

4. Conclusion

The occurrence conditions and lessons learned for recurrence prevention from the four accident investigations introduced in this digest and other accident investigations are summarized below.

■ Occurrence conditions for aircraft shaking accidents

◆ Statistics on the accidents

There were 40 accidents involving large aircraft, and 19 of these (nearly half) were aircraft shaking accidents.

◆ Breakdown of the injured

The number of people injured per aircraft shaking accident was approximately four times larger than other aircraft accidents involving large aircraft.

The aft accounted for approximately 72% of the results for the position in aircraft where accidents occurred (excluding cases in which the position was unknown).

◆ Categories of Causes

Not only environmental factors but also organizational and other factors contributed to accidents

In terms of categories of causes, seven cases were caused by environmental factors, five cases by environmental and organizational factors, four cases by human and environmental factors, and two cases by human, environmental, and organizational factors, indicating that not only environmental factors but also organizational and other factors contributed to accidents.

■ Lessons learned from the accident investigation

○ Flight crew members

- When aircraft is anticipated to encounter turbulence, the cockpit crew should turn on the seat belt sign at the earliest possible time so that FAs may have enough time to finish their duties before the encounter, because a lot of time is necessary for them to provide services to passengers, clean up and confirm the safety of passengers.

○ Flight attendants

- When informed by the PIC of the possible turbulence and the need to be seated during the descent in the pre-flight briefing, FAs should plan to finish in-flight services well before the anticipated encounter with turbulence.
- Pay attention to the seatbelt sign to ensure that passengers properly wear their seatbelts.
- Remind passengers to carefully listen to in-flight announcements.
- Consider discontinuing or canceling in-flight services depending on the circumstances.
- When the seat belt sign is illuminated, FAs are required to urge non-seated passengers to be seated.
- Perform safety checks mainly by confirming their seat belt fastening manner.

○ Other

- Some aircraft have taken safety measures such as installing handrails at locations where passengers pass by. Continue to examine the effectiveness of such measures and consider taking further safety measures to prevent accidents.
- Consider educating passengers on the response they should take in the event of the shaking of the aircraft.

A tip from Director for Analysis, Recommendation and Opinion

Aircraft shaking accidents occur when aircraft encounter sudden turbulence that is difficult for even aircraft operation and weather professionals to forecast.

While there are hopes that technologies for forecasting turbulence will be further developed, because there is always the possibility of such accidents occurring on aircraft that operate day and night, both operators and passengers should prepare as best they can in order to prevent these accidents from occurring and to mitigate damage in the event of their occurrence.

We hope that you act to protect yourself when boarding aircraft by properly fastening your seatbelt as much as possible, regardless of whether or not the seatbelt sign is on.

We welcome your comments on “JTSB Digests”
and requests of dispatching lecturers

Japan Transport Safety Board (JTSB)
Director for Analysis,
Recommendation and Opinion
2-1-2, Kasumigaseki, Chiyoda-ku
Tokyo, 100-8918 Japan

TEL: +81-3-5253-8824

FAX: +81-3-5253-1680

URL: <http://www.mlit.go.jp/jtsb/index.html>

e-mail: hqt-jtsb_analysis@ml.mlit.go.jp