

# **Air India Flight AI171 Crash: An In-Depth Analysis of Preliminary Findings and Contributing Factors**

## **Executive Summary**

On June 12, 2025, Air India Flight AI171, a Boeing 787-8 Dreamliner en route from Ahmedabad (AMD) to London Gatwick (LGW), experienced a catastrophic accident shortly after takeoff. The aircraft, carrying 242 individuals, including 232 passengers and 10 crew members, crashed into a densely populated residential area known as Meghani Nagar, specifically impacting a doctors' hostel at BJ Medical College, approximately 1.7 kilometers from Sardar Vallabhbhai Patel International Airport.<sup>1</sup> The presence of a substantial fuel load for the long-haul flight contributed to a massive post-impact fire, resulting in significant casualties among those on board and on the ground.<sup>1</sup>

The cause of this tragic event is currently under rigorous investigation by India's Aircraft Accident Investigation Bureau (AAIB) and the Directorate General of Civil Aviation (DGCA).<sup>2</sup> International cooperation is integral to this process, with the UK Air Accidents Investigation Branch (AAIB) and the US National Transportation Safety Board (NTSB) providing expert assistance in accordance with International Civil Aviation Organization (ICAO) Annex 13 protocols, given the presence of British citizens on board and the aircraft's US manufacturing origin.<sup>18</sup> While the aircraft's black boxes (Flight Data Recorder and Cockpit Voice Recorder) have been recovered, definitive conclusions regarding the accident's cause are anticipated to take months or even years to emerge.<sup>6</sup> Preliminary assessments suggest potential factors including mechanical failure, bird strike, or issues related to aircraft configuration and pilot actions during the critical takeoff phase.<sup>3</sup> This incident marks the first fatal crash involving a Boeing 787 Dreamliner globally, drawing renewed scrutiny to the aircraft's safety record and Boeing's manufacturing practices.<sup>1</sup>

## **1. Introduction to the Incident**

### **1.1 Flight AI171: Details of the Aircraft, Route, and Occupants**

Air India Flight AI171 was a scheduled international service from Sardar Vallabhbhai Patel International Airport (AMD) in Ahmedabad, India, to London Gatwick Airport (LGW) in the United Kingdom.<sup>4</sup> The aircraft involved was a Boeing 787-8 Dreamliner, registered as VT-ANB, an 11-year-old twin-engine wide-body jet that had been part of Air India's fleet since January 2014.<sup>1</sup> The Boeing 787 Dreamliner, introduced in 2009, is recognized for its fuel efficiency and advanced technology, and until this incident, had

maintained a strong safety record without any fatal crashes.<sup>1</sup>

The flight was carrying a total of 242 individuals: 232 passengers and 10 crew members.<sup>2</sup> The passenger manifest included a diverse group of nationalities, with 169 Indian nationals, 53 British nationals, 7 Portuguese nationals, and 1 Canadian national. Among the passengers were 11 children.<sup>3</sup> The flight was under the command of Captain Sumeet Sabharwal, a line training captain with 8,200 hours of flying experience, and First Officer Clive Kundar, who had 1,100 hours of experience.<sup>2</sup>

## **1.2 Chronology of the Event: Takeoff, Distress Call, and Crash Impact**

Flight AI171 commenced its takeoff from Runway 23 of Sardar Vallabhbhai Patel International Airport at approximately 1:38 PM local time (08:08 GMT).<sup>1</sup> Shortly after lifting off, the crew issued a "Mayday" distress call to Air Traffic Control (ATC), signaling a critical emergency.<sup>2</sup> However, no further communication was received from the aircraft by ATC after this initial call.<sup>4</sup>

Flight tracking data from FlightRadar24 indicates that the aircraft's signal was lost less than a minute after takeoff, at an altitude of approximately 625 feet (190 meters).<sup>3</sup> The aircraft then began to descend rapidly, with a recorded vertical speed of -475 feet per minute (-144.8 meters per minute).<sup>3</sup> The crash occurred approximately five minutes after takeoff.<sup>1</sup> Eyewitnesses described the plane flying very low before it crashed, accompanied by a loud blast, and then erupting into a massive fireball and thick black smoke upon impact.<sup>1</sup> The aircraft crashed into a residential area, specifically the premises of BJ Medical College in Meghani Nagar, hitting a doctors' hostel and staff quarters.<sup>1</sup>

## **1.3 Immediate Aftermath: Casualties and Initial Emergency Response**

The crash site was characterized by widespread destruction, with debris scattered across the area and buildings catching fire.<sup>1</sup> Initial reports from the Ahmedabad police chief, G.S. Malik, indicated that there appeared to be no survivors from the aircraft, though one British national, Vishwash Kumar Ramesh, initially reported as a survivor from seat 11A, was later confirmed to have sustained injuries and was receiving treatment.<sup>1</sup> The crash also caused casualties and injuries among local residents, as the plane impacted a densely populated area, including the doctors' hostel.<sup>1</sup> As of initial reports, at least 204 bodies were recovered from the site, with many severely charred and unidentifiable.<sup>3</sup>

Emergency services, including firefighters, police, Army, Border Security Force (BSF), State Reserve Police Force, National Disaster Response Force (NDRF), and medical

teams, were immediately mobilized to the crash site.<sup>1</sup> Rescue operations focused on extinguishing the fire, searching for survivors, and recovering bodies from the debris.<sup>1</sup> The Ahmedabad airport temporarily suspended all flight operations following the incident.<sup>4</sup> Air India activated an emergency response center and dedicated support teams, providing hotlines for families seeking information.<sup>1</sup> The Tata Group, owner of Air India, announced a compensation of ₹1 crore (approximately \$120,000 USD) for the families of each deceased individual, committed to covering medical expenses for the injured, and pledged to rebuild the damaged BJ Medical College hostel.<sup>11</sup> Condolences and offers of support poured in from Indian Prime Minister Narendra Modi, UK Prime Minister Sir Keir Starmer, King Charles III, and other international authorities.<sup>1</sup>

## **2. The Investigation Framework**

### **2.1 Lead Investigating Authority: India's Aircraft Accident Investigation Bureau (AAIB) and Directorate General of Civil Aviation (DGCA)**

The primary responsibility for investigating the Air India Flight AI171 crash rests with India's Aircraft Accident Investigation Bureau (AAIB), an attached office of the Ministry of Civil Aviation (MoCA).<sup>2</sup> The Directorate General of Civil Aviation (DGCA), India's aviation safety regulator, is also deeply involved, having confirmed initial details about the flight and the Mayday call.<sup>5</sup> Top AAIB officials, including its Director General and Director of Investigation, were dispatched to Ahmedabad immediately following the accident to commence the probe.<sup>2</sup> The AAIB is mandated to investigate all serious aircraft accidents within Indian airspace and is expected to release a comprehensive investigation report within a year of the incident.<sup>23</sup>

### **2.2 International Cooperation: Roles of UK AAIB, US NTSB, and FAA (in accordance with ICAO Annex 13)**

Aviation accident investigations are governed by international protocols, primarily ICAO Annex 13, which stipulates that the state of occurrence leads the investigation, but also allows for participation from other "concerned states".<sup>3</sup> Given the nationalities on board and the aircraft's origin, several international bodies are involved:

- **UK Air Accidents Investigation Branch (AAIB):** Formally offered its assistance to the Indian AAIB and holds expert status in the investigation due to the presence of 53 British citizens on board.<sup>4</sup> A multidisciplinary investigation team from the UK AAIB has been deployed to India to support the Indian-led investigation.<sup>18</sup>
- **US National Transportation Safety Board (NTSB) and Federal Aviation**

**Administration (FAA):** The NTSB is in contact with the FAA regarding the incident and will lead the US team assisting the investigation.<sup>3</sup> The FAA provides technical support, and both agencies stand ready to launch a team immediately if assistance is requested by the Indian authorities.<sup>25</sup> This involvement is crucial as the Boeing 787-8 Dreamliner is a US-manufactured aircraft.<sup>18</sup>

This international collaboration ensures a comprehensive and objective investigation, leveraging diverse expertise and resources to uncover the causal and contributing factors.

### **2.3 Importance and Status of Black Box (FDR & CVR) Recovery and Analysis**

The recovery of the aircraft's "black boxes" — the Flight Data Recorder (FDR) and the Cockpit Voice Recorder (CVR) — is paramount to determining the cause of the Air India AI171 crash.<sup>6</sup> These bright orange, crash-resistant devices are designed to withstand extreme impacts, fire, and water pressure, making them the most objective source of information in aviation accidents.<sup>6</sup>

The FDR logs thousands of critical technical parameters, including altitude, speed, engine thrust, control surface movements, and flight path data, providing a second-by-second reconstruction of the aircraft's performance.<sup>1</sup> The CVR captures all cockpit audio, including pilot conversations, radio transmissions, warning alarms, and ambient mechanical sounds, offering an invaluable "eyewitness" account from the cockpit during the final moments before impact.<sup>6</sup> These recorders continuously store up to 25 hours of information, which can also reveal mechanical issues that may have developed over time.<sup>6</sup>

As of the latest reports, the black box has been successfully recovered.<sup>13</sup> Once recovered, these devices are sent to forensic laboratories under the DGCA or AAIB, where experts extract and decode the memory modules, synchronize voice and flight data, and correlate findings with radar logs and air traffic control records.<sup>6</sup> While initial assessments can sometimes be provided within 24 hours to guide the investigation, the comprehensive analysis process typically takes days to weeks, depending on the extent of damage to the devices and the complexity of the incident.<sup>6</sup> Final conclusions from the investigation, based on this crucial data, could take months or even years to emerge.<sup>13</sup> The information gleaned from these devices is essential for definitively determining whether the accident was caused by mechanical failure, engine malfunction, bird strike, onboard fire, or human error, and for formulating safety improvements to prevent future occurrences.<sup>6</sup>

### **3. Analysis of Flight Data and Communications**

#### **3.1 Flight Profile: Altitude, Speed, and Descent Characteristics**

Flight AI171's trajectory after takeoff provides critical clues for investigators. The aircraft departed from Runway 23 at Ahmedabad and, according to flight tracking data, reached a maximum altitude of approximately 625 feet (190 meters).<sup>3</sup> The signal from the aircraft was lost less than a minute after takeoff.<sup>4</sup> Following its brief ascent, the aircraft began to descend rapidly with a vertical speed of -475 feet per minute (-144.8 meters per minute).<sup>3</sup> The crash occurred approximately five minutes after takeoff.<sup>1</sup>

Aviation experts note that takeoffs are among the most dangerous phases of flight, but the low altitude achieved by AI171—barely above 200 meters (650 feet)—is particularly concerning.<sup>15</sup> This limited climb suggests that the aircraft was unable to generate sufficient lift or maintain its climb rate, which is highly unusual for a modern twin-engine jet designed with redundancy to handle engine failures even during takeoff.<sup>15</sup> The rapid descent from such a low altitude indicates a sudden and severe problem that the crew was unable to manage or recover from, making the timing of the problem—either in the final part of the takeoff roll or immediately after liftoff—a critical area of investigation.<sup>15</sup>

#### **3.2 Mayday Call: Details and Lack of Subsequent Aircraft Response**

A crucial piece of information is that the pilots of Air India Flight AI171 issued a "Mayday" call to Air Traffic Control (ATC) shortly after takeoff.<sup>2</sup> A Mayday call signifies a critical emergency where the aircraft is in grave and imminent danger and requires immediate assistance.<sup>38</sup> This distress signal indicates that the crew was aware of a severe issue developing rapidly.

However, despite the Mayday call, the Indian aviation regulator reported that no response was received from the aircraft after that initial transmission to the repeated calls made by ATC.<sup>4</sup> This lack of subsequent communication suggests a sudden and complete loss of control, power, or communication capability, or perhaps the crew was entirely preoccupied with attempting to manage the emergency and could not respond. The flight tracking data corroborates this, showing the signal was lost very quickly after takeoff, consistent with an abrupt and unrecoverable event.<sup>4</sup> The content of the Mayday call, which some reports indicate may have mentioned "engine failure"<sup>36</sup>, will be a critical piece of evidence once the Cockpit Voice Recorder (CVR) is fully analyzed.<sup>6</sup>

### **3.3 Initial Expert Observations on Takeoff Dynamics (e.g., lift, configuration)**

Aviation safety experts have provided initial observations based on available visuals and flight data, emphasizing that these are preliminary and subject to change upon detailed investigation. John M. Cox, CEO of Safety Operating Systems, noted that early, albeit grainy, images of the crash suggested the aircraft had its nose up but was not climbing, indicating a lack of sufficient lift.<sup>1</sup> This observation leads to a crucial area of inquiry: whether the aircraft was properly configured for takeoff, specifically regarding the position of its flaps and slats.<sup>3</sup>

Flaps and slats are retractable surfaces on the wings that are deployed during takeoff and landing to increase lift at lower speeds.<sup>3</sup> Terry Tozer, another aviation expert, highlighted that the pictures did not appear to show takeoff flaps set, which would prevent an aircraft from taking off and climbing safely.<sup>3</sup> If the flaps were not set correctly prior to takeoff, the crew would typically receive multiple warnings.<sup>3</sup> Alternatively, questions arise if the flaps were retracted too soon while the landing gear was still down.<sup>3</sup> While the image quality makes definitive conclusions impossible at this stage, the lack of lift and potential configuration issues are high-priority areas for the investigation, as they could explain the aircraft's inability to gain altitude after liftoff.<sup>3</sup>

## **4. Preliminary Assessment of Potential Causes**

While the official investigation is ongoing and no definitive cause has been confirmed, preliminary reports and expert analyses have highlighted several potential factors that investigators will thoroughly examine.

### **4.1 Mechanical Failure: Examination of possible engine issues or system malfunctions**

One of the primary areas of investigation is the possibility of a mechanical failure, particularly involving the aircraft's engines or other critical systems.<sup>1</sup> Aviation expert Mirza Faizan suggested that the crash might have occurred due to issues in the propulsion system, such as engine failure or fuel system problems.<sup>45</sup> The Mayday call, reportedly mentioning "engine failure"<sup>36</sup>, further points towards a power-related issue.

However, modern twin-engine aircraft like the Boeing 787 are designed with significant redundancy, including the capability to climb even with only one engine operating.<sup>15</sup> This inherent safety feature makes a complete and sudden loss of control due to a single engine failure less probable, suggesting that if engine failure was a factor, it might have involved both engines or been compounded by another critical



system malfunction that rendered the aircraft unmanageable.<sup>15</sup> The Flight Data Recorder (FDR) will provide precise data on engine performance, control surface movements, and any system alerts, which will be crucial in determining the exact nature of any mechanical or system failures.<sup>6</sup>

#### **4.2 External Factors: Consideration of bird strike or other environmental influences**

Another significant preliminary theory centers on external factors, specifically a bird strike. Captain Saurabh Bhatnagar, a former senior pilot, assessed the situation as "prima facie, a case of multiple bird hits wherein both the engines have lost power".<sup>10</sup> He noted that the takeoff appeared uneventful, but the aircraft began descending shortly before the landing gear could be fully retracted, which is consistent with a sudden loss of engine power or lift.<sup>27</sup>

Bird strikes, defined as collisions between birds and aircraft, can cause severe damage, especially if a large flock is ingested into an engine, leading to power loss.<sup>28</sup> While aircraft engines are designed to withstand a certain level of bird ingestion, multiple bird strikes or the ingestion of large birds into both engines simultaneously could lead to a catastrophic dual engine failure, which would be extremely challenging for a crew to manage at low altitude and high speed during takeoff.<sup>28</sup> The investigation will meticulously examine engine components for evidence of foreign object damage (FOD) consistent with bird strikes.

#### **4.3 Human Factors: Review of pilot actions and crew coordination (acknowledging ongoing investigation)**

Human factors, including pilot actions and crew coordination, are always a critical component of any aviation accident investigation. Historically, pilot error has been identified as a dominant cause in a significant percentage of aviation fatalities.<sup>5</sup> While the investigation is ongoing and no conclusions have been drawn, the Mayday call indicates the crew was actively responding to an emergency.<sup>2</sup> The Cockpit Voice Recorder (CVR) will be vital in revealing pilot conversations, radio transmissions, warning alarms, and ambient mechanical sounds, which will provide crucial clues about the crew's awareness, their adherence to emergency checklists, and their coordination in the moments leading up to the impact.<sup>6</sup>

The pilots, Captain Sumeet Sabharwal and First Officer Clive Kundar, had a combined flying experience of 9,300 hours, with Captain Sabharwal possessing 8,200 hours and First Officer Kundar 1,100 hours.<sup>2</sup> Their experience levels will be considered in the context of the emergency situation. The investigation will seek to understand if there

was any system confusion, missed warning signs, or issues related to stress or unclear emergency instructions that might have affected their response.<sup>13</sup>

#### **4.4 Aircraft Configuration: Expert insights on flap/slat positioning**

The configuration of the aircraft during takeoff is a critical area of focus for investigators. As noted by aviation safety consultants John M. Cox and Terry Tozer, grainy images of the aircraft suggested that the flaps and slats might not have been in the correct position for takeoff.<sup>3</sup> These devices are essential for generating sufficient lift at lower speeds, particularly during the initial climb.<sup>3</sup>

If the flaps were not properly deployed, the aircraft would struggle to gain altitude, consistent with observations that the plane's nose was up but it was continuing to sink.<sup>3</sup> Modern aircraft are equipped with warning systems to alert pilots if the aircraft is not configured correctly for takeoff.<sup>3</sup> The investigation will determine if such warnings were activated and how the crew responded. The Flight Data Recorder (FDR) will provide precise data on the position of all control surfaces, offering definitive evidence on the aircraft's configuration at the time of the incident.<sup>6</sup> This aspect of the investigation will be crucial in understanding why the aircraft failed to achieve a safe climb profile.

### **5. Boeing 787 Dreamliner: Safety Record and Scrutiny**

#### **5.1 Historical Context: The 787's operational history and its first fatal crash**

The Air India Flight AI171 crash marks a significant and unfortunate milestone: it is the first fatal crash of a Boeing 787 Dreamliner globally since the aircraft's introduction in 2009 (first commercial flight in 2012).<sup>1</sup> Prior to this incident, the 787 had largely maintained a reputation as one of Boeing's safest and most advanced models, having carried over one billion passengers.<sup>1</sup> This incident therefore represents a turning point for the Dreamliner's previously untainted safety record.<sup>22</sup>

The immediate aftermath of the crash saw Boeing's shares fall significantly, reflecting renewed global safety concerns surrounding the manufacturer.<sup>22</sup> This event has placed the 787 Dreamliner under intense scrutiny, prompting questions about its overall reliability and potential systemic issues.<sup>22</sup>

#### **5.2 Past Safety Concerns: Lithium-ion battery issues and whistleblower allegations regarding manufacturing quality**

Despite its generally positive safety record, the Boeing 787 Dreamliner has not been entirely free of issues throughout its operational history. In its early years, the fleet



faced significant problems related to its lithium-ion batteries, which caused onboard fires and led to a global grounding of the entire 787 fleet in 2013.<sup>22</sup> Regulators worldwide, including in India, grounded the aircraft until the issues were addressed.<sup>22</sup>

More recently, the 787 program has been subject to alarming allegations from whistleblowers, raising concerns about manufacturing quality and structural integrity. In April 2024, Sam Salehpour, a Boeing engineer with over a decade of experience, publicly alleged that Boeing had taken dangerous shortcuts in the manufacturing of both its 777 and 787 Dreamliner models.<sup>22</sup> His complaint, filed with the US Federal Aviation Administration (FAA) in January 2024, specifically claimed "two quality issues that may dramatically reduce the life of the planes".<sup>22</sup> Salehpour alleged that sections of the 787 Dreamliner's fuselage were improperly fastened together, warning that the structural integrity could degrade far earlier than the traditional 50-year lifespan Boeing claims for its aircraft, potentially putting lives at risk.<sup>22</sup> He also stated that he was transferred out of the 787 program after raising concerns about faulty drilling practices, indicating that management ignored his warnings.<sup>22</sup>

Another Boeing whistleblower, John Barnett, who worked at a 787 manufacturing facility, was found dead in March 2024 from a suspected "self-inflicted" gunshot wound. In 2019, Barnett had accused Boeing of installing substandard parts in Dreamliners to speed up production.<sup>31</sup> Boeing has consistently denied these whistleblower claims, calling them "inaccurate" and asserting confidence in the aircraft's quality and long-term safety.<sup>31</sup>

Beyond these allegations, the 787 has also been associated with other flight safety scares, including reports of hydraulic leaks, flap malfunctions, and emergency landings on certain aircraft in 2025.<sup>22</sup> For instance, a Latam Airlines 787 experienced a sudden mid-flight plunge in March 2024, later attributed to human error.<sup>31</sup> These incidents, combined with the recent whistleblower complaints, have intensified scrutiny of Boeing's operational oversight and internal processes.<sup>22</sup>

### **5.3 Broader Implications for Boeing's Fleet and Safety Oversight**

The crash of Air India Flight AI171, being the first fatal accident for the Boeing 787 Dreamliner, carries significant broader implications for Boeing's entire fleet and global aviation safety oversight.<sup>22</sup> This incident comes after a string of safety issues for Boeing, including two fatal crashes involving its 737 MAX jets in 2018 and 2019 that killed 346 people, and a recent \$1.1 billion deal to avoid prosecution for those crashes.<sup>30</sup>

The current crash could prompt regulators, such as the FAA and DGCA, to take firmer

action, potentially leading to fleet-wide inspections or even temporary groundings of parts of the 787 fleet, depending on the investigation's findings.<sup>35</sup> The FAA had already announced in May 2024 that Boeing was "reinspecting all 787 airplanes still within the production system" and planned to assess those in service, following the whistleblower allegations.<sup>31</sup> This accident may accelerate or expand such measures.

The incident also raises questions about the increasing strain on airline maintenance systems amid rapid growth and operational demands.<sup>13</sup> The crash underscores that even modern fleets are not immune to catastrophic failures, and any legacy aircraft, particularly those with delayed retrofits or inconsistent maintenance histories, carry inherent risks.<sup>13</sup> The outcome of the DGCA and FAA investigations will be closely watched by the industry, as their findings could lead to new regulatory mandates, enhanced safety inspections, and potentially a cultural shift within Boeing to prioritize engineering and quality over cost-cutting.<sup>6</sup> The crash of AI171 has undoubtedly shaken confidence in the global airline sector and reignited scrutiny over how airlines and manufacturers manage safety in a competitive environment.<sup>13</sup>

## **6. Impact and Response**

### **6.1 Human Toll and Humanitarian Efforts**

The crash of Air India Flight AI171 resulted in a devastating human toll. While initial reports from the Ahmedabad police chief indicated no known survivors from the aircraft, one British national, Vishwash Kumar Ramesh, was later reported to have survived with injuries.<sup>1</sup> As of immediate reports, at least 204 bodies were recovered from the crash site.<sup>3</sup> The impact in a densely populated residential area, specifically the BJ Medical College doctors' hostel, also led to casualties and injuries among local residents, including medical students.<sup>1</sup> Many of the victims sustained severe burns, making identification challenging.<sup>17</sup>

Immediate humanitarian efforts were launched, with Indian Army teams, NDRF teams, CRPF personnel, local police, and medical teams deploying to the site.<sup>1</sup> Their efforts focused on rescue operations, extinguishing the massive fire, clearing debris, and providing immediate medical aid to the injured, who were rushed to nearby hospitals.<sup>1</sup> The Gujarat Chief Minister instructed officials to carry out "immediate rescue and relief operations" and to make arrangements on a "war footing".<sup>4</sup>

### **6.2 Airline and Government Actions: Support, compensation, and operational adjustments**

In response to the tragedy, Air India, owned by the Tata Group, swiftly activated an emergency response center and deployed dedicated support teams to assist the

families of those affected.<sup>1</sup> Hotlines were established to provide information and support.<sup>4</sup> Air India's Chairman, Natarajan Chandrasekaran, expressed profound sorrow and emphasized that the airline's primary focus was on supporting all affected individuals and their families, pledging full cooperation with authorities.<sup>1</sup>

The Tata Group announced a compensation of ₹1 crore (approximately \$120,000 USD) for the families of each person who lost their life in the crash.<sup>11</sup> Additionally, the group committed to covering the medical expenses of all injured passengers and providing support for the rebuilding of the damaged BJ Medical College hostel.<sup>43</sup>

Government responses at national and international levels were immediate. Indian Prime Minister Narendra Modi expressed deep sadness, calling the tragedy "heartbreaking beyond words," and instructed officials to provide continuous updates and full support.<sup>1</sup> The Union Civil Aviation Minister, Ram Mohan Naidu Kinjarapu, personally visited the crash site to oversee operations and directed all aviation and emergency response agencies to take swift and coordinated action.<sup>4</sup>

Internationally, British Prime Minister Sir Keir Starmer called the crash "devastating," and the British government pledged "all the support that it can" to those affected, particularly British nationals.<sup>1</sup> King Charles III also conveyed his shock and deepest sympathies.<sup>1</sup> The UK Air Accidents Investigation Branch (AAIB) formally offered its assistance to India, deploying a multidisciplinary investigation team.<sup>18</sup>

Operationally, Ahmedabad's Sardar Vallabhbhai Patel International Airport suspended all flight operations immediately after the crash, advising passengers to check with their respective airlines for updates.<sup>4</sup> IndiGo, another airline, issued a travel advisory offering rebooking options and full refunds to affected passengers due to the runway restrictions.<sup>46</sup> The FAA also confirmed it was in contact with the NTSB, standing ready to provide technical support to the Indian-led investigation.<sup>3</sup> While the immediate focus was on rescue and relief, the incident has inevitably led to a re-evaluation of safety protocols and operational procedures within Air India and the broader aviation sector.

## **7. Conclusion and Future Outlook**

The crash of Air India Flight AI171 is a profound tragedy, notable as the first fatal accident involving a Boeing 787 Dreamliner. While the full and definitive cause of the crash remains under official investigation by India's Aircraft Accident Investigation Bureau (AAIB) and Directorate General of Civil Aviation (DGCA), supported by international agencies like the UK AAIB and US NTSB, preliminary assessments

highlight several critical areas of focus.

The aircraft's brief flight profile, reaching only 625 feet before a rapid descent, coupled with the Mayday call and subsequent loss of communication, points to a sudden and severe event that rendered the aircraft unmanageable. Initial expert observations suggest potential issues with aircraft configuration, specifically the positioning of flaps and slats, which could have led to insufficient lift during takeoff. The possibility of mechanical failure, particularly dual engine failure, potentially caused by a multiple bird strike, is also a strong preliminary consideration. The recovery and ongoing analysis of the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) are paramount, as these "black boxes" hold the objective data necessary to reconstruct the final moments of the flight, including engine performance, control inputs, system alerts, and cockpit communications.

This incident has inevitably renewed scrutiny on the Boeing 787 Dreamliner's safety, especially in light of its past issues with lithium-ion batteries and recent whistleblower allegations concerning manufacturing quality and structural integrity. While Boeing maintains confidence in the aircraft, the ongoing investigations by various national and international aviation authorities will thoroughly examine these claims and any potential systemic issues. The findings from this investigation are not only critical for determining the specific cause of AI171's crash but will also inform future safety recommendations, training protocols, and potentially lead to design modifications or enhanced inspections across the global 787 fleet. The aviation community will closely monitor the final report to ensure that lessons learned from this devastating event contribute to preventing similar tragedies in the future, reinforcing the continuous evolution of aviation safety standards.

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