

# CI 680 Occurrence Investigation

## Executive Summary

On August 12, 2012, an Airbus A330-300 aircraft, registration number B-18352, operated by China Airlines performing a scheduled passenger flight CI 680 took off from Hong Kong International Airport at 13:49 for Taoyuan International Airport with 2 flight crew members, 11 cabin crew members and 293 passengers, total 306 people on board.

Before departing from Hong Kong International Airport, the flight crew obtained weather information of Taoyuan Airport's visibility was 3,200 meters from 12:00 to 18:00. The flight crew received Automatic Terminal Information Service (ATIS) V of unstable wind on ground, and flight crew planned to vacate runway via taxiway S3 and used configuration 3 for approach. According to the interviews, the flight crew stated that the runway was in sight at 15 nautical miles away, visual range was about half of the runway. At 1520:39, Taipei control tower broadcasted 'heavy showers and visibility 8,000 meters'. The flight crew disengaged auto-pilot at the altitude of 904 ft and then turns on wipers; the auto-throttle was disengaged at the altitude of 14 ft at 1523:59.

The aircraft remained at the runway 23L extended centerline during final approach in general with the flight track in-clined a little rightward. The aircraft landed at the right side of the runway centerline, the touchdown point was 1,470 ft from the runway 23L threshold. Prior to the time that nose landing gear touchdown the flight crew used the left rudder to correct the rightward track and keep the course parallel to the runway but without success. At 1524:05, the aircraft veered off the runway 23L at 2,220 ft from threshold. During the aircraft veering off the runway, two runway edge lights were damaged and the aircraft right main gear rolled over a cement manhole structure. The flight crew used nose gear steering and rudder to maneuver the aircraft back to the

runway at 4,220 ft from the runway 23L threshold. The aircraft decelerated and vacated the runway via Taxiway S3 and the flight crew requested a towing service to tow aircraft back to the ramp. Maintenance personnel inspected the aircraft's lower right belly skin and found several minor scratches. All people on board were safe.

The ASC launched investigation according to the Aviation Occurrence Act after the occurrence. Parties to the investigation are the Civil Aeronautics Administration (CAA), China Airlines and Taoyuan International Airport Company. Investigation report was published after approval by the ASC council members on May 28, 2013, at the 11th Council Meeting.

### **Findings as the result of this investigation**

The Safety Council presents the findings derived from the factual information gathered during the investigation and the analysis of the occurrence. The findings are presented in three categories: **findings related to the probable causes, findings related to risk, and other findings.**

**The findings related to the probable causes** identify elements that have been shown to have operated in the occurrence, or almost certainly operated in the occurrence. These findings are associated with unsafe acts, unsafe conditions, or safety deficiencies that are associated with safety significant events that played a major role in the circumstances leading to the occurrence.

**The findings related to risk** identify elements of risk that have the potential to degrade aviation safety. Some of the findings in this category identify unsafe acts, unsafe conditions, and safety deficiencies that made this occurrence more likely; however, they cannot be clearly shown to have operated in the occurrence. They also identify risks that increase the possibility of property damage and personnel injury and death. Further, some of the findings in this category identify risks that are unrelated to the occurrence, but nonetheless

were safety deficiencies that may warrant future safety actions.

**Other findings** identify elements that have the potential to enhance aviation safety, resolve an issue of controversy, or clarify an issue of unresolved ambiguity. Some of these findings are of general interest and are not necessarily analytical, but they are often included in ICAO format accident reports for informational, and safety awareness, education, and improvement purposes.

#### **The findings related to the probable causes**

1. The aircraft encountered momentary heavy showers and flight visibility dropped down suddenly before landing. During flare, the flight crew was not aware of pressing the control stick rightwards intermittently; the aircraft landed on the right side of the runway centerline and continued veering off to the right. The flight crew used immediately the left rudder to correct but did not continue using the left rudder or consider to initiate rejected landing; which made the aircraft veered off the runway rightward.

#### **Findings related to Risks**

1. There were no runway centerline lights at runway 23L at Taoyuan Airport. The effects of visual references for pilots might be affected under heavy showers.
2. The manhole structures at the airport runway area did not comply with the International Civil Aviation Organization (ICAO) Annex 14 Aerodrome Design and Operations Attachment A recommendation of 'measures should be taken to prevent an airplane's wheel, when sinking into the ground, from striking a hard vertical face'.

#### **Other Findings**

1. The certificates of flight crew were in accordance with civil aviation regulations; rest and activities within 72 hours before the occurrence were normal; no evidence to show that the flight crew was affected by any

medication or alcohol during that flight.

2. The weight and balance of the aircraft was within the limit.
3. During the 10 seconds between the time when the aircraft was at 55 ft of altitude and when the main landing gears touched down, the AWOS (Automated Weather Observing System) momentary observation record showed that visibility RVR decreased from 1,800 meters to 1,500 meters due to rain fall, left wind increased to about 5 nautical miles / hour, and one hour of accumulated precipitation increased from 2.6 mm to 3.2 mm.
4. The aircraft encountered momentary heavy showers and flight visibility dropped down suddenly, which still met the minimum weather requirement for approach and landing before landing. There were no momentary changes to wind direction nor wind speed.
5. China Airlines did not establish standard call out in A330 Flight Operation Manual concerning the situation when the aircraft deviated from the centerline
6. The malfunction of the area microphone in the cockpit resulted in bad quality of the CVR recording. The pre-flight inspected only if CVR signal circuits were normal; which might not verify the quality of the CVR recording. China Airliner's annual CVR system test may not to ensure quality of CVR recording.
7. As Runway 23L at Taoyuan Airport is CAT I precision approach runway, it may do without runway centerline lights. However, the runway width is 60 meters and according to ICAO Annex 14, it recommends that installation of runway centerline lights on this type of runway may improve the visual references for pilots during landing phase.

## **Safety Recommendations**

### **To China Airlines**

1. Reinforce flight crew's training which include: situation awareness and emergency response capability when encountered momentary heavy

showers and sudden drop of visibility during final approach; reinforce flight crew's maneuver skill when veering off, and enhanced flight crew's decision making of rejected landing when flight crew unable to correct the aircraft directional control accordingly.

2. Examine the definition of rejected landing in the existing manuals and review the standard call out when aircraft deviating from runway centerline.
3. Perform one-time inspection of area microphone recording function in the cockpit of this aircraft type and notice to all maintenance personnel that miss-hearing may occurred during CVR (Cockpit Voice Recorder) system test to ensure cockpit voice recording quality, review annual CVR system test interval.

#### **To CAA**

1. Supervise China Airlines to reinforce flight crew's training which include: situation awareness and emergency response capability when encountered momentary heavy showers and sudden drop of visibility during final approach; reinforce flight crew's maneuver skill when veering off and enhanced flight crew's decision making of rejected landing when flight crew unable to correct the aircraft directional control accordingly.

#### **To Taoyuan Airport Company**

1. Examine the manhole structures at Taoyuan Airport runway area complied with the ICAO Annex 14 Aerodrome Design and Operations Attachment A Recommendations.

#### **To Ministry of Transportation Communications**

2. 1. Supervise Taoyuan Airport Company to examine the manhole structures at Taoyuan Airport runway area complied with the ICAO Annex 14 Aerodrome Design and Operations Attachment A Recommendations.