Ready for takeoff
Ready for takeoff

Boeing 737NG

16. Mai 2017
Ready for takeoff

Airbus A320
Ready for takeoff

Amalia Moser

16. Mai 2017

Airbus A380
Der Mensch
Behind the numbers

The fourth and latest generation of aircraft is characterized by Fly-By-Wire technology that allowed the introduction of flight envelope protection.

The previous generation was characterized by the introduction of Glass Cockpits that came with Navigation Displays and Flight Management Systems.

Evolution of the 10 year moving average accident rate for the last three aircraft generations

The introduction of the latest generation has allowed to halve the accident rate compared to the previous one.

Yearly accident rate per million flights

The accident rate was divided by around 8 for fatal accidents, and by around 3 for hull losses.

Anzahl der Flüge und Unfälle zwischen 1959-2015

Teneriffa 27. März 1977
Crew Resource Management

Die effektive Nutzung aller zur Verfügung stehenden Ressourcen, um eine sichere und effiziente Durchführung des Fluges und/oder der Aufgabe zu gewährleisten.
“Oh, I believe in resource management all right.....
You’re the resource and I’m the management”
Redundante Basiskompetenzen
Ganzheitliches und akzeptiertes Rollenkonzept
Flexible und vernetzte Einsatzstrukturen
Hohe Wahrnehmungskompetenz
Strukturierte Entscheidung

- F Facts
- O Options
- R Risks
- D Decision
- E Execution
- C Check
Crew Resource Management

COOPERATION

LEADERSHIP

DECISION MAKING

SITUATIONAL-AWARENESS

COMMUNICATION

COMMUNICATION
Percentage of pilot errors in US commercial airline accidents before and after the introduction of CRM in 1980.

Die Fehlerkette

Gefahr

Latente Fehler

Aktive Fehler

Unfall
Positive Fehlerkultur

- Fehlerakzeptanz
- Sanktionsfreiheit
- Top-Down
- Kommunikation
- Reflexion
- Schulung
At 1530:01, the first officer stated, “got flaps out,” and, at 1530:03, stated, “two hundred fifty feet in the air.” He then stated, “hundred and seventy knots…got no power on either one? Try the other one?” The captain responded, “try the other one.” At 1530:16, the first officer stated, “hundred and fifty knots,” and, at 1530:17, stated, “got flaps two, you want more?” The captain replied, “no, let’s stay at two,” and then asked the first officer, “got any ideas?” The first officer responded, “actually not.”

At 1530:24, the GPWS issued a “terrain, terrain” warning followed by “pull up,” which repeated to the end of the CVR recording. At 1530:38 The first officer then stated, “switch?”

Radar coverage is line-of-sight from the radar antenna to the airplane. If the airplane descends low enough to have the line-of-sight obstructed by buildings or other obstructions, radar contact will be lost.

The first officer was referring to the cabin emergency notification switch, which provides a signal to the cabin crewmembers indicating that an emergency has occurred.

New York, 15. Januar 2009
New York, 15. Januar 2009
appropriate holding position in order for that to occur. ATC initially cleared the flight crew to conduct a holding pattern to the east of Singapore. Following further discussion amongst the flight crew, ATC was advised that a holding area within 30 NM (56 km) of Changi Airport was required. ATC acknowledged that requirement and directed the aircraft to a different area to the east of the airport and provided heading information to maintain the aircraft in an approximately 20 NM (37 km) long racetrack holding pattern at 7,400 ft (Figure 2). ATC also advised of reports that a number of aircraft components had been found by residents of Batam Island, Indonesia.

Figure 2: Flight path during the event
Image source: Google Earth.

Observations of the aircraft’s damage from the cabin at the time of the engine failure, the seat belt sign was on and all cabin crew and passengers were seated. Cabin crew and passengers observed damage to the aircraft’s left wing and fuel escaping from that wing. The customer service manager (CSM) and other cabin crew attempted to contact the captain at that time to report the observed damage, however, the flight crew did not respond. While the flight crew continued to process the ECAM messages and associated procedures, the second officer went into the cabin to visually assess the damage. As the second officer moved through the cabin, a passenger, who was also a pilot for the operator, brought his attention to a view of the aircraft from the vertical fin-mounted camera that was displayed on the aircraft’s in-flight entertainment system. That display showed a fuel leak from the left wing. The second officer proceeded to the main (lower) deck and observed damage to the left wing and fuel leaking from the wing. He recalled that the leak appeared to be coming from underneath the wing in the vicinity of the No. 2 engine, and that the trail was about 0.5 m wide (Figure 3). He reported that he could not see the turbine.
The flight crew was comprised of:

- the aircraft Captain, as pilot in command (PIC)
- the First Officer, acting as copilot
- a Second Officer (SO)
- a second Captain, who was undergoing training as a Check Captain (CC)
- a Supervising Check Captain (SCC), who was overseeing the training of the CC.

The flight included a route check on the PIC by the trainee CC under the supervision of the SCC. The pre-flight briefing included tracking to the east of the active Merapi volcano in Indonesia and the PIC added 2 t of fuel to allow for any manoeuvring around the volcanic area.

1 The 24-hour clock is used in this report to describe the time of day in Universal Coordinated Time (UTC), as particular events occurred.
Controlled Flight into Motivation

Amalia Moser ist aktiver Flugkapitän, Luftfahrtexperte und Wirtschaftspsychologin. Projekttweise begleitet sie Veränderungsprozesse und die Implementierung von Team- und Führungskonzepten in Unternehmen.

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