

AIRCRAFT ACCIDENT REPORT No 4/93

This report was published on 27 August 1993 and is available from HMSO Bookshops and accredited agents

REPORT ON THE INCIDENT TO BRITISH AEROSPACE 146-300, G-UKHP, AT ABERDEEN AIRPORT, DYCE, SCOTLAND, ON 31 MARCH 1992

The incident occurred when the aircraft, which was on a scheduled passenger flight from Edinburgh to Aberdeen, overran runway 34 whilst landing in heavy rain and strong crosswind conditions. The lift spoilers were not deployed and the aircraft brakes produced insufficient retardation to stop the aircraft on the wet runway surface. The passengers, who disembarked some time after the event, sustained no injuries. The aircraft suffered mud contamination of its wheels, brakes and engines.

The investigation identified the following causal factors:

- (i) The commander omitted to select lift spoilers as a result of his pre-occupation in controlling the aircraft's attitude following the initial touchdown in strong crosswind conditions.
- (ii) The consequences of lift spoiler non-deployment after touchdown were that the aerodynamic drag was not increased, and wing lift was not shed to transfer the aircraft's weight to the mainwheels, resulting in markedly reduced braking effectiveness on the wet runway.
- (iii) The oversight was not identified by the first officer, who was required to make a spoiler deployed confirmation call, but who instead warned the commander of the need to keep the right wing from rising in the gusting crosswind conditions.
- (iv) The failure of the spoiler not deployed warning lights to illuminate resulted in the crew not being alerted to their error.
- (v) Although difficulties encountered during the landing in strong crosswind conditions delayed the commander's application of wheelbrakes on the wet runway until the aircraft had travelled some 550 metres beyond the normal touchdown point, this delay only became a factor in the incident when compounded by the related events.
- (vi) When it became apparent to the commander that normal deceleration was not being achieved, he still did not associate this with lack of lift spoiler deployment but instead assumed, incorrectly, that a braking system malfunction had occurred.

- (vii) On changing over to the alternate braking system the commander momentarily released brake pedal pressure, which further reduced the aircraft's deceleration.
- (viii) During the latter stages of the overrun the aircraft's deceleration reduced, probably as a result of the wet conditions on the heavy rubber deposits within the touchdown zone of the reciprocal runway.

Six Safety Recommendations were made during the course of the investigation:

- 1 British Aerospace should include, in the BAe 146 aircraft Manufacturer's Operating Manual normal handling section, a warning to crews emphasising the effects that spoilers and their non-deployment can have on landing performance.
[Safety Recommendation 93-8, made July 1993]
- 2 Air UK should expand its Operations Manual entry relating to normal approach and landing techniques to include the additional technique that can be used in very gusty conditions which is detailed in the Manufacturer's Training Manual for the BAe 146 aircraft.
[Safety Recommendation 93-9, made July 1993]
- 3 The CAA should examine methods whereby flight crews of BAe 146 aircraft may more fully appreciate the performance penalties and handling differences that exist when spoiler system malfunctions occur during the landing phase and with limiting runway situations.
[Safety Recommendation 93-3, made July 1993]
- 4 In view of the marked effect of lift spoiler non-deployment upon the runway braking performance of the BAe 146 aircraft, the CAA should require the mandatory embodiment of BAe modification HCM00913 on all BAe 146 aircraft not so equipped in order to provide flight crew with warnings of lift spoiler non-deployment on landing.
[Safety Recommendation 92-46, made 23 November 1992]
- 5 In view of the importance of lift spoiler deployment to the runway braking performance of the BAe 146 aircraft, the CAA should require the manufacturer of the BAe 146 aircraft to introduce a pre-flight test procedure into the Operations Manual to enable flight crew to check the serviceability of the lift spoiler warning lights and associated driving circuits, before each flight.
[Safety Recommendation 92-49, made 23 November 1992]
- 6 The manufacturer of the BAe 146 aircraft should reconsider the time delays which are currently a feature of the lift spoiler non-deployment warning system, with a view to providing associated flight crews with the earliest cue for lift spoiler deployment, following achievement of the required weight-on-wheels configuration on landing.
[Safety Recommendation 93-4, made March 1993]