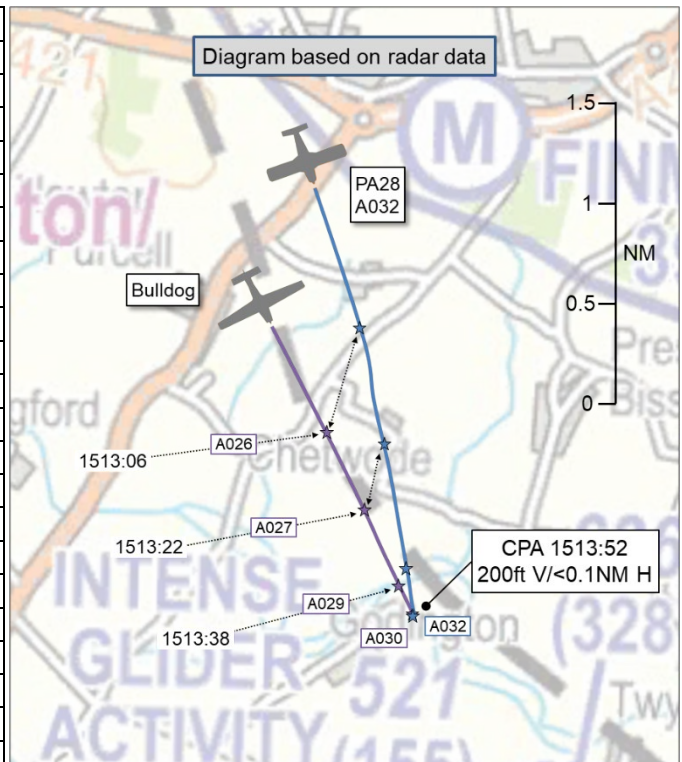


AIRPROX REPORT No 2024120

Date: 16 Jun 2024 Time: 1514Z Position: 5156N 00104W Location: 3NM NE Bicester

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	Bulldog
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	Unknown
Provider	Turweston Radio	Unknown
Altitude/FL	3200ft	3000ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White	Red
Lighting	Strobes	Beacon
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	3200ft	2000ft
Altimeter	QNH (1002hPa)	QNH
Heading	174°	180°
Speed	130kt	95kt
ACAS/TAS	PilotAware, SkyEcho	SkyEcho
Alert	None	None
Separation at CPA		
Reported	50ft V/50m H	NK ¹
Recorded	200ft V/<0.1NM H	



THE PA28 PILOT reports that they taxied to the hold for RW27 at Turweston, followed by a white low-wing aircraft. As the [PA28 pilot] completed their power checks, a Bulldog taxied past a white aircraft whose pilot was also doing power checks, and [the Bulldog pilot] positioned as the Number 2 for departure.

[The PA28 pilot] departed Turweston at 1508, announcing after departure that they were right-hand downwind 'high' departing via the overhead. Very soon after take-off, the Bulldog pilot reported ready for departure, and announced that they would depart with a "left turnout via the railway line". The AGCS operator stated that this was "non-standard". The Bulldog pilot responded by saying that they were taking off (or something similar). [The PA28 pilot] passed crosswind at 2900ft according to the SkyDemon log, and continued their climb southbound, quickly reaching cruising altitude of 3200ft.

At about 3-4 miles south of Turweston, they reported changing frequency. They cannot recall if they stated their position during this call or not, but they usually make it a habit to do so for licensed airfields. Before they switched frequency, they heard the Bulldog pilot also state they were changing frequency (possibly at a range of 5 miles) and they thanked the radio operator for the "quick turnaround as usual". [The pilot of the PA28 opined that] because of the non-standard departure, and the cutting-in at the hold, it suggested to them that the pilot was, perhaps, in a hurry to get on their way.

[The PA28 pilot] didn't change frequency straight away, even though they had requested the change. They were not heads-down during that but had pre-selected their next frequency, Farnborough Radar, during their departure. They recall maintaining a good lookout, and were mindful of the departing Bulldog that they suspected was heading south also, but they were not visual with it at any point [until, at] 1514, they saw the aircraft just forward of their port wing, at a range of 50m and 50ft below. They

¹ The pilot of the Bulldog reported a separation at CPA of 200ft vertically and 0.33NM horizontally but, by reference to their narrative report, UKAB Secretariat assessed that that had not been a separation from the PA28 subject of this Airprox.

banked right. They do not know why they hadn't seen the aircraft until this very close encounter and [opined that], perhaps, it was always below their cowling/instrument panel or wing until suddenly appearing into view. They immediately felt responsible for the Airprox (rightly or wrongly) since they were the following aircraft.

Prior to the Airprox, they had taken the previous non-sighting of the aircraft as a sign that it had diverged from their own track and had not recorded its destination or direction of flight beyond just 'a left turn-out'. On reflection, they feel that they should have been more curious as to its respective track and position, since they had recognised that its left turn behind them might have put it into conflict with themselves [as they had] performed a more laborious, standard departure. They feel that they should have asked about its position and altitude, and also performed some clearing turns to look for the aircraft. They do not wish to judge the other pilot for making what was a 'non-standard' departure (to be expected at an unlicensed airfield in Class G [airspace]) and the Airprox occurred some miles south of the circuit. [The pilot of the PA28 opined that] their relative trajectory was the issue. They think they must have been in a position where the aircraft was blocked from their view, due to the cowling and instrument panel. It's possible, they suppose, that even a clearing turn might not have revealed the aircraft looming below.

This was a very close call and they have not exaggerated the relative distances which, if anything, are a conservative estimate of the relative positions. They carry [two brands of] electronic conspicuity: one [displayed on] a SkyDemon moving map, and [the other] as an ADS-B-out source. The Bulldog did not display on SkyDemon nor did they receive an alert.

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

THE BULLDOG PILOT reports that [they recall] the other aircraft was travelling in the opposite direction, about 250-300ft lower than them and about 1/4 to 1/3 of a mile to starboard. The aircraft was seen quite late but no avoiding action was taken as no risk of collision existed.

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

THE TURWESTON AGO reports that the aircraft departed Turweston a few minutes apart. Both pilots were on the Turweston Radio frequency for the whole time of their pre-departure taxiing and checks, and they backtracked RW27-grass in-line and in-turn. Both would have heard each other's calls regarding their departure intentions.

[The pilot of the PA28] took off from RW27 at 1507, announcing they would depart from downwind into the overhead. As far as they recall, they did not state an intended direction. [The pilot of the Bulldog] took off from RW27 at 1510 advising they would like an early left turn "along the railway line" (which is HS2 under construction). They did not state any further intention or direction.

The Turweston AGO passed information to the pilot of [the Bulldog], telling them the observation was unofficial and not reliable: "*nothing seen on [EC equipment] or other screens and no traffic on frequency to affect*". Both pilots left the frequency 5min or so after departure.

The pilot of the PA28 emailed Turweston later the same day to advise that they had encountered an Airprox with the Bulldog close to Bicester.

Factual Background

The weather at Oxford was recorded as follows:

METAR EGTK 161520Z 24011KT 9999 SCT043 20/08 Q1002

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft could be positively identified from Mode S data. CPA was assessed to have occurred between the radar sweeps at 1513:50 and 1513:54 (Figures 1 and 2).

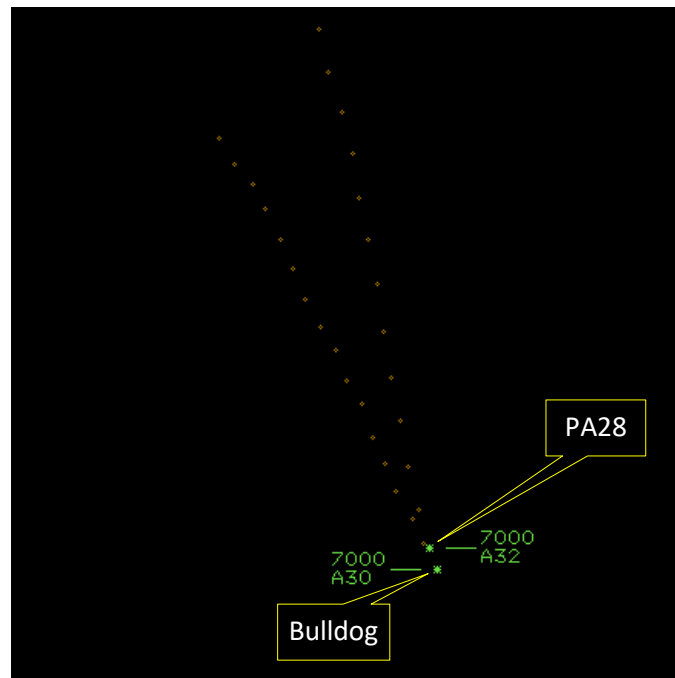


Figure 1 – 1513:50 (2sec before CPA)

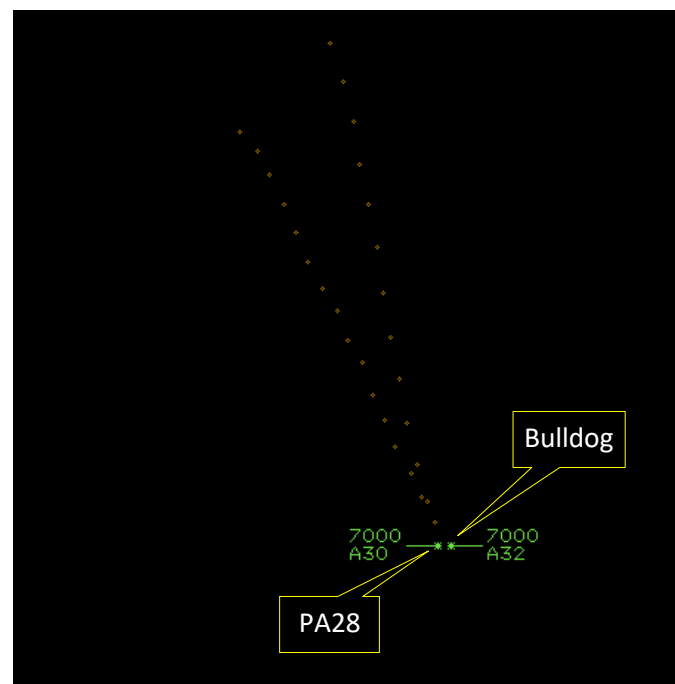


Figure 2 – 1513:54 (2sec after CPA)

The PA28 and Bulldog pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.² If the incident geometry is considered as converging then the PA28 pilot was required to give way to the Bulldog.³ If the incident geometry is considered as overtaking then the PA28 pilot had right of way and the Bulldog pilot was required to keep out of the way of the other aircraft by altering course to the right.⁴

² (UK) SERA.3205 Proximity.

³ (UK) SERA.3210 Right-of-way (c)(2) Converging.

⁴ (UK) SERA.3210 Right-of-way (c)(3) Overtaking.

Summary

An Airprox was reported when a PA28 and a Bulldog flew into proximity 3NM north-east of Bicester at 1514Z on Sunday 16th June 2024. Both pilots were operating under VFR in VMC. The PA28 pilot had been listening-out on the Turweston Radio frequency. It could not be determined if the pilot of the Bulldog had been in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the Air/Ground Radio Operator involved. 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 first considered the actions of the pilot of the PA28. Members noted that they had been aware that the pilot of the Bulldog had departed from Turweston a couple of minutes after their own departure, and that they had intended to take a 'left turn-out'. Whilst the exact routeing of the Bulldog had not been apparent, some members wondered whether the pilot of the PA28 might have enquired as to its exact position as, despite having routed differently initially, they had also ultimately headed 'left' (i.e. south) from their departure from RW27. Indeed, it was noted that the pilot of the PA28 had 'self-debriefed' this point in their narrative report, and members commended them for their open and honest reporting of the incident and self-reflection.

Members noted that the PA28 had been fitted with two types of additional Electronic Conspicuity (EC) device but neither device had alerted to the presence of the Bulldog when such an alert would have been expected (**CF2**). Some members pointed out that a study⁵ released in 2023 concluded that EC devices may detect less than 50% of General Aviation aircraft and that, whilst EC devices may provide extremely valuable situational awareness in some circumstances, they are likely to provide an incomplete picture of the traffic situation. Notwithstanding, members agreed that the pilot of the PA28 had had generic situational awareness of the Bulldog (**CF1**).

Members agreed that the pilot of the PA28 had not appreciated that they had been on a converging track with the Bulldog for several minutes and wondered why the Bulldog had not been sighted sooner. As the Bulldog had been ahead, but below the PA28, members concluded that the Bulldog had been obscured from the view of the PA28 pilot (**CF4**), and perhaps had been for some considerable time. Members were keen to emphasise that it would be prudent for a pilot to periodically weave, or to otherwise alter course momentarily, in order to visually scan a greater portion of the sky around them. Members agreed that the Bulldog was subsequently sighted at CPA which, effectively, had been a non-sighting (**CF3**).

Turning their attention to the actions of the Turweston AGO, members noted that they had heard the pilot of the Bulldog declare that they had intended to depart with "*a left turn-out via the railway line*". It was also noted that the pilot of the PA28 reported having heard the Turweston AGO reply to the pilot of the Bulldog with words to the effect that such a departure had not been the preferred routeing. Indeed, members noted that the departure had not been in accordance with the Turweston Aerodrome Rules as published on the Turweston Aerodrome website.

Members noted that the Turweston AGO had access to a screen displaying EC information from aircraft in the vicinity, and that they had passed information to the pilot of the Bulldog that there was "*nothing seen on [EC equipment] or other screens and no traffic on frequency to affect*". Members noted that the message had been preceded by a reminder that the observation was 'unofficial and not reliable'. Although the pilot of the PA28 had departed approximately three minutes earlier, members surmised that the Turweston AGO had not been aware that the PA28 pilot had routed, or had intended to route, southwards. Notwithstanding, whilst members appreciated that the Turweston AGO's intention had been to have assisted the pilot of the Bulldog, some members suggested that their message may have

⁵ <https://www.caa.co.uk/newsroom/news/new-study-on-electronic-conspicuity-published-by-aviation-regulator/>
<https://www.caa.co.uk/publication/download/20799>

implied that the sky was clear of traffic for some distance along their track and, perhaps, had inadvertently reduced the 'urgency' to maintain a thorough lookout.

Members further considered the actions of the pilot of the Bulldog. Noting the narrative reports from the other parties involved, some members felt that there had been a suggestion that the Bulldog pilot had been eager to expedite their departure and 'get on their way'. Whilst it may not have been true in this case, members suggested that a pilot in a hurry may become too focussed on their own flight to the detriment of their awareness of other aircraft around them.

One member wondered whether the EC device fitted to the Bulldog had been switched on and pointed out that an ADS-B-out signal from the Bulldog was not apparent on web-based flight tracking apps. Members could not determine whether the EC device fitted to the Bulldog had been functioning, but noted that it had been reported as such by the Bulldog pilot. Consequently, it was agreed that the device had not alerted to the presence of the PA28 when such an alert would have been expected (**CF2**).

Members noted that the narrative report provided by the pilot of the Bulldog had not correctly described the geometry of the Airprox encounter with the PA28. Members agreed that, although they had had generic situational awareness of the PA28 having departed minutes before their own departure (**CF1**), the pilot of the Bulldog had not been aware of the converging track of the PA28 and its close proximity. As such, members were in agreement that it had been a non-sighting (**CF3**). A member with knowledge of the design of the Bulldog suggested that, although the PA28 had converged with the Bulldog from behind, the expansive canopy of the Bulldog may have allowed the pilot (seated on the left) to have sighted the PA28 approaching from a high position on their left. Members agreed that it had been the equal responsibility of both pilots to have avoided a collision.

Concluding their discussion, members agreed that both pilots had had generic situational awareness of the other aircraft. However, neither pilot had been alerted by their respective EC device(s) to the proximity. The pilot of the Bulldog had not sighted the PA28 and the pilot of the PA28 had only sighted the Bulldog at the moment of CPA. Members agreed that the separation between the PA28 and Bulldog had been such that the safety of the aircraft had not been assured and that there had been a risk of collision (**CF5**). The Board assigned Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024120			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
1	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
2	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
3	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
4	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other
	• Outcome Events			
5	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B.

Safety Barrier Assessment⁶

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

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because both pilots had generic situational awareness of the presence of the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC devices fitted to each aircraft would have been expected to have detected the presence of the other aircraft, but neither pilot reported that an alert had been received.

See and Avoid were assessed as **ineffective** because neither pilot had visually acquired the other aircraft before CPA.

Airprox Barrier Assessment: 2024120		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	✘	✘					
Key:			Full	Partial	None	Not Present/Not Assessable	Not Used	
Provision	✔	⚠	✘	○				
Application	✔	⚠	✘	○		○		
Effectiveness	■	■	■	■		□		

⁶ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).