

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



DCA23LA096

SURVIVAL FACTORS

Specialist's Factual Report

November 19, 2024

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A ACCIDENT

Location: Kahului, Hawaii
Date: December 18, 2022
Time: 1007 Hawaii standard time (HST)
2007 coordinated universal time (UTC)
Airplane: Airbus A330-243, N393HA, Hawaiian Airlines

B SURVIVAL FACTORS SPECIALIST

Specialist Amanda Taylor
National Transportation Safety Board
Washington, DC

C SUMMARY

While on approach the airplane encountered turbulence resulting in injuries of passengers and cabin crew.

D DETAILS OF THE INVESTIGATION

A survival factors investigator was assigned to this case on December 19, 2022, to document the interior of the cabin, obtain crew statements, and collect injury information. On-scene documentation of the cabin area was completed by representatives from Hawaiian Airlines and provided to the NTSB.

E FACTUAL INFORMATION

There were 293 occupants on board the airplane at the time of the turbulence event. There were 283 passengers (including three lap held children¹) and 10 crewmembers, consisting of two pilots and eight flight attendants (FAs). Additionally, there two off-duty Hawaiian Airlines pilots seated in jumpseats in the cockpit.

1.0 Airplane Configuration

The airplane was equipped with 278 passenger seats, two pilot seats and two jumpseats in the cockpit, and 11 flight attendant jumpseats (see figure 1). There were eight floor level Type I emergency exits on the airplane. All occupants entered and exited through the 2L door via jet bridge, according to passenger statements.

¹ According to the passenger manifest provided by Hawaiian Airlines, the lap held children were located with occupants at seats 23G, 29H, and 40G.

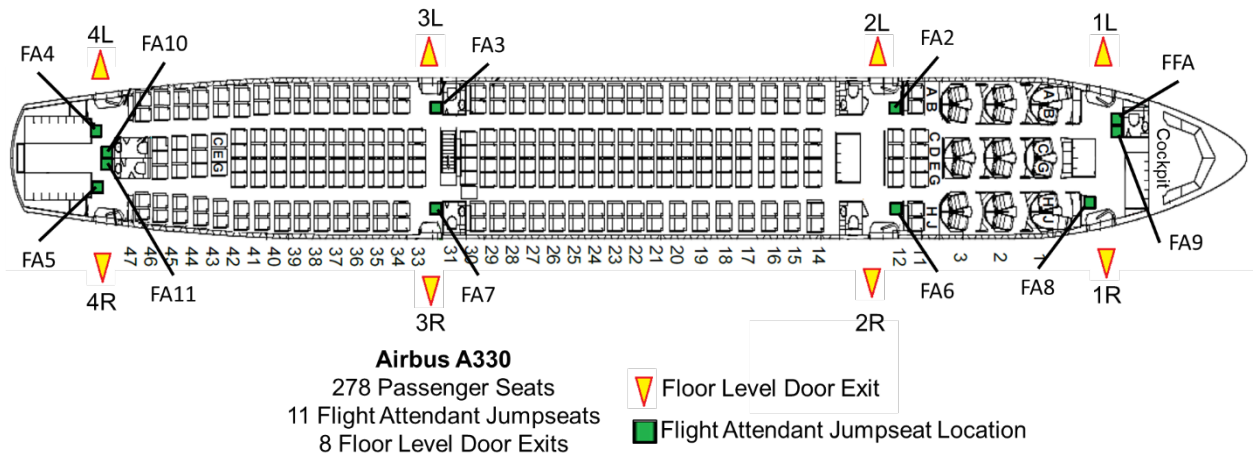


Figure 1 Interior configuration of N393HA.

2.0 Interior Damage²

Damage occurred throughout the cabin area including passenger service units, ceiling panels, overhead bin components, light panels, exit signs, and the 4L flight attendant handset (see figures 2 to 5).



Figure 2. A passenger service unit in row 39 that fell during the turbulence.

² Damage to the interior of the aircraft was documented by Hawaiian Airlines personal and provided to the NTSB.



Figure 3. Missing ceiling panels near rows 36 through 41.



Figure 4. Crack in an overhead light in the rear galley area.



Figure 5. Damaged 4L flight attendant handset.

3.0 Flight Attendants

Flight HA35 was operated with 8 F/As. Figure 6 provides the F/A position, jumpseat location, initial hire, and last recurrent training dates³.

F/A Position	Jumpseat Location	Initial New Hire Date	Last Recurrent Training Date
FFA - Lead	1L door side	2/12/2018	09/13/2022
FA2	2L	5/14/2012	5/9/2022
FA3	3L	2/22/2013	10/12/2022
FA4	4L door side	2/18/1999	10/11/2022
FA5	4R door side	8/4/2010	10/26/2022
FA6	2R	5/15/2012	06/30/2022
FA7	3R	4/4/2018	08/10/2022

³ F/A training dates were obtained from Hawaiian Airlines employee training records.

FA8	1R	5/28/2022	05/21/2022
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Figure 6. Flight attendant position, location, and training dates.

3.1 Flight Attendant Manual

Hawaiian Airlines provided a copy of a flight attendant manual dated 12/12/2022 that was current at the time of the accident. Pertinent sections are shown below.



HAWAIIAN
AIRLINES.

In-Flight Manual (IFM)

Page: 190 of 196

Revision: 14

Date: 12/12/22

NOTE

If FAs are experiencing turbulence in the cabin and the FD has not illuminated the FASTEN SEAT BELT sign and made an announcement, FAs may communicate to the FD to turn on the FASTEN SEAT BELT sign and make an announcement.

CAUTION

When PIC announces "Cabin Crew take your seats," this is not a request but an order.

2. In the event of unexpected turbulence, the FAs:
 - A. Will occupy the nearest available J/S or PAX seat
 - B. **Cart Procedures During Turbulence:** If turbulence increases to a point where carts in the aisle present a hazard and moving the carts is difficult or dangerous, the FA will:
 - 1) Wedge cart between seat armrests or into a row; park in the designated galley stalls if possible
 - 2) Set cart brake and use galley restraints if in galley
 - 3) Clear top of cart completely or cover top of cart with a blanket
 - 4) Sit in available PAX seat in immediate area and secure seat belt; or sit on the floor and hold on securely to seat structure
 - 5) Pour hot liquids into the galley drain (e.g., water, tea, or coffee)
 - C. Occupy assigned seats and use the seat belt/harness
 - D. May occupy a PAX seat only if the FA J/S is inoperable or too far to safely reach

Figure 7. In flight manual turbulence procedures.

13.44.1 Reporting Terms and Definitions of Turbulence

Occasional	Less than 1/3 of the time
Intermittent	1/3 to 2/3 of the time
Continuous	More than 2/3 of the time

1. Pilots should report location(s), time, intensity, whether in or near clouds, altitude, type of aircraft and when applicable, duration of turbulence
2. Duration may be based on time between two locations or over a single location. All locations should be readily identifiable.

13.44.2 Turbulence Intensity Chart

Table 13-15: Turbulence Intensity Chart

Light Chop/Light Turbulence	
Definitions • Light chop: Causes slight, rapid, and somewhat rhythmic bumpiness without appreciable changes in A/C altitude/attitude • Light turbulence: Causes slight, rapid, and erratic changes in A/C altitude/attitude	
Conditions • PAX may feel slight strain against seat belts • Unsecured objects may be slightly displaced • Food and beverage service may be conducted • Little or no difficulty encountered in walking	
FA Procedures • FFA makes announcement when FASTEN SEAT BELT sign ON • Cabin compliance check • Secure unattended carts, service/galley items, and cabin	PI/C Procedures • FASTEN SEAT BELT sign ON at discretion

Figure 8. In flight manual reporting terms and intensity chart.

Moderate Chop/Moderate Turbulence	
Definitions - Moderate chop: Causes rapid bumps or jolts without appreciable changes in A/C altitude/ attitude - Moderate turbulence: Changes in A/C altitude/attitude occur but A/C remains in positive control at all times. It usually causes variations in indicated airspeed.	
Conditions - PAX feel definite strain against seat belts - Unsecured objects dislodged - Food and beverage service may be difficult - Difficulty walking	
FA Procedures - FFA makes announcement instructing PAX to be seated - Cabin compliance check - Secure unattended carts, service/galley items, and cabin - If FAs are instructed to take J/S, FAs sit down and secure safety belts - FFA advises PAX to sit down and fasten seat belts; follows with interphone call to FAs	PI/C Procedures - FASTEN SEAT BELT sign must be ON - Confer with FFA to determine if service should be interrupted and FAs seated

Figure 9. In flight manual moderate and severe turbulence intensity chart continued.

Severe/Extreme Turbulence	
FA Procedures - Immediately sit down in nearest seat and secure self - FFA advises PAX to sit down and fasten seat belts - FAs get up and check cabin after PI/C advises safe to move about cabin	PI/C Procedures - FASTEN SEAT BELT sign must be ON - Make PA "Cabin crew, take your seats"

Clear Air Turbulence	
Definitions Clear air turbulence: when other than light turbulence is encountered unexpectedly	
Conditions A variety of the above conditions may occur, depending on the severity	
FA Procedures Take appropriate action based on turbulence intensity	PI/C Procedures Take appropriate action based on turbulence intensity

Figure 10. In flight manual severe and clear air turbulence chart.

4.0 Emergency Medical Equipment

Emergency medical equipment was stowed throughout the cabin (see figure 11).

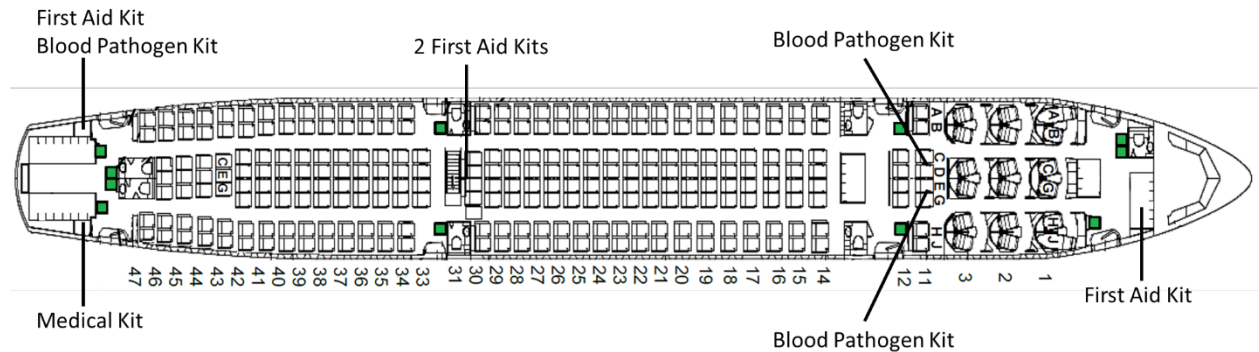


Figure 11. Locations of the first aid kits, blood pathogen kits, and medical kits.

5.0 Summary of Event⁴

About 45 minutes prior to landing passengers remembered an announcement stating that they would be making their final descent into Honolulu in approximately 10 minutes and the seat belt sign was? being illuminated. Passengers were instructed to use the restroom at that time, if necessary, and passenger 31C walked to the lavatory. FAs were finishing up their cabin service, securing carts, and collecting the required state agricultural forms. About this time the cockpit called back to the lead FA to alert her there would be turbulence on the descent. As she initiated an “all call” to the rest of the cabin crew, the turbulence hit.

Passengers described feeling a “hard jolt” followed by a feeling of free fall. Unsecured items, such as phones, jackets, and water bottles, began to float up around them. After about three seconds of floating there were “two hard downward hits.” FAs and passengers who not restrained were thrown upward impacting the ceiling or baggage compartments above them then downward onto the floor. This motion occurred twice.

Once the plane had stabilized, passenger 31C crawled back to her seat and was helped by a couple seated next to her to get into the seat and secure herself. FA 5 was also helped into her seat and secured. FA 4 secured herself in her seat at door 4L, however the handset was broken so she unbuckled and crawled to the flight attendant seat by door 4R and secured herself there while using that handset to call for assistance.

The other FAs began working their way through the cabin picking up items and checking on passengers and crew. They also made announcements asking anyone onboard with medical training to assist. Other off-duty crew also assisted with the

⁴ This narrative was developed using informational summaries provided by cabin crew and passengers located in attachments 1 and 2 respectively in this report.

injured. A Hawaiian Airlines pilot seated in 11D worked with FAs to secure loose cabin panels in the lower crew rest areas and lavatories for landing. FA 3 checked on an unaccompanied minor located in seat 30C, she had been buckled? and was uninjured. The FAs made a list of the seriously injured and turned on their call lights to identify them for rapid attention by emergency services upon landing. The lead FA let the pilots know the airplane had over a dozen injured passengers and the flight would need to be met by medical personnel upon landing.

Once the cabin was secured, all the FAs and passengers returned to their seats and restrained themselves for landing. Once on the ground and at the gate all passengers were instructed to stay seated so that emergency services could board the plane and take the more seriously injured passengers and FA 5 off first. Afterwards all passengers disembarked through door 2L to the gate area where a triage had been set up to take care of other wounded.

6.0 Injury Information

According to information provided by Hawaiian Airlines about 25 occupants were transported via ambulances, buses, and personal vehicles to local hospitals which included Queens Medical Center, Pali Momi Medical Center, and Kaiser Permanente Moanalua Medical Center. Additionally, other passengers reportedly sought medical treatment once they returned to their residences. Medical records from the treating hospitals and information obtained from passenger interviews indicated there were a total of 4 serious and 20 minor injuries. There were three lap held infants according to the passenger manifest, and one was taken via personal vehicle to a hospital and released with a minor injury.

6.1 Injury table

Type of injury	Pilots	Cabin Crew	Passengers	Total
Fatal	0	0	0	0
Serious	0	1	3	4
Minor	0	3	17	20
None	2	4	263	269
TOTAL	2	8	283	293

6.2 Injuries by Seating Location

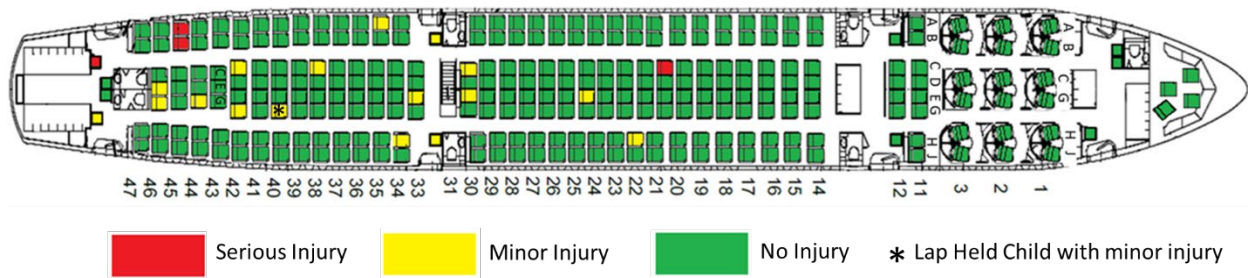


Figure 12. Injury level at each seating position.

F LIST OF ATTACHMENTS

Attachment 1: Flight Attendant Information Summaries

Attachment 2: Passenger Statements

Attachment 3: Injury List

Submitted by:

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