

# Boeing 767 (Lauda Air) spurious thrust reversal, 26<sup>th</sup> May 1991

(adapted from report by Thailand Ministry of Transport and Communications)

Takeoff from Bangkok airport at 1602. Aircraft was climbing to cruising height when it disappeared from radar 15 minutes after takeoff.

Five minutes and forty five seconds after takeoff, the crew discussed an alert associated with a thrust reverser isolation valve. The pilot-in-command stated, "That keeps coming on." The Quick Reference Handbook was consulted to determine appropriate crew actions. No actions were required, and none were taken.

Fifteen minutes and one second into the flight the co-pilot said, "ah reverser's deployed," accompanied by sound similar to airframe shuddering, sounds of metallic snaps and the pilot-in-command stating "here wait a minute." The cockpit voice recording ended twenty nine seconds later with multiple bangs thought to be structural breakup of the airplane.

The probable cause of this accident was uncommanded in-flight deployment of the left engine thrust reverser, which resulted in loss of flight path control. The specific cause of the thrust reverser deployment was not positively identified. Engines were Pratt & Whitney 4060.

**213 passengers and 10 crew killed.**

*The critical nature of an in-flight thrust reverser deployment in this phase of flight was not known and therefore the flightcrew was not provided with operational guidance.*

*From August 14, 1990, there were 13 maintenance actions logged on the left engine thrust reverser system of this aircraft, almost always in response to recurring Propulsion Interface Monitor Unit (PIMU) alarm messages.*

*Computer memory within the electronic engine control (EEC) indicated that an anomaly occurred between channel A and B reverser sleeve position signals.....this anomaly was associated with the thrust reverser deployment of one or both sleeves. The EEC data indicated that the thrust reverser deployed in-flight with the engine at climb power.*

*Subsequent simulations of a 25 percent lift loss resulting from an in-flight deployment of the left engine thrust reverser indicated that recovery from the event was uncontrollable.*

*Investigation of the accident disclosed that certain "hot-short" conditions involving the electrical system occurring during an auto-restow command, could potentially cause the thrust reverser Directional Control Valve (DCV) to momentarily move to the deploy position. However, no specific wire or component malfunction was physically identified that caused an uncommanded thrust reverser deployment on the accident airplane.*

*FAA required that "Each turbojet reversing system must have means to prevent the engine from producing more than idle forward thrust when the reversing system malfunctions....." The circumstance of this accident brought into question the adequacy or interpretation of the FAA requirements and the demonstration/analyses that were required. Design changes were implemented by Boeing by February 1992.*