

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 4, 1981
CORRECTED COPY

Forwarded to:

Honorable J. Lynn Helms
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-81-97 and -98

About 2003 e.s.t. on April 8, 1981, Eastern Airlines flight 60 from New Orleans, Louisiana, to New York made an emergency, gear-retracted landing on runway 22R at John F. Kennedy (JFK) International Airport, Jamaica, New York. The landing of the Boeing 727 was followed by an emergency evacuation of the aircraft. All 67 passengers and 6 crewmembers were evacuated without injury. 1/

The flightcrew, in preparation for landing, placed the landing gear lever into the down position but the green light indicating that the left landing gear was "down and locked" did not illuminate. The flightcrew, following the procedure prescribed in the Eastern flight manual for a "LANDING GEAR UNSAFE CONDITION," tested the light, retarded one of the throttles to idle to sound the landing gear horn, and visually checked the landing gear "down-and-locked" position indicators through the appropriate viewing ports.

The main landing gear position indicators can only be seen through the viewing ports located in the cabin floor of the accident aircraft near the rear wing spar between rows 21 and 22. The flight engineer reportedly had some difficulty in locating the viewing ports and in removing the carpet which covered the ports. He said that when he looked through the ports, the right gear position indicator showed a gear "down-and-locked" position but the left gear position indicator was not visible and he saw--"nothing but metal." The tire and the rim are partially visible through the port when the gear is retracted.

The flightcrew recycled the landing gear and attempted to manually extend the gear. However, they did not attempt again to visually verify the landing gear position as specified in the Eastern Flight Manual under the "MANUAL GEAR EXTENSION" procedure after additional attempts were made to hydraulically and manually extend the left main landing gear. The flightcrew relied solely on cockpit indications from the gear indicator lights and the landing gear warning horn. Finally, based on the cockpit indications, the captain concluded that the left gear was not "down and locked," and he decided to land with the gear retracted.

1/ For more detailed information, read Aircraft Incident Report—"Eastern Airlines Boeing 727-25, N8140N, John F. Kennedy International Airport, Jamaica, New York, April 8, 1981" (NTSB-AAR-81-14).

Subsequent operational tests of the left landing gear revealed no mechanical failures which would have precluded its proper operation. However, the left gear "down-and-locked" indicator microswitch was found to be defective because of an abnormally high internal resistance. Since the microswitch was common to both the landing gear indicator system and the landing gear warning horn system, a failure of the microswitch in an essentially open position would not have illuminated the indicator light and would have sounded the warning horn when a throttle was retarded to the idle position. Thus, a "LANDING GEAR UNSAFE CONDITION" was indicated even though the landing gear may have been "down and locked." Therefore, the prescribed visual check was the only redundancy for determining the position of the landing gear.

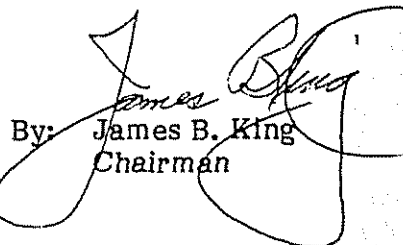
The Safety Board believes that the flightcrew's lack of familiarity with the operation of the landing gear and its electrical and mechanical position indicating system and the insufficient information provided in the flight manual led the crew to rely on potentially erroneous cockpit cues. If additional information had been provided to the crew on the operation of the electrical indicating system, they might not have relied solely on the cockpit indicators and might have realized the critical need for visual verification of landing gear status after resorting to the manual gear extension procedures.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

Require the revision of air carrier operator flight manuals for the Boeing 727, as needed, to illustrate the location of the landing gear position indicator viewing ports in the passenger cabin, and to provide a pictorial presentation of the gear in the fully retracted position and the indicator in and out of the "down-and-locked" position when viewed through the port. (Class II, Priority Action) (A-81-97)

Require the revision of the abnormal procedures section of Boeing 727 air carrier operator flight manuals, as needed, regarding the landing gear unsafe indication, to include additional information relevant to the gear position indicator lights and the landing gear warning horn system, and the fact that they are not independent and are not redundant landing gear position indicating systems. (Class II, Priority Action) (A-81-98)

KING, Chairman, and GOLDMAN and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, and McADAMS, Member, did not participate.

By:  James B. King
Chairman