Accident

Aircraft Type and Registration:	Airbus A380-841, G-XLEI
No & Type of Engines:	4 Rolls-Royce RB211 Trent 970-84 turbofan engines
Year of Manufacture:	2014 (Serial no: 173)
Date & Time (UTC):	6 December 2024 at 1203 hrs
Location:	Over the Atlantic Ocean, South of Greenland
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 24 Passengers - 277
Injuries:	Crew - 1 (Serious) 23 (None) Passengers - 1 (Serious) 276 (None)
Nature of Damage:	None
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	57 years
Commander's Flying Experience:	21,557 hours (of which 5,178 were on type) Last 90 days - 172 hours Last 28 days - 44 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent enquiries by the AAIB

Synopsis

The aircraft was flying from Los Angeles to London at FL390. The route crossed an area of forecast turbulence south of Greenland, which the flight crew were monitoring using a live weather application on their tablet devices. The passenger seat belt signs were switched on, but a short period of turbulence caused two people in the cabin to fall and sustain serious lower leg injuries. Live weather app technology and ground-based medical advisory services assisted the flight crew's decision making.

History of the flight

The aircraft was operating a passenger service from Los Angeles international airport to London Heathrow airport (Heathrow). It climbed to FL 390 for the Atlantic crossing.

The briefing documentation provided to the crew before departure contained no 'significant weather warnings' (SIGMETs)[1] for the route. The North Atlantic significant weather chart valid at 1200 hrs (Figure 1) forecasted that the aircraft would transit an area of moderate turbulence south of Greenland.

Footnote

[1] 'SIGMET' – an advisory about weather conditions significant to flight safety.

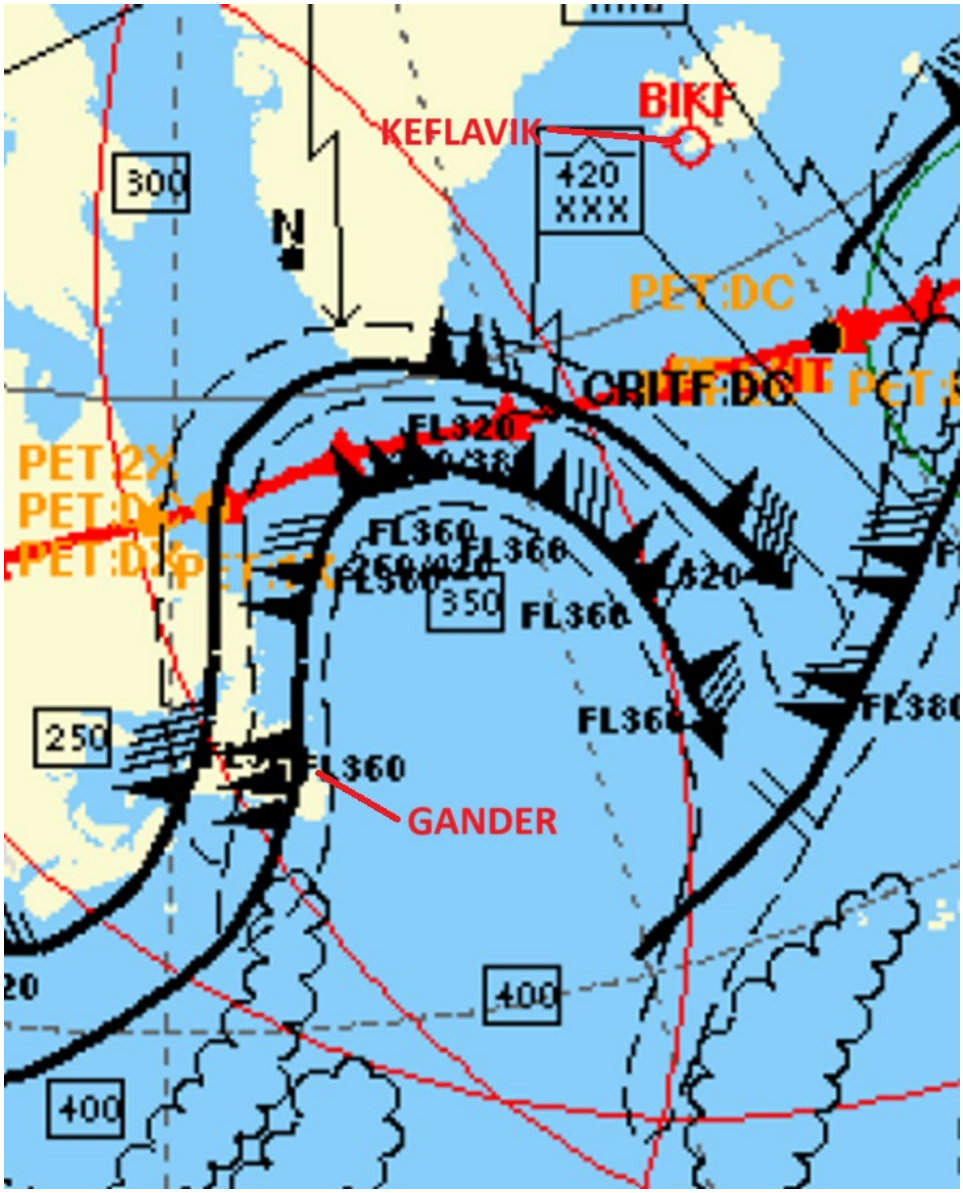

Figure 1

Excerpt of weather chart showing jet stream at FL360, and related forecast turbulence

In addition to the pre-flight briefing documentation the crew had access to a weather 'app' on their electronic flight bags (EFB)[2], which receives live updates during the flight via the aircraft's Wi-Fi. From that, the crew became aware of a forecasted area of potentially severe turbulence developing. As the aircraft approached this area the commander switched on the passenger seat belt signs. He subsequently asked the cabin crew to secure cabin equipment and take their own seats[3]. The app's live updates showed no actual traces of turbulence in the previous two hours, and a nearby aircraft had experienced insignificant turbulence[4].

Footnote

[2] The operator supplies each pilot with a tablet device containing operational documentation.
[3] These actions are aligned with the operator's Part B guidance on 'anticipated turbulence'.
[4] The app shares information between aircraft – see Meteorology section later in the report.

Around 20 minutes after the seat belt signs were switched on, there was an episode of turbulence lasting around 10 to 15 seconds which the commander said he perceived as light to moderate. Recorded data showed the aircraft's speed varied by around plus or minus 13 KIAS, but was controlled by the autopilot (Figure 3). During this time, a member of cabin crew (Figure 2) was lowering her crew seat to strap herself in when the turbulence raised her up after which she fell, breaking her ankle. She called the flight deck using an interphone to explain she was injured. Another member of cabin crew informed the In-flight lead (IFL)[5].

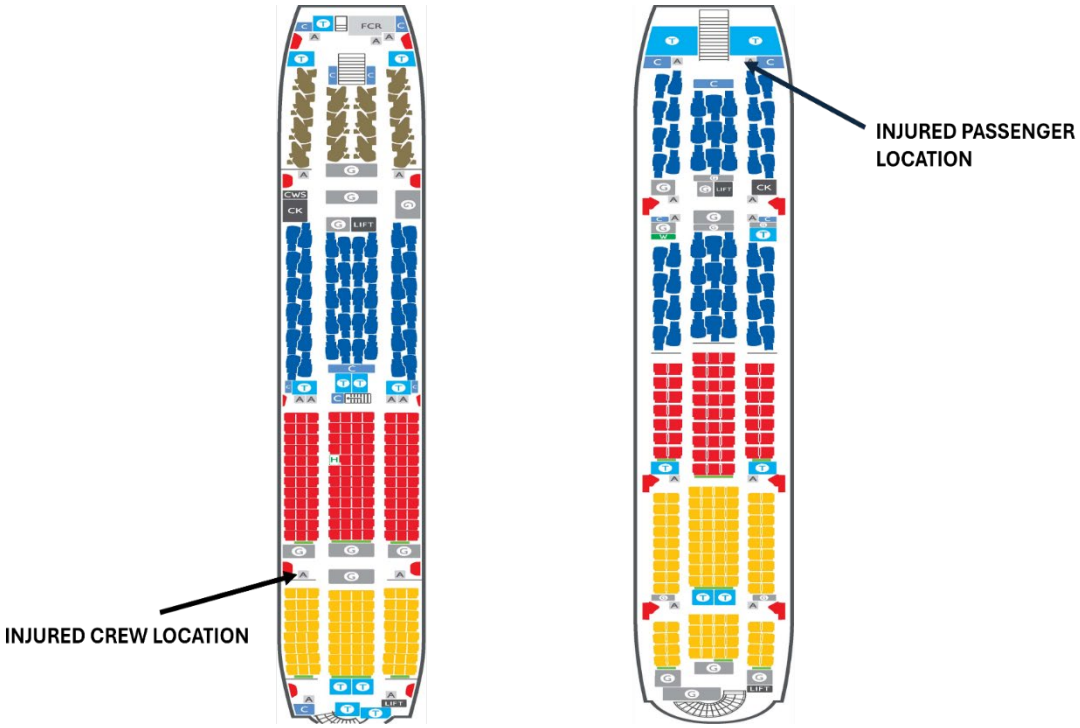

Figure 2

Location of injured persons on the lower deck (left) and upper deck (right)

Soon after, the IFL was informed that a passenger in the upper deck was also injured. That passenger reported that he left his seat to use the lavatory. He described the aircraft as "undergoing light chop" but, having been asleep prior to that, had not noticed the seat belt signs being on, and had not heard any announcements. While returning to his seat he described the aircraft making a sudden movement upward and sideways, and believed that the movement of the floor with respect to his foot broke his ankle.

The flight deck crew called MedLink[6] for advice. Two other passengers – who were doctors – assisted with the injured persons, using splints to support their ankles and administering pain relief. The cabin crew and doctors used on-board materials to create additional splints secured with items of clothing to supplement the medical kit supplies.

Footnote

[5] IFL – the senior cabin crew member.

[6] MedLink – a ground based medical assistance service which is contactable in-flight – Medical and Aviation Security | Ground-Based Medical Advisory Service (MedLink) [accessed 11 December 2025].

Shortly after the turbulence injuries, a different passenger became unwell and lost consciousness. Members of cabin crew and one of the doctors assisted that passenger, and the flight crew again sought advice from MedLink. During the event, the IFL ensured the cabin manager and other crew members returned from their rest periods to ensure the medical issues and other essential duties[7] were covered.

The commander said he considered diverting the aircraft to Gander international airport, Canada, or Keflavik international airport, Iceland (Figure 1). However, Gander's weather was below the required landing minima and Keflavik's runway was contaminated with ice. After discussions with MedLink, the doctors on board, and the cabin crew, he decided to continue the flight to Heathrow. A medical 'PAN' was declared, and ATC facilitated a direct routing to Heathrow. On landing, ambulances met the aircraft and took the three casualties to hospital.

Recorded information

Flight data was recovered for the event and presented in Figure 3.

G-XLEI was cruising at FL390 and about 270 kt at the start of the turbulence. The seatbelt sign was switched on at 1142 hrs and remained on for 1 hour. The minimum recorded normal acceleration (0.5g) and maximum (2.1g)[8] were within four seconds of each other at about 1202 hrs (Figure 3 inset). For the remaining time the normal acceleration was nominally 1±0.2g with the occasional spikes down to 0.5g and up to 1.5g.

Footnote

[7] The operator's *'Medical action plan'* required three members of crew attend each patient.
[8] The limit manoeuvring load for a commercial aircraft must be at least 2.5g. CS-25 Amendment 28 | EASA.

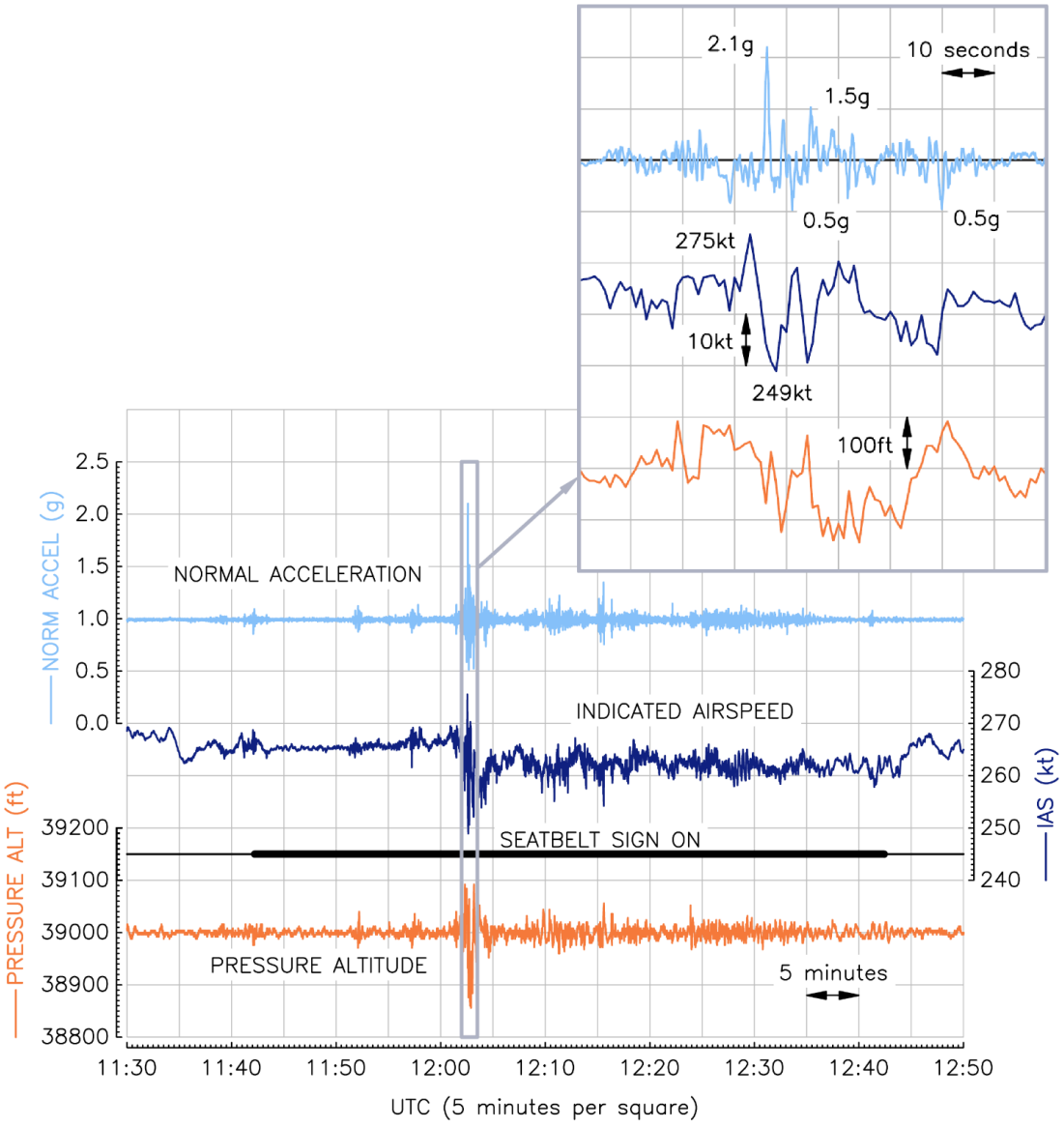

Figure 3

G-XLEI flight data for the turbulence event

Meteorology

The Met Office produced a report on the weather situation for the time of the event. It contained an analysis of the Eddy Dissipation Rate (EDR) for the region (Figure 5). EDR represents the rate at which turbulent kinetic energy is converted into thermal energy. It is used in flight planning and real-time weather monitoring. Higher EDR values correspond to more intense turbulence, while lower values suggest smoother airflow. The report explained that the position of the aircraft when the accident occurred is annotated as a black 'x' on Figure 4, which was *'located within a large area of moderate turbulence'*.

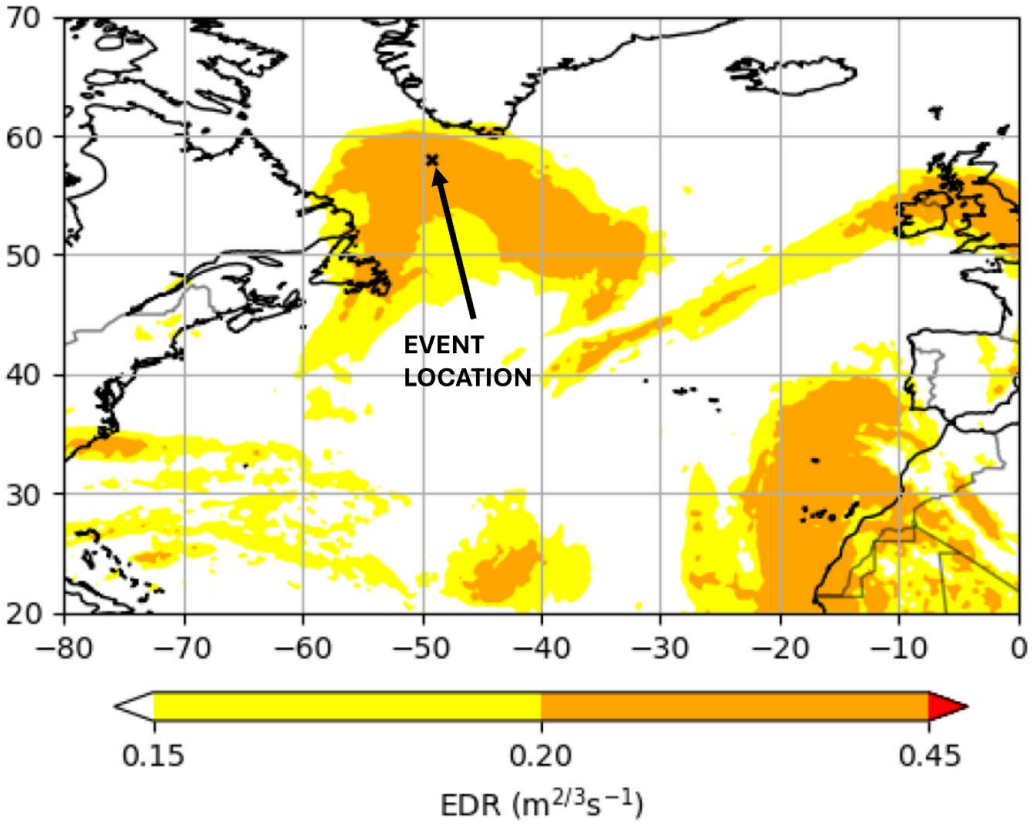

Figure 4

EDR Forecast Chart

The weather app on the crews' EFBs receives real-time EDR information via a global data exchange platform called *'Turbulence Aware'*[9]. It gives indications of turbulence relevant to the mass of the receiving aircraft. The information in the app indicated no significant turbulence in the vicinity of the aircraft.

Analysis

Weather app technology

Given that pre-flight weather charts give a widespread picture of potential turbulence conditions, this type of event highlights the benefits of live weather app technology in giving localised, real-time turbulence information to crew. The commander in this event followed 'anticipated' turbulence procedures and – although two people were unfortunately injured – had the seat belt signs remained off, more people may have been affected.

Situation in the cabin

With two injured persons, and a third, unrelated, medical event onboard, the IFL ensured sufficient cabin crew were recalled from rest periods to fulfil the Medical action plan. Two doctors onboard assisted the casualties, and some improvisation was used to supplement medical kit supplies and immobilise injuries.

Footnote

[9] IATA - Turbulence Aware Platform.

Ground based medical advice

Given weather limitations at nearby airports, this event highlights the benefits of ground-based professional medical advice for informing flight crews' decision making – in this case, continuing to Heathrow, with emergency assistance from ATC.

Conclusion

A crew member and a passenger sustained serious leg injuries during a brief period of turbulence. The flight crew monitored the turbulence situation using a real-time weather application on their operational tablet devices and instructed the cabin crew to secure the cabin some time before the event. Had the seat belt signs been off, more people might have been affected.

The event highlights the benefits of live weather app technology and ground-based medical services in assisting with crew decision making.