

# Boeing 737-5L9, G-MSKA

**AAIB Bulletin No: 6/98 Ref: EW/G98/04/08      Category: 1.1**

**Aircraft Type and Registration:** Boeing 737-5L9, G-MSKA  
**No & Type of Engines:** 2 CFM56-3B1 turbofan engines  
**Year of Manufacture:** 1990  
**Date & Time (UTC):** 14 April 1998 at 1820 hrs  
**Location:** Near Birmingham Airport  
**Type of Flight:** Public Transport (Passenger)  
**Persons on Board:** Crew - 7 - Passengers - 49  
**Injuries:** Crew - None - Passengers - None  
**Nature of Damage:** Nil  
**Commander's Licence:** Airline Transport Pilot's Licence  
**Commander's Age:** 37 years  
**Commander's Flying Experience:** 6,141 hours (of which 625 were on type)  
Last 90 days - 105 hours  
Last 28 days - 19 hours  
**Information Source:** Aircraft Accident Report Form submitted by the pilot

As the aircraft was descending towards Birmingham Airport a single meal was put into the (empty) No 1 oven in the forward galley; the meal was taken out after one minute, and the oven was switched off at the controller. After about a minute a smell of burning was apparent and the oven was opened, but no problems were evident. Approximately 30 to 40 seconds later the smell was getting worse, so it was again checked and a bright red glow was seen around the back of the rear internal oven panel. The purser then informed the flight deck that the oven was on fire. A PAN call was made and an expeditious approach was given by ATC. The cabin staff discharged a BCF fire extinguisher into the oven but, in spite of this action, the fire appeared to be getting worse. This information was passed to the flight crew, who upgraded the emergency to a MAYDAY, and advised ATC that their intention was to stop on the runway and assess the fire before initiating an evacuation. A second BCF extinguisher was then discharged into the oven.

After the aircraft had stopped the purser checked the oven and was satisfied that the fire was completely extinguished, he declared that the fire was under control and that it would be safe to taxi to the stand. The fire brigade escorted the aircraft to the gate as a precaution where a nurse was in attendance.

The reported fire was caused by an overheated oven element, there had been no smoke or flames, neither had there been any excessive temperatures outside the oven. The power to the oven went through four switching devices: a thermostatic controller; an overheat protection trip; a circuit breaker, and a galley master switch on the flight deck. No attempt was made to pull the circuit breaker or to operate the galley master switch, indicating that the fire was not recognised as being an 'electrical' fire. This assumption was not surprising given that a survey of Boeing 737 galley fires recorded on the CAA MOR database gave over 150 records, the vast majority of which were caused by the combustion of fat and other food debris left in the oven.

The oven was checked by engineering staff whilst still installed in the aircraft - no defects were found, so the oven and its controller were examined in the maintenance workshops; again no defect was found, however, there was evidence of overheating of the oven elements. The oven is powered by 3-phase 115 volts AC and is fan assisted, there are three heating elements in the oven powered separately by each phase through a common control relay. Both the oven and the controller were sent to an overhaul agency who confirmed that one element had been subject to overheating. The controller did not have any relevant defects.

It is considered that the problem was caused by a control failure; selecting OFF should switch off the fan and de-energise the heating element control relay. The evidence suggests that one contact of the relay failed to open when the oven was selected OFF, resulting in the power continuing to one element. Without the fan to transfer the heat, and the normal thermostatic temperature control being bypassed by the failure, the element continued to heat until it glowed red. It is probable that vibration during the landing released the relay contact and allowed the element to cool. The oven has an overheat protection trip which did not operate (it will not reset itself) and has subsequently been tested and found serviceable. The conclusion is that it did not get hot enough to operate.

Flight deck and galley procedures are being reviewed as a result of the non-use of the circuit breaker or the galley master switch.