negative training. On the other hand, if the student should fail to accomplish a task or procedure satisfactorily, it is realistic to introduce an additional problem that would logically result from the unsatisfactory accomplishment of the earlier task. The FAA supports training scenarios designed to do just that. In general, this guideline confines the compounding of problems/emergencies to a particular aircraft system or related systems; for example, a mismanaged engine fire or a misdiagnosed electrical problem resulting in the loss of all normal electrical systems.

In all cases, the primary objective of flight training is to provide an opportunity for flight crewmembers to acquire the skills and knowledge necessary to perform to a desired standard. This opportunity provides for demonstration, instruction, and practice of the maneuvers and procedures (training events) pertinent to a particular aircraft and crewmember duty position.

NTSB: Airlines used to train multiple emergencies at the same time – does the FAA know why this practice was discontinued?

FAA Response: As described in the answer above, multiple, unrelated emergencies strung together as a training event are unrealistic training scenarios. In pursuit of realistic line-oriented training airlines create Line Oriented Simulations (LOS) by developing Line Oriented Flight Training (LOFT) and Line Operational Evaluation (LOE) scenarios from actual line experiences. The Aviation Safety Reporting System (ASRS) database, company incident reports, company Aviation Safety Action Program (ASAP) reports, and Flight Operational Quality Assurance Program (FOQA) events often identify emergencies and abnormal operations employed in such scenarios. Scenarios designed from these sources are operationally relevant, believable, and a test of the flight crew's skills and capabilities.

NTSB: Under AQP, airlines have a script to follow in training – this script does not contain multiple emergencies. Is there a reason for this?

FAA Response: Advanced Qualification Program (AQP) participants use lesson plans for training events. AQP training curriculums are based on a job task analysis, qualification standards, and proficiency objectives developed for each duty position. The curriculums are translated into a course footprint, and then documented in the curriculum outline. These curriculums are expanded in more detail in the student and instructor syllabus and in individual lessons and evaluations. The LOE is the primary means of proficiency evaluation under an AQP. This evaluation addresses the individual's ability to demonstrate technical and Crew Resource Management (CRM) skills appropriate to fulfilling job requirements in a full mission scenario environment. A typical LOE scenario is divided into a series of segments, called event sets. A scenario might have six or eight event sets relating to the phases of operations (ground operations, takeoff, climb, cruise, descent, approach, landing, and after landing). Each event set consists of a series of evaluation tasks, which include both technical and CRM objectives. The intent of an LOE is to evaluate and verify that an individual's job knowledge, technical skills, and CRM skills are commensurate with AQP qualification standards. An LOE is not designed to saturate a flight crew or impose an unrealistic level of difficulty or complexity. On the other hand, the LOE must provide enough difficulty and complexity to adequately test the flight crew's technical and CRM skills, and for that purpose, should the flight crew compound an emergency by failing to accomplish a task or procedure satisfactorily, all additional problems that would logically result from the unsatisfactory accomplishment of the earlier task are allowed to progress.

Complex events have ongoing consequences that must be dealt with in flight and cannot be solved by simply selecting and executing an abnormal checklist. LOE scenarios require the coordinated actions of all crewmembers for successful completion. The properly designed LOE does not necessarily have a single solution. Rather, it may have a number of possible and reasonable solutions. Thus, the well-designed LOE promotes the management of a complex situation.