

What happened on Pan Am flight 103, and what steps were taken to address it?

Questions/Key Points	Notes
<p>Though there have been many airliner bombings in history, this was among the deadliest.</p> <p>The aircraft was destroyed just 38 minutes after departure. There was no hijacking or known threat; it just happened.</p> <p>The investigating agency recommended that improvements be made to FDRs to be able to detect explosions afterwards.</p>	<p>https://aviation-safety.net/database/record.php?id=19881221-0 https://reports.aviation-safety.net/1988/19881221-0_B741_N739PA.pdf</p> <ul style="list-style-type: none"> ● Background, definitions <ul style="list-style-type: none"> ○ This incident is also known as the Lockerbie Bombing ○ Empennage - tail assembly of an a/c ● Basics <ul style="list-style-type: none"> ○ Date: 21 Dec 1988, Wed ○ Time of incident: 1903 ○ Flight number & aircraft: Pan Am/PA103, B741, N739PA ○ Intended destination: KJFK/JFK from EGLL/LHR ○ Fatalities: 259/259 occupants, 11 on the ground ● Synopsis <ul style="list-style-type: none"> ○ PA103 departs Heathrow at 18:25 and levels off at FL310 at 1856. The departure is unremarkable. ○ At 19:03, the aircraft was issued an ocean crossing clearance, which is also the time when the last radar return was received from the a/c ○ Radar then shows many large pieces of aircraft spreading out ○ Large pieces fall on the town of Lockerbie, Scotland. Other pieces are spread far and wide. ○ Forensic study of the debris pattern allows the conclusion that an explosive caused the incident ○ Falling debris, including fuel-filled wing portions, caused massive fireballs upon impacting the ground, which killed people and destroyed houses and other buildings ● Explosion and structural dynamics <ul style="list-style-type: none"> ○ Explosion occurred in the forward cargo hold at position 4L. Punctured a hole in the fuselage and damaged the floor of the cabin ○ Cargo and other items in the hold fall through the hole and damage the empennage ○ Cracks propagate in the fuselage from the hole. Then, the forward area + flight deck completely separate from the aircraft. This part is one of the major portions that landed in Lockerbie ○ As the nose section falls, it knocks engine no. 3 off the wing and the rest of the aircraft quickly disintegrates. Major portions that land are part of the cabin floor and baggage hold, and a wing ○ The explosive used was an improvised bomb, with the primary explosive being Semtex, a commercial explosive used typically for demolition. ○ The responsible party is found to be Libya ● Probable cause and other factors <ul style="list-style-type: none"> ○ The destruction of the aircraft was caused by an improvised explosive in the forward left cargo hold that was detonated inflight. ● Proposed actions <ul style="list-style-type: none"> ○ Enhance airport security ○ Improve Flight Data Recorders (FDRs) to find a way to record explosions ○ Perhaps find a way to make aircraft more resistant to explosions

Essential Question:

25 May 2021

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Summary

Pan Am flight 103 was bombed on December 12, 1988 shortly after taking off from London Heathrow enroute to New York, with 270 total fatalities. The suspect was involved with the Lybian Intelligence Agency, which was held responsible for the attack.