

INCIDENT

Aircraft Type and Registration:	Airbus A319-131, G-DBCI
Serial No:	2720
No & Type of Engines:	2 International Aero Engine V2522-A5 turbofan engines
Year of Manufacture:	2006
Date & Time (UTC):	24 January 2007 at 1208 hrs
Location:	Leeds Bradford Airport
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 5 Passengers - 53
Injuries:	Crew - None Passengers - None
Nature of Damage:	Damage to all main landing gear tyres
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	49 years
Commander's Flying Experience:	9,500 hours (of which 950 were on type) Last 90 days - 147 hours Last 28 days - 41 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot, investigation reports produced by the operator and AAIB follow-up enquiries

Synopsis

On approach to Leeds Bradford Airport (LBA), the commander inadvertently selected the parking brake to ON after the first officer had called for full flap. As a result of a previous landing by the commander at LBA, in difficult weather conditions, his attention was focused upon the numerous ATC wind advisory messages transmitted during the approach. One of these messages coincided with the first officer request for full flap. When the first officer realised that the flaps had not been deployed to full, he called again for their selection, to which the commander responded correctly.

The application of the parking brake was not detected prior to touchdown. All four main landing gear tyres deflated on landing.

History of the flight

The aircraft was inbound to LBA from London Heathrow Airport and broke cloud at a height of approximately 3,000 ft in a snow shower. During the approach, ATC transmitted five advisory wind reports and, at approximately 1,300 ft, the first officer, who was the Pilot Flying (PF), requested full flap.

Coincidentally, ATC transmitted a further wind check and this was acknowledged by the commander¹. A few seconds later, the first officer noticed that the ECAM (Electronic Aircraft Central Monitoring) still indicated FLAP 3 and repeated his request. The commander then selected full flap and the landing checklist was completed. Immediately after touchdown, the flight crew noted that the brakes appeared to take effect immediately with a greater deceleration than normal. The commander noticed that the AUTOBRAKE blue caption remained illuminated, but with no DECEL indication. The first officer then ‘dabbed’ the brakes in an attempt to disengage the autobrake, but this had no effect. The aircraft came to a halt on the runway, slightly left of the centreline. After coming to a halt the commander requested the first officer to apply the parking brake but the first officer found it already set. Initially, the flight crew had believed that only one tyre had deflated but, when the AFS attended the aircraft, they were informed that all four main wheel tyres had, in fact, deflated. Neither pilot reported any abnormal noises during the landing.

After assessing the situation, the passengers were disembarked through the normal exits and taken by coach to the terminal.

Investigation

The parking brake handle and flap selection lever are located on the aft section of the centre pedestal between the pilots’ seats, Figure 1, and are of different shapes. The flap lever is moved fore and aft through the various flap position ‘gates’ whilst the parking brake

is selected by grasping the parking brake handle and rotating it clockwise. Despite these controls being of different shapes, requiring different methods of activation, their shapes allow both to be grasped in a similar manner prior to selection. An inspection of the aircraft’s flight deck showed that the identifying placard was missing from the parking brake selector.

The operator’s Standard Operating Procedures (SOPs) state that:

‘when the configuration of an aircraft is changed, positions of the surfaces should be monitored to confirm that the change has been accomplished.’

The SOP for the pre-landing checks require the flight crew to confirm that no checklist items remain outstanding; any such items appear in the lower left quadrant of the ECAM display. There is no requirement to check the lower right quadrant of the display for caution or advisory messages. Should the parking brake be selected in-flight, an amber PARK



Figure 1

Parking brake and flap selectors on an A320

Footnote

¹ The ATIS for LBA at the time was recorded as: Info. ‘F’, Runway 32, 01014KT 340V050 9999 FEW007 SCT013 03/01 Q1014.

BRK caution is generated in the lower right quadrant of the ECAM display, Figure 2.

This caution is classified by the manufacturer as a ‘Level 1’ caution and, therefore, the master caution light does not illuminate and the audible ‘attention getter’ tone does not sound. The aircraft was fitted with a pre-‘H2F3’ standard Flight Warning Computer (FWC). In these circumstances, in an aircraft fitted with the ‘H2F3’ standard FWC, the master caution light will illuminate and the ‘attention getter’ tone is generated; in addition, the following landing checklist item appears on the ECAM screen:

*‘BRAKES PRK BRK ON
-PARK BRK.....OFF’*

During an investigation carried out by the operator into this event, the commander stated that he had been involved in a previous landing at Leeds Bradford in difficult wind conditions, which resulted in the use of a significant proportion of the runway length, due to a tailwind. He also acknowledged that he had no recollection of his action taken in response to the first officer’s first request for full flap. The aircraft manufacturer has confirmed that there have been five similar events worldwide.

Additional information

During the operator’s investigation into this event, they were advised on the issues of Crew Resource Management (CRM) and Human Factors, by a Psychologist. The following is an extract from that report, reproduced with the agreement of the operator.

‘It is possible that the commander was temporarily fixated on the environmental conditions exacerbated by the perception that



Figure 2

ECAM Display with parking brake selected

these could lead to the repetition of a previously experienced unpleasant event.

This fixation and the requirement to complete simultaneous tasks could have resulted in a narrowing his focus of attention and an inability to complete both using conscious thought processes.

Hence the task of flap selection may have been relegated to a sub-conscious and thus un-monitored motor action.

In this case a regularly used, but inappropriate motor action was transposed with the correct one.

Although it may appear that the SOP for configuration change and the subsequent check following surface travel was not followed correctly, the commander was unaware that he had commenced the process and so would not have consciously checked for process completion.

It was therefore extremely unlikely to have been a case of conscious failure to follow SOPs.

The above would explain the incorrect action taken, the inability to remember task completion and omitting to trap the error at the selection stage or thereafter.

As humans are generally susceptible to this type of fallibility, it is important to have robust procedures in place that trail the error after it has been made, but before it leads to an incident, thus breaking the error chain.'

Analysis

The large number of wind advisory reports transmitted by ATC, coupled with the commander's experience of landing with a tailwind at LBA, may have led him to become temporarily fixated on the changing environmental conditions during the later stages of the approach. The transmission, and acknowledgement, of the final wind advisory report, at the same moment as the first officer requested full flap, probably caused the commander to make a subconscious control selection. This is supported by his lack of recollection of the event. The ability to grasp the parking brake handle in a similar manner to the flap selector may also have prevented the commander from obtaining initial tactile feedback that the wrong control had been selected. The fact that these actions appeared to have been made subconsciously would most likely have prevented the triggering of the requirement to confirm that the correct configuration had been achieved after selection. Given the nature of the control selection, the lack of a placard on the parking brake handle is not thought to have contributed to the incident.

The standard of FWC fitted to the aircraft did not trigger the illumination of the master caution light

and an aural alert, which could have drawn the crew's attention to the inadvertent selection. The SOP's in force at the time of the incident did not direct the flight crew to check for messages in the lower right quadrant of the ECAM screen and, given the high cockpit workload during the later stages of the approach, it is possible that any such messages could be easily overlooked.

Conclusions

In the later stages of the approach, the commander inadvertently set the parking brake, instead of the flaps to FULL. He was probably focused on changing weather conditions, because of a previous difficult landing at LBA as well as the numerous wind advisory calls from ATC, the last of which was coincident with the co-pilot's initial request for full flap.

The FWC fitted to the aircraft generated an advisory message on the ECAM display but did not produce any additional 'attention getters'. Had the later standard been fitted, both aural and visual cues would have been produced by the selection of the parking brake, together with the generation of an open checklist item on the ECAM screen. The pre-landing checks in use at the time of the incident required that the crew confirm that there were no open checklist items; it did not require crews to check for advisory messages.

Safety action

As a result of this event, the operator has made changes to its SOP's to incorporate a pre-landing check of the lower right quadrant of the ECAM screen for advisory and caution messages.