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## Electrical sparks, Boeing 757-2YO, G-OOOX

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**Micro-summary:** This Boeing 757-2YO experienced a shower of sparks from the overhead P1 panel, along with some systems failures, resulting in a diversion.

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**Event Date:** 1998-06-22 at 0005 UTC

**Investigative Body:** Aircraft Accident Investigation Board (AAIB), United Kingdom

**Investigative Body's Web Site:** <http://www.aaib.dft.gov/uk/>

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## Boeing 757-2YO, G-OOOX

**AAIB Bulletin No: 10/98**      **Ref: EW/G98/6/6 Category: 1.1**

**Aircraft Type and Registration:** Boeing 757-2YO, G-OOOX

**No & Type of Engines:** 2 Rolls Royce RB211-535E4-37 turbofan engines

**Year of Manufacture:** 1993

**Date & Time (UTC):** 22 June 1998 at 0005 hrs

**Location:** Approximately 50 nm west of Larnaca, Cyprus

**Type of Flight:** Public Transport

**Persons on Board:** Crew - 9 - Passengers - 206

**Injuries:** Crew - None - Passengers - None

**Nature of Damage:** Minor damage to electrical wiring

**Commander's Licence:** Airline Transport Pilot's Licence

**Commander's Age:** 42 years

**Commander's Flying Experience:** 6,038 hours (of which 3,790 were on type)  
Last 90 days - 138 hours

**Last 28 days - 69 hours**

**First Officer's Age:** 37 years

**First Officer's Flying Experience:** 6,100 hours (of which 750 were on type)  
Last 90 days - 100 hours  
Last 28 days - 74 hours

**Information Source:** AAIB Field Investigation

The aircraft and crew had been scheduled to fly from Manchester to Larnaca, Cyprus, and return. The aircraft was serviceable for the flight and the outbound leg had been uneventful. After a normal turnaround the aircraft departed from Larnaca with the first officer (FO) as the handling pilot; he established the aircraft in the climb with the autopilot and autothrottle engaged. When passing FL 255 there was a loud bang and a shower of sparks which emanated from the overhead panel (P11). Simultaneously the commander's air speed indication reduced to zero, his altimeter OFF flag appeared and multiple OFF flags appeared on his Radio Distance Magnetic Indicator (RDMI); the FO suffered no instrument malfunctions. The FO retained control of the aircraft which he levelled at FL 270. By this stage a number of caution and advisory messages had appeared on the Engine Indication and Crew Alerting System (EICAS) display. The commander selected the alternate air data source which restored his ASI and altimeter. Meanwhile his VOR/DME controller display had

gone blank, the centre ILS had failed and multiple OFF flags had appeared on the standby attitude indicator which eventually toppled.

The crew declared an emergency via a PAN call and requested a return to Larnaca where they knew that the meteorological conditions were good. The visibility was 20 km, the only cloud was reported as scattered at 3,500 feet, there was no significant weather and the surface temperature was +22\_C. Runway 22 was in use in light wind conditions; this runway has an asphalt surface with an available landing distance of 2,520 metres. All relevant approach aids and lighting units were serviceable.

The FO retained control of the aircraft whilst the commander completed the appropriate drills for the following EICAS messages: 'Spoilers', 'Left Yaw Damper' 'Standby Bus Off'. He was unable to restore power to the standby bus and since both the main and the Auxiliary Power Unit (APU) batteries were discharging he reset the standby power selector to 'Auto' in accordance with the drill. During the return to Larnaca the commander's flight director and the auto throttle failed and when descending through 5,000 feet the 'Right IRS DC Fail' message appeared on the EICAS. Once the aircraft was positioned on the extended runway centreline at about 2,000 feet, and the crew had assured visual contact with the runway, the commander took control and completed an overweight, manual landing at 96 tonnes. When the APU was started during the taxi to the allocated parking area the status message 'APU Batt No Stby' appeared.

### Engineering Investigation

Two wires behind panel P11, situated over the pilot's head, had chafed against a bonding lead which earthed the disconnect bracket AP0011 to the fuselage. This short circuit caused the AC standby bus power circuit breaker to trip, dropping many systems off line. Damage was limited to the two wires involved and had been caused by faulty routing of the wiring loom. The wiring was repaired with permanent in-line splices and the aircraft was ferried back to Manchester for a thorough inspection before being returned to service.

The operator conducted a check on the 13 aircraft in his fleet and found one other aircraft with slight damage through chafing against the disconnect bracket, and two other aircraft with no signs of chafing, but with inadequate clearance. The details of this inspection were forwarded to the manufacturer, the National Transportation Safety Board and the FAA. An Airworthiness Directive (AD) has been written to address this problem, and the FAA expect to release the AD as an immediate adoption AD early to mid September 1998.