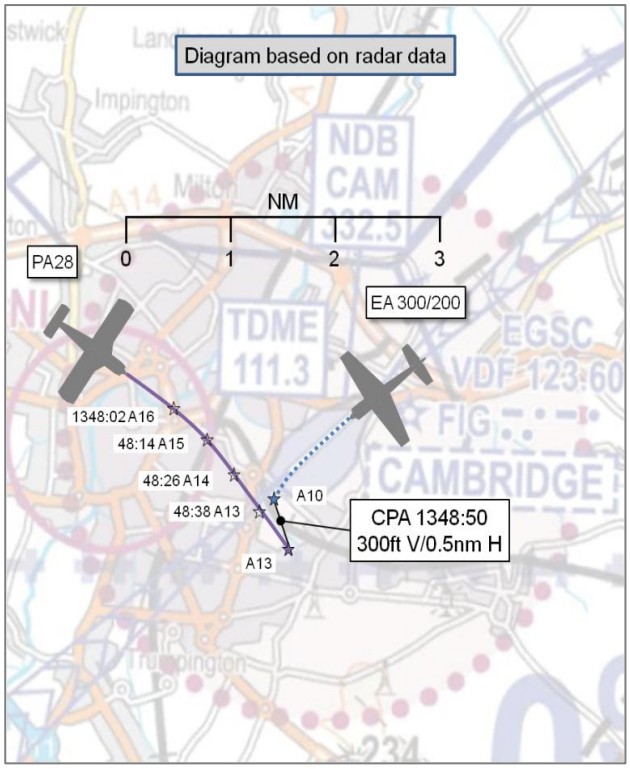
AIRPROX REPORT No 2014168

Date/Time:	7 Sep 2014 1349Z (Sunday)	
Position:	5212N 00010E (0.4nm SW Cambridge Airport - elevation 47ft)	
Airspace:	Cambridge ATZ	(*Class*: G)
	Aircraft 1	*Aircraft 2*
Type:	Extra EA300/200	PA28
Operator:	Civ Club	Civ Club
Alt/FL:	700ft	1500ft QFE
Conditions:	VMC	VMC
Visibility:	>10km	>10km
Reported Separation:	150ft V/0nm H	700ft V/1000m H
Recorded Separation:	300ft V/0.5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXTRA EA300/200 PILOT reports that his aircraft was coloured blue and white; strobes were illuminated; SSR Modes C and S were selected. A TAS was not fitted. The pilot was intending to fly solo circuits in VMC and he recalled that he was in the initial climb following a touch and go on RW23 at Cambridge airport (CBG). Passing through approximately 700ft, the pilot looked to the right and saw an aircraft flying apparently straight and level, slightly higher, on a crossing track. The pilot judged that, if the present trajectory was continued, they would possibly collide or pass each other extremely closely. The pilot immediately lowered the nose of the aircraft in order to level off so that the other aircraft would fly over the top. Approximately 4sec from the first sighting of the other aircraft, the pilot looked left and saw that it had passed overhead and was clear. At that point the climb was resumed. The pilot stated that the Extra 'is very quick' in the circuit. He made no comment on the radio at the time but, after the incident, the Extra pilot remembered hearing an aircraft requesting to join the circuit and thought that the clearance was given for a "standard overhead join". He concluded that the aircraft encountered may have been that one and, if so, then it was joining at or about circuit height and directly onto crosswind, which was not the Extra pilot's understanding of an overhead join.

The pilot assessed the risk of collision as 'High'.

THE PIPER PA28 PILOT reports that he was inbound to CBG from the west under VFR in VMC. His aircraft was predominantly white and grey; its lighting state was not reported; SSR Modes A and C were selected; a TAS was not fitted. He was receiving a Basic Service from CBG Approach. When he reported inbound at 5nm he was transferred to the Tower frequency and reported inbound for a crosswind join. He descended over the City on the deadside to 1500ft. Approaching crosswind, he was informed of a PA28 departing left for an overhead departure, and an Extra entering the runway; he became visual with the Extra as its pilot was cleared for take-off. He reported crosswind at 1500ft and was instructed to report on final as number one. He was visual with the PA28 departing from the

overhead and made a slightly wider circuit to accommodate. The Extra pilot positioned inside him on a tighter circuit thus becoming *de facto* number one, so he became number two. He completed a normal circuit to land.

He assessed the risk of collision as 'None'.

THE CBG AERODROME CONTROLLER reports that from what he remembered of the incident the EA300/200 pilot was in the circuit and the PA28 pilot was joining overhead and asked to report crosswind. The EA300/200 pilot was cleared for a touch-and-go and the PA28 pilot then reported turning crosswind. He passed traffic to the PA28 pilot telling him that the EA300/200 was about to depart and was remaining in the circuit. No Traffic Information was passed to the EA300/200 pilot as he felt it would be poor timing as the aircraft was on the roll on the runway. No pilots reported an Airprox to him on frequency. However, the operating company of the EA300/200 telephoned the Tower shortly after the EA300/200 pilot had finished the circuit training asking 'what happened with the Cherokee' stating that the pilot of the EA300/200 said it had 'got a bit close'. He explained that it was a PA28 crosswind. He heard nothing from the PA28's operating company. He considered that the issue was, and had been for a long time, how the EA300/200 is operated in the circuit. On departure the pilots seem to zoom climb almost to 1000ft by the end of the runway and then, on occasions, carry out short circuits. He thought that the EA300/200 climbing very quickly and steeply together with the tendency of the PA28's flying club to fly wider circuits contributed to the incident.

Factual Background

The CBG weather was:

```
METAR EGSC 071320Z 31005KT 250V030 9999 SCT040 19/09 Q1016=
```

The CBG ATZ consists of a circle of radius 2.5nm, centred on RW05/23 and extending from the surface to 2000ft above the surface (elevation 47ft).

Analysis and Investigation

CAA ATSI

The CAA ATSI had access to CBG RTF, area radar recording and the written reports from CBG Aerodrome controller and both pilots. The Airprox was not reported to the CBG ATSU and the controller completed his report some time after the occurrence.

The EA300/200 pilot was operating under VFR, conducting solo circuits on RW23. The PA28 pilot was operating under VFR, returning to CBG from the west. Both pilots were in receipt of an Aerodrome Control Service from CBG Tower.

The UK AIP AD 2.EGSC-11, dated May 2014 states:

> 'Unless otherwise instructed by Air Traffic Control the visual circuit height is 1500 ft for all muti-engined types, 1000 ft for other fixed-wing aircraft and 700 ft for helicopters. All heights QFE.'

At 1345:52, the PA28 pilot contacted CBG Tower reporting 12nm to run with the airfield in sight. The Aerodrome controller asked how the PA28 pilot wished to join for RW23 left-hand circuit with QFE 1014hPa. The PA28 pilot requested to join crosswind and the Aerodrome controller instructed him to report deadside joining for crosswind RW23 left-

hand. The PA28 pilot acknowledged *"Report deadside* [PA28 C/S] *for crosswind join".* The PA28 pilot was reminded of the QFE which he acknowledged.

At 1347:13, the controller cleared the EA300/200 pilot for take-off, passing Traffic Information regarding an aircraft departing to the east (not involved) and the PA28 inbound from the west *"*[EA300/200 C/S] *traffic Cherokee inbound to join crosswind from the west"*, which was acknowledged by the EA300/200 pilot. Area radar recording showed the PA28 positioned 2.9nm west-northwest of CBG indicating FL016 (Figure 1).

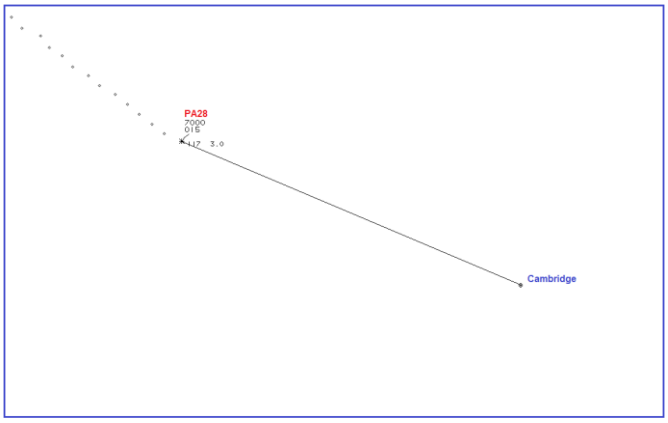


Figure 1 - Stansted single source radar at 1347:13

At 1347:45, the following RTF exchange occurred:

ATC *"*[PA28 C/S] *traffic Extra just departing runway two three remaining in the circuit further traffic er is a Cherokee turning crosswind departing the circuit".*

PA28 *"Copy traffic, turning deadside currently at one thousand five hundred feet* [PA28 C/S]*"*

ATC *"*[PA28 C/S] *roger report downwind left-hand Extra just rolling".*

PA28 *"Report downwind left-hand* [PA28 C/S] [1348:10].

At 1348:33, the radar recording showed the PA28 pilot positioning crosswind at FL012 (altitude 1227ft), 0.8nm southwest of the Aerodrome Reference Point. The EA300/200 had not yet appeared on the radar replay (Figure 2).

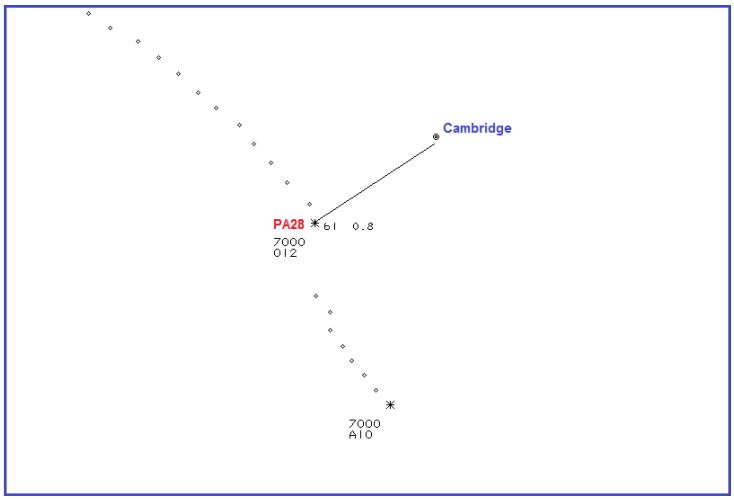


Figure 2 - Stansted single source radar at 1348:33

At 1348:41, the PA28 pilot reported *"[PA28 C/S] clear of the Extra"* and the controller instructed the PA28 pilot to report final number one which was acknowledged. The EA300/200 was shown on radar with the PA28 in its 11 o'clock position at a range of 0.4nm and 500ft above (Figure 3).

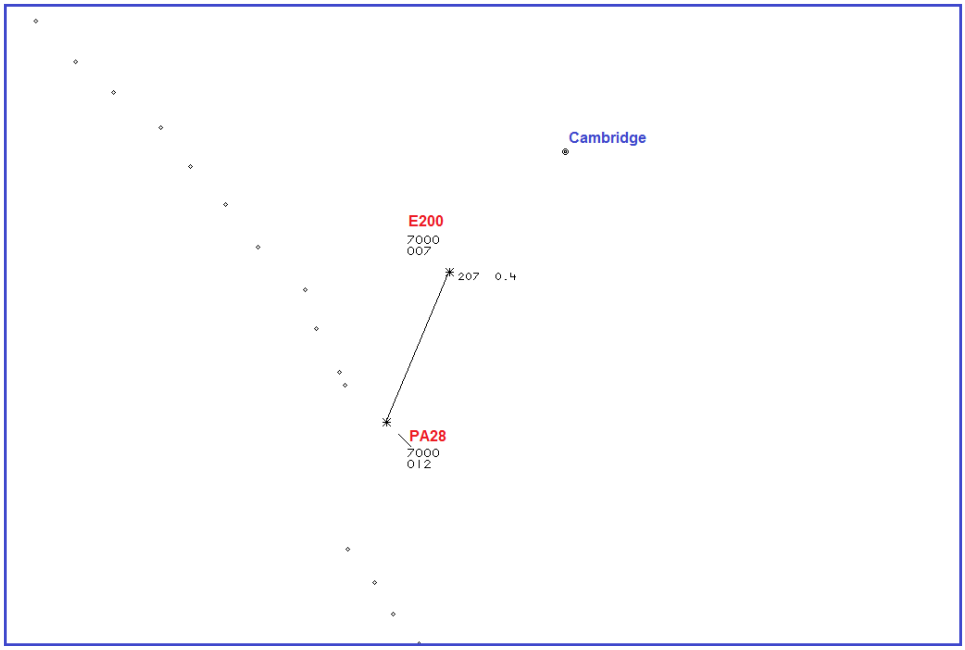


Figure 3 - Stansted single source radar at 1348:41

The EA300/200 pilot followed the PA28 and, at 1349:29, was turning inside the PA28 pilot's circuit (Figure 4).

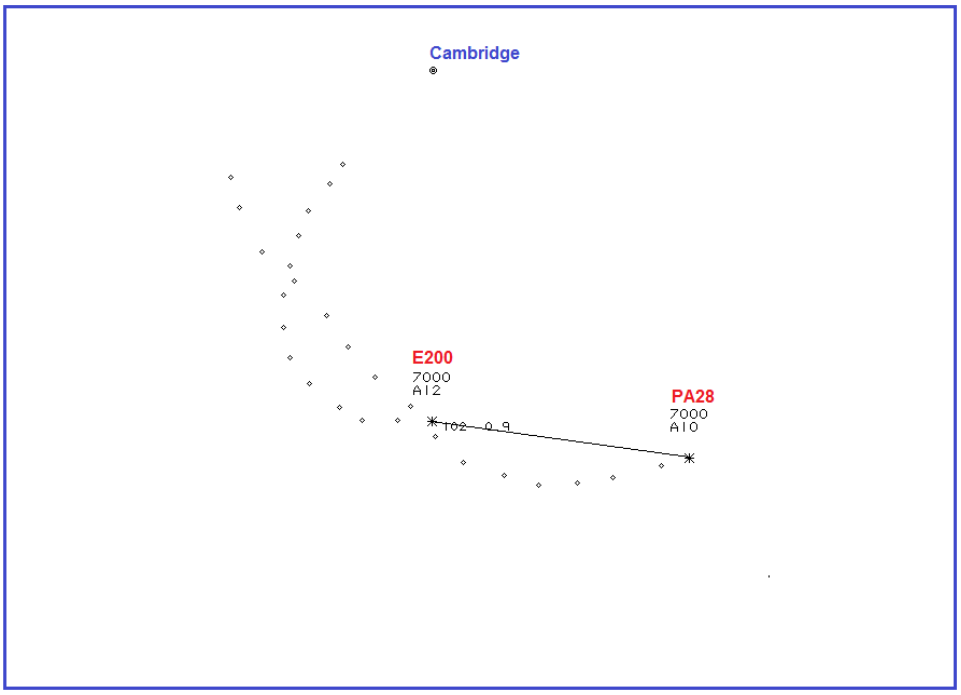


Figure 4 - Stansted single source radar at 1349:29

Due to the wider circuit flown by the PA28 pilot and the compact circuit of the EA300/200 pilot, the controller subsequently made the E200 pilot number one and both pilots continued in the circuit without further incident.

Both pilots were in receipt of an Aerodrome Control Service and CAP493 (The Manual of Air Traffic Services (MATS) Part 1), Section 2, Chapter 1, paragraphs 1.4 and 1.23 state:

> 'Aerodrome Control shall issue information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic with the objective of: Preventing collisions between: aircraft flying in, and in the vicinity of, the ATZ…
> …Note: Aerodrome Control is not solely responsible for the prevention of collisions. Pilots and … must also fulfil their own responsibilities in accordance with Rules of the Air.
>
> Traffic information and instructions shall be passed to aircraft on any occasion that a controller considers it necessary in the interests of safety, or when requested by a pilot. In particular, Aerodrome Control shall provide:
>
> Generic traffic information to enable VFR pilots to safely integrate their flight with other aircraft;
>
> Specific traffic information appropriate to the stage of flight and risk of collision;
>
> Timely instructions as necessary to prevent collisions and to enable safe, orderly and expeditious flight within and in the vicinity of the ATZ.'

The PA28 pilot was passed appropriate Traffic Information and was visual with the climbing EA300/200. After the PA28 crossed the extended centreline at a height of 1200ft (altitude 1227ft) the pilot reported clear of the EA300/200. (Circuit height is 1000ft.)

Prior to departure the EA300/200 pilot was given appropriate Traffic Information regarding the PA28 joining crosswind from the west. The EA300/200 pilot only sighted the PA28 on passing 700ft in the climb, and the aircraft was levelled to remain below the PA28 which was 500ft above.

UKAB Secretariat

Both pilots shared an equal responsibility to avoid collision and not to fly into such proximity as to create a danger of collision[1].

Summary

The Airprox occurred within Class G airspace of the CBG ATZ, when the departing EA300/200 came into proximity with the PA28 joining crosswind. The controller had provided both aircraft with appropriate Traffic Information. The PA28 pilot was visual with the departing EA300/200 and joined crosswind as instructed. On passing 700ft in the climb-out the EA300/200 pilot made a late sighting of the PA28 crossing ahead and above from right to left. The EA300/200 pilot was concerned about the proximity of the PA28 and levelled the aircraft to avoid. The minimum separation was recorded as 0.5nm horizontally and 300ft vertically.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

It was pointed out to the Board that initially there had been some confusion as to the time of the Airprox. The EA300/200 pilot had carried out two sorties on the day of the Airprox and it

[1] Rules of the Air 2007 (as amended), Rule 8 (avoiding aerial collisions).

was only when the CAA Transcription Unit checked the RTF recordings that it was established that the incident between the two aircraft had occurred during the afternoon. This explained why both the EA300/200 pilot and the controller believed that the Airprox occurred after a touch-and-go rather than a take-off as had actually occurred.

The Board noted that the PA28 pilot requested and was cleared for a crosswind join to RW23 left-hand circuit at Cambridge. He positioned accordingly, although radar recordings show that he crossed through the RW23 departure path slightly high at an altitude of 1227ft (a height of 1180ft). Members commented that aircraft are expected to be at the circuit height on the crosswind leg but they agreed that the actual difference in this case was probably not germane to the incident given that he was only 180ft high (the circuit height at CBG was 1000ft). Traffic Information was passed to the PA28 pilot about the EA300/200 departing, which he saw as it departed.

Turning to the actions of the Extra pilot, the Board noted that when he was cleared for take-off the controller passed accurate Traffic Information about the PA28, joining crosswind from the west. The EA300/200 pilot took-off but only sighted the PA28 as he was passing about 700ft in the climb. The pilot's written report commented that, from recollection, a standard overhead join was issued at about that time, possibly to the PA28 pilot. The Board opined that if the EA300/200 pilot's mental model was that he believed the PA28 was conducting an overhead join then he may have deduced that, by the time the inbound aircraft had carried it out, the EA300/200 would have been clear of its track and so was not a factor. It was apparent that the sudden presence of the PA28 then surprised the pilot of the EA300/200, but the Board concluded that he had been given appropriate Traffic Information and that the PA28 was there to be seen. Bearing this in mind, the Board considered that the root cause of the Airprox was that the Extra pilot had not assimilated the Traffic Information he had been given, and his subsequent surprise had been exacerbated by his lack of situational awareness about the PA28. These factors had probably caused him to be concerned by its proximity. His lack of situational awareness had also probably caused him to turn inside the PA28 when it had already been cleared as number 1 in the circuit.

Notwithstanding his somewhat late sighting, the EA300/200 pilot took effective action by levelling off well below the PA28; the PA28 pilot had the Extra in sight at all times. Accordingly, the Board considered that the achieved 300ft vertical and 0.4nm horizontal separation meant that normal procedures, safety standards and parameters had pertained in the visual circuit; they categorised the Airprox as Risk E.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Extra pilot was concerned by the proximity of the PA28.

Degree of Risk: E.

ERC Score[2]: 2.

[2] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.