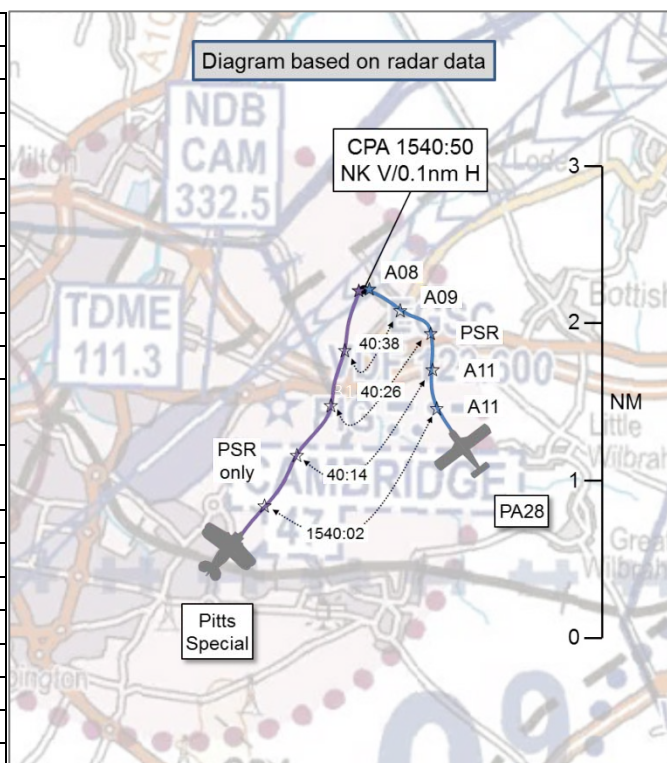


AIRPROX REPORT No 2016120

Date: 23 Jun 2016 Time: 1541Z Position: 5213N 00012E Location: Cambridge airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	Pitts Special
Operator	Civ Trg	Civ Pte
Airspace	Cambridge ATZ	Cambridge ATZ
Class	G	G
Rules	VFR	VFR
Service	Aerodrome	Listening out
Provider	Cambridge	London Info
Altitude/FL	800ft	NK
Transponder	A, C	None
Reported		
Colours	White with red/grey stripes	Red
Lighting	Strobes, tail beacon, landing	NK
Conditions	VMC	VMC
Visibility	>10km	Variable
Altitude/FL	650ft	1000ft
Altimeter	NK	NK
Heading	230°	NK
Speed	75kt	138kt
Separation		
Reported	Nil V/30m H	Not seen
Recorded	NK V/0.1nm H	



THE CAMBRIDGE AERODROME CONTROLLER reports that the PA28 was on base leg, shortly turning final, when an unidentified aircraft entered the ATZ, believed to be a Pitts Special (red and white in colour). The unidentified aircraft was not in communication with either the Aerodrome or Approach controller; blind calls were made but no response was heard. Traffic Information was passed to the PA28 pilot as soon as practicable, and the pilot gained visual contact on the infringing aircraft, subsequently reporting 'visual on final'. The unidentified aircraft was observed, and reported, to have been at approximately 500ft. On getting close to or abeam the PA28, the 'Pitts Special' was observed rocking its wings as it went past. It was fortunate that the PA28 pilot reported the aircraft visual, otherwise this could have been a lot closer than it was. The unidentified aircraft was tracked by other agencies and was last observed 4nm north-west of Chatteris where it disappeared from radar. The traffic was non-transponding throughout the whole period.

THE PA28 PILOT reports that he was in the circuit at Cambridge; he was sitting in the right-hand seat and his pupil was in the left-hand seat. As they turned onto base leg, the Aerodrome controller advised them of an aircraft they could see inside the circuit pattern coming towards them at an unknown height with no radio contact with Approach or Tower. He saw the aircraft as his student was configuring the aircraft for base leg (descent). He identified it as a red coloured Pitts Special flying low (approximately 500-550ft he estimated) on a trajectory that would soon be intersecting the final approach to RW23, left to right, at approximately 45° (towards Waterbeach). He let his student continue because there was no risk of a collision at this point and he wanted to be in a position to see the other aircraft. As his student turned onto final RW23, the other aircraft continued on its path, which was now about to cross the final approach. As he let his student continue to descend on the glide-path, the pilot of the other aircraft did not change his course; did not turn; did not climb or descend; but just continued so that at one point they were at the same level (approximately 500-550ft) on different tracks. The lateral distance may have been 30m. He presumed that the Pitts Special pilot must at that point have seen that he was crossing their path (to him it must have looked

like a PA28 was flying towards him) because he descended about 100ft and turned slightly to his left (away from them) but there was no risk of a collision.

He assessed the risk of collision as 'Low'.

THE PITTS SPECIAL PILOT reports that he was flying on a course heading north and west of the city of Cambridge. Another aircraft was accompanying him. Because of very heavy thunderstorms, both pilots changed their course and accidentally entered the Cambridge ATZ. The other pilot contacted London Flight Information to apologise. Despite a good look-out he did not see any traffic in the vicinity. He added that the weather was too bad at that moment to navigate carefully. The lesson was to avoid the bad weather sooner.

Factual Background

The weather at Cambridge was recorded as follows:

EGSC 231520Z 20004KT 9999 SCT015 FEW040CB 22/19 Q1015=

The Rules of the Air Regulations 2015¹ states:

If the aerodrome has an air traffic control unit the commander must obtain the permission of that unit to enable the flight to be conducted safely within the aerodrome traffic zone.

Analysis and Investigation

CAA ATSI

At 1537:35, the Aerodrome controller instructed the PA28 pilot to orbit right-hand at the end of the downwind leg because there was an aircraft ready to backtrack the runway for departure.

At 1538:31, a primary radar-only contact appeared on the area radar recording, 2.7nm south-west of Cambridge tracking north-north-east. No level information was available and at no time was it possible to determine the identity of the aircraft (Figure 1).

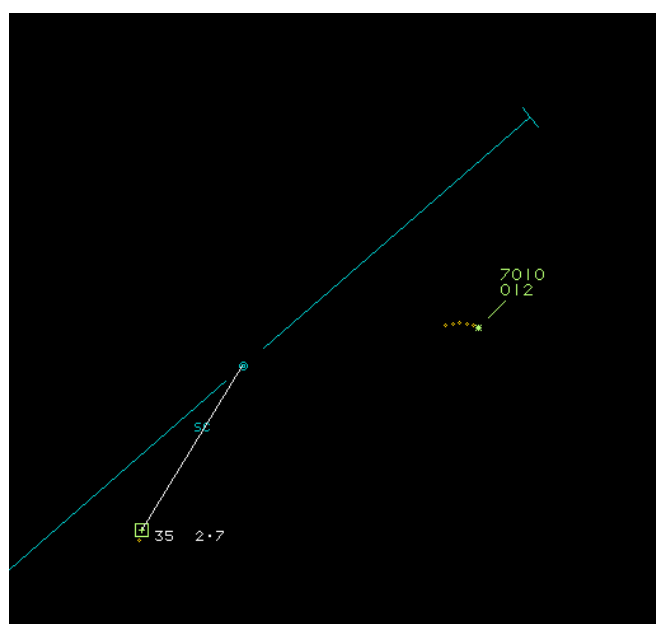


Figure 1 – Swanwick MRT – 1538:31. PA28=Squawk 7010.

¹ Section 3, Rule11, Flight within ATZs, Paragraph 3.

At 1538:42, the unidentified aircraft was within the lateral dimensions of the Cambridge ATZ, which has a radius of 2.5nm, tracking towards the RW23 climb-out (Figure 2).

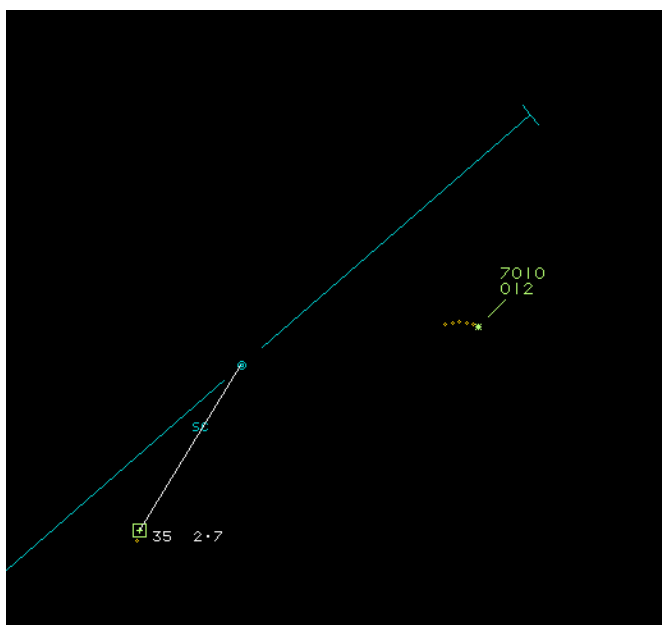


Figure 2 – Swanwick MRT – 1538:42.

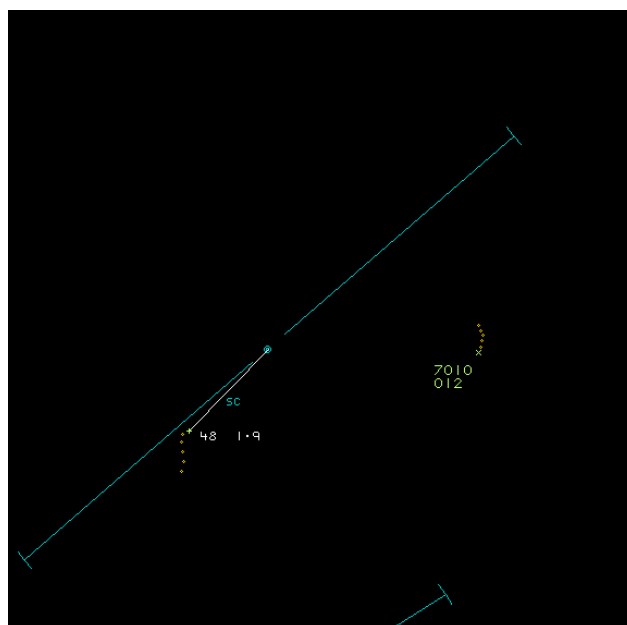


Figure 3 – Swanwick MRT – 1539:00.

At 1539:00, the aircraft was observed to turn east, away from the RW23 climb-out area, and at 1539:38 turned onto a north-easterly track (Figures 3 & 4).

At 1539:50, the pilot of the departing aircraft was cleared for take-off and at 1540:00 the PA28 pilot was cleared to final for RW23.

At 1540:28, Traffic Information on the unidentified aircraft was passed by the Aerodrome controller to the PA28 pilot who reported visual almost immediately. No type of aircraft was passed but an estimated level of 1000ft was passed by the controller (Figure 5).

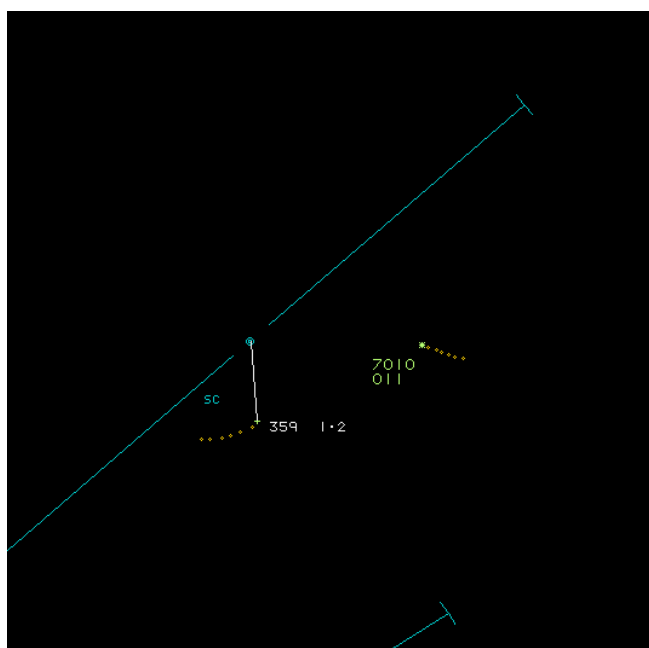


Figure 4 – Swanwick MRT – 1539:38.

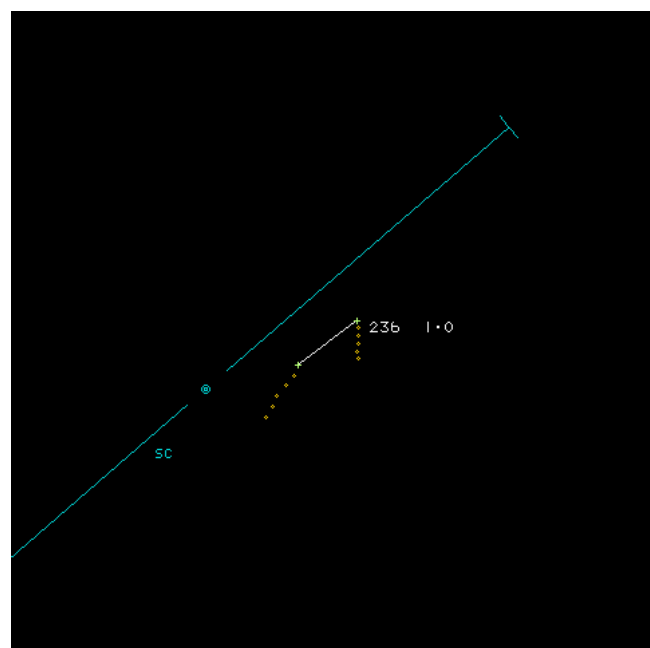


Figure 5 – Swanwick MRT – 1540:28.

The CPA took place at 1540:50 with a minimum lateral distance of <0.1nm (Figure 6).

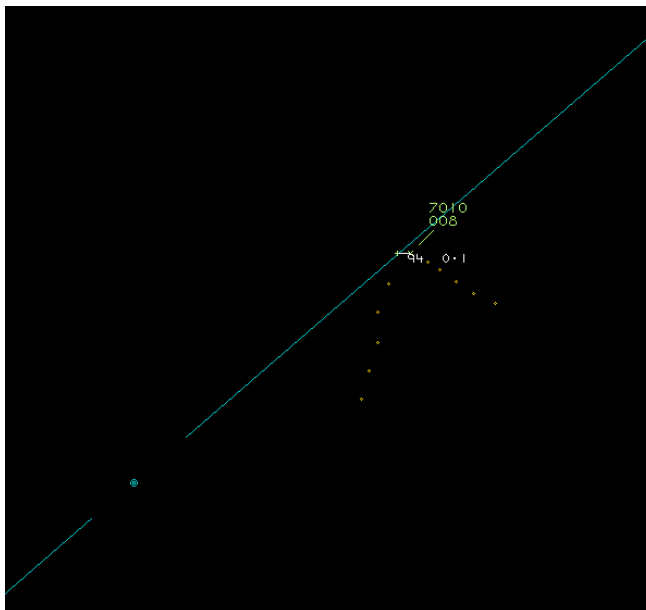


Figure 6 – Swanwick MRT – 1540:50.

The Aerodrome controller reported making blind transmissions but at no time did the pilot of the unidentified aircraft contact Cambridge. The Aerodrome controller later referred to the aircraft type as a biplane and subsequently in the written report as a “Pitts Special”.

UKAB Secretariat

The PA28 and the Pitts Special pilots an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard². An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation³.

Summary

An Airprox was reported when a PA28 and a Pitts Special flew into proximity at 1541 on Sunday 18th July 2016. The PA28 pilot was operating under VFR in VMC, in receipt of an Aerodrome Control Service from Cambridge. The Pitts Special pilot was operating under VFR in VMC, listening out on the London FIS frequency. The Pitts Special was observed to enter the ATZ, without contacting Cambridge ATC, into conflict with the PA28.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first discussed the actions of the PA28 pilot, who was carrying out a training flight in the left-hand circuit to RW23 at Cambridge. Having been informed of the unknown aircraft that had entered the ATZ and was routing towards them, the PA28 pilot gained visual contact and had decided to let his student continue the approach as he continued to watch the other aircraft. Noting that the PA28 pilot had reported that the horizontal distance reduced to about 30m whilst they were on final, the Board were concerned that although he thought that there had not been a risk of a collision, continuing his flight towards an aircraft with unknown intentions to a distance of about 30m was not an ideal situation. GA pilot members considered that it would have been much more

² SERA.3205 Proximity.

³ SERA.3225 Operation on and in the Vicinity of an Aerodrome.

preferential to have discontinued the approach and have remained well clear of the unknown aircraft; particularly with a student in the cockpit given that it demonstrated a flawed idea of how to deal with such a situation in future, especially if the student had experienced it on a solo flight. This questionable decision to continue was compounded by the fact that it appeared that the instructor had assumed that the other pilot had seen him, which he had not. The Board again re-iterated the importance of pilots not assuming that others had seen them just because they themselves had seen the other aircraft; although the Pitts Special pilot was required to give way to the PA28, having not seen the PA28, the Pitts Special pilot could not see-and-avoid.

The actions of the Pitts Special pilot were then discussed by the Board. He had reported that his plan was to route to the west and north of the city of Cambridge (the airport is situated to the east of the city). However, his intended route had been affected by thunderstorms, resulting in him changing course, during which he found that accurate navigation had been difficult. The Board acknowledged that the Pitts Special pilot's workload was undoubtedly high bearing in mind the weather conditions and the need to keep a relatively high speed to assist the aircraft's manoeuvrability, but the fact that he had entered the Cambridge ATZ without permission and was considered to be a key causal factor in the incident. That he did not then see the PA28 may have been a result of obscuration by his aircraft's high wing, but this was a timely reminder for pilots of such aircraft to positively manoeuvre their aircraft in order to mitigate these issues.

Turning to ATC, the Board commended the Aerodrome controller for noticing the unknown aircraft in the ATZ and for his issuing pertinent Traffic Information to the PA28 pilot. Additionally, although not successful, members noted that both he and the Approach controller had been proactive in making blind calls to the unknown aircraft to try to elicit a response.

The Board then looked at the barriers that were relevant to this Airprox and decided that the following were key factors:

- **Flight Crew Pre-flight Management and Planning** was assessed as **ineffective** because the Pitts Special pilot had not taken enough account of the Cambridge ATZ, or presumably the weather, in his route plan.
- **Flight Crew Acting on Information** was also considered **ineffective** because the PA28 pilot did not alter his intentions as a result of Cambridge ATC's Traffic Information.
- **Flight Crew Operational Threat Awareness and Management** was also considered **ineffective** because the Pitts Special pilot had not maintained situational awareness of the Cambridge ATZ as he avoided weather.
- **Flight Crew Electronic Warning System and Resolution Action** was **not available** because neither aircraft was fitted with an ACAS/TAS.

Looking at the cause and risk, but noting that the PA28 pilot considered the risk of collision as low, the Board judged that the Aerodrome controller had rightly filed the Airprox report because he had been concerned by the close proximity of the two aircraft and this was the cause of the Airprox. Members noted that the radar recordings showed that at CPA the two aircraft were <0.1nm apart at the same altitude, and that the PA28 pilot's estimate was 30m. However, the Board noted that the PA28 pilot had had the Pitts Special in sight throughout and had not considered that avoiding action was necessary. Members agreed therefore that although safety had been degraded, there had been no risk of a collision and the Board assessed the Airprox as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

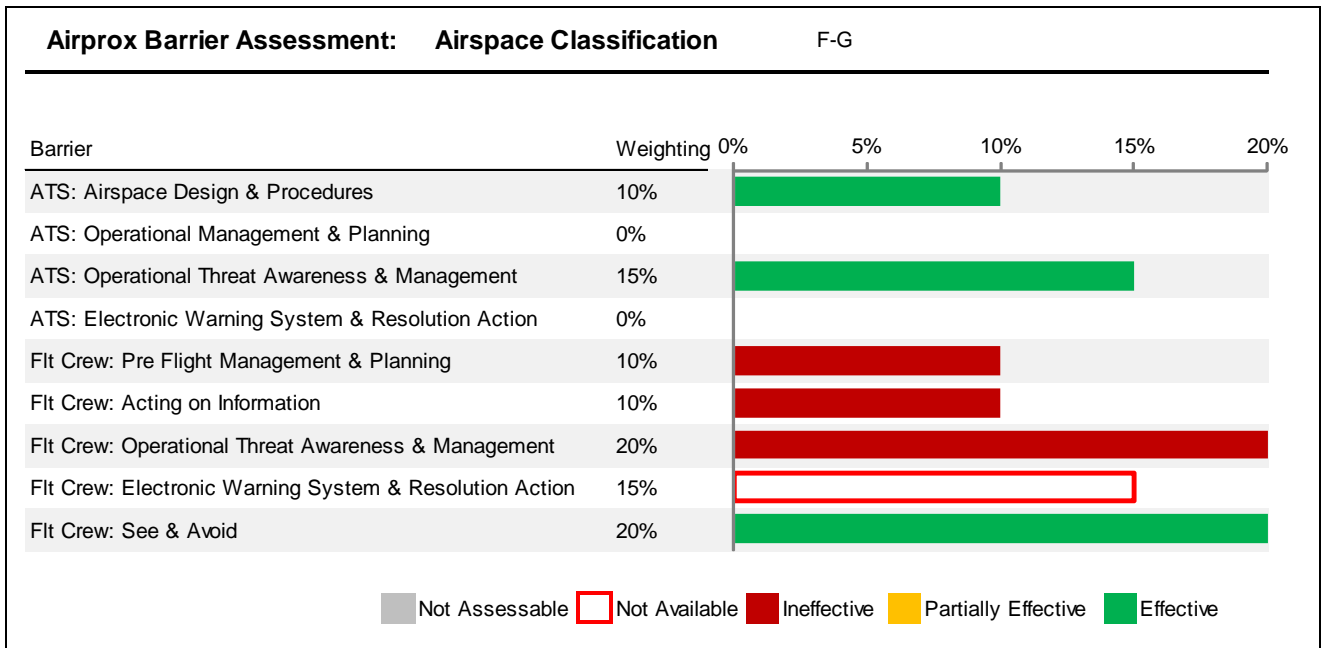
Cause: The Cambridge controller was concerned by the close proximity of the aircraft.

Contributory Factors: The Pitts Special pilot entered the Cambridge ATZ without permission.

Degree of Risk: C.

Barrier Assessment:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).⁴ The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, Not Available, or Not Assessable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.



⁴ Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.