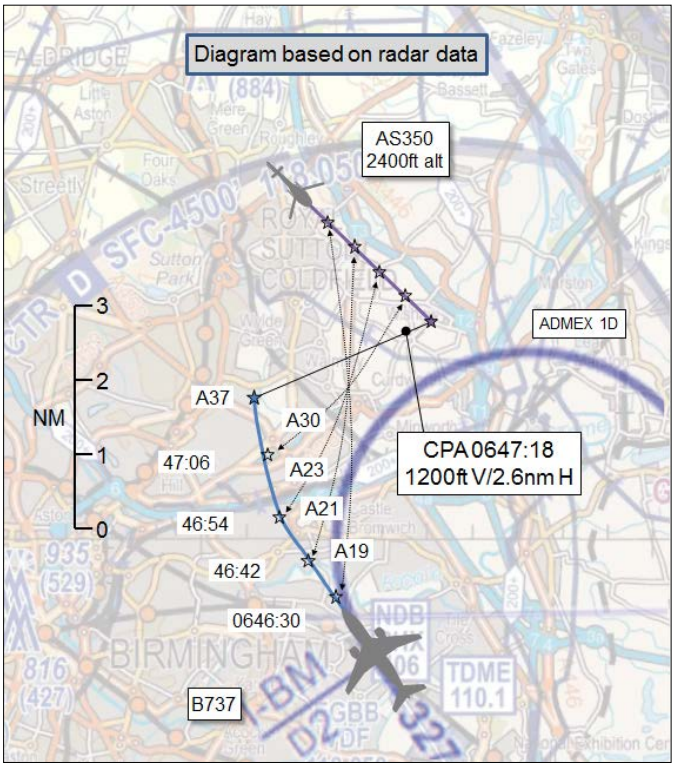
AIRPROX REPORT No 2017202

Date: 18 Aug 2017 Time: 0647Z Position: 5232N 00147W Location: 6nm N Birmingham airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B737	AS350
Operator	CAT	Civ Pte
Airspace	Birmingham CTR	Birmingham CTR
Class	D	D
Rules	IFR	VFR
Service	Aerodrome	Radar Control
Provider	Birmingham	Birmingham
Altitude/FL	3700ft	2400ft
Transponder	A,C,S	A,C,S
Reported		Not reported
Colours	Company	NK
Lighting	NK	NK
Conditions	VMC	NK
Visibility	10km	NK
Altitude/FL	1200ft	NK
Altimeter	QNH	NK
Heading	360°	NK
Speed	220kt	NK
ACAS/TAS	TCAS II	Unknown
Alert	None	Unknown
Separation		
Reported	200ft V/2nm H	NK
Recorded	1200ft V/2.6nm H	



THE BOEING 737 PILOT reports that they were climbing on an ADMEX 1D SID from Birmingham when TCAS traffic appeared on their right at approximately 2nm and 300-400ft above. It appeared to be on their departure path. As a precaution, the SID was discontinued to avoid a possible TA/RA. No mention of the traffic was made by ATC until they themselves mentioned it. ATC advised that the other traffic had them in sight but because they did not they took appropriate action.

THE EUROCOPTER AS350 ECUREUIL PILOT did not complete an Airprox report form but commented that he did not remember anything in the last few years of flying that would constitute an Airprox in his opinion. On this particular day he was flying to Brands Hatch. He did not have any specific recollection of any incident that he would have considered overly unusual. On the day, he believed he was flying through Birmingham airspace under radar control, which would usually be not above 2000ft. He did recall on one occasion recently, a large commercial airliner being closer to him than was normal, but he had considered the separation to be such that he had no concern whatsoever. If that was the occasion, then the aircraft was climbing steeply and well above him and, in any event, not on a collision course. He commented that it was difficult to be more helpful or precise on this, since there was nothing particular to register with him as an "event" and, as such, he had to really dredge his memory bank. In the circumstance he could not add anything further.

Factual Background

The weather at Birmingham was recorded as follows:

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EGBB 180620Z 25007KT 210V280 9999 FEW018 14/12 Q1008=
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Analysis and Investigation

CAA ATSI

ATSI had access to the report from the B737 pilot and e-mails from the AS350 pilot and Birmingham ATC Management. The area radar and R/T recordings of the Birmingham Tower and Approach frequencies were reviewed for the period of the incident. Screenshots in the report are taken from the area radar. All times are UTC.

The B737 was on an IFR flight from Birmingham in receipt of an Aerodrome Control Service from the Birmingham Aerodrome controller at the time of the reported incident. The AS350 was on a VFR flight to a private site near Brands Hatch in receipt of a Radar Control Service from the Birmingham Radar controller.

At 0638:40 the AS350 pilot checked in with the Birmingham Radar Controller, advised that he was north of the Zone, routing from Ternhill to Brands Hatch, at 3500ft QNH (1008hPa) and requested Zone transit to pass 3nm east abeam and parallel to RW15. The controller was busy with other aircraft initially and eventually responded with a clearance for the AS350 pilot to enter Controlled Airspace (CAS) not above 2500ft, VFR, and explained that the level restriction was to allow sequencing against departing traffic. A Basic Service was agreed.

At 0643.20 the AS350 pilot entered CAS and was advised that they were now under a Radar Control Service (Figure 1).

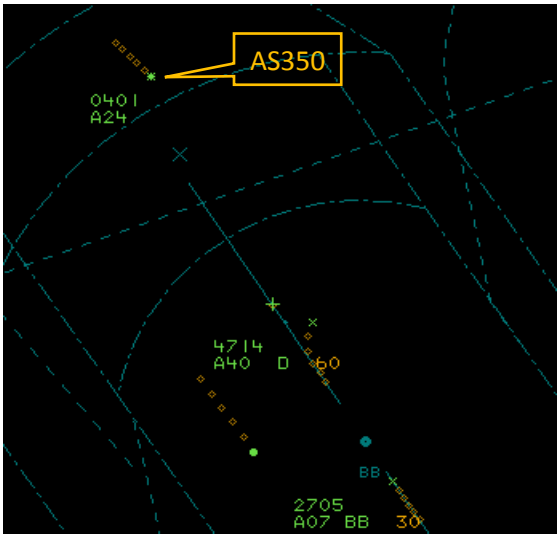


Figure 1 – 0643.20.

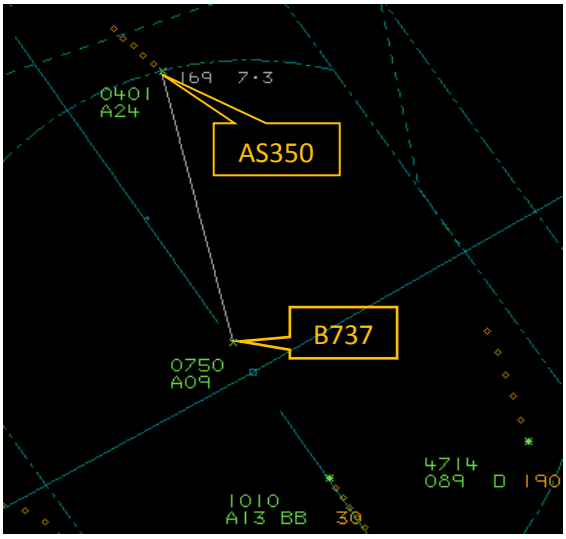


Figure 2 - 0646.01.

At 0644.50 the Aerodrome controller cleared the B737 pilot for take-off on an ADMEX 1D SID. For ease of reference, details of the ADMEX 1D SID have been reproduced later in the report.

At 0645.20 the Radar controller called the Aerodrome controller, identified the AS350, advised them that it was continuing on its present track not above 2500ft and asked them to pass Traffic Information to the B737 pilot. The Aerodrome controller responded that they would do so.

At 0645.40 the Radar controller passed Traffic Information to the AS350 pilot on the departing B737 as climbing straight ahead initially and then turning right. The AS350 pilot responded that they were visual.

At 0646.01 the B737 first appears on the radar replay passing 900ft (Figure 2).

At 0646.40 the Aerodrome controller passed Traffic Information on the AS350 to the B737 pilot advising him that he may pick up VFR rotary traffic on TCAS, 5nm northeast of them, southbound. The pilot responded that they were holding off the right turn for a little while (Figure 3).

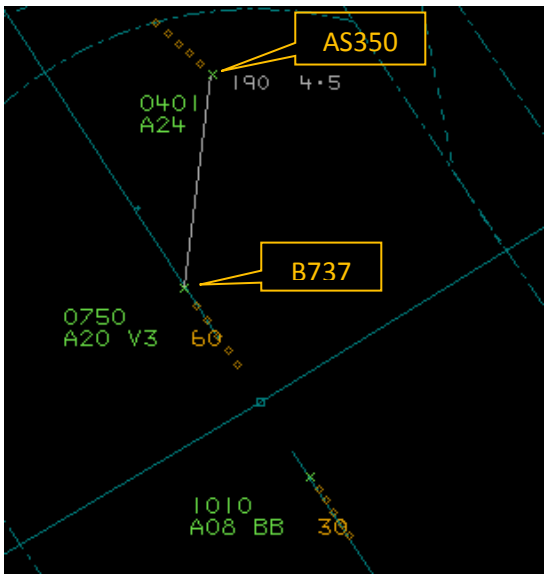


Figure 3 - 0646.40.

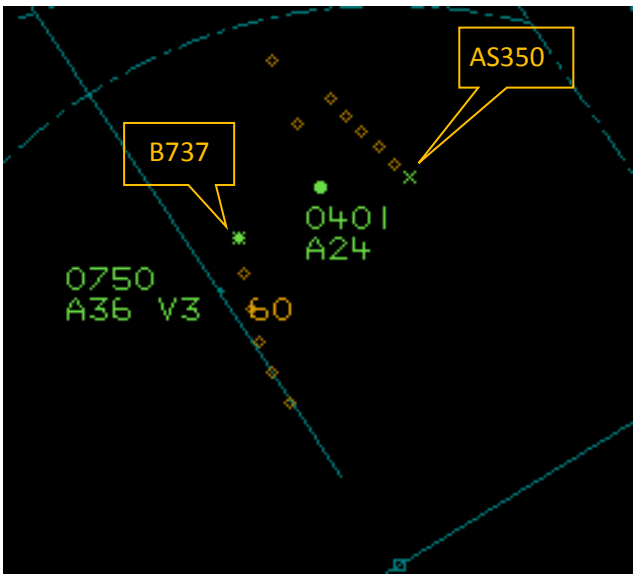


Figure 4 – 0647.18.

CPA took place at 0647:18, with the aircraft separated by 2.6nm laterally and 1200ft vertically (Figure 4).

At 0647.20 the Aerodrome controller advised the B737 pilot that the conflicting traffic was now indicating 1000ft below and instructed the pilot to contact Birmingham Radar.

At 0647:40 the Radar controller made a blind-call to the B737 pilot asking if they were on frequency. The B737 pilot responded immediately and advised the controller that they were turning back onto the SID and had come off the SID due to having had traffic on their right. The controller responded that the traffic was a helicopter and that the helicopter pilot had them in sight. The B737 pilot responded that it would have been nice to know about the traffic before getting airborne.

At the time of the Airprox the Aerodrome controller was providing both Air and Ground services and the Radar controller was operating solo. There was a steady stream of arriving and departing IFR traffic with some complex ground movements taking place as a result of a Calculated Take Off Time (CTOT) having to be renegotiated.

The Airprox occurred within Class D Airspace. The minimum ATC service to be provided within Class D Airspace (in terms of Traffic Information) is that Traffic Information is to be passed to IFR on VFR traffic and Traffic Information is to be passed to VFR on all other traffic. Traffic avoidance is to be provided if requested by the pilot.

After the B737 was airborne and the Radar controller advised the Aerodrome controller of the AS350's route and level, there was a delay of 1 minute and 20 seconds, before the Aerodrome controller passed on the Traffic Information to the B737 pilot.

CAP493 (Manual of Air Traffic Services Part 1) requires the Radar controller to supply pertinent data to the Aerodrome controller on all relevant flights and to coordinate aircraft routeing through the traffic circuit.

The initial phase of the RW33 ADMEX 1D SID is published in the UK AIP as follows: 'Climb straight ahead to the **I-BM 2DME** or **830 feet** whichever is later, then turn right to intercept **DTY VOR** Radial 317'.

CAP 493 provides advice and guidance to controllers on the safe integration of VFR flights with the IFR traffic flow within Class D Airspace and states that routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive Traffic Information. It also states that Visual Reference Points (VRP's) may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. There are a number of Birmingham VRP's promulgated in the UK AIP and these are published in the Birmingham MATS Part 2.

The requirement for Traffic Information to the AS350 pilot was effectively discharged by the Radar controller when they passed timely and accurate traffic Information on the B737 to the AS350 pilot and he achieved sighting of the B737.

Whilst the Radar controller discharged their responsibility to supply the Aerodrome controller with pertinent data on the AS350 pilot's routing, the information was passed late i.e. after the B737 was airborne.

When the Aerodrome controller received notice of the AS350, the B737 was in the initial stages of its climb-out. Cockpit workload would be high at this point in flight and it was likely that the Aerodrome controller chose to monitor the situation and delay the passing of Traffic Information until the B737 was safely established in the climb. When Traffic Information was eventually passed, it was passed as the AS350 being 5nm northeast of the B737 when in fact it was directly north of the B737. This may have played a part in the B737 pilot not sighting the AS350

UKAB Secretariat

Notwithstanding that, in Class D airspace ATC were providing an ATC service to both pilots, the B737 and AS350 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[1]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[2].

Summary

An Airprox was reported when a B737 and an AS350 flew into proximity at 0647 on Friday 18th August 2017. The B737 pilot was operating under IFR in VMC, in receipt of an Aerodrome Control Service from Birmingham; the AS350 pilot was operating under VFR in receipt of a Radar Control Service from Birmingham Approach.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, radar recordings and reports from the appropriate ATC and operating authorities.

The Board first noted that the Airprox occurred within Class D airspace of the Birmingham CTR. The AS350 pilot, on a VFR transit flight, was in receipt of a Radar Control Service and the B737 pilot, departing IFR from Birmingham, was in receipt of an Aerodrome Control Service. The AS350 pilot, on first call, had reported at 3500ft and had requested to enter the Birmingham CTR, to route 3nm east of the airport, parallel to the runway. The pilot was cleared to enter the CTR not above 2500ft. The controller explained to the pilot that this altitude restriction was to allow sequencing from departing traffic. He was aware that there were a number of departures, including the B737, which would be making a right turn-out from RW33, in accordance with their SID routing. Approximately 4½ minutes after the AS350 pilot's initial call, the aircraft entered the CTR and was placed under a Radar Control Service. With a steady stream of departing traffic due to use the ADMEX 1D SID, the potential for a conflict between the AS350 on their chosen track and IFR departures on the SID

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on.

always existed and, sure enough, 2mins later, the Radar controller telephoned the Aerodrome controller to advise him of the AS350's details and requested that he pass Traffic Information about it to the B737 pilot. However, by this time, the B737 pilot had been cleared for take-off and was airborne. The Aerodrome controller, being aware of the B737 pilot's workload after departure, decided to wait until he was established in his climb before passing the Traffic Information; this was considered a reasonable decision by the Civil Controller members. The B737 pilot responded that they were delaying the right turn, having observed the traffic on TCAS. Meanwhile Traffic Information had been passed to the AS350 pilot, by the Radar controller, about the B737 departing with a right turn-out; the pilot reported visual.

Turning to the actions of the pilots, some members wondered whether the B737 pilot's rate of climb would have quickly taken him above the AS350 anyway, and whether there had been a need to delay his turn. In response, airline pilot members considered that the B737 pilot's actions were appropriate; he had observed the AS350 on TCAS above him and to his right, in the area he would be turning towards following his SID, and had therefore reasonably decided to delay his turn. Other members felt that known issues with TCAS angle of arrival error meant that the B737 pilot could not have been sure of the bearing of the AS350 (this was the reason for the ICAO requirement not to manoeuvre for a TCAS TA). Those members felt that, by inference, the B737 pilot should therefore have flown the cleared SID and requested Traffic Information or deconfliction advice from the Birmingham controller, if necessary. As for the AS350 pilot, the Board quickly agreed that he was complying with his CTR clearance, was tracking southeast at 2400ft (below the requested maximum altitude of 2500ft), and that there was little else he could have done to influence events in the circumstances.

Civil Controller members pointed out that, in Class D airspace, it is not a requirement to separate IFR and VFR traffic. They went on to explain that there was, however, a requirement to pass Traffic Information to both pilots. Although agreeing that Traffic Information had been passed to the B737 and AS350 pilots, they considered that this had not been done in a timely manner to the B737 pilot. The Radar controller had cleared the AS350 pilot to enter the CTR to the east, in the vicinity of the B737's ADMEX SID, which involved a right-turn from RW33. The controller had been aware that there would be a number of imminent departures on that SID but he had not informed the Aerodrome controller about the AS350 until 2 min after it had entered the CTR, by which time the B737 pilot had been cleared for take-off. As a result, this denied the B737 pilot the opportunity to delay his take-off or request a revised routing if he was concerned about the presence of the AS350. The Board agreed therefore that Birmingham ATC not passing timely Traffic Information to the B737 pilot was a contributory factor to the Airprox. The Civil Controller members also opined that the situation could have then been resolved by instructing the B737 pilot to climb straight ahead to 3000ft before commencing his turn, followed by an explanation of his revised routing.

In discussing the cause and risk of the incident, some members wondered if the Radar controller had initially assessed that the B737 would have climbed safely above the AS350 whilst following his SID and that Traffic Information was not relevant. However, there was no guarantee that this would occur. Therefore, because no positive action had been taken to ensure that the two aircraft did not conflict, and Traffic Information had not been issued to the B737 pilot prior to departure, the Board considered that the cause of the Airprox was that Birmingham ATC had released the B737 into conflict with the AS350. The Board then turned their attention to the risk and quickly agreed that, because the B737 pilot had taken action to avoid the AS350, and the latter's pilot had been visual with the B737, although safety had been degraded, there had been no risk of a collision. Accordingly, the Airprox was assessed as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Birmingham ATC released the B737 into conflict with the AS350.

Contributory Factor: Birmingham ATC did not pass timely Traffic Information to the B737 pilot.

Degree of Risk: C.

Safety Barrier Assessment[3]

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

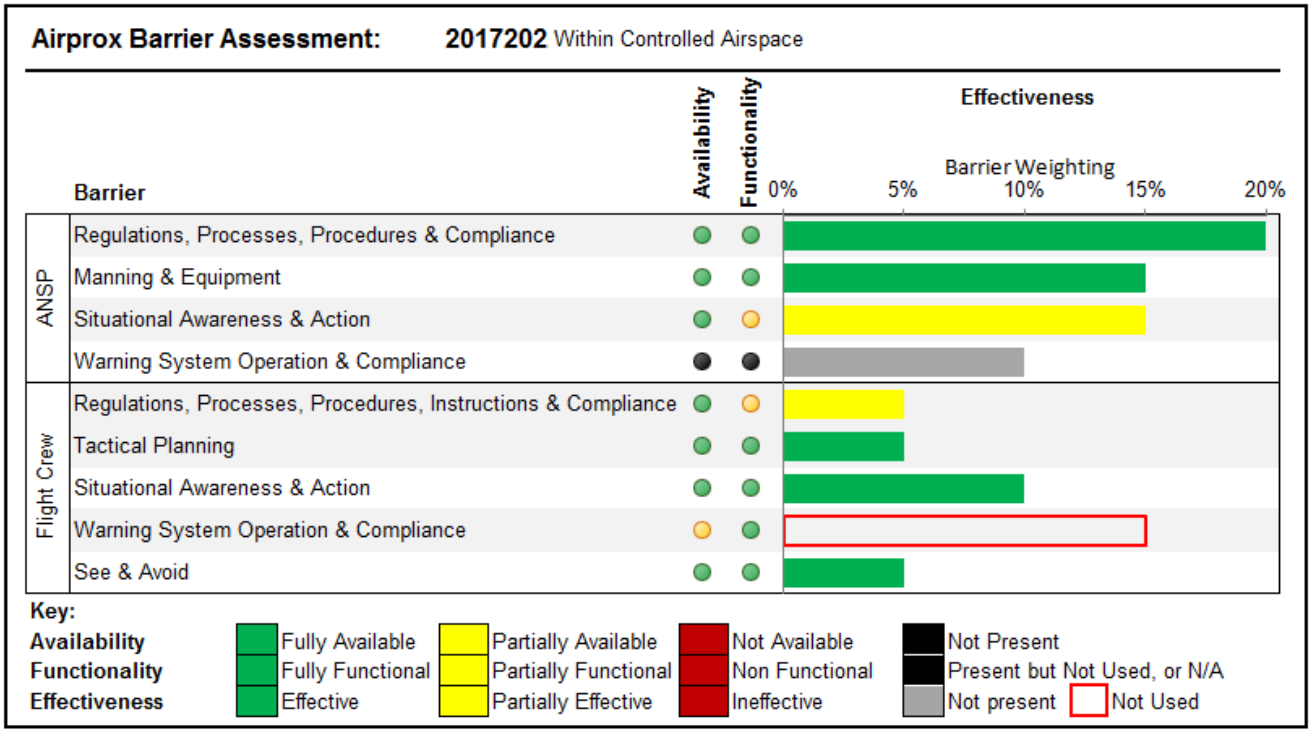
ANSP:

Situational Awareness and Action were assessed as **partially effective** because Traffic Information was only passed to the B737 pilot after he was airborne.

Flight Crew:

Regulations, Processes, Procedures and Compliance were considered **partially effective** because the B737 pilot had to deviate from the SID without receiving a clearance from ATC.

Warning System Operation & Compliance was assessed as **not used** because the B737 TCAS did not generate a TA or RA. The B737 pilot used the TCAS display for SA purposes, which is included in **Situational Awareness & Action**.



[3] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.