

Case Study on Asiana Airliner 214

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Safety Issues: Misjudged approach, crew's decision-making, and pilot's experience

On 6th July 2013, a Boeing 777-200 ER airliner from South Korea crashed and burned after it clipped a seawall at San Francisco Airport. It was approaching the runway at 3Â° glide path when it arrived at the 5 nm level. The crew could not manage the airliner's descent.

Probable Cause

According to the National Transport Safety Board, the most likely cause of the crash was the inability of the crew to manage the descending aeroplane in the visual approach, the pilot's deactivation of the speed control knobs, failure of the crew to monitor the airspeed and the delay in executing a go-around upon realizing that the plane was at unacceptable velocity.

The cause of the accident was also attributed to (1) the complexity of the autothrottles and the directory systems of the autopilot were insufficiently explained in Boeing's documentation and Asiana's aviation induction, which resultantly raised the probability of the occurrence of mode errors (Campion et al., 2016). Also, (2) there was irregular communication and coordination amongst the flight crew to explain the use of the autothrottle and the autopilot directory systems. (3) There was also insufficient training and execution of visual approach for the pilot. Additionally, (4) there was poor pilot monitoring and insufficient monitoring by the instructor pilot. Lastly, (5) the flight crew were worn out, leading to low performance.

Flight Crew Experience

One of the pilots at the control had little experience operating the Boeing 777. Lee Gang-guk had almost 10,000 hours of flight but only 43 hours on the 777. Another one had 12,390 hours of flight and 3,220 on 777. Later, Lee Jeong-min assisted Lee Gang-guk in adapting to 777. The pilot did not have enough manual flying techniques.

History Of Flight

Asiana Airlines started on 17th February 1988 with its headquarters in South Korea. By April 2013, it had 80 aeroplanes (Chow, Yortsos, & Meshkati, 2014). Asiana Airlines flies through 12 cities via 14 domestic air routes, 24 countries, and 73 cities using 93 international routes. By August 2013, it had 10,381 employees. It served 15 million people in a year.

Accident Sequence

Flight 214 left Incheon Airport at 0504, which was 34 minutes after the arranged time. It was scheduled to land at San Francisco Airport at 1104. At around 1121, the airline 214 was cleared for a visual approach to the runway. The crew was advised to sustain a speed of 180 knots up to the time that the craft was 8 km from the runway. At 1127, the controller approved the airliner's clearance to the land, which was 1.5 miles away. The weather was conducive, with clear visibility, no wind shear, or precipitation.

The crash occurred at 1127 hours on 6th July. Eight seconds before the impact, a call was made at the cockpit to increase the speed of the airliner 214, flying at 112 knots, 125 feet above the surface. After 5 seconds, the engines had 50% power. Just 1.5 seconds before the fatal impacts, there was no distress call to ask for flight control to cancel the landing. It was reported that the pilot had advised the crew to go around, but they did not.

At 1128, the craft crashed at 28L's threshold after the landing gear and the tail clipped the seawall. The engines and the tail unit are wet and separate from the craft. The major landing gear and the front parts of the airliner, which hit the seawall, separated in a mysterious way as though intended to guard the wing fuel tank. The stabilizers chop down on the runway. At 1130, emergency slides went to the scene.

The Flight Crew Performance And Situational Stress

The flight crew executed a hard landing, which lacked actual landing strips. The craft should not have travelled below the landing velocity, and it should not have flown that low while approaching the threshold. According to the Safety Board report, the flight crew mismanaged the plane's vertical scaling of the visual approach. The low airspeed and path conditions could not accomplish the go-around, which was the most viable remedy. There was a crisis in communication and coordination among the flight crew. The crew was insufficiently monitoring the airspeed, which was a result of either a lot of workloads, fatigue, or automation reliance.

Due to the complexity of Boeing 777, there was inadequate training and documentation, the pilot had no idea how autopilot flight director system and auto throttle are used which made him deactivate the controls. The pilot's monitoring of a pilot trainee in operational service should not take such long flights as they did with an 11-hour journey.

Safety Recommendations

The airliners should adhere to the Standard Operating Procedures (SOP) concerning callouts and selections of control panels (Krause, 2003). The pilot did not adhere to the call-out when he deactivated the controls.

The designers of the aircraft should offer maximum training and familiarization to avoid complexities and misunderstandings. The aviation training should minimize errors and boost adaptations to systems.

Pilots should be exposed to more manual flights to boost their confidence. If the pilots had been provided with more chances to operate manual Boeing 777, they would have engaged pitch trims, noted the decreasing velocity, and engaged corrective remedies to add power.

References

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