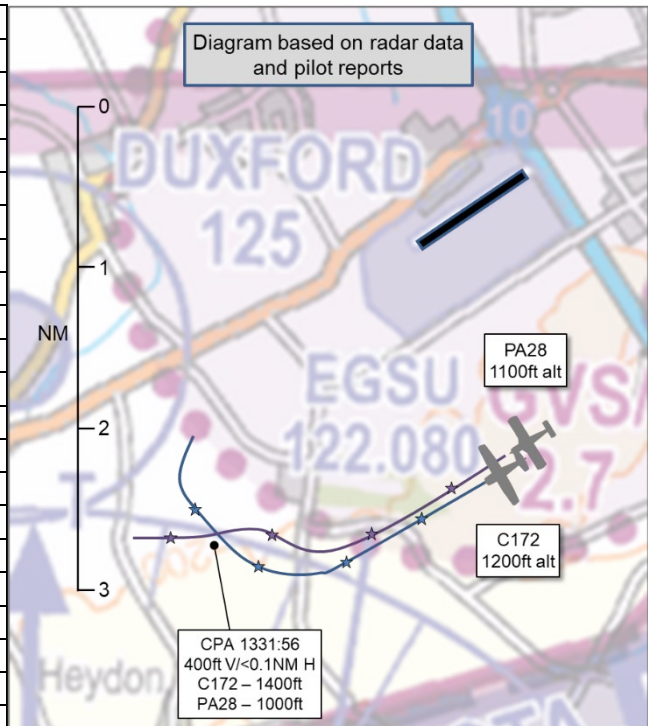


**AIRPROX REPORT No 2023107**

Date: 10 Jun 2023 Time: 1332Z Position: 5203N 00005E Location: 2NM SW Duxford

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	C172	PA28
Operator	Civ FW	Civ FW
Airspace	Duxford ATZ	Duxford ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Duxford	Duxford
Altitude/FL	1400ft	1000ft
Transponder	A, C, S	A, C
<b>Reported</b>		
Colours	Cream	Beige
Lighting	Beacon/Strobes	Anti Col/Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1000ft	1000ft
Altimeter	QFE (1009hPa)	QFE
Heading	NR°	240°
Speed	95kt	100kt
ACAS/TAS	SkyEcho	Not fitted
Alert	Information	N/A
<b>Separation at CPA</b>		
Reported	100ft V/0NM H	Co-alt V/NR H
Recorded	400ft V/<0.1NM H	



**THE C172 PILOT** reports that they were on circuit detail. On the 4<sup>th</sup> touch-and-go they observed a PA28 departing behind them. As they turned crosswind, they saw the PA28 climbing out (visually and on [their TAS display]), it appeared to be diverging 15-20° right of the centreline, but passing safely behind them. As the C172 pilot flew downwind, they observed on [their TAS display] that the PA28 pilot had turned quite tight onto the downwind leg, and may have clipped the [industrial site] south of Duxford village. As the C172 pilot turned base leg and the student initiated descent, they glanced at the [TAS display] and observed the contact cutting inside them, and showing -0.1 (~100ft) below them. The C172 pilot looked down to their right and saw the aircraft below them. They took control and immediately initiated a climb, concerned that the PA28 might be in a climb. The PA28 passed directly beneath them. After landing, the C172 pilot went to the Tower to discuss the incident; they confirmed the identity of the other aircraft and had been advised it had been outbound to [destination airfield].

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

**THE PA28 PILOT** reports that a C172 departed ahead of them. They commenced their take-off roll once the C172 had been airborne. Once airborne, the PA28 pilot joined the circuit (right-hand) always remaining visual with the C172. It became apparent during the downwind leg that they were catching up to C172, and so reduced speed to try and match, which had been reached/maintained between mid-field downwind and base, at which point the PA28 pilot held position line astern around 500ft behind the C172 and descended 50ft so as to retain good visual contact. Knowing the C172 aimed to remain in the circuit and shortly to turn onto base, and being fully visual throughout, the situation appeared stable and would be 'resolved' once the C172 turned base. As the airfield had been busy, the PA28 pilot did not wish to make an orbit, as this may have created another situation with other circuit traffic. It is assumed that when the C172 started to turn onto base, the pilot briefly gained visual with the PA28 as they abruptly stopped the turn and made several small manoeuvres (which also further reduced separation) [they thought] to try and establish visual which is more difficult to do in a high winged aircraft on a right hand circuit, before then turning away from the PA28's course. The PA28 pilot continued

straight and level, as no collision avoidance had been needed. They recall remaining fully visual with the C172 throughout and able to take avoiding action should it have proved necessary. There had been no R/T between the pilots. The PA28 pilot departed the circuit/ATZ and took up a heading towards Royston.

The pilot assessed the risk of collision as 'None'.

**THE DUXFORD AFISO** reports that they were the duty FISO. At 1329 the PA28 (routeing to [destination airfield]) departed RW06R. There had been one aircraft in the circuit (the subject C172) and one aircraft joining. The FISO did not recall what other traffic had been airborne or on frequency as it had been a busy day and the C172 pilot did not state their intentions to file an Airprox until later that afternoon. As the PA28 climbed out, the pilot transmitted that they would be departing the circuit from the downwind leg. This had been acknowledged and the PA28 appeared to be climbing out normally. At approximately 1331, the C172 pilot reported that an aircraft had flown underneath them very close. This had been acknowledged. Attempts were made to contact the PA28 pilot, however, they had left the frequency.

**THE DUXFORD SENIOR AFISO** reports that at the time of and leading up to the incident the circuit had been busy with moderate to busy workload. The C172 pilot had been engaged in a circuit detail; the PA28 had been holding at 'Delta' and lined-up behind the C172. Once the C172 was airborne the PA28 [pilot] had been given [departure clearance] but no information on the C172 had been given. The PA28 [pilot] reported turning 'circuit right to depart downwind' and the C172 [pilot] reported 'downwind'.

At 1331, the C172 [pilot] had been on final to RW06R for a touch-and-go and reported that the departing aircraft had passed right underneath [them]. The C172 [pilot] continued to land and the PA28 [pilot] departed the circuit.

The Airprox had subsequently been reported to Duxford ATSU. The FISO filed an MOR but not an Airprox; they have been reminded of the requirement to do so.

## Factual Background

The weather at Stansted was recorded as follows:

METAR EGSS 101250Z AUTO 09013KT 9999 NCD 29/13 Q1014=

## Analysis and Investigation

### CAA ATSI

Having reviewed the radar and RT files for this event ATSI noted that, with both aircraft still downwind, the PA28 pilot who had been following the C172 by 0.2NM, reported clearing the ATZ at 1331:38 and "*picking up a track for Royston*". The C172 pilot continued downwind with the PA28 initially continuing to follow. The turn onto base by the C172 had not been obvious on the radar until 1331:49 whilst the PA28 appeared to take up a more westerly track ultimately passing 400ft underneath the C172.

The FISO had a lot of other traffic on frequency, however, had they observed the proximity of the C172 and PA28 on base leg they might possibly have considered passing Traffic Information if they were concerned. Also, earlier when the pilot of the PA28 had stated their intention to initially follow the circuit pattern, an assurance that the PA28 pilot had been aware of and/or visual with the C172 ahead might have been considered useful. The unit investigation report made the point that Traffic Information had not been passed and that the unit had issued a reminder to the AFISO of the importance of doing so.

That being said however, it is clear from the PA28 pilot report and evidenced by the radar, that they were fully aware of and visually following the C172 around the circuit having stated their intentions, in the climb-out, to circuit to the right to clear the ATZ then track north to Royston. The pilot of the C172 had also been aware of the presence of the PA28, having seen it climb-out behind them and

track towards them. They maintained awareness of its presence using [branded multi-function display]. It might have been better in this instance for the pilot of the PA28 to stay outside the C172 rather than passing underneath, or even have passed their intentions over the RT and advise the C172 pilot that they were visual.

### DUXFORD SAFETY MANAGER

Staffing had not been a contributing factor to this incident but it should be noted that, on the day, Duxford frequency had been covered by 1 x FISO and 1 x AG operator (who holds a FISO licence but [currently not operating as such]). Traffic levels had been moderate/high, inclusive of GA, circuit training and warbirds but this is not exceptional for Duxford; workload had not been a factor. A verbal interview and de-brief with the FISO has reminded the FISO of the importance of passing all relevant Traffic Information to aid with pilot situational awareness. The pilot of the PA28 did advise the FISO that they were planning on departing via the downwind. The FISO had been aware of other traffic in the circuit but did not pass this Traffic Information to the pilot of the PA28. In the interview with the FISO, it had been reported that the aircraft had been observed to make a turn on climb-out into the right-hand circuit early in the climb.

### UKAB Secretariat

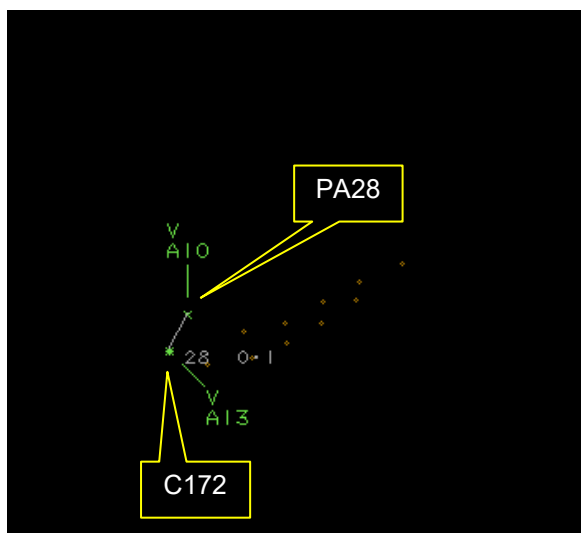


Figure 1: 1331:50

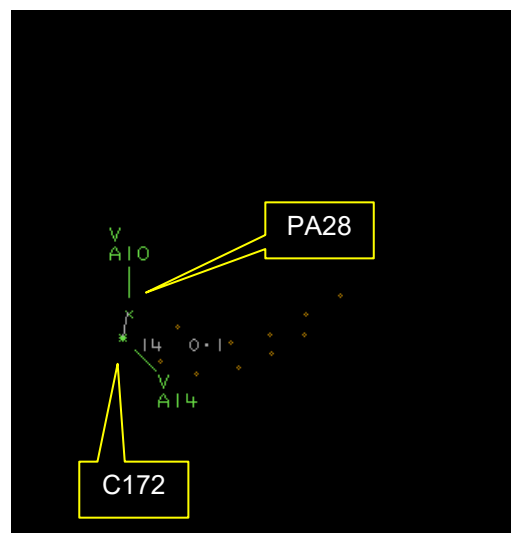


Figure 2: 1331:54

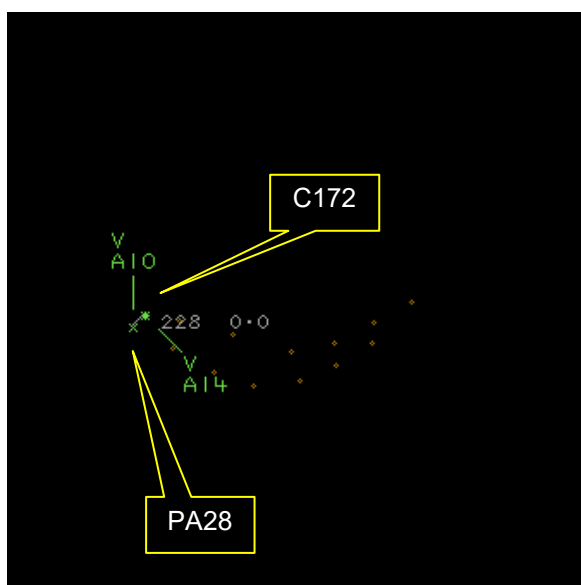


Figure 3: CPA+2secs 400ft V/<0.1NM H 1331:58

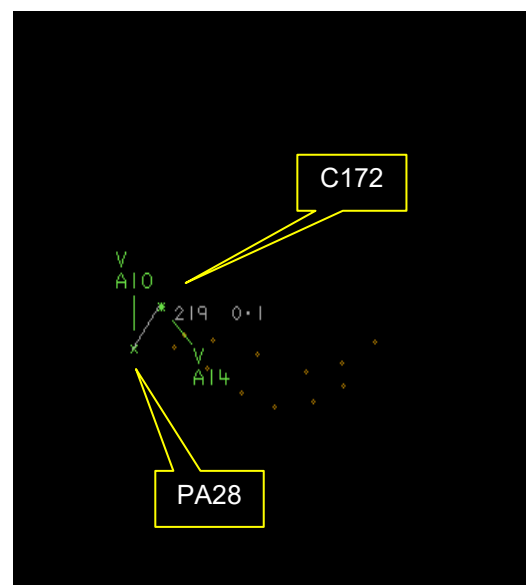


Figure 4: 1332:02

The following extract from the UK AIP is relevant to circuit procedures for departing traffic at Duxford:

## EGSU AD 2.22 FLIGHT PROCEDURES

- a. There are no overhead, dead-side or crosswind joins at Duxford to assist in deconfliction of circuit patterns.
- b. Circuit patterns are variable with no dead-side. It is therefore essential that pilots obtain a briefing from Duxford before departure whether inbound or outbound.
- c. Traffic departing Runway 06 continue straight ahead for 2 NM before turning (BP Roundabout). Traffic joining for Runway 24 LHC; join downwind and position for 2 NM final (BP Roundabout). Traffic joining for RWY 06 RHC join downwind. Traffic departing RWY 24 LHC **no right turn** until past Royston.

The C172 and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>1</sup> 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 operation.<sup>2</sup> An aircraft that is obliged [...] to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence.<sup>3</sup>

### Summary

An Airprox was reported when a C172 and a PA28 flew into proximity at Duxford at 1332Z on Saturday 10<sup>th</sup> June 2023. Both pilots were operating under VFR in VMC and in receipt of an AFIS from the Duxford AFISO.

### PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the AFISOs involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board firstly discussed the actions of the C172 pilot, noting that they had successfully completed 3 previous circuits and were established on a fourth, in the knowledge that the PA28 had followed them airborne on that occasion, with its pilot stating their intention to depart the circuit downwind. As the C172 pilot had turned right onto the base leg, the TAS indication received by the C172 pilot (**CF5**) had raised concern regarding the proximity of the PA28 as the PA28 had been positioned within the C172 pilot's blind spot – slightly low and toward their 5 o'clock (**CF7**). The Board noted that, on sighting the PA28, the C172 pilot had immediately initiated a climb, with the PA28 passing underneath them and departing to their left. The Board considered this to have been an appropriate action on the part of the C172 pilot as they had not known what situational awareness the PA28 pilot had had in this case and had been concerned by the proximity of the departing aircraft (**CF4**).

Members then considered the actions of the PA28 pilot. They noted the pilot's decision to turn tightly after take-off, which had closed the distance between themselves and the C172 ahead, a situation exacerbated by the PA28's higher circuit speed (**CF3**). Members also noted the PA28 pilot's decision to sit inside, i.e. to the right of, the C172 when their ultimate aim had been to depart left from the circuit, an action that would have inevitably led them to have to cross paths with the circuit-based C172 ahead (**CF2**). Members wondered why the PA28 pilot had not used the AFIS frequency, that both the pilots and the AFISO had been monitoring, to state their position and intentions, which would have, in the Board's view, uniformly raised the collective situational awareness (**CF1**). Members discussed the manoeuvre taken by the PA28 pilot to depart the circuit, cutting from the inside of the C172 and crossing underneath, causing some concern to the C172 pilot regarding the PA28's proximity (**CF6**), recalling

<sup>1</sup> (UK) SERA.3205 Proximity.

<sup>2</sup> (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

<sup>3</sup> SERA.3210. Right-of-Way (c).

the wording of (UK) SERA.3210 regarding the pilot of the avoiding aircraft's obligation to avoid passing ahead, under or over the aircraft being avoided.

Members then reviewed the actions of the Duxford AFISO, noting that although the AFISO is not permitted to offer avoidance advice, they could have passed Traffic Information as the scenario had developed in the circuit, or confirmed with the PA28 pilot before take-off that they had been aware of the C172 pilot's intentions to remain in the circuit.

Turning to the risk involved in this event, members considered the reports from the pilots, Duxford AFISO, the radar replays available and the Duxford Safety Manager report. They agreed that the separation between the two aircraft had been reduced and that safety had been degraded, but that the circumstances, actions and information available, together with the fact that the PA28 pilot had been visual with the C172 throughout, had been sufficient to prevent the aircraft from coming into close proximity and remove any risk of collision. Accordingly, the Board assigned a Risk Category C to this Airprox.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### **Contributory Factors:**

2023107				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Tactical Planning and Execution</b>				
1	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
3	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
4	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
<b>• Electronic Warning System Operation and Compliance</b>				
5	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
<b>• See and Avoid</b>				
6	Human Factors	• Lack of Individual Risk Perception	Events involving flight crew not fully appreciating the risk of a particular course of action	Pilot flew close enough to cause concern
7	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

**Degree of Risk:** C

### **Safety Barrier Assessment<sup>4</sup>**

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

### **Ground Elements:**

<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

**Situational Awareness of the Confliction and Action** were assessed as **not used** because the AFISO is not permitted to manage aircraft separation in the circuit.

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because the PA28 pilot, although visual with the C172 ahead, chose to fly 'inside' the leading aircraft despite the ultimate aim of departing left out of the ATZ from a right hand circuit, and did not use radio calls to clarify their intentions.

<b>Airprox Barrier Assessment: 2023107</b>		Outside Controlled Airspace						
Barrier	Provision	Application	Effectiveness Barrier Weighting					
			0%	5%	10%	15%	20%	
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Confliction & Action	✓	○					
	Electronic Warning System Operation and Compliance	○	○					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Tactical Planning and Execution	✓	⚠					
	Situational Awareness of the Conflicting Aircraft & Action	✓	✓					
	Electronic Warning System Operation and Compliance	⚠	✓					
	See & Avoid	✓	✓					
<b>Key:</b>								
	Full	Partial	None	Not Present/Not Assessable	Not Used			
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○	○			
Effectiveness	■	■	■	■	□			