

Log 1682

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.**

ISSUED: May 7, 1984

Forwarded to:

Mr. Frank Borman
President
Eastern Air Lines, Inc.
Miami International Airport
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SAFETY RECOMMENDATION(S)
A-84-42 through -44

On May 5, 1983, Eastern Air Lines Flight 855, a Lockheed L-1011 airplane, N334EA, was en route from Miami, Florida, to Nassau, Grand Bahama Island, when the flightcrew noted a loss of oil pressure on the No. 2 engine and shut it down. Rather than continue the descent to Nassau, which was about 50 nautical miles away, the captain decided to return to Miami because of better weather and terminal approach aids there. However, after the airplane's course was reversed and leveled at 16,000 feet, the No. 3 engine flamed out. About 5 minutes later, the No. 1 engine flamed out. With none of the airplane's engines operating, the flightcrew began a descent to maximize the glide distance, and began efforts to restart the No. 2 engine. At the same time, the flightcrew considered it probable that they would be forced to ditch the airplane. The flight engineer told the senior flight attendant to prepare the cabin for ditching. After descending about 11,000 feet, the flightcrew succeeded in restarting the No. 2 engine and subsequently landed the airplane safely in Miami. There were no injuries to the 162 passengers and 10 crewmembers.

The Safety Board has addressed the causal issues in its report on this accident. ^{1/} In a letter dated March 29, 1984, to the Administrator of the Federal Aviation Administration (FAA), the Safety Board has recommended actions to improve quality control of maintenance operations, to revise flight manuals and flight attendant manuals, and to institute research on life vest standards. The purpose of this letter is to address issues related to cabin safety which became apparent during the investigation.

In the course of its investigations of previous accidents and incidents, the Safety Board repeatedly has expressed concern about the adequacy of passenger briefings, the coordination between flightcrews and flight attendants during emergency situations, and the difficulties which passengers experience in locating, obtaining, and donning life vests.

^{1/} Aircraft Accident Report--"Eastern Air Lines Inc., Lockheed L-1011, N334 A, Miami International Airport, Miami, Florida, May 5, 1983," (NTSB-AAR-84/04).

Although the need to ditch the airplane was averted in this accident by skillful piloting, the Safety Board's investigation of the activities and problems of the flightcrew, the flight attendants, and the passengers during preparations for potential ditching corroborates many of the concerns previously expressed by the Safety Board in general studies on turbojet ditching 2/ and passenger in-flight safety 3/ and in numerous specific safety recommendations. 4/.

In the May 5, 1983, accident, the usual predeparture oral briefing of passengers for extended overwater flights, which included a demonstration of the donning of life vests, was conducted by the flight attendants. Flight attendants noted that the cabin was particularly noisy during the predeparture briefing and that many passengers were inattentive. However, of the 92 passengers who responded to a Safety Board questionnaire following the incident, 88 percent indicated that they recalled the briefing and had observed the life vest donning demonstration. Less than half of those 92 passengers said that they had read the safety briefing card before takeoff. Passengers generally knew where the life vests were stowed; however, most were not aware that the vests would be folded and sealed in a plastic container.

During the emergency, there were four communications between the flightcrew and the flight attendants. After the No. 2 engine was shut down, the flightcrew informed the senior flight attendant that the flight was returning to Miami. When the No. 3 engine flamed out, 14 minutes later, the flight engineer instructed the senior flight attendant to prepare the cabin for a ditching. Following the flameout of the remaining (No. 1) engine, 5 minutes later, the flight engineer announced that a ditching was imminent. About 10 minutes later, (just 3 minutes prior to touchdown) the final communication informed flight attendants that they should prepare for a normal landing.

Flight attendants responded immediately to the warning to prepare the cabin for a ditching. Passengers were told to retrieve and don their life vests. Flight attendants then selected able-bodied persons, briefed them on the operation of doors and slide/rafts and relocated them accordingly. Passengers were instructed on how to assume the brace position. Flight attendants testified, however, that they would have been more effective had they been told the nature of the emergency and given some estimate of the time available to them for the cabin preparation. Following the flightcrew's "prepare the cabin for ditching" announcement, some of the flight attendants were uncertain about whether there would be further warning from the cockpit as to when to assume the brace position. The "ditching is imminent" announcement prompted the flight attendants to instruct passengers to assume the brace position. Because flight attendants were not aware of the time available, they tended to rush the preparations, possibly to the exclusion of providing individual assistance where it was needed. Preparations were halted when the flight engineer announced that a ditching was imminent. Those passengers who had not already done so were informed to assume the brace position immediately. In fact, the airplane was probably at an altitude of about 10,000 feet and descending about 1,600 feet per minute when the announcement was made. The announcement that the airplane would be making a normal landing came after the passengers had been in the brace position for about 10 minutes.

2/ Special Study—"Passenger Survival in Turbojet Ditching (A Critical Case Review)" April 5, 1972, (NTSB-AA5-72-2).

3/ Special Study—"In-Flight Safety of Passengers and Flight Attendants Aboard Air Carrier Aircraft," March 14, 1973, (NTSB AAS-73-1).

4/ Safety Recommendations A-67-16, A-68-31, A-72-68, A-76-76, A-72-128, A-72-143, A-73-06, A-74-112, A-76-25, A-79-78, A-82-70, and A-83-45.

Although preditching instructions in the flight attendant's manual prescribed logical guidance to the flight attendants with respect to passenger preparation for the emergency and coordination with the flightcrew, corresponding instructions in the flightcrew's manual were not as consistent. As a result, preparations were rushed in the cabin. The Safety Board holds that the same information for emergency preparations should be provided in both manuals. Also, crewmembers should be trained on crew coordination procedures that ensure smooth and effective interaction between cabin and flight deck crews during emergencies.

The main problem confronting the passengers was locating, retrieving, unpacking, and donning the life vests. Many of the passengers received direct assistance from the flight attendants, and these passengers praised the flight attendants for their professional manner. However, other passengers believed that they were neglected and uninformed. Many passengers stated that they were particularly apprehensive because they had not been told the nature of the problem with the airplane and what to expect if the airplane was forced to ditch. Several passengers expressed concern that they could not get information about whether the airplane would float, the time available for evacuation, and postevacuation procedures.

The Safety Board believes that the problems which were experienced by the passengers and crew of Flight 855 as they prepared for a ditching can be abated by (1) revising and modifying prescribed emergency procedures and crew training to stress the importance of coordination and communications between the flightcrew and flight attendants during emergencies, and (2) reviewing and revising flight attendant's predeparture oral briefings so that they are complete and engage mental and possibly some physical involvement of passengers.

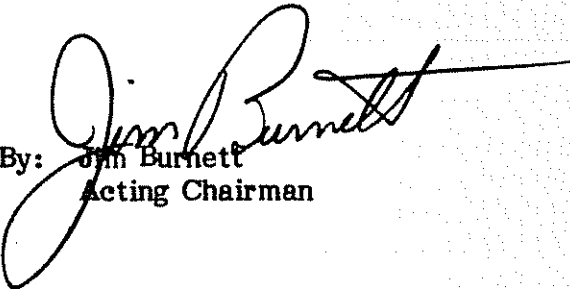
Therefore, the National Transportation Safety Board recommends that Eastern Air Lines:

Revise its flight manual emergency landing/ditching checklist in the emergency procedures section, the flight deck crew duties checklist in the ditching/crash landing procedures section, and the flight attendant manual (1) to make them consistent regarding the flightcrew informing the flight attendants of the nature of the emergency and the approximate time available for cabin preparation; and (2) to prescribe a standardized signal from the flightcrew to flight attendants to direct passengers to assume the brace position. (Class II, Priority Action) (A-84-42)

Review and modify as needed, its flight manuals, flight attendant manuals, and training programs to assure compatibility of emergency procedures and checklists, and to require joint cockpit and cabin crew training with respect to emergency procedures; specific attention should be given to conducting periodic emergency drills in which cockpit/cabin crew coordination and communication are practiced and passenger briefings are simulated regarding events that may be expected during such emergencies. (Class II, Priority Action) (A-84-43)

Revise, as required, its predeparture oral briefing and supplementary safety briefing cards to ensure that each accurately demonstrates or describes all steps necessary for passengers to locate and recover life vests from the stowed position, remove them from their plastic containers, and don them. (Class II, Priority Action) (A-84-44)

BURNETT, Acting Chairman, GOLDMAN and GROSE, Members, concurred in these recommendations. BURSLEY, Member, did not participate.

By: 
Jim Burnett
Acting Chairman