

**SERIOUS INCIDENT**

<b>Aircraft Type and Registration:</b>	Airbus A319-131, G-EUPX
<b>No &amp; Type of Engines:</b>	2 International Aero Engine V2522-A5 turbofan engines
<b>Year of Manufacture:</b>	2001 (Serial no: 1445)
<b>Date &amp; Time (UTC):</b>	25 April 2012 at 1113 hrs
<b>Location:</b>	Runway 09L, London Heathrow Airport
<b>Type of Flight:</b>	Commercial Air Transport (Passenger)
<b>Persons on Board:</b>	Crew - 5                      Passengers - 112
<b>Injuries:</b>	Crew - None                      Passengers - None
<b>Nature of Damage:</b>	Tyres scuffed
<b>Commander's Licence:</b>	Airline Transport Pilot's Licence
<b>Commander's Age:</b>	52 years
<b>Commander's Flying Experience:</b>	7,700 hours (of which 5,000 were on type) Last 90 days - 150 hours Last 28 days - 34 hours
<b>Information Source:</b>	AAIB Field Investigation

**Synopsis**

During the landing roll, as the Autobrake was disengaged, the aircraft veered towards the right edge of the runway. Control was subsequently regained and the aircraft was taxied onto stand without further incident. The pilot flying had depressed the brake pedals asymmetrically to disengage the Autobrake.

**History of the flight**

The aircraft was on a scheduled flight from Berlin Tegel Airport, Germany to London Heathrow Airport. The commander was the pilot flying the sector.

After an uneventful flight, the aircraft was established on the ILS for a landing on Runway 09L at Heathrow with Autobrake LO selected for the landing. The commander

disconnected the autopilot at about 420 ft aal, having received clearance to land from ATC. The runway surface was damp and the surface wind transmitted by ATC was from 170° at 21 kt.

During the touchdown the commander removed the drift by applying left rudder, flared the aircraft and touched down "positively, but not firmly." The co-pilot then selected the thrust reversers and made the standard rollout calls. During the landing roll, with IDLE reverse, the aircraft decelerated on the runway centreline. Believing it would be better to vacate the runway at the second available rapid exit turnoff the commander "relaxed a little" and disengaged the Autobrake with the brake pedals; at this point the aircraft was travelling at

a speed of about 100 kt. The commander reported that he momentarily glanced inside, possibly to check the spoilers had deployed. Then, he looked up, the aircraft was diverging to the right and heading toward the edge of the runway. To correct this, he initially applied both brake pedals simultaneously, followed by full left brake pedal and left rudder which brought the aircraft back towards the runway centreline. The co-pilot also applied left brake pedal at the same time.

Having regained the runway centreline, the aircraft was taxied off the runway and stopped on the taxiway. The pilots then checked the aircraft's systems and found them to be serviceable. The aircraft was then taxied onto stand without incident.

## Engineering

### *Overview of the braking system*

Each main wheel is fitted with a hydraulically powered, multi-disk brake unit that can be operated by either of two independent brake systems. Each pilot position is fitted with foot-operated brakes that are integral to the rudder pedals. These enable either pilot to operate the brakes; the brake units on the left and right main gear can be operated differentially if required.

When selected, an Autobrake function will automatically apply the brakes, once certain conditions are met, to achieve the deceleration chosen by the crew (LO, MED or MAX). The Autobrake system can be disengaged if a pilot applies sufficient deflection to at least one brake pedal. On this aircraft and with the Autobrake setting selected, a deflection of 50.3% is required on a single pedal or deflection of 11.03% on both pedals to disengage the Autobrake.

The antiskid system provides maximum braking by preventing individual wheels from skidding. The anti-skid function is deactivated below a ground speed of 20 kt.

All braking (and steering) functions are controlled through a two-channel Brake and Steering Control Unit (BSCU).

### *Examination of the aircraft*

The tread of all four mainwheel tyres had signs of lateral scratch marks consistent with the deviation; these were most prevalent on the outer edge of the outboard tyre of the left main gear, as would be expected. An extensive examination and test of the brake system was conducted and no faults were identified. As a precautionary measure, the operator decided to replace all the wheel and tyre assemblies, brake units and the BSCU. The aircraft was returned to service and no further incidents have been reported.

### **Autobrake disengagement guidance**

The aircraft manufacturer commented that there is no guidance as to when to disengage the Autobrake after landing, as it is dependent on the circumstances at the time.

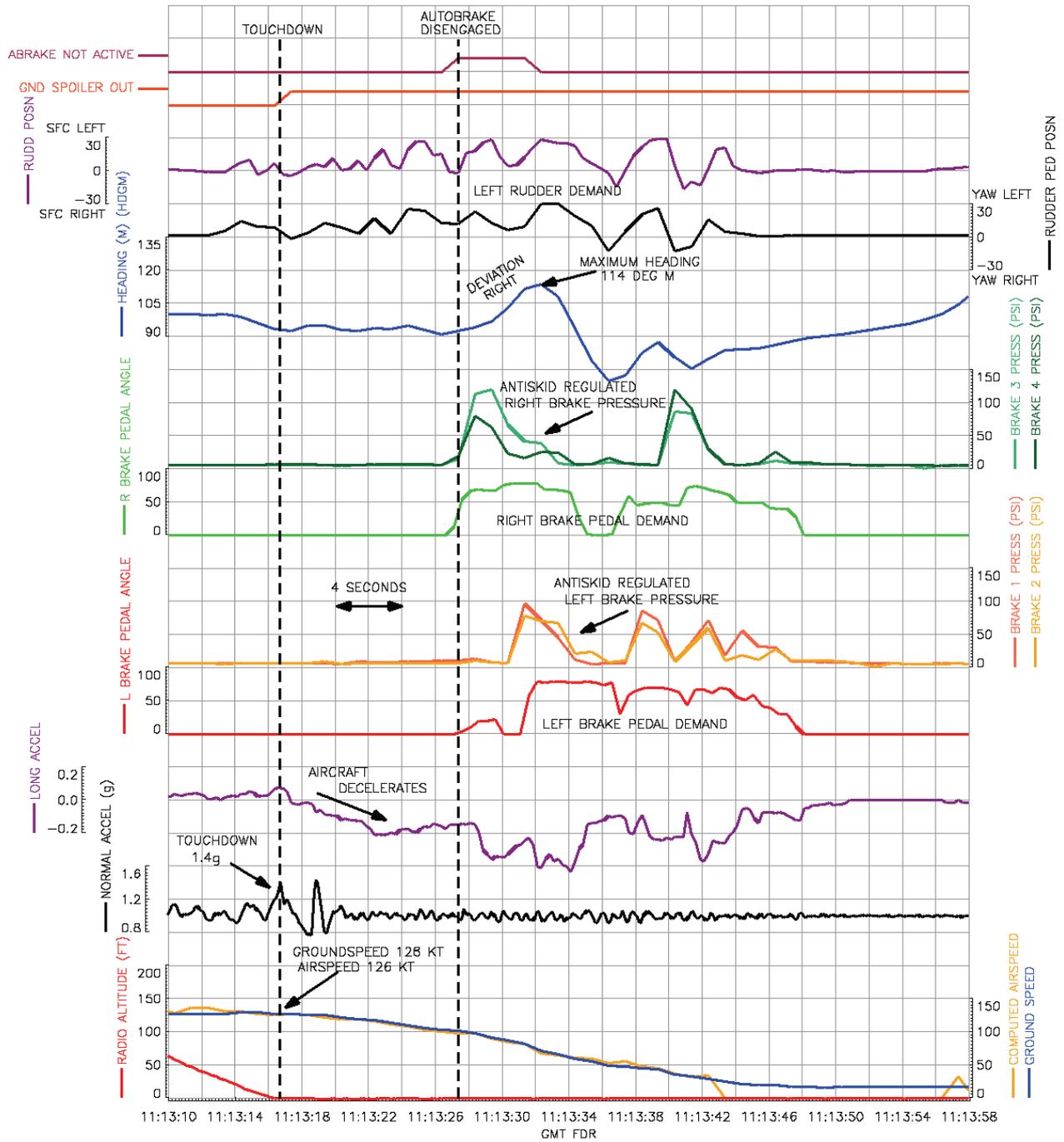
The operator's procedures state that the Autobrake should be disengaged before the aircraft's speed has reduced to 20 kt:

*'to avoid some brake jerks at low speed.'*

### **Recorded Information**

The aircraft was fitted with a solid state Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). In addition, data from the operator's Flight Data Monitoring (FDM) system was recovered.

Aircraft touchdown was recorded at a normal acceleration of 1.4g, computed airspeed of 126 kt and groundspeed of 128 kt (Figure 1). Approximately 10 seconds after touchdown, the CVR recorded one



**Figure 1**  
G-EUPX FDR and FDM data

of the flight crew announce ‘DECEL’, signifying that deceleration has been felt by the crew and has been confirmed by a speed trend on the primary flight display. The Autobrake system did not apply any brake pressure to achieve this as the effect of the aerodynamic braking and engine reverse thrust was sufficient.

Just after ‘DECEL’ was announced, the FDR recorded deflection of both brake pedals but significantly more on the right pedal, which disengaged the Autobrake. An increase in brake pressure on both right main landing gear brakes (brakes 3 and 4) was recorded, although the antiskid system limited the pressure to prevent the wheels

from skidding. Four and a half seconds after the right pedal was depressed, the left brake pedal was applied along with left rudder, which slowed the yaw rate and returned the aircraft back to the runway centreline.

### **Operator's comments**

During a simulator assessment after the incident, the commander demonstrated (under the same environmental conditions) a tendency towards inadvertently applying more pressure on the right brake pedal when disengaging the Autobrake. He has undertaken subsequent simulator training to correct this and has now returned to line flying.

The operator will be highlighting the incident in a newsletter which is available to all their flight crews. Attention will be drawn to the potential difficulty of disengaging the Autobrakes at high speed in crosswind conditions.

### **Conclusion**

The aircraft veered to the right during the landing roll, following the asymmetric application of the brake pedals when the Autobrake was disengaged. No faults were found with the aircraft braking system.