

**SERIOUS INCIDENT**

<b>Aircraft Type and Registration:</b>	Airbus A319-111, G-EZFA	
<b>No &amp; Type of Engines:</b>	2 CFM56-5B5/3 turbofan engines	
<b>Year of Manufacture:</b>	2009 (Serial no: 3788)	
<b>Date &amp; Time (UTC):</b>	16 February 2016 at 1550 hrs	
<b>Location:</b>	On departure from Bristol Airport	
<b>Type of Flight:</b>	Commercial Air Transport (Passenger)	
<b>Persons on Board:</b>	Crew - 6	Passengers - 125
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	None	
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence	
<b>Commander's Age:</b>	38 years	
<b>Commander's Flying Experience:</b>	9,333 hours (of which 5,702 were on type) Last 90 days - 141 hours Last 28 days - 52 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot and Safety Investigation Report produced by the Operator	

**Synopsis**

After lift-off, the co-pilot retracted the flap instead of the landing gear. The commander lowered the nose attitude and selected TOGA thrust but the GPWS Mode 3 aural alert ("DON'T SINK, DON'T SINK") was triggered before the aircraft recovered to climbing flight.

**History of the flight**

G-EZFA was operating a scheduled Commercial Air Transport (CAT) flight with six crew and 125 passengers on board. The commander was the Pilot Flying (PF). During the takeoff roll there was a "rattle" from the centre console and the co-pilot placed his hand on it, aft of the thrust levers, to reduce the noise. After lift-off, the commander instructed the co-pilot to raise the landing gear but the co-pilot moved the flap lever from position 1 to 0 instead. The aircraft was 46 ft above the runway.

The commander noticed the VLS indication on the PFD increase rapidly (see Note in the next section) but did not realise initially that the flaps were retracting. Seven seconds after the flap lever was moved, the commander lowered the nose attitude of the aircraft and, three seconds later, selected TOGA<sup>1</sup> thrust. The GPWS<sup>2</sup> aural alert "DON'T SINK, DON'T SINK"

**Footnote**

<sup>1</sup> TOGA: Takeoff/Go-around thrust.

<sup>2</sup> GPWS: Ground Proximity Warning System.

was triggered (by the loss of altitude after takeoff). The aircraft was flying at 194 kt and descending through 393 ft agl with a rate of descent of 1,300 fpm. Two seconds later the commander applied an aft control input with the airspeed at 205 kt and, two seconds after that, the aircraft began to climb. The flight continued to its destination without further incident.

### **Information from the operator's report**

The performance calculation conducted by the pilots determined that the departure would be flown with flaps and slats set to Config 1 + F (18° of slats and 10° of flaps) and with reduced thrust<sup>3</sup>.

#### *Flight data*

VLS (lowest selectable IAS) is computed by the Flight Augmentation Computer (FAC) and displayed on the PFD as the top of a vertical amber strip along the airspeed scale. VLS corresponds to:

- a. 1.13 times the stalling speed during takeoff.
- b. 1.28 times the stalling speed in the clean configuration.

When the flap lever was selected to position 0 the aircraft was at 46 ft agl, climbing at 1,300 fpm and 158 kt. The VLS indication on the Primary Flight Display (PFD) increased towards 197 kt, the value corresponding to flaps and slats fully retracted.

Passing through 138 ft agl, the aircraft was climbing at 1,900 fpm and 160 kt and the angle of attack increased to approximately 9.5°. The aircraft is fitted with an Alpha/Speed Lock function which inhibits slat retraction at high angles of attack (above 8.5°) and low speeds (below 148 kt). The protection is not active after the flap lever has been moved to position 0 and did not inhibit slat retraction in this case.

At 308 ft agl, the aircraft was climbing at 1,500 fpm at 167 kt and the commander began to reduce the pitch attitude from 15°. At 418 ft agl, the pitch attitude was 9°, the rate of climb had reduced to 700 fpm and the commander selected TOGA thrust. At 438 ft agl, with the pitch attitude reducing through 8°, the aircraft began to descend and the gear was selected UP. The aircraft descended and accelerated until, at 393 ft agl, the GPWS aural alert, "DON'T SINK, DON'T SINK" was triggered with a rate of descent of 1,300 fpm.

The airspeed increased above VLS with the aircraft at 378 ft agl, the commander began to raise the nose attitude and the aircraft transitioned into a climb.

#### *Aircraft stalling speed*

The operator calculated that the stalling speed was 128 kt with the aircraft configured for takeoff and 155 kt with flaps and slats retracted. The aircraft was flying at 158 kt when the

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#### **Footnote**

<sup>3</sup> In conditions where all applicable performance requirements can be met, a reduced thrust may be used for takeoff. The reduction is entered into aircraft systems using an 'assumed temperature', which Airbus terms a 'flexible' or 'FLEX' temperature.

flap was selected to position 0. At the point where the flaps had retracted fully, the aircraft was accelerating through 183 kt and descending through 440 ft agl with a rate of descent of 1,000 fpm.

#### *Human factors*

The operator classified the mis-selection of flap instead of landing gear as a type of 'action-slip' where:

*'an out-of-sequence step (the flap selection) was included in a series of routine, well-learned behaviours (takeoff procedure).'*

In regard to the rattling of the console during the takeoff run, it commented that:

*'distractions caused by interruptions, can make operators vulnerable to task interference, strong habit intrusion, or mis-ordering tasks.'*

Further:

*'action slips are hard to detect as the action itself is not under conscious control from a human information-processing perspective.'*

#### **Assessment of cause**

The operator assessed that the co-pilot had been distracted by the rattling noise during takeoff which caused him to make an 'action error' in mis-selecting the flap. The operator noted that, in a similar event<sup>4</sup>, the pilots re-selected the flap lever to position 1 and the aircraft maintained a positive climb rate and a speed above VLS. In the case of G-EZFA, however, the crew did not fully appreciate what had happened until after TOGA had been selected and, by the time they considered re-selecting flap, the aircraft was recovering to climbing flight.

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#### **Footnote**

<sup>4</sup> See report Reference EW/G2016/02/11 in AAIB Bulletin 8/2016.