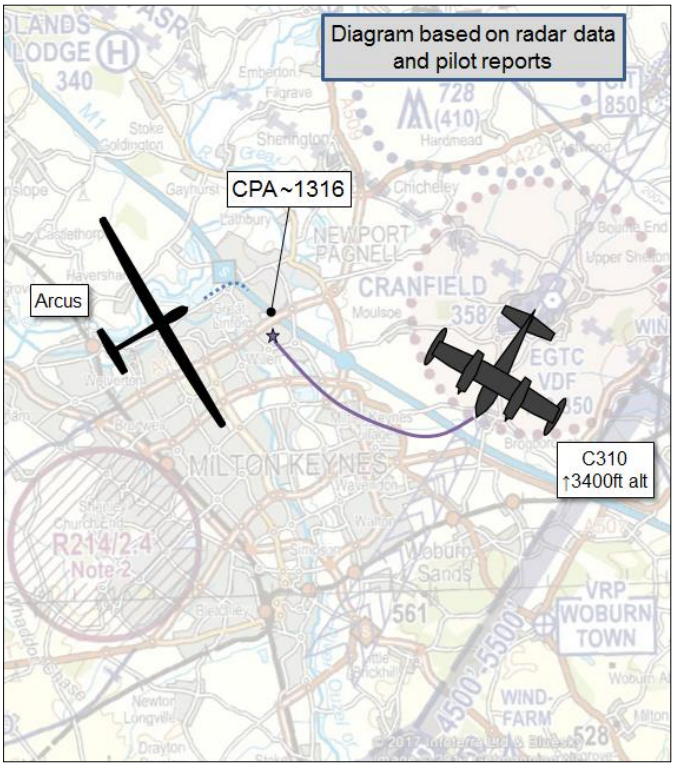
AIRPROX REPORT No 2017131

Date: 26 Jun 2017 Time: 1316Z Position: 5204N 00044W Location: W Cranfield

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Arcus	Cessna 310
Operator	Civ Pte	Civ Trg
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Basic
Provider		Cranfield
Altitude/FL	NK	3400ft
Transponder	Off	A, C, S
Reported		
Colours	White	White
Lighting	Nil	Anti-Cols
Conditions	VMC	VMC
Visibility	25nm	>10km
Altitude/FL	3500ft	3000ft
Altimeter	QNH	QNH
Heading	Turning	300°
Speed	50kt	160kt
ACAS/TAS	PowerFLARM	Not fitted
Alert	Unknown	N/A
Separation		
Reported	0ft V/25-35m H	100ft V/100m H
Recorded	NK	



THE ARCUS PILOT reports that he was turning right in a thermal when a twin-engine aircraft flew straight past the cockpit at the same level, 25-35m away, heading north-west; it appeared to maintain a straight line, with no avoidance action.

Subsequent to the UKAB meeting the Arcus pilot confirmed that he had tightened his right turn to avoid the C310.

He assessed the risk of collision as 'High'.

THE CESSNA 310 PILOT reports that he was on a type-conversion training flight for commercial operations; the PF was a student, with an instructor in the right-hand seat and another student as an observer in row 2. They had just flown an IFR sector to go VFR after a missed approach at Cranfield. They had commenced a climbing right turn to head 300° and, at the initial level off, spotted a glider in the 1 to 2 o'clock. The instructor commanded a right turn to increase separation, but the student was slow to respond, so the instructor took over to increase bank and started a descent. He did not file an Airprox at the time because he did not consider it to be one; however, he wished to apologise to the glider pilot if he thought separation was compromised. He noted that contributory factors were that there was a very high cockpit workload as they changed from IFR to VFR, and changed course and transponder codes at the same time, but that the second student was there in mitigation as an extra look-out. The aircraft was not fitted with TCAS at the time, although it has been since.

He assessed the risk of collision as 'None'.

Factual Background

The weather at Cranfield was recorded as follows:

EGTC 261250Z VRB03KT CAVOK 20/09 Q1014

Analysis and Investigation

CAA ATSI

The C310 was IFR and had requested an RNAV approach to Cranfield. At 1302:47, Cranfield issued the conspicuity code of 7417 and a Procedural Service was agreed. Then, at 1302:58, the C310 was cleared for the RNAV approach to RW21. At 1309:52, (Figure 1), the C310 was established inbound on the approach and at 1312:12, the C310 was observed to commence a climb, consistent with a missed approach.

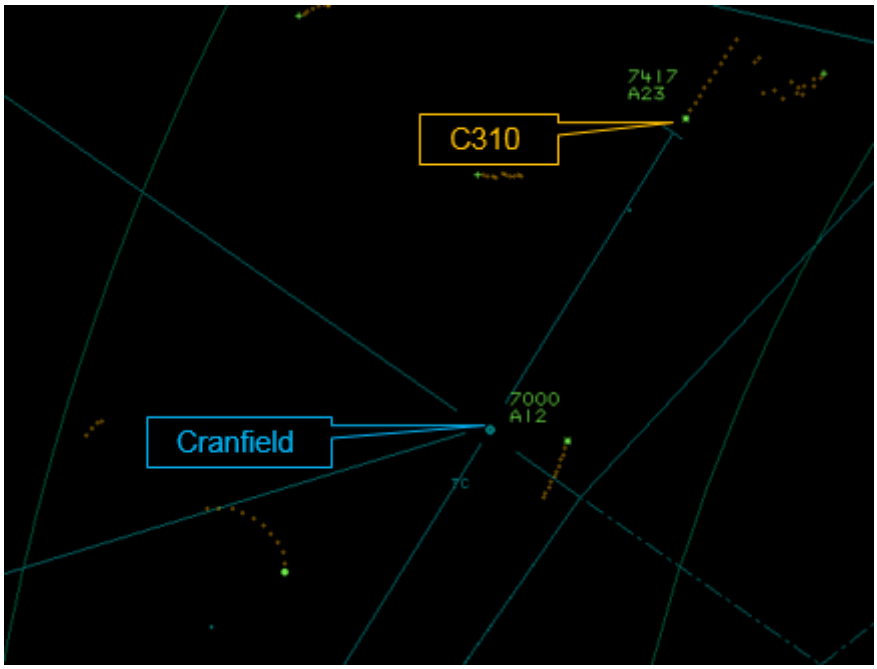


Figure 1 – 1309:52

At 1312:39, (Figure 2), the SSR code changed to 7000 as Cranfield had instructed, and a Basic Service was agreed because the C310 was now departing to the north-west VFR.

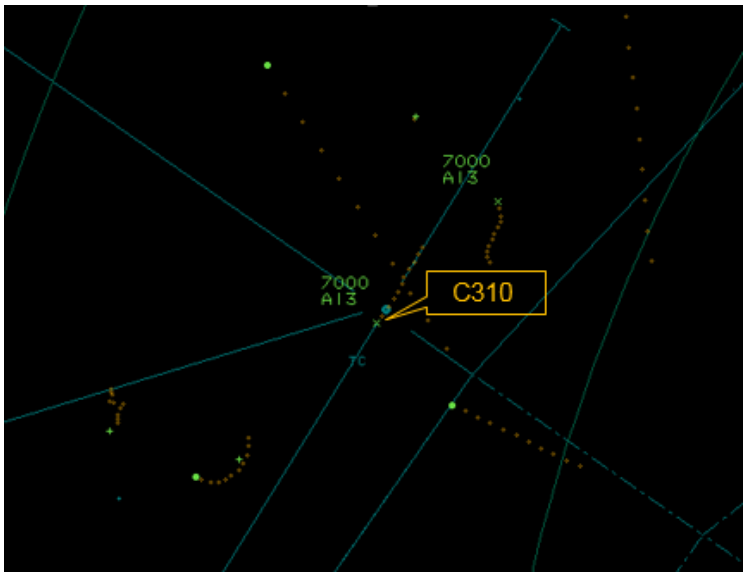


Figure 2 – 1312:39

At 1315:04 (Figure 3) the radar indicated a primary-only contact 3nm north-west of the C310. There was no height information and the Cranfield controller would not have been able to observe this contact because they were not using surveillance equipment.

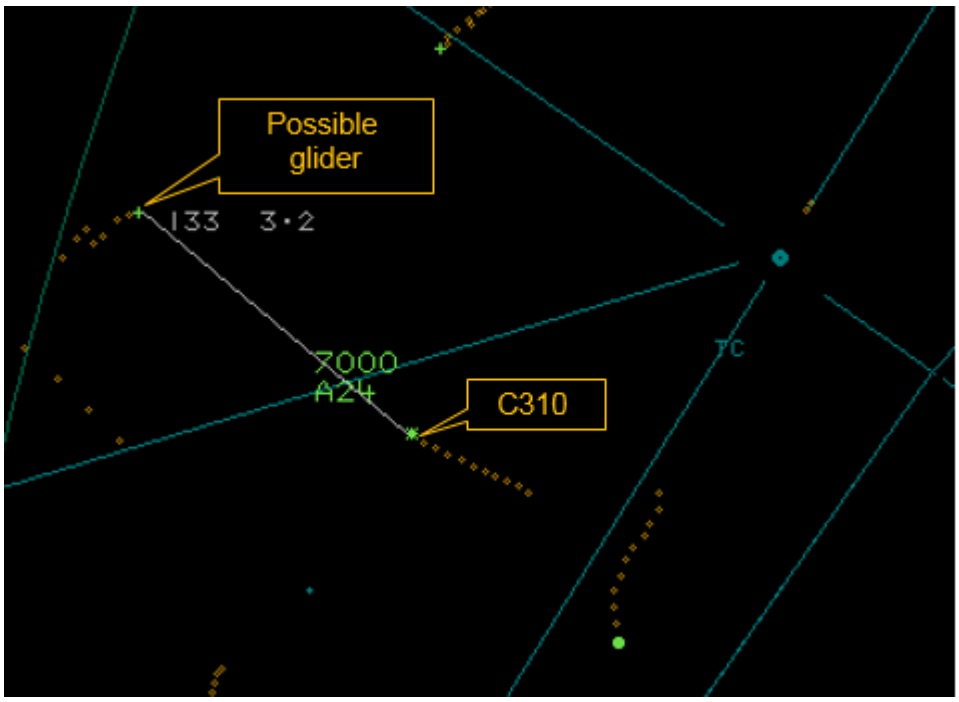


Figure 3 – 1315:04

On the radar, the closest that the C310 came to the primary returns was at 1316:11, (Figure 4), when the C310 appeared to be 0.6nm from the primary-only contact. Based on the pilot reports, and the altitudes and tracks observed, there is a strong likelihood that this primary contact is the glider pilot that reported the Airprox.

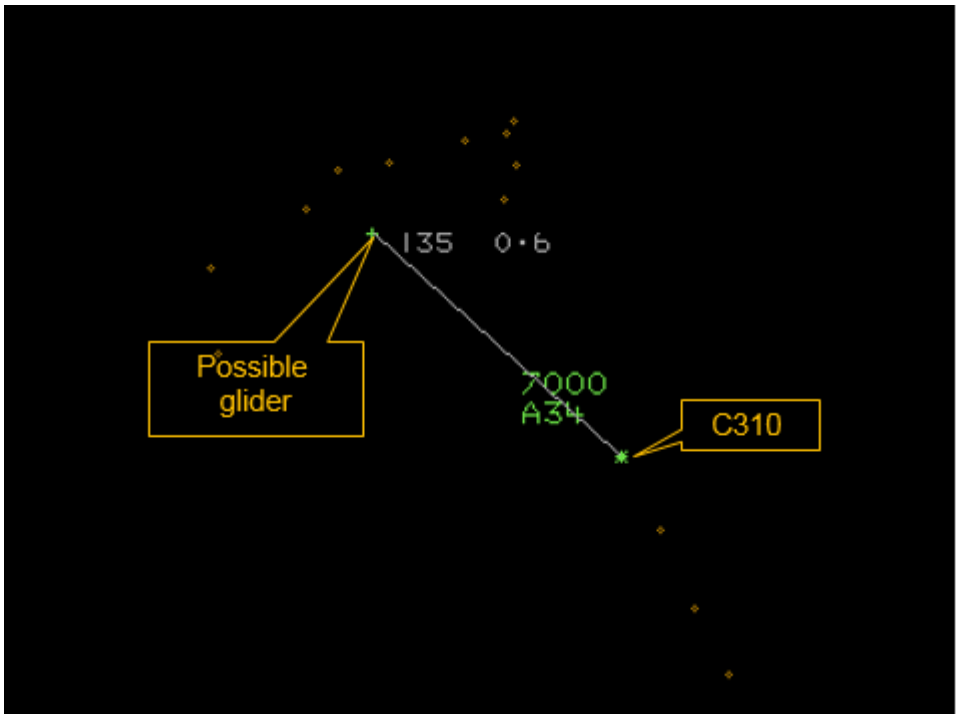


Figure 4 – CPA on radar 1316:11

The C310 contacted Coventry at 1325:22 and no mention of the Airprox was made to Cranfield. The RTF was examined for another 20 minutes and the glider pilot made no report on the

Cranfield frequency either. At the time of the Airprox the Cranfield controller was providing a Basic Service without the use of surveillance equipment. The responsibility for collision avoidance remained with the pilots.

UKAB Secretariat

The Arcus and C310 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 head-on or nearly so then both pilots were required to turn right[2]. If the incident geometry is considered converging then the C310 pilot was required to give way to the glider[3].

Comments

BGA

The difference in separation reported by the aircraft involved and that from the radar traces suggests that the primary return may not have been from the glider which reported the Airprox.

Summary

An Airprox was reported when an Arcus and a C310 flew into proximity at 1316 on Monday 26th June 2017. Both pilots were operating under VFR in VMC, the glider pilot was not in receipt of an ATS and the C310 was receiving a Basic Service from Cranfield.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, and reports from the appropriate ATC.

The Board first looked at the actions of the glider pilot, he was thermalling in Class G airspace where see-and-avoid was the main mitigation against mid-air collision; he saw the C310, if somewhat later than ideal, and tightened his turn to avoid. The Gliding Member opined that, because glider pilots are used to seeing other aircraft at close range when thermalling, the pilot must have been concerned at the proximity of the C310 to have reported the incident. Noting that he assessed the separation as 25-35m, and that the other pilot assessed it at 100m having seen the glider earlier, some members wondered if there could have been an element of startle factor in the glider pilot's assessment given the lateness of him observing the C310. The glider's IGC file confirmed that the two aircraft were at approximately the same level as the C310 passed by, but the difficulties of matching the data accurately against the radar at that scale meant that the exact horizontal separation could not be determined, other than it was probably less than 0.1nm (~185m). The Board noted that the glider was fitted with PowerFLARM, but that it had seemingly not alerted (PowerFLARM is capable of detecting Mode C transmissions from other aircraft); on the assumption that it was correctly selected, members could not determine why the glider's PowerFLARM would not have detected the C310 Mode C other than to speculate that aerial blanking may have blocked the signal. Members also noted that the glider was SSR equipped and commented on the value of selecting SSR on in areas of high traffic density such as this. Although in this particular incident the C310 was not equipped with a CWS, other aircraft might have been, and this would provide a useful further barrier to mid-air collision; although the limitations of glider batteries sometimes precluded employment of such systems throughout the flight, selective use in high-density traffic areas would at least provide some mitigation. Finally, members wondered if the glider pilot had thought to contact Cranfield at any point as he thermalled nearby; although they had no radar, if he had informed them of his general location then they could have passed on that information to aircraft that were likely to route in that direction.

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

Turning to the C310, the Board noted that the instructor reported that they had seen the glider and, although the student had not reacted quickly enough, the instructor had taken control and manoeuvred to avoid it. Given the disparity between the glider pilot's report (non-manoeuvring twin at 25-35m separation) and the C310 pilot's report (right-hand descending turn and 100ft/100m separation), some members wondered whether the C310 pilot had seen a different glider. However, the glider pilot had confirmed that he wasn't aware of any other gliders in the vicinity at the time. The radar clearly shows the C310 descending and turning slightly to the right, but members noted that, with the glider turning in a thermal, it may have been difficult for the glider pilot to have seen the C310's avoiding-action from close abeam. Noting that Cranfield does not have radar, the Board commented that the C310 pilot could not have taken a radar service in this instance, although ideally with a high cockpit workload he would have done so. Therefore, without any other way of receiving Traffic Information, the merits of electronic conspicuity were again highlighted, and the Board were heartened to hear that the C310 had since been fitted with TCAS. Although in this instance the TCAS would not have alerted because the glider was not squawking, its benefits would surely become apparent when encountering aircraft that were.

The Board briefly looked at the role of ATC in the Airprox and agreed that, without a radar, the Cranfield controller had no way of knowing that the glider was there and therefore could not pass Traffic information to the C310 pilot.

Finally, in determining the cause of the Airprox, the Board quickly agreed that this had been a conflict in Class G airspace, resolved by both pilots. Based on the reported separations the risk was assessed as Category B, safety margins had been much reduced below the norm.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G resolved by both pilots.

Degree of Risk: B.

Safety Barrier Assessment[4]

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 & Action was assessed as **ineffective** because Cranfield had no knowledge of the glider.

Flight Crew

Situational Awareness & Action was assessed as **ineffective** because neither pilot had any information about the other.

Warning System Operation and Compliance was assessed as **ineffective** because the P-FLARM on the glider did not alert, and the C310 did not have a CWS.

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

See and Avoid was assessed as **fully effective** because the C310 instructor took effective avoiding action, albeit later than ideal due to the student's initial slow response.