INCIDENT

Aircraft Type and Registration:	Boeing 757-225, G-OOOM	
No & Type of Engines:	2 Rolls-Royce RB211-535E4 turbofan engines	
Year of Manufacture:	1986	
Date & Time (UTC):	13 October 1995 at approximately 1250 hrs	
Location:	On approach to Birmingham Airport	
Type of Flight:	Public Transport	
Persons on Board:	Crew - 9	Passengers - 233
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Loss of fairing panel on right-hand side of fuselage	
Commander's Licence:	Not known	
Commander's Age:	Not known	
Commander's Flying Experience:	Not known Last 90 days - N/A Last 28 days - N/A	
Information Source:	AAIB Field Investigation	

When the flaps were selected to 30° whilst on the approach to Birmingham Airport, the flight deck and cabin crew noticed a significant shuddering and vibration. This was accompanied by a marked uncommanded roll to the right. The landing was uneventful, and after the aircraft was parked on its stand, a section of a fairing panel approximately 1 metre square was found to be missing from the right-hand side of the fuselage, close to the wing trailing edge. The only part of the panel that had remained was a narrow strip which included the fasteners along the bottom edge. The detached portion was never recovered.

The panel, which was of composite construction, was identified as 196BR, as shown on the appended diagram. It was attached to the structure (typically 'T' section flanges) by means of screw type fasteners which located into floating nut-plates, or anchor nuts. The upper portion of the 'T' flange under the panel trailing edge had been torn off, which had caused damage to the leading edge of the panel located immediately aft. The section of the affected panel that had remained with the aircraft bore no evidence of disbonding, moisture ingress or any other visible material defect. It was despatched to

the aircraft manufacturer for laboratory analysis. Any pertinent results will be published in a future AAIB Bulletin Addendum.

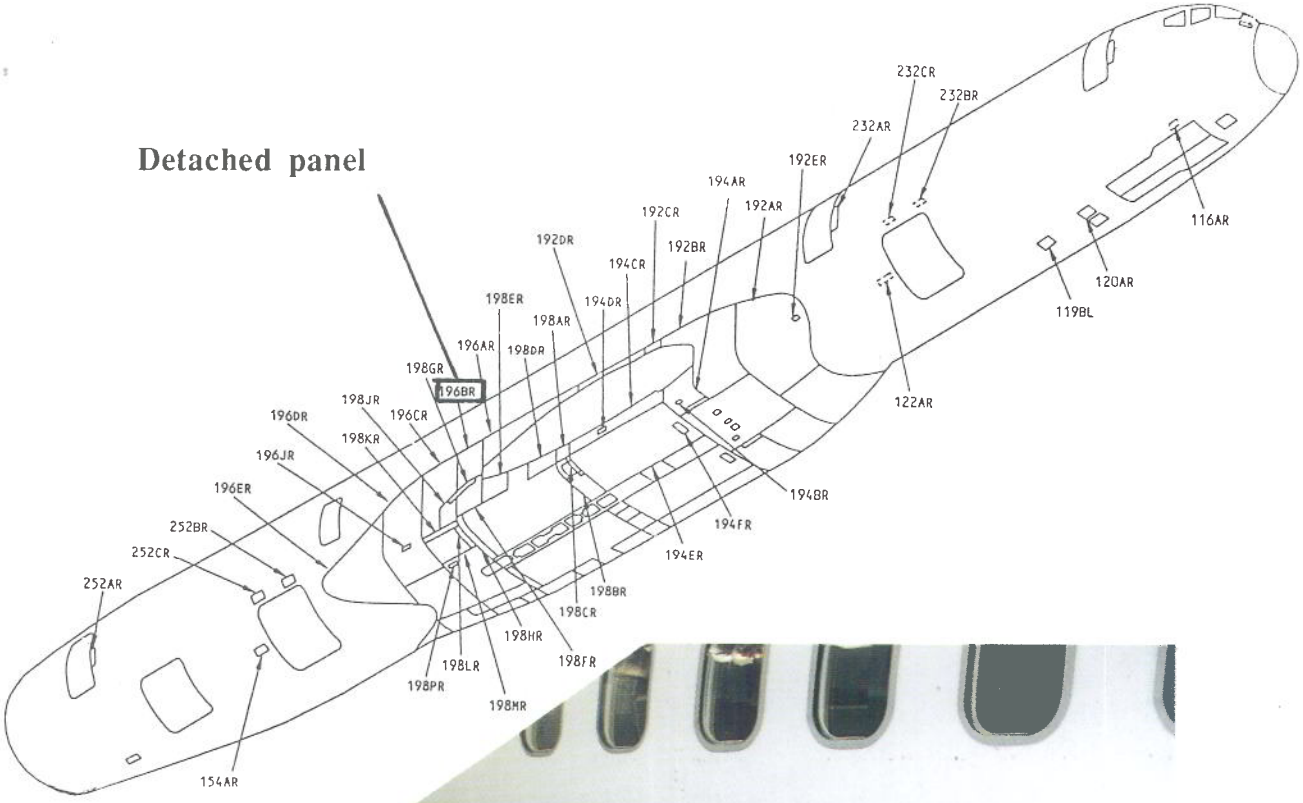
Following the incident, a maintenance organisation was contracted to fabricate a temporary panel out of sheet alloy. Due to pressure to return the aircraft to service, there was no organised documentation of evidence prior to repair. However, personnel did recall that one or two fasteners from the leading edge may have been missing. The fact that most were still in position suggested that the panel had departed by means of the fastener heads pulling through the holes in the panel.

A Boeing Service Letter, No 757-SL-53-012-A, dated December 1993, applies to this panel, and its opposite number on the left side of the fuselage. The letter was issued following an operator report of a loss of a panel, and was raised to issue 'B' in September 1994 after another operator reported a similar loss. The purpose of the Service Letter was to advise operators of the possibility that the nut plates would not meet the specified 'run down' and 'breakaway' torque requirements. Metallurgical examination had determined that circumferential cracking could occur in the last one or two threads at the exit end of the nuts, leading to the loss of locking torque capability, and in consequence, the fasteners becoming loose. The Service Letter required a one-time inspection to check that the run down torque (ie the torque required to rotate the fastener prior to the head bedding down on the panel) was between 2 and 18 inch-pounds, and that the final installation torque was between 25 and 35 inch-pounds. This check was conducted on G-OOOM in May 1994, since when the aircraft accumulated in excess of 5,900 hours and 2,000 flight cycles up to the time of the incident.

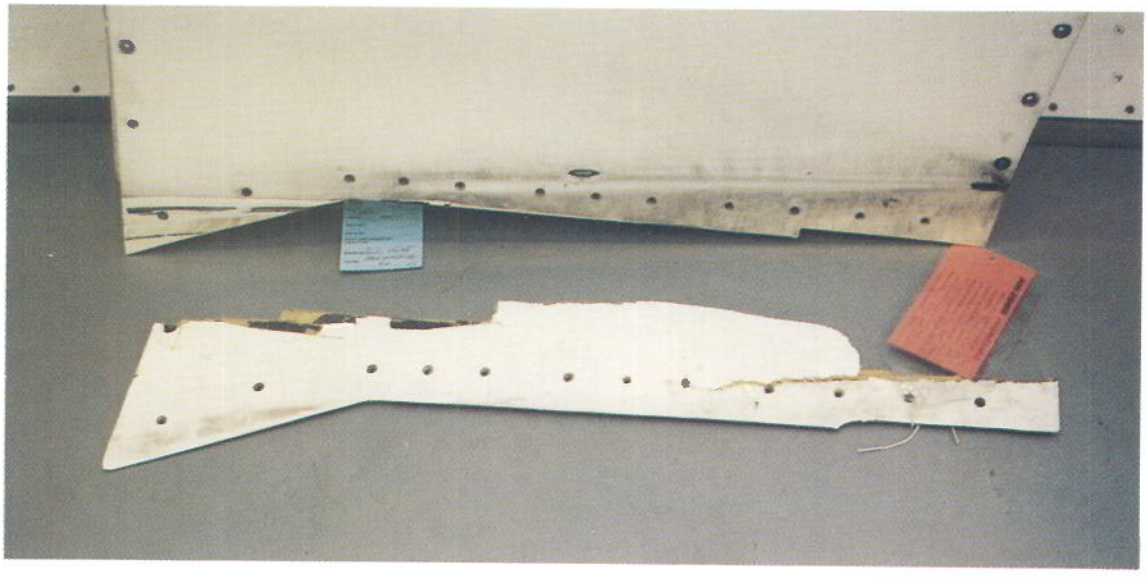
The airline subsequently re-inspected its fleet of 14 aircraft in accordance with the requirements of SL-53-012-B, which thus involved a total of 27 panels, including the one from the left side of G-OOOM. This revealed 9 instances of missing screws (including one panel with 2 missing screws); 7 reports of panels with one or more loose screws, and 7 panels with screws that were overlong by one size, ranging from 2 to 11 overlong screws per panel. The airline has recognised the quality control implications of these results, and intends to address the problem by raising an Inspection Instruction on its contracted maintenance organisation. For their part, Boeing has stated that they have had no other reports of loss of fairing panels that have been inspected and re-worked in accordance with the requirements of the Service Letter.

The airline considers that this particular panel on the aircraft may be more susceptible to the effects of loose or missing fasteners than other panels, due to the fact that it is only attached to the aircraft along three sides. A row of fasteners along the upper edge merely attach a seal, with the fasteners themselves not locating into the aircraft structure. Other, often larger panels are similarly attached, but they have the benefit of additional support by means of intermediate vertical rows of fasteners between the leading and trailing edges.

Detached panel



View of similar aircraft with Panel 198BR removed



Remaining portion of panel from G-OOOM