

**This Interim Report contains facts which have been determined up to the time of issue. It is published to inform the military chain of command, aviation industry and the public of the general circumstances of this serious incident and should be regarded as tentative and subject to alteration or correction if additional evidence becomes available.**

20140313-9Feb14\_ZZ333\_SI\_Interim\_Report-U

17 Mar 14

## **INTERIM REPORT FROM THE SERVICE INQUIRY INVESTIGATING THE INCIDENT INVOLVING VOYAGER ZZ333 ON 9 FEB 14**

**(All times UTC)**

### **Headline**

1. While the investigation into the Voyager<sup>1</sup> incident of 9 February is ongoing, the Service Inquiry Panel is now confident that the cause was not related to an aircraft technical issue but was as a result of Human Factors.

### **Introduction**

2. The incident involving Voyager ZZ333 occurred on 9 February 2014 when the aircraft suddenly pitched nose down while in the cruise at Flight Level (FL) 330 (33,000 ft). Within 27 seconds, the aircraft lost 4,440 ft in height, before the self-protection system initiated a recovery back towards controlled flight. The aircraft diverted to Incirlik Airbase in Turkey. The resulting negative g forces were sufficient for almost all of the unrestrained passengers and crew to be thrown towards the ceiling, resulting in a number of minor injuries. A team from the Military Air Accident Investigation Branch deployed to Incirlik on 11 February 2014 and DG MAA elected to convene a Service Inquiry on 12 February. This update presents the key facts determined up to the time of issue of this Interim Report. The Service Inquiry is ongoing and will publish its full findings in due course.

### **History of the Flight**

3. On Sunday 9 February 2014, the crew of ZZ333 briefed at 0925 hrs for a non-stop air transport flight from RAF Brize Norton to Camp Bastion Airfield, Afghanistan. ZZ333 taxied approx 20 minutes late with a total flight crew of 9, plus 189 passengers. The departure was delayed slightly by a transponder Electronic Centralized Aircraft Monitoring warning just prior to line-up which was quickly resolved and ZZ333 departed RAF Brize Norton for Camp Bastion at 1200 hrs.

4. Initially, the flight progressed without incident, with the exception of at least one instance of turbulence, significant enough to warrant the illumination of the seat belt signs. At 1549 hrs, with the aircraft in the cruise at FL330 and auto-pilot 1 engaged, the Co-pilot had left his seat and was in the forward galley in the vicinity of the forward left passenger door. The Captain (occupying the left-hand flight deck seat) reports that he suddenly felt a sensation of weightlessness and being

<sup>1</sup> An Airbus A330-200 derived Multi Role Tanker Transport Aircraft

restrained by his harness, accompanied by a rapid pitching down of the aircraft. He attempted to take control by pulling back on his side-stick controller and pressing the auto-pilot disconnect button but these actions were ineffective.

5. Immediately prior to the pitch-down, the Co-pilot reported feeling a sensation similar to turbulence. Other crew in the cabin reported a similar sensation, describing it as a 'jolt'. The Co-pilot then experienced weightlessness and struck the cabin roof but was able to re-enter the flight-deck through the open door. He reported a disorderly scene with audio alarms sounding and a violent shaking of the aircraft. He reached down to pull back on the side-stick control. Both pilots report hearing a *dual input* audio warning, indicating simultaneous inputs by both pilots on their respective side-sticks. As the aircraft began to recover from the dive, the Co-pilot was aware of excessive speed building and called for the thrust levers to idle which decreased the speed rapidly. The Captain took control, setting Take-off and Go-around power and subsequently re-establishing a power attitude combination for straight and level flight at FL310. The aircraft had lost 4,400 feet in 27 seconds, registering a maximum rate-of-descent of approximately 15,000 feet per minute. The aircraft was diverted to Incirlik Airbase in southern Turkey without further incident.

### **Cause**

6. The Flight Data Recorder has shown no indication of system failures which could have led the aircraft to pitch-down. Moreover, the Inquiry has found no evidence of unresolved comparable incidents across any A330 aircraft variants. Consequently, the Inquiry assesses this incident to be unique. The Flight Data Recorder and Cockpit Voice Recorder has shown that the Captain's side-stick moved at one minute and 44 seconds prior to the event (introducing a sustained, small pitch-down command of 0.8 degrees) and again at the onset of the event (introducing a sustained, fully-forward pitch-down command). The recorders have also shown that the Captain's seat moved at precisely one minute and 44 seconds prior to the event, and at the onset of the event.

7. The Panel has found evidence to link the movement of the seat to the movement of the side-stick, in the form of a Digital SLR camera obstruction which was in-front of the Captain's left arm rest and behind the base of the Captain's side-stick at the time of the event. Analysis of the camera has confirmed that it was being used in the three minutes leading up to the event. Furthermore, forensic analysis of damage to the body of the camera indicates that it experienced a significant compression against the base of the side-stick, consistent with having been jammed between the arm rest and the side-stick unit. Crew interviews have corroborated this evidence. As such, the Inquiry has confidence that the pitch-down command was the result of an inadvertent physical input to the Captain's side-stick by means of a physical obstruction (the camera) between the arm-rest and the side-stick unit. Simulations have been carried out which have re-created the scenario which has shown that it is possible for objects to become inadvertently lodged in the space between the arm rest and the side-stick, generating an identical pitch-down command to that seen during the incident. Safety advice has been issued to the RAF and to Airbus to highlight this possibility.

### **Conclusion**

8. Given the weight of evidence, the Service Inquiry is confident that the cause of the event was Human Factors. Nevertheless, the inquiry continues to pursue a standard of evidence that will allow other lines of inquiry to be closed across a range of possible causes. In accordance with its terms of reference, the Service Inquiry continues to examine other factors, such as the post-occurrence management of the event, in order to identify any relevant lessons that may enhance Air Safety.

**Director General Military Aviation Authority**