



Publication of the Final Report for FZ 981 Media Briefing Pack

***Embargoed until the publication of the Interstate Aviation Committee's Final Report
into the FZ 981 air accident***

INTRODUCTION

The Interstate Aviation Committee (IAC) has published the Final Report in relation to the FZ 981 accident. This represents the final phase of the investigation.

This document is designed for journalists to brief and explain flydubai's response to, and analysis of, the loss of flight FZ 981 now that the Final Report has been published and the findings of the investigation can be discussed.

CONTENTS

1. Media Statements for Publication..... Page 4 – 5
Media statements

2. History of the Flight..... Page 6
Summary information
Flight history

3. flydubai’s Response Since the Accident..... Page 7 – 8
Family assistance
Support to the Investigator In Charge and internal review

4. Actions taken by flydubai..... Page 9 – 11

5. Notes to Editors..... Page 12 – 13
Background information and press contact

1. Media Statements for Publication

On the publication of the Final Report, flydubai's Spokesperson made the following press statements:

Statements to be attributed to Ghaith Al Ghaith, Chief Executive Officer, flydubai

Statement of Condolence

"The loss of a loved one is devastating. Today, our first thoughts are with the passengers and crew who lost their lives on board flight FZ 981 and those who continue to grieve. Our Family Assistance Team remains available to support the families for as long as they need."

Statement on publication of the Final Report

"flydubai would like to thank the Interstate Aviation Committee (IAC) the Russian Authorities and the Accredited Representatives for their work.

During the official investigation, while observing ICAO's Annex 13 protocols, flydubai appointed a number of subject matter experts to conduct a thorough internal investigation of the factual data as well as to provide substantive responses to the Investigator In Charge.

In accidents involving Human Factors, it is important to exhaust all possible scenarios when interpreting the factual data. It is the priority of the industry to understand all possible factors contributing to such a tragic accident and ensure critical insights that can make aviation safer are shared.

flydubai acknowledges the conclusions and recommendations drawn by the IAC. We have taken our obligations seriously and have implemented additional actions above and beyond those identified in the Final Report.

As part of flydubai's ongoing commitment to improved air safety, it is our intention to share our additional learnings and insights with the industry."

Statement on Actions Taken by flydubai since the Accident

"Since the accident, our priorities have been to support the bereaved families, to conduct a thorough review of our internal processes and systems, and to support the work of the Investigator In Charge. The pursuit of safety enhancements remains central to our operations.

At the time of the accident, flydubai was fully compliant with all regulatory requirements. Following a thorough review of the Interim Report, the Draft Final Report and flydubai's own internal investigation, the airline has, in conjunction with our regulator, the General Civil Aviation Authority (GCAA) taken a number of precautionary measures prior to the publication of the Final Report.

Following the release of the Interim Report on 20 April 2016, flydubai undertook a thorough internal review of all available data in conjunction with analysis from independent and recognised subject matter experts. The airline made proactive operational enhancements to both simulator and classroom training to reinforce awareness and enhance understanding of spatial disorientation. Furthermore, flydubai made additions to the manufacturer's standard operating procedures and manuals. All pilots have been trained on these enhancements which exceed regulatory requirements.

flydubai will continue to work closely with its industry partners and the regulator to share learnings with the joint aim of enhancing air safety."

Statements to be attributed to Ghaith Al Ghaith, Chief Executive Officer, flydubai

Statement of Family Assistance

“Today, on the publication of the Final Report, our thoughts are with the passengers and our crew of flight FZ 981 and their loved ones.

At this poignant time, we would ask that they are given the time and privacy to review the report and to be able reflect on its contents.

Our Family Assistance Team remains available to support the families for as long as they need.”

Statement on Compensation

“flydubai’s aim has always been to fairly compensate those who have been impacted by the loss of loved ones following the accident involving FZ 981. We have now settled the majority of claims and it remains our priority to complete this process. We recognise this is a poignant moment for the families and our long-term care team remains available for as long as they need.”

2. HISTORY OF THE FLIGHT

Summary of Information

Date of accident: 19 March 2016
Time of accident: 00:42 (UTC: Coordinated Universal Time)
Aircraft type: Next-Generation Boeing 737-800
Aircraft registration: A6 FDN
Flight number: FZ 981
Accident site: Rostov-on-Don Airport (ROV)
Number of passengers: 55
Number of crew members: 7

FLIGHT HISTORY – REFLECTING FLYDUBAI'S INTERNAL REVIEW

- The aircraft was airworthy when it was dispatched from Dubai International with no technical faults.
- Crew were fully rested prior to the flight, they were within flight duty limitations and met all regulatory requirements.
- On the first approach to Rostov-on-Don, the crew conducted a go-around in line with Standard Operating Procedures following an audible windshear warning.
- The crew held for 2 hours at Rostov-on-Don (ROV) based on the weather reports.
- After receiving an incomplete weather report from Air Traffic Control without an active windshear warning the crew made the decision to fly a second approach.
- After observing a spike in air speed, the Captain initiated a second go-around.
- During the second go-around, the Final Report concludes that the Captain's mindset was focused on landing. This was an unconscious cognitive bias to continue with an original plan in spite of changing conditions. This behaviour is widely understood in Human Factors.
- Ambiguity in the manufacturer's operating manuals led to confusion in the type of go-around being flown. One call-out led to two distinct procedures each with a different aircraft configuration and thrust setting.
- It is possible that the Captain and the First Officer were experiencing operational tiredness at the time of the second go-around which was conducted under intense workload and in turbulent weather.
- In the later stages of the flight the Captain ran the stabiliser trim for 12 seconds. After two seconds, the aircraft experienced less than 1G. It is thought that somatogravic "pitch-up illusion" may have contributed to the Captain continuing to press the trim switch.
- During the last phase of the flight, the Captain became incapacitated.

3. FLYDUBAI'S RESPONSE SINCE THE ACCIDENT

FAMILY ASSISTANCE

Approach and Continued Support

Immediate Response

Within the first hour following the accident, flydubai established an emergency call centre for families requiring assistance and within the first eight hours a team of flydubai staff departed to support the effort at Rostov-on-Don. This was supplemented by additional teams of Russian-speaking staff. These trained Family Assistance Team members established a Family Assistance Centre to support grieving families. It remained open until 03 June 2016 and was closed in concurrence with the Rostov Governor's office following the completion of the repatriation of loved ones.

Long-Term Commitment

A Long-Term Family Assistance Centre was established ten days after the accident to support the families for their long-term needs. This team continues to remain available 24 hours a day by telephone or via email. A dedicated website for the families was set up during the first week following the accident to share important information and this continues to be used by the families.

The role of the Family Assistance team has been to support the families during the repatriation of loved ones, tracing personal effects, funerals, anniversaries, coordinating the compensation process and now with the publication of the Final Report. flydubai remains committed to supporting the families for as long as required.

Compensation

flydubai remains committed to fairly compensating all those who lost loved ones on board FZ 981. The majority of families have completed the legal process and agreed a compensation settlement. The details of each settlement is a private matter between flydubai and the family.

SUPPORT TO THE INVESTIGATOR IN CHARGE AND INTERNAL REVIEW

Approach

Immediately following the accident, flydubai established a team of dedicated personnel to support the Investigator In Charge and to conduct an internal review. The objectives of this group have been to:

- appoint external subject matter experts and world leading specialists
- provide timely and accurate information to the regulator and Investigator In Charge
- proactively and transparently support the investigation
- communicate updates to the airline's staff, observing ICAO's Annex 13 protocols
- analyse and provide substantive responses to the Investigator In Charge following the publication of the Interim Report on 20 April 2016
- provide scientific and evidence-based responses to the Investigator In Charge
- conduct a thorough internal review with the use of Tripod Beta analysis (a state-of-the-art Air Accident Investigator's tool)
- oversee implementation of report recommendations

Internal Response Team

- Appointed a Director of Internal Investigation for FZ 981
- Up to 30 people working simultaneously dedicating over 25,000 person-hours to support the investigation
- Appointed experts:
 - Somatogravic Illusion: Dr. David Newman
 - Tripod Beta analysis: Prof. Dimitrios Soukeras

4. ACTIONS TAKEN BY FLYDUBAI FOLLOWING THE RECOMMENDATIONS IN THE INTERIM REPORT AND ITS INTERNAL INVESTIGATION TO ENHANCE SAFETY

flydubai immediately and proactively analysed available data including the safety recommendations in the Interim Report which were published on 20 April 2016 alongside data from its internal review. flydubai took proactive safety actions in concurrence with its regulator, the General Civil Aviation Authority (GCAA).

- flydubai has continuously communicated with all staff (including flight and maintenance personnel) in line with the principles as outlined in ICAO's Annex 13.
- Based on the Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile (BEA) Airplane State Awareness during Go-Around (ASAGA) Study, flydubai has produced a training document to simplify the management of the go-around execution and configuration. Furthermore, the following Human Factors areas are addressed; raising pilot awareness about illusion and providing guidance and information on how to overcome these threats.
- Spatial disorientation awareness training for all pilots. This training includes information on the types of spatial disorientation and the likely conditions conducive to the development of these illusions. The training also considers illusions by phase of flight (take-off, approach, go-around, landing) and discusses techniques for the recognition and appropriate management of spatial disorientation.
- Go-around training (single and two-engine) has formed part of initial and recurrent training since the airline started in 2009. flydubai's go-around training exceeded and continues to exceed regulatory requirements. Training has been further enhanced and as a result of the analytical study by the BEA on ASAGA led to the addition of two engine go-arounds at predetermined altitudes and weights. These enhancements were documented and implemented effective May 2016, initially with Low Visibility Initial Training, and from June 2016 in Zero Flight Time Training. All pilots are being trained on these enhanced procedures during recurrent training, effective from March 2017.

flydubai's pilots have been trained in upset recovery since June 2012 (although this was not a mandatory regulated requirement at the time of the accident) and this was enhanced with the new GCAA Upset Prevention and Recovery Training (UPRT) Notice of Proposed Amendment (NPA), which became a regulation effective from September 2017. This includes two-engine go-arounds from various stages during the approach and at different weights. These enhancements were documented and implemented effective from June 2016, initially in Zero Flight Time Training, and later with UPRT training in September 2016.

- flydubai provides Full Flight Simulator (FFS) Training for all its pilots and the programme exceeds current regulations. The simulator recurrent training includes go-around training (single and two-engine) in various conditions and scenarios; these include windshear, system failures, weather below minima and ATC (Air Traffic Control) request. Based upon the analysis of the BEA's ASAGA Study and the new GCAA UPRT NPA, simulator training has been enhanced to include two engine go-arounds at different altitudes and weights.

The UPRT training was introduced in September 2016 (ahead of regulatory requirement) with all pilots having received the enhanced recurrent simulator training from March 2017.

UPRT was enhanced following the ICAO recommendations issued November 2014 (implementation deadline of 2019) and the EASA recommendations issued 01 September 2015 (implementation date April 2018). Under the GCAA NPA which became regulation effective from September 2017, flydubai adopted the proposed amendment in September 2016.

- In September 2016, all of flydubai's instructors were trained to teach UPRT.
- CRM has been an integral part of Initial and Recurrent Training since the start of the airline in 2009. It

is enhanced on an annual basis with a rolling three-year syllabus in line with the regulator and industry best practice. In the latest enhancement in February 2017, high workload and unusual conditions are covered in the initial and command upgrade syllabus and recurrently trained through case studies.

- Effective from March 2017, visual scan training has been enhanced in flydubai's simulator recurrent training. These enhancements are based on the BEA's ASAGA recommendations.
- The existing procedure for Go-Around and Missed Approach briefing was enhanced with emphasis on workload management, task prioritisation (flight path control, configuration changes, navigation and ATC communication), initial target N1 setting, roles of the Pilot Flying and Pilot Monitoring and strategies to direct intervention in case of significant flight path deviation. This enhancement became an official procedure in August 2017.

Based on the recommendations in the BEA's ASAGA study, Airplane State Awareness (ASA) and Joint Safety Analysis Team (JSAT) this enhancement became an official procedure in August 2017. Furthermore, initial and recurrent training has been enhanced to take into consideration these recommendations. Furthermore, additional thrust management guidance for Go-Around Procedures was implemented in February 2018.

- Procedures (Standard Callout Changes for the Enhanced Missed Approach Procedure): The standard call-outs have been modified to accurately reflect the go-around procedure. These were implemented in August 2017.
- Procedures (Standard Callout Amendment for Windshear and Enhanced Go-Around Procedure): A new standard callout has been introduced to distinguish a Windshear Escape Manoeuvre from a normal go-around. The enhanced windshear call-out was implemented in July 2017.

DEFINITIONS

Definition of Human Factors

Human Factors is the interaction between the crew, the aircraft and the environment.

The aviation industry recognises the importance of the interplay between these components. Systems are purposefully designed, implemented and measured through regulation, processes and procedures. These form the necessary checks and balances to protect the whole system from being compromised by the failure of any single element.

In the event of an accident, the checks and balances designed to protect the system have failed. Exploring beyond the single point of failure and examining the complex interplay between the crew, the aircraft and the environment will identify the contributory factors. Only when these factors are understood can learnings be drawn and actions taken.

Definition of Spatial Disorientation

Spatial disorientation is a term used to describe when a pilot fails to correctly sense the position, motion or attitude of the aircraft. Without visual references to counteract this situation, the individual is unable to correctly determine their orientation. Under normal circumstances, the actions to counteract disorientation would be instinctive, but in severe occurrences this sensation can be so overwhelming that it creates an illusion. This illusion compromises the individual's ability to correctly analyse the situation and take the appropriate actions.

Definition of Somatogravic Illusion

The human vestibular system does not differentiate between acceleration and gravitational forces. To maintain situational awareness during periods of acceleration, the human body requires visual sensory input.

Where there is a lack of visual reference the vestibular system can provide misleading sensations and, in severe cases, illusionary effects. One such illusion is Somatogravic Illusion, where the individual perceives acceleration as vertical movement. For example, if an individual was driving in a tunnel where there is no indication of a natural horizon and the vehicle was constantly accelerating the driver could start to believe that they are driving up hill even though the road is perfectly level. This will affect individuals differently, at different times, based on their susceptibility and their tolerance to the illusion.

For pilots this can be specifically prevalent during take-off and go-around where there are periods of constant linear acceleration. If a pilot is susceptible, this may cause them to believe that the aircraft is climbing at a higher angle than indicated by the instruments.

Often the sensation can be momentary and the pilot will regain situational awareness from external visual cues or by following their instruments. Under severe occurrences, with few visual cues, the sensation can be so strong that a pilot no longer interprets their instruments and can succumb to the illusion. The pilot's perception of the aircraft pitching up persists and results in the instinctive action to push forward on the control column to counter the sensation. This reduces the rate of climb to the point where the aircraft may start descending. The intuitive corrective measures taken by the pilot amplify the illusion as the linear acceleration continues. The conditions conducive to the creation of the illusion more often occur during take-off or go-arounds.

5. NOTES TO EDITORS

Online pressroom

For all our latest news, please visit the flydubai Newsroom: news.flydubai.com

Press office contacts

Email: news@flydubai.com

Tel: +971 55 517 4642

About flydubai

From its home in Dubai, flydubai has created a network of more than 90 destinations and over the next decade the airline will see its fleet grow by up to 236 aircraft. Since commencing operations in June 2009, flydubai has been committed to removing barriers to travel, creating free flows of trade and tourism and enhancing connectivity between different cultures across its ever-expanding network.

flydubai has marked its journey with a number of milestones that represent the scale of the ambition planned for the airline:

- **An expanding network:** Created a network of more than 90 destinations in 48 countries across Africa, Central Asia, the Caucasus, Central and South-East Europe, the GCC and the Middle East, and the Indian Subcontinent.
- **Serving underserved markets:** Opened up more than 65 new routes that did not previously have direct air links to Dubai or were not served by a UAE national carrier from Dubai.
- **An efficient single fleet-type:** 55 Boeing 737 aircraft.
- **Record-breaking orders:** Placed the largest single-aisle aircraft orders in the region at the 2013 and 2017 editions of the Dubai Airshow.
- **Enhancing connectivity:** Carried more than 75 million passengers since it began operations in 2009.

Fleet:

- 41 Next-Generation Boeing 737-800 (in operation)
- 11 Boeing 737 MAX 8 (grounded)
- 3 Boeing 737 MAX 9 (grounded)

Name and Title of flydubai's Spokesperson

Ghaith Al Ghaith, Chief Executive Officer, flydubai

Images

Spokesperson

Ghaith Al Ghaith, Chief Executive Officer, flydubai



Photograph of A6 FDN, flight FZ 981

