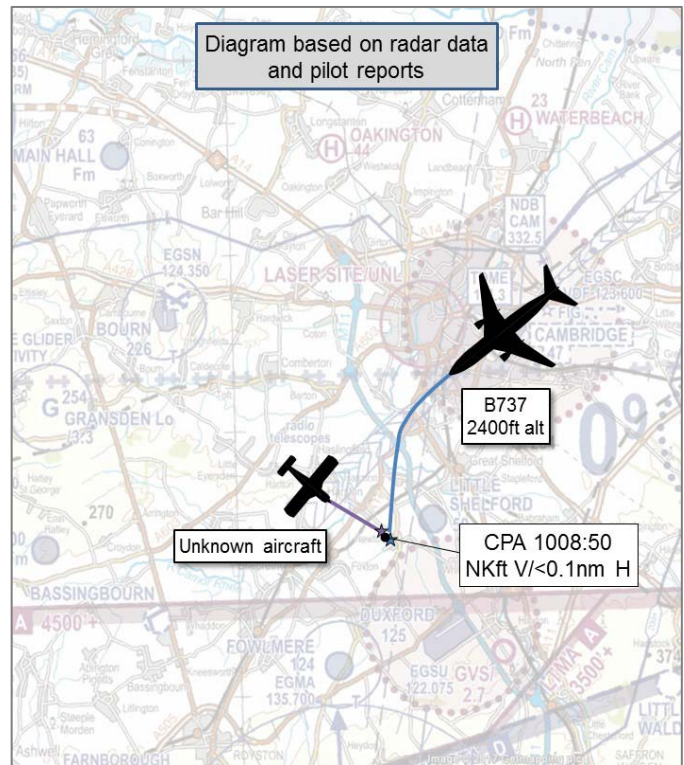


AIRPROX REPORT No 2017179

Date: 29 Jul 2017 Time: 1008Z Position: 5207N 00005E Location: 6nm SW Cambridge Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B737	Unknown ac
Operator	Civ Exec	Unknown
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	N/K
Service	None	
Provider	Stansted	
Altitude/FL	2400ft	
Transponder	On/S	
Reported		
Colours	White, Blue	N/K
Lighting	Nav, Anti-Col, Strobe, Landing	
Conditions	VMC	
Visibility	5km	
Altitude/FL	2500	
Altimeter	QNH (1007hPa)	
Heading	210°	
Speed	210kt	
ACAS/TAS	TCAS II	Unknown
Alert	None	N/A
Separation		
Reported	0ft V/800m H	N/K
Recorded	NK V/<0.1nm H	



THE B737 PILOT reports that he was being handed over from Cambridge to Stansted Director in level flight at altitude 2500ft after initial departure from Cambridge. An aircraft was seen in his 2 o'clock position, at the same level. The aircraft immediately banked to the right (approx 45° AOB) at the same time that he turned his aircraft left to avoid. His turn was discontinued after approximately 15 degrees because the other aircraft had turned and was tracking away by then. Stansted Director informed him of a primary radar contact at the same time he was turning to avoid.

He assessed the risk of collision as 'High'.

THE UNKNOWN AIRCRAFT PILOT could not be traced.

THE STANSTED CONTROLLER reports that the B737 departed Cambridge outside CAS climbing to 2400ft as per the procedure for CPT/BZD outbounds. Cambridge transferred the aircraft to him in direct conflict with a primary only contact. As soon as the pilot read back the squawk ident, he gave immediate Traffic Information that the contact was directly in their 1 o'clock. The pilot advised they were turning left to avoid. After the conflict was resolved, he gave the pilot a Traffic Service and they entered CAS without further incident. This is not the 1st time an aircraft has been transferred to him from Cambridge in direct conflict with another aircraft outside CAS. What was particularly concerning about this incident was that the aircraft in question was primary-only meaning TCAS would not help. Since the procedure effectively requires Cambridge departures to fly over Duxford, he was surprised this sort of incident doesn't occur more often; it certainly makes him feel uncomfortable.

THE CAMBRIDGE CONTROLLER reports that, at approximately 1002, a "Standard BKY" departure clearance was requested from TC East ATSA for the B737 via Approach. The TC Air Traffic Service

Assistant (ATSA) provide the squawk and frequency, confirm the request for a "Standard BKY departure", and confirm the London QNH. The BKY clearance is issued by TC East on request from Cambridge Approach controller, they then pass the after-departure instructions to the Cambridge Tower controller in an abbreviated format i.e. "callsign, standard BKY departure, squawk and frequency" with a "release" or "release subject approach." Clearance is then passed in full and is "climb straight ahead to altitude 2400ft then a left turn on track to BKY" which was passed to the B737 and which was read back correctly. There was no known conflicting traffic working Cambridge Approach or Tower and she believed none was advised by Essex radar. The B737 was airborne at 1006 and, in the absence of any known conflicting traffic, was transferred to Stansted Director for a radar service shortly afterwards at 1007.

[UKAB Note: Cambridge were providing a combined Aerodrome Control/Approach Procedural Service without surveillance radar due to resource (personnel) limitations].

Factual Background

The weather at Cambridge was recorded as follows:

METAR EGSC 290950Z 25010KT 9999 SCT043 19/12 Q1009

Analysis and Investigation

CAA ATSI

The B737 was on an IFR departure from Cambridge with a clearance to climb straight ahead on departure from RW23 at Cambridge to an altitude of 2400ft, followed by a left turn towards the BKY VOR/DME, to remain outside of controlled airspace. The aircraft had been cleared for take-off by the Cambridge controller at 1005:30. The controller was providing a combined Aerodrome Control/Approach Procedural service. At 1007:45 the controller instructed the B737 to contact Stansted Radar (Figure 1).

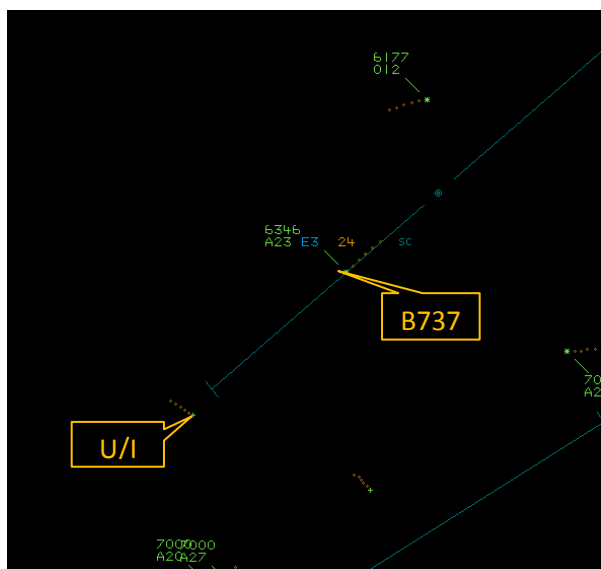


Figure 1 – 1007:45

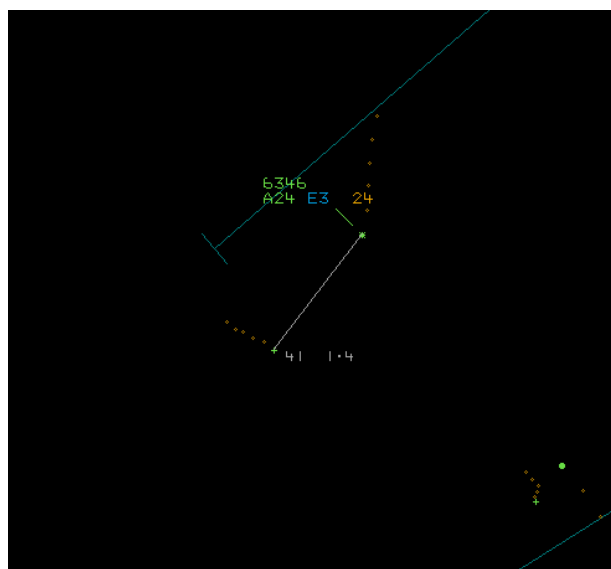
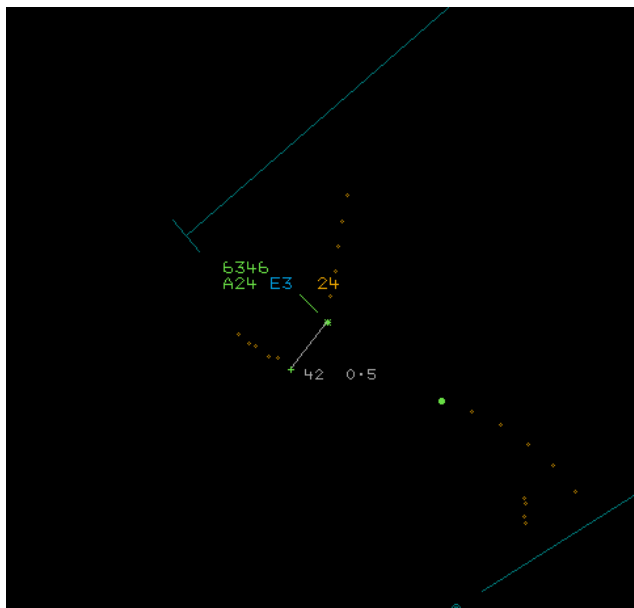


Figure 2 – 1008:27

At 1008:27, the pilot of the B737 contacted Stansted Radar, advising them that they were maintaining 2400ft and routing direct to BKY. The controller instructed the pilot to squawk ident and cleared them to climb further to 5000ft (Figure 2).

At 1008:42, the controller advised the pilot of the B737 of traffic in their 1 o'clock position, confirming that there was no height information available. The pilot of the B737 acknowledged this

and immediately confirmed that they were visual with that traffic and were turning left to avoid it



(Figure 3).

Figure 3 – 1008:42

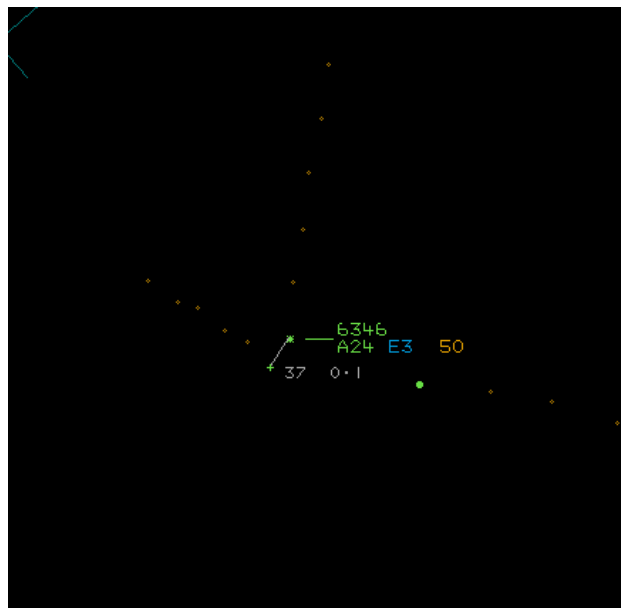


Figure 4 - 1008:51

CPA occurred at 1008:51, with the aircraft separated by less than 0.1nm laterally. The other aircraft was not transponding, and so neither its level nor identity could be determined (Figure 4).

Although no obvious left turn by the B737 was observed on the radar replay, the other aircraft appeared to make a significant turn away (Figure 5).

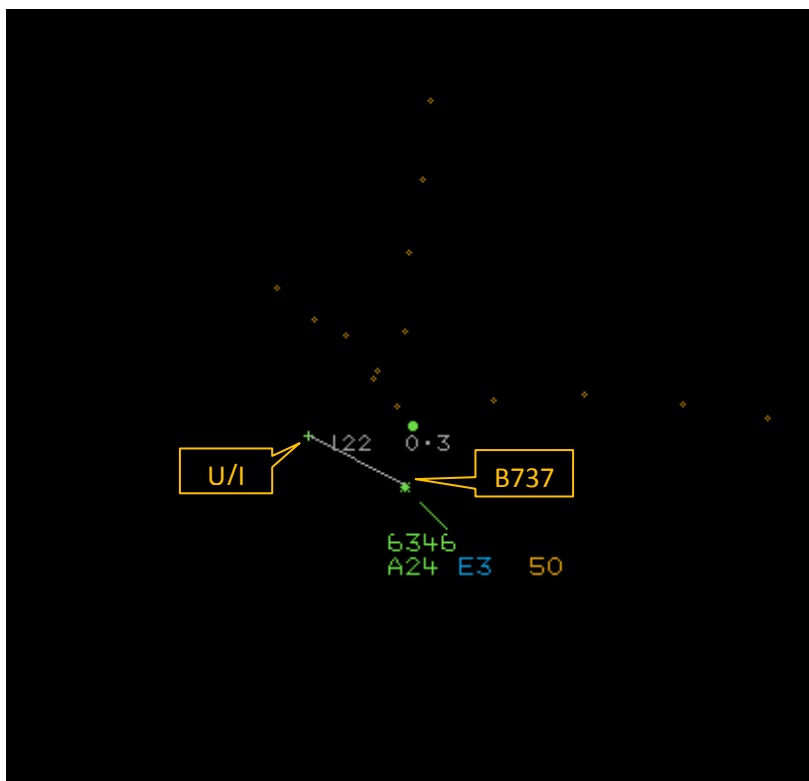


Figure 5 – 1009:10

The Stansted Radar controller is based at Terminal Control Swanwick, and their primary task is the sequencing of aircraft into Stansted Airport. At the time of the Airprox the B737 had not been formally identified, nor an ATS agreed. A Traffic Service was subsequently agreed at 1009:10,

and the controller went on to pass other Traffic Information to the B737 whilst continuing to sequence Stansted inbound traffic. The B737 entered controlled airspace at 1010:19.

The pilot of the B737, in their written report, stated that they were already visual with the aircraft and were turning to avoid it when the controller passed them the Traffic Information. They reported having originally seen the aircraft *“1000m to right of aircraft in 2 o’clock position”*. They also reported that it was at the same level as themselves.

Cambridge Radar was unavailable due to resources; however, the controller did not advise the pilot of the B737 that there would be no surveillance service available for their departure, although they did advise that the next frequency would be Stansted Radar. The AIP entry for Cambridge states that Cambridge Radar is *“available intermittently during normal working hours”*. The lack of radar services was not NOTAM’d and no reference to it was included on the ATIS.

Both aircraft were operating in Class G airspace where the pilots are responsible for their own collision avoidance.

ATSI recommends that Cambridge ATC review how they promulgate the availability of Cambridge Radar. ATSI believes that the AIP entry is insufficient, and that pilots should be advised of the times that radar services will or will be not available.

UKAB Secretariat

The B737 and unknown aircraft pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. If the incident geometry is considered as converging then the B737 pilot was required to give way to the unknown aircraft².

Summary

An Airprox was reported when a B737 and an unknown aircraft flew into proximity near Cambridge Airfield at 1008 on Saturday 29th July 2017. The B737 pilot was operating under IFR in VMC having departed Cambridge and in the process of transferring from Cambridge to Stansted radar. Despite extensive efforts, the unknown aircraft pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilot of the B737, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board firstly looked at the actions of Cambridge ATC. Members discussed the Cambridge departure procedures and agreed that the airspace around Cambridge can be very busy. The consensus amongst the Board was that to allow an aircraft the size of a B737 to depart without a radar service in Class G see-and-avoid airspace and join controlled airspace near Duxford (a busy GA airfield), severely compromised the safety of aircraft this size given their limited ability to see other aircraft and manoeuvre in a timely and effective manner. If Cambridge were not able to provide a radar service themselves, some members opined that a better solution could be to climb the aircraft to the north, where a radar service could be provided by Lakenheath and would allow the aircraft to climb quickly to a more suitable level. Members did not have all of the required information to formally make a recommendation, but the Board opined that there would be value in Cambridge revisiting their procedures for these types of aircraft when radar services are not available. The Board also noted that the B737 pilot had not been informed of the absence of radar at the time (the

¹ SERA.3205 Proximity.

² SERA.3210 Right-of-way (c)(2) Converging.

absence had not been pro-actively promulgated by NOTAM or ATIS broadcast), and this had resulted in relevant Traffic Information not being available to the B737 pilot prior to handover to Stansted.

The Board then turned to the actions of the B737 pilot. Members could only assume that the operating company had appropriately risk-assessed B737 operations outside of controlled airspace, but they wondered whether this risk-assessment had been made under the assumption that the crew would receive a radar service on departure. Irrespective, members agreed that by not informing the pilot of the lack of radar, he had not been in a position to make a dynamic risk assessment and decide if he could still safely depart. This was considered to be a contributory factor in this incident. The Board noted that the B737 was fitted with TCAS II but, because the unknown aircraft was not transponding, the B737's equipment was unable to detect the unknown aircraft. This was a salutary reminder of the fact that TCAS/TAS could not be relied upon in Class G airspace because some aircraft were not transponder equipped. As it transpired, the B737 pilot saw the unknown aircraft at the last minute, at the same time as Stansted passed Traffic Information, and he reported carrying out a turn to avoid. Unfortunately, the limited manoeuvrability of the B737 meant that it was unlikely that its pilot was able to materially increase separation before the unknown aircraft pilot had resolved the conflict by carrying out a sharp avoiding action turn away from the B737.

The Board then looked at the actions of the Stansted controller. They noted that as the B737 pilot called the Stansted controller he was already in conflict with the unknown aircraft. The Board commended the controller for his prompt action in passing Traffic Information although, as it transpired, the B737 pilot had already seen the contact. The Board felt that it was important to acknowledge that the B737 had been transferred to Stansted in conflict, and that the controller did everything he could in the time available.

The Board then looked at the cause and risk of the Airprox. Operating as they both were in Class G see-and-avoid airspace without a radar service, it was incumbent on both pilots to avoid collisions with each other. Without a report from the unknown aircraft pilot it was not possible to determine at what point he had seen the B737; given the size of a B737 and his energetic avoiding manoeuvre, it appeared to the Board that it was likely that the unknown pilot had seen the B737 late, but they could not definitively say that that was the case. For his part, the B737 pilot was probably preoccupied with after takeoff and departure checks, and it may have been that the unknown aircraft was also obscured by cockpit structures. As a result, the Board agreed that the incident was probably best described as a conflict in Class G resolved by the unknown aircraft pilot. The Board looked at the contributory factors and agreed that two factors had reduced the information available to the B737 pilot, these were that Cambridge radar was not in use due to personnel limitations, and that Cambridge did not inform the B737 pilot that surveillance radar was not available. The Board then turned to the risk. Although both pilots had evidently seen each other, the lateness of sighting and non-manoevrability of the B737, allied to the degree of manoeuvring by the unknown pilot, indicated to the Board that safety had been much reduced below the norm. Accordingly the degree of risk was assessed as Category B.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G resolved by the unknown aircraft pilot.

Contributory Factor(s): 1. Cambridge radar was not in use due to personnel limitations.
2. Cambridge did not inform the B737 pilot that surveillance radar was not available.

Degree of Risk: B.

Safety Barrier Assessment³

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

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

ANSP

Regulations, Processes, Procedures & Compliance was assessed as partially effective because Cambridge ATC did not inform the B737, or any other pilots, of the absence of radar services. This might have prompted the pilot to change his departure plan.

Manning & Equipment was assessed as partially effective because Cambridge ATC did not have a radar service available for the departing B737, a medium category aircraft, and this unavailability was not notified to the aircraft crew.

Situational Awareness & Action was assessed as ineffective because Cambridge ATC handed over the B737 to Stansted Radar in conflict. The Stansted radar controller gave the B737 pilot TI but only at the same time as the B737 pilot started to turn to avoid the unknown aircraft.

Flight Crew

Situational Awareness & Action was assessed as ineffective because the crew were not aware of the conflicting aircraft until they made initial contact with Stansted Radar.

Warning System Operation and Compliance was assessed as ineffective because, although the B737 was equipped with TCAS II, the unknown aircraft was not transponding and therefore the B737 TCAS could not provide warnings to the B737 crew.

See and Avoid was assessed as partially effective because both pilots likely did not see the other aircraft until the last moment and both had to carry out emergency avoiding action.

