

Air India 787 Crash Near Ahmedabad: Causes, Aircraft History & Safety Insights

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Air India 787 Crash Latest News

- An Air India Boeing 787 Dreamliner flying from Ahmedabad to London Gatwick crashed shortly after takeoff, with 242 people on board. The crash occurred in Meghani Nagar, a densely populated area near Ahmedabad airport, sending thick black smoke into the sky.
- The cause of the crash was not immediately known. Most aviation accidents typically happen during takeoff or landing phases.

Boeing 787 Dreamliner

- Boeing introduced the 787 in 2007 as a next-generation, long-haul jet, building on the success of its 777 predecessor to offer a more fuel-efficient variant.
- The first commercial Boeing 787 took flight in 2012. The aircraft involved in recent crash entered Air India's fleet in 2014.

- The crash intensifies scrutiny on Boeing, which has faced global criticism since the two 737 Max crashes in 2018 and 2019.

Features of Boeing 787

- **Structure:** Made from carbon fibre composite, lighter than traditional aluminium bodies.
- **Fuel Efficiency:** Consumes 25% less fuel than older models.
- **Comfort:** Spacious cabins, large windows, improved cabin pressure and humidity.
- **Variants:** 787-8, 787-9, and 787-10.

Safety Concerns and Investigations

- **US Federal Aviation Administration (FAA) Scrutiny:** Multiple investigations into Boeing 787 production practices.
- **Whistleblower Allegations**
 - **Sam Salehpour (2024):** Claimed fuselage sections were improperly fastened, posing long-term safety risks.
 - **John Barnett (2019):** Accused Boeing of using substandard parts; found dead in 2024 under suspicious circumstances.
- **Incidents:**
 - 2013: Global grounding due to lithium-ion battery fires.
 - 2024: Latam Airlines 787 plunged mid-flight due to human error.

Why Most Plane Crashes Occur During Takeoff and Landing

- Data has shown that most crashes take place during landing, takeoff, or the phases immediately before/after these two events.

Statistics

- As per the IATA Data (2005–2023):
 - Landing phase: 53% of all accidents
 - Takeoff phase: 8.5%
 - Approach (before landing): 8.5%
 - Initial climb (after takeoff): 6.1%
 - Rejected takeoffs: 1.8%
- Boeing Data (2015–2024):
 - Takeoff + initial climb: 20% of fatal accidents & fatalities, despite only 2% exposure
 - Climb phase: 10% of fatal accidents, 35% of fatalities
 - Final approach + landing: 47% of accidents, 37% of fatalities
 - Cruise phase: Only 10% of fatal accidents, <0.5% of fatalities, despite 57% exposure

Takeoff and Landing Are the Riskiest Phases

- **Low and Slow Factor**

- Aircraft fly at low altitude and speed during these phases, leaving little time for corrective action.
- At cruising altitude, even with engine failure, planes can glide for minutes. On the ground or just after takeoff, pilots have seconds.

- **Increased Stress on Engines**

- Engines work hardest during takeoff, increasing the likelihood of failure.

- **Pilot Workload**

- Landings are technically demanding, involving complex real-time decisions based on aircraft weight, wind, and speed.

- **Stall Risk**

- Wing stalls are more likely during takeoff due to excessive nose-up angles, leading to lift loss.
 - A wing stall occurs when an aircraft's wing suddenly loses lift, which is the force that keeps it flying.
 - This happens when the angle of attack — the angle between the wing and the oncoming air — becomes too steep.
 - When a pilot pulls the aircraft's nose up too sharply (like during a steep takeoff), the angle of attack increases.
 - If this angle becomes too large (usually more than 15–20 degrees), the airflow over the wing becomes turbulent and detaches.
 - As a result, lift drops suddenly, and the plane can lose altitude or even fall.

- **Environmental Hazards**

- Bird strikes, turbulence, and adverse weather are more common at low altitudes.

- **Flying Is Still the Safest Mode of Transport**

- **ICAO Data:** Accidents per million departures dropped from 4.9 (2005) to 1.9 (2023).
- **Fatalities Declining:** Fatal accident numbers fluctuate annually but trend downward due to safer aircraft, better-trained pilots, and advanced simulators.
- **Improved Safety Protocols:** Modern aviation benefits from better materials, engineering, weather forecasting, and strict safety regulations.

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