

Aircraft type and registration: Boeing 737 G-BKYP/BAe 1-11 G-AVML

No & Type of engines: 2 Pratt and Whitney JT8 D-15A turbine engines/2 Spey 512-4 turbine engines

Year of Manufacture: 1985/86

Date and time (UTC): 29 July 1986 at 0934 hrs

Location: London (Heathrow) Terminal Control Area

Type of flight: Public transport/Public transport

Persons on board: Crew — 6/5 Passengers — 73/29

Injuries: Crew — None/None Passengers — None/None

Nature of damage: Nil

Commander's Licence: Not applicable

Commander's Age: Not applicable

Commander's Total Flying Experience: Not applicable

Information Source: AIB Field Investigation.

History of the flight

British Airways flight BA 753, a Boeing 737, on a flight from Munich to London Heathrow, with 73 passengers, arrived at Lambourne VHF omni range (VOR) beacon at 0929 hrs. The BA Shuttle 9U from Edinburgh, carrying 29 passengers, arrived at Bovingdon VOR at 0923 hrs.

Both aircraft were, by then, under the control of London Heathrow (North) Approach radar, 'Director 1' (North), whose task it is to guide Heathrow bound aircraft, from Lambourne and Bovingdon VOR's, into a sequenced stream flying a downwind leg, in this case for runway 28L.

As the two aircraft approached Bovingdon and Lambourne VOR's, a sector controller at the London Air Traffic Control Centre passed their details by telephone to the procedural controller at Heathrow. It is his responsibility to ensure procedural separation as the aircraft arrive at the VOR. Director 1 issues radar vectoring instructions when he requires the aircraft to leave it to begin the approach.

The procedure also ensures that there is no conflict between aircraft descending into a downwind position for landing and those climbing away to the north after take-off. The arrivals leave the two VOR's usually at the "minimum stack level" which is the same for each beacon and each aircraft is then confined to the radar manoeuvring area (RMA) shown in the attached diagram.

For landing on Runway 28L, aircraft from Bovingdon are generally given a direct track from the VOR to the downwind position and those from Lambourne proceed in a generally westerly direction until they can be sequenced to turn either behind or in front of those from Bovingdon.

Once in sequence, flying in an easterly direction, they are passed, by a frequency change, to Director 2 for positioning on the final approach to land. He also accepts the traffic from another Director 1 who has sequenced the aircraft arriving from the south.

Once Director 2 has positioned the aircraft on the final approach, with spacing according to aircraft type, he passes them, by another frequency change, to (Heathrow) Tower. In order to facilitate the change of control, Director 2 informs the Tower, by telephone, of the aircraft's call signs and arrival sequence. This process is called "warning-in". It is clear that Director 2 cannot be constantly on the telephone to the Tower, and so it is usual to warn-in a number of aircraft at the same time. This necessitates the enlargement of his scan and thus provides an incidental, albeit small, degree of awareness of aircraft under the control of Director 1.

It can be seen therefore that handling the aircraft, from entry into the RMA until touchdown, involves close teamwork and co-operation between the various controllers. Nevertheless, at no time are the individual controllers intentionally supervised and there is no back up for any individual controller who makes an error or an omission in the control of his sector.

On the occasion of this incident, the concentration of Director 1 was diverted from the position of BA 753 for a period of nearly two minutes, during which he spoke to only Shuttle 9U. The reason for this period of distraction could not be positively identified but it is possible that the presence of two visitors, who were listening to the radiotelephony (RTF) and watching his screen, may have contributed.

In accordance with the procedure described, at 0920 hrs 753 left Lambourne at Flight Level (FL) 80 on a westerly heading at a stipulated speed of 210 knots (indicated). This, in the prevailing conditions of wind and temperature, provided a groundspeed of about 200 knots. At 0932 hrs Shuttle 9U left Bovingdon, also at FL 80, on a heading of 130°; although flying at the same indicated airspeed as BA 753, Shuttle 9U's groundspeed was 270 knots. The aircraft were then, as is normal practice, some 15 nm apart on opposing courses.

Releasing the aircraft from the VOR's in this manner allows Director 1 to turn the westbound aircraft left onto an easterly heading so as to position it at the correct distance ahead of, or behind, the eastbound traffic. However, it was not until two minutes later, 0934 hrs, when the two aircraft were less than 2 miles apart, that Director 1 instructed BA 753 to turn left onto 130° and descend to 3000 feet. As soon as BA 753 had acknowledged this, he told Shuttle 9U to turn right onto a heading of 190°. Neither of these instructions held any implication by word or tone, of collision avoidance.

A few seconds later, the commander of BA 753 was obliged to push the control column sharply forward in order to avoid Shuttle 9U. The crew of the Shuttle, having just began to turn did not see the other aircraft, however, an Airmiss Report was filed by both crews.

Air Traffic Control (ATC)

The relevant portion of the ATC "watch" comprises a Watch Manager, Approach Procedural Controller, Director 1 (radar) and Director 2 (radar).

The Watch Manager may or may not be present in the control room at any given time and has many administrative tasks. There is a "repeater" radar screen at his desk but this is used for many purposes but not for general supervision, and inbound aircraft from the north are handled by only the three controllers who sit side-by-side. The "suite" at which they sit has three positions: that of the procedural approach controller, which faces a column of aircraft flight progress strips and those of the two radar controllers (Directors 1 and 2) which each face separate but identical radar screens. The procedural controller and Director 1 operate the same RTF channel and Director 2 operates another. Because of the discrete nature of their individual tasks, and the number of aircraft that each is processing, none can monitor the operation of the others, although Director 1 and 2 have a peripheral view of each other's aircraft on their own screen.

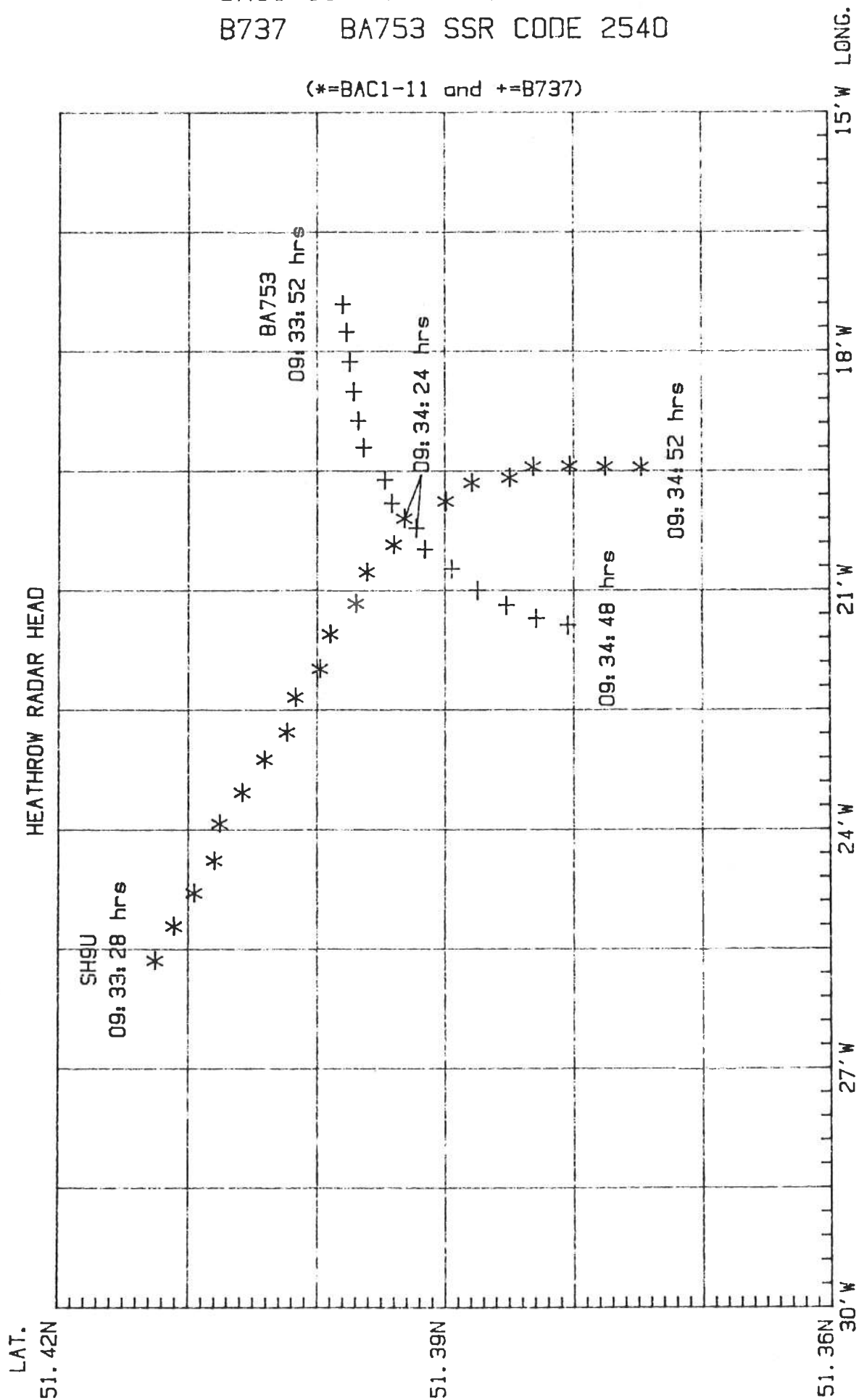
It is noteworthy that Heathrow radar control receives an almost constant stream of official and unofficial visitors and it is common practice for them to "plug in" to the RTF beside an active controller. It is, however, the right of the controller to send them away if he thinks that their presence is interfering with his concentration. This does not normally occur.

SSR TRACKS FOR AIRMISS 29.7.86

BAC1-11 SH9U SSR CODE 5022

B737 BA753 SSR CODE 2540

(* = BAC1-11 and + = B737)



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B737 BA753 SSR CODE 2540

HEATHROW RADAR HEAD

LAT. 51° 45'N 51° 30'N 51° 15'N

LONG. 36° W 24° W 12° W 0 12° E

BOVINGDON

LONDON HEATHROW

OCKHAM

BIGGIN

LAMBOURNE

09:34:00 hrs

120M

160M

270M

210M

BA753 8737

SH9U BAC1-11

RADAR MANOEUVERING AREA WESTERLIES

--- from Lambourne

MINOR DIVISIONS, LATITUDE 30sec. OR 0.5mm., LONGITUDE 10cc.