

AIRPROX REPORT No 2010003

Date/Time: 5 Feb 1229

Position: 5207N 00006E (6nm
SW Cambridge - elev
47ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: B737-300 DR400

Operator: CAT Civ Pte

Alt/FL: 3000ft↑ N/K
QNH (1001mb) N/K

Weather: NR VMC CLOC

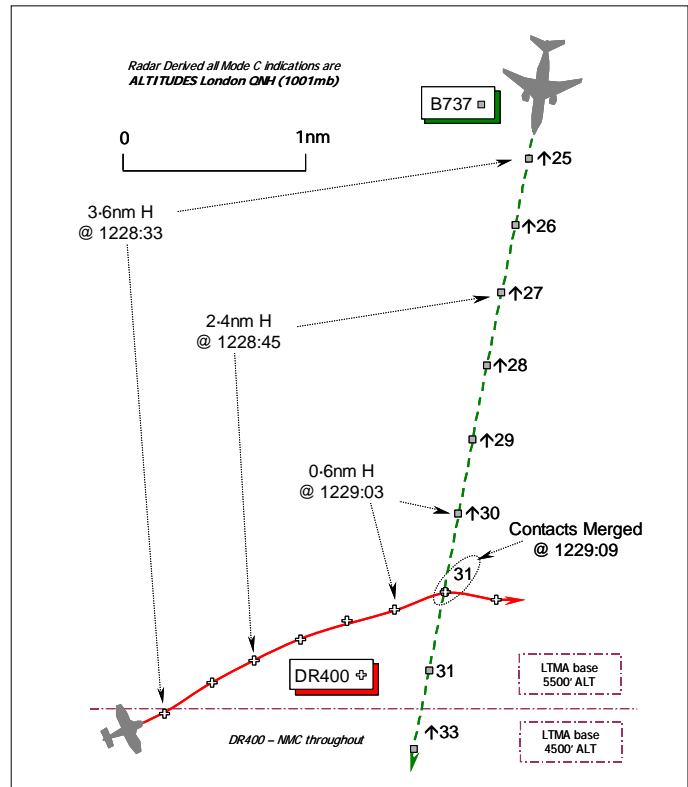
Visibility: >10km 20km

Reported Separation:

300-500ftV/nil H 300ft V/Nil H

Recorded Separation:

Contacts merged



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737-300 PILOT reports he was outbound from Cambridge to join CAS to the S [at BARKWAY-BKY]. Stansted Intermediate DIRECTOR (SS INT) [situated at LTC] had just cleared them to join CAS in the climb to FL80. Subsequently, climbing through 3500ft, to the SW of Cambridge heading 200° at 250kt, the controller advised them of a primary contact in their 1 o'clock position tracking from R – L with no height readout. There was no traffic of any sort displayed on their TCAS, but a light ac was acquired visually by the 1st Officer PF about 1nm away to starboard. To avoid the other ac, the AP was disconnected and the climb stopped/reduced as the light ac passed an estimated 300-500ft vertically directly above them with a 'high' Risk of a collision. They advised ATC of the separation, then resumed the climb and turned onto a radar heading of W.

He commended the controller for advising them about this primary contact. In the absence of any warning from TCAS to alert them, it was this TI that enabled them to acquire the light ac visually and avoid it.

UKAB Note (1): The Cambridge weather was reported to be: Surface wind 220°/9kt; Vis >10km nil weather; Cloud FEW at 1400ft.

THE DR400 PILOT reports he had departed from Membury and was in transit to Crowfield. The aeroplane has a white and green colour-scheme and the HISLs were on. He was not in communication with any ATSU; the SSR transponder, including Mode C, was switched off.

Flying VFR with no cloud in the vicinity and an in-flight visibility of 20km, about 3-4nm SSW of Cambridge heading 090° (he did not recall the altitude or speed), the B737 was sighted at least 2nm away climbing gently outbound from Cambridge. The B737's climb angle was such that it was always going to pass beneath his ac. The B737 made no sudden attitude changes and passed 300ft underneath his ac with no Risk of a collision. After the B737 passed its ROC increased, but in his opinion, the B737 pilot saw him well in advance and decided his own distance to pass underneath his DR400.

THE LTC STANSTED INTERMEDIATE DIRECTOR (SS INT) reports 1 month after the event, that the B737 crew was given an airways join on track BKY after departing Cambridge. Climbing initially to 2400ft ALT, when the B737 crew called on frequency the flight was identified and placed under a TS outside CAS. He then co-ordinated the CAS join with TMA N and subsequently climbed the B737 to FL80 with a clearance to enter CAS on track BKY. Whilst in the climb a primary only contact was observed in the vicinity of Duxford. He believed that the primary contact would possibly be in the B737's path but he did not wish to issue an avoiding action vector outside CAS as he did not know the intentions of the other ac. The B737 crew was left under their own navigation and he called TI as appropriate. The B737 pilot reported visual and advised that he had seen an ac less than 500ft above. Therefore, he thought at the time that the primary was at around 5000ft ALT.

ATSI reports that the Airprox was reported by the B737 pilot whilst in contact with the LTC Stansted Intermediate Director (SS INT) and occurred about 6nm SW of Cambridge aerodrome at an altitude of 3100ft. Departing Cambridge for Coventry on an initial clearance to "*BARKWAY (BKY) 2400 feet*", the B737 was first shown on the Stansted 10cm radar, in use by the SS INT controller, at 1227:23 and was observed passing a reported altitude of 800ft. At 1228:00, the pilot of the B737 called on the SS INT frequency, 120.625MHz, on track BKY at an altitude of 2400ft. The indicated Mode C altitude of the B737 was 2500ft London QNH; SS INT instructed the B737 crew to squawk ident and gave a further climb to an altitude of 3000ft.

After SS INT co-ordinated a CAS joining clearance with TC North and identified the B737 3nm SW of Cambridge, at 1228:34, the controller instructed the B737 crew that they were clear to, "*..climb now flight level 8-0 clear to enter controlled airspace*". The flight was placed under a TS and the clearance and ATS were correctly read-back by the B737 pilot. At 1228:49, SS INT passed TI on, "*..a primary only contact...observed just right of your 12 o'clock passing right to left across you now 1 mile ahead no height information believed to be low level*". The radar recording shows the primary contact of the DR400 1.7nm SW of the B737. At 1229:09, the two contacts merged within Class G airspace at a position 210°(M) Cambridge airport 6.2nm, the B737 indicating an altitude of 3100ft London QNH (1001mb).

The pilot of the B737 reported to the SS INT controller that the traffic had passed overhead his ac, "*..and we're just passing underneath now no height readout...we estimate about less than 5 hundred foot separation*". After confirming this, the SS INT controller informed the pilot: "[that traffic] *now observed to have passed behind you had no height information*". After passing underneath the DR400 the climb rate of the B737 increased, the flight entered CAS, turned westerly and switched en-route without further incident.

This Airprox occurred wholly within Class G, uncontrolled airspace. After departure, the B737 was correctly identified, given a joining clearance and placed under an appropriate service.

In accordance with CAP493 Section 1 Chapter 11 paragraph 4.1.1 & 4.5.1, under a TS:

'... the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic... the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.'

Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting ac's observed flight profile indicates that it will pass within 3nm...of the aircraft in receipt of the Traffic Service.

The B737 crew was therefore given appropriate and timely TI immediately after identification. Although the controller perceived [incorrectly] that the primary only contact was at low-level, the provision of TI was such that the B737 pilot was able to visually acquire the DR400 light ac and adjust the B737's climb rate accordingly.

There are considered to be no implications for ATC resulting from this Airprox.

UKAB Note (1): The Debden Radar recording shows the B737 departing from Cambridge setting course for BKY. At 1228:33, the B737 climbs through an altitude of 2500ft London QNH (1001mb) tracking 190° with the DR400 shown as a primary contact only at R 1 o'clock at a range of 3-6nm, flying in a broadly ENE'ly direction but in a slight R turn. The DR400 closes to a range of 2-4nm at 1228:45, moments before SS INT passed TI, as the B737 climbs through 2700ft London QNH. The DR400 maintains a constant relative bearing in the B737's 1 o'clock and at 1229:03, the range has closed to 0-6nm and the B737 is shown climbing steadily through 3000ft London QNH. The contacts merge at a position 1-8nm NW of Duxford at 1229:09, where the base of the LTMA is 5500ft amsl - about 0-6nm N of the step in Class A CAS down to the lower limit of 4500ft amsl. The B737 indicates 3100ft London QNH – still in Class G airspace – at the CPA and maintains this altitude until clear to the S of the DR400. The DR400 pilot's report that the B737 was 300ft below his aeroplane at the closest point would suggest that he was flying at an altitude of about 3400ft QNH. Thereafter, the DR400 draws astern flying easterly as the B737 climbs and subsequently enters CAS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings and a report from the appropriate ATC authority.

Although the DR400 pilot did not recall his transit altitude at the time of the Airprox, it was plain that he was legitimately flying in Class G airspace beneath the lower limit of the LTMA. In this busy 'see and avoid' environment, the DR400 pilot had spotted the B737 climbing out from Cambridge at a range of at least 2nm and assessed that the B737's climb was such that it would pass beneath him. Whereas the DR400 pilot might have perceived that his small aeroplane had been seen well in advance, this was evidently not the case – perhaps understandably so given the relative sizes and more restricted view from the airliner's flight deck. In the confined airspace below the LTMA it should have been apparent to the DR400 pilot that the B737 would be climbing higher to enter CAS – as was the case here – and its rate of climb would not necessarily remain constant. Therefore the old 'see and avoid' maxim applied: presume that other pilots are unaware of your presence until there is evidence to the contrary. Notwithstanding that the Rules of the Air might require the B737 crew to give way in this situation, it would have been wiser to turn the more nimble DR400 out of the way and afford the B737 some lateral separation, especially with the potential for significant wake turbulence from the larger airliner.

Members were disappointed that, although the DR400 was equipped with a SSR transponder, the Mode A & C were switched off thereby preventing ATC from including specific altitude readouts in the TI provided to the B737, and negating the benefit of the B737's TCAS. The Board recognised that in Class G airspace, the operation of the transponder was not mandatory. Nevertheless, National procedures [UK AIP ENR 1-6-2] recommend that 'pilots operate an SSR transponder with pressure-altitude reporting enabled in order to facilitate detection of their aircraft by collision avoidance systems and ATC radar'. The safety benefits of TCAS as an aid to collision avoidance are almost universally recognised, and it would be far better airmanship to fly with the Mode A General Conspicuity Code [7000] selected and Mode C on, especially beneath the LTMA. As it was with the DR400's SSR switched off, the B737's TCAS was rendered blind to the presence of the DR400 and the B737 crew were reliant on ATC to supplement their own lookout. The Board agreed that a Contributory Factor to this Airprox was that the DR400's SSR was switched off, thereby preventing earlier conflict resolution advice from TCAS.

The B737 crew acquired the small aeroplane visually about 1nm away, the pilot reported, with the assistance of TI from SS INT and avoided it by reducing their RoC. Whereas the controller estimated the traffic to be 1nm away when the TI was transmitted, the ATSI report shows it was in fact 1-7nm away and this slightly earlier warning was clearly instrumental in allowing the B737 crew to sight the small DR400 in time. Passing above the small aeroplane might have resulted in some significant wake turbulence, so it was fortunate that the DR400 was spotted in time by the B737 crew for them to stop their climb and pass beneath it. Thus this conflict had been detected and action taken to prevent the situation becoming more serious, but it was unfortunate that the B737 crew was unable to provide

any lateral clearance against the DR400 in case the pilot had not seen them and suddenly commenced a descent. Without Mode C data from the DR400 the exact vertical separation could not be determined independently however both pilots' estimates were broadly in agreement: the B737 pilot with perhaps the better view beneath reporting the DR400 was 300-500ft above, whilst the latter's pilot stated that the separation was at the lower limit of the B737 pilot's estimate. The Board concluded unanimously that this Airprox had been the result of a conflict that had been resolved by the B737 crew. Furthermore, the visual sighting by both pilots, coupled with the reported vertical separation convinced the Members that there was no Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict resolved by the B737 crew.

Degree of Risk: C.

Contributory Factors: DR400's Mode C switched off preventing earlier conflict resolution by TCAS.