

INCIDENT

Aircraft Type and Registration:	i) Boeing 747-200, LV-MLP ii) Boeing 737-59D, G-BVKD
No & Type of Engines:	i) 4 JT9D-7Q turbofan engines ii) 2 CFM56-3C1 turbofan engines
Year of Manufacture:	i) 1979 ii) 1992
Date & Time (UTC):	16 September 1995 at 1808 hrs
Location:	3 nm northeast of Ockham VOR, over Cobham, Surrey
Type of Flight:	i) Public Transport ii) Public Transport
Persons on Board:	i) Crew - 3 + 14 Passengers - 52 ii) Crew - 2 + 4 Passengers - 29
Injuries:	i) Crew - None Passengers - None ii) Crew - None Passengers - None
Nature of Damage:	i) None ii) None
Commander's Licence:	i) Airline Transport Pilot's Licence ii) Airline Transport Pilot's Licence
Commander's Age:	i) 51 years ii) 38 years
Commander's Flying Experience:	i) 12,596 hours (of which 1,977 were on type) Last 90 days - 177 hours Last 28 days - 60 hours ii) 5,400 hours (of which 4,100 were on type) Last 90 days - 203 hours Last 28 days - 74 hours
Information Source:	AAIB Field Investigation

Synopsis

The Boeing 737 (G-BVKD) was inbound to Heathrow and had departed Biggin VOR at Flight Level (FL) 80, on a westerly radar heading, for a downwind right-hand circuit to Runway 09L. It was under the positive ATC radar control of 'Heathrow Director South', on 134.975 MHz.

The Boeing 747 (LV-MLP) had taken off from Runway 09R, at 1805 hrs, with the first officer handling the aircraft and the commander carrying out the RT. It was climbing on the 'Midhurst 1J' Standard Instrument Departure (SID), at the time on a southerly heading, and was being controlled by 'Terminal Control' [Willo], on 120.47 MHz.

The two aircraft passed, nearly at right angles, with a minimum separation of about one third of a nautical mile horizontally and about 100 feet vertically.

The Boeing B737

The crew of the B737, who had been observing the B747 for time enough to realise that it was climbing and presenting a constant bearing relative to themselves, alerted ATC to the conflict at 1808 hrs. At 1808:31 hrs, when the B747 seemed to be (and was) at their own level, closing from three quarters of a mile, the commander of the B737 initiated a gentle but positive descent. Coincidentally with this, their ('Director South') ATC controller, being unaware what instructions might have been given to the B747, initially instructed the B737 to climb immediately, but then, as the commander replied that they were already descending, cleared them for further descent to 4,000 feet. The crew of the B737 subsequently stated that, because they had been carefully watching and assessing the potential conflict with the B747 for some time, they were able to make the avoidance manoeuvre in a more gentle manner than the situation would have warranted otherwise.

The Boeing B747

Whilst carrying out the 'Midhurst 1J' SID, the B747 had been released from the speed restriction and, at 1808 hrs, had been given a radar heading of 155°. The crew had acknowledged this correctly. No variation of the SID altitude limit had been given. The presence of the B737 was signalled by the B747's Traffic Alert and Collision Avoidance System (TCAS), which was selected to 'TA/RA' (Traffic Advisory/Resolution Alert), as a 'Traffic Advisory', requiring no avoiding action. About five seconds later, whilst the B747 was accelerating, turning and still climbing, ATC instructed: "ONE ONE FIVE THREE LONDON MAINTAIN ALTITUDE SIX THOUSAND FEET ON REACHING PLEASE THERE IS TRAFFIC CROSSING LEFT TO RIGHT". Although this was not heard by the B747 crew, they had already sighted the other aircraft, and the secondary radar recording shows that at this time the B747 was at about 7,000 feet. The message was immediately repeated by ATC saying: "ARGENTINA ONE ONE FIVE THREE LONDON I SAY AGAIN DESCEND NOW DESCEND NOW TO ALTITUDE SIX THOUSAND FEET OVER", to which the B747 commander replied "TRAFFIC IN SIGHT...". ATC issued a further instruction to descend and then requested the B747 crew to state their level, which they reported as 8,700 feet. The flight was then re-cleared to continue the climb to FL 150.

A few moments later, when the B747 crew was asked to what Level they had been climbing, the commander replied that they had not been given one. This latter message has subsequently been described by the commander as intending to indicate that he had received no ATC message which suggested an alternative limit to his en route climb.

Additional information

The operating company issues Iberia's 'Atlas' charts for use in Europe, whilst using Jeppesen charts for the rest of the world. Each of the operating company's crews transit Heathrow only once or twice a year, often with a different onwards destination requiring a different Heathrow SID. Both the commander and the first officer of the B747 have stated that they briefed fully for the SID, but did not see any altitude limitation on their SID chart for the 'Midhurst 1J' departure. They have since stated that they expected that any required restriction to the direct climb to their flight plan level would be issued as a verbal instruction by ATC, as it is at some other international airports.

The Atlas chart shows all of the 09R departures in one diagram on a fold-out A4 page (see Figure 1). A written description is shown on another A5 page. On the version of the Atlas chart dated 31 March 1994, which was in use at the time, all the other SID's track diagrams show an Altitude Limit, but the Midhurst departure did not. Atlas have since rectified this omission. Atlas's written description of the procedure dated 2 February 1995, also in use at the time of the incident, differs from the 'UK Aeronautical Information Publication' wording, by describing the various check altitudes en route to Midhurst as, for example, "at 5000 Mnm", rather than "above 5000". The Midhurst 1J departure is described thus:

MIDHURST ONE JULIET (MID1J) [LONDON CONTROL 121.32]

RT to intercept R129 LON until DME 3.5 LON then RT to intercept R030 MID to MID.

Cross DME 16 MID (ABMOCK) at 3000 Mnm. R030/DME 12 MID at 4000 Mnm: R030/DME 8 MID at 5000 Mnm. MID at 6000.

(Via MID/A-34.A-1. Southbound)

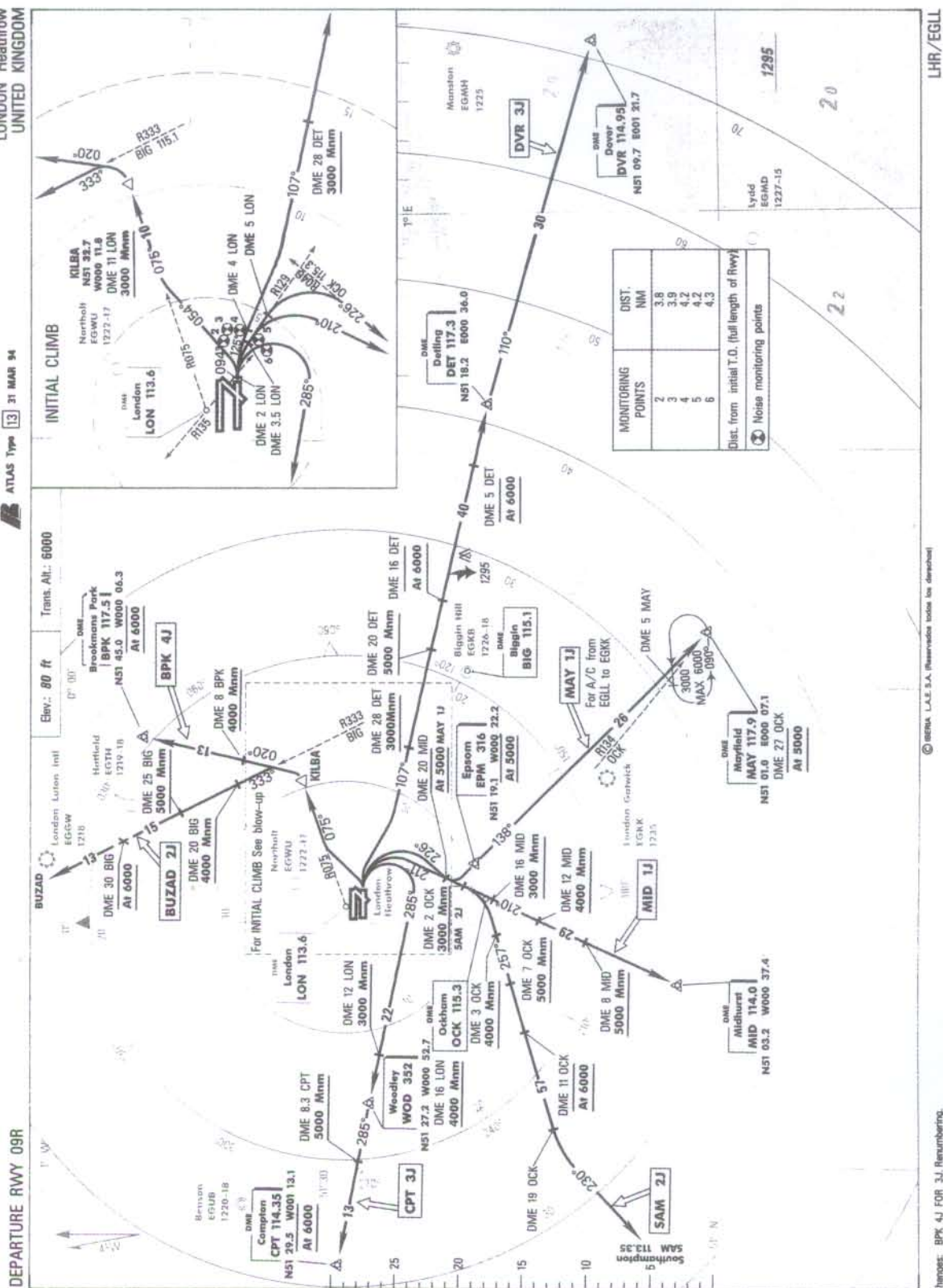
Note in particular the layout of the paragraph is such that the "Mnm", referring to the previous check altitude (DME 8 MID), is carried over to the next and final line, which then reads "Mnm. MID at 6000".

Safety actions

Immediately following this incident, the operating company, of the Boeing B747 issued a Fleet Bulletin to all B747 crews reminding them to be aware of and strictly comply with published SID

procedures, particularly altitude restrictions. The company are also examining the possibility of substituting the existing (Atlas) charts for ones which appear to be more easily interpreted.

The Air Traffic Services Investigations Department of the CAA, noting that some sector controllers already re-iterate, and thereby confirm, an aircraft's cleared altitude on initial contact, have asked LATCC to consider adopting such practise as a standard which will positively aid flight safety.



DEPARTURE RWY 09R

Figure 1