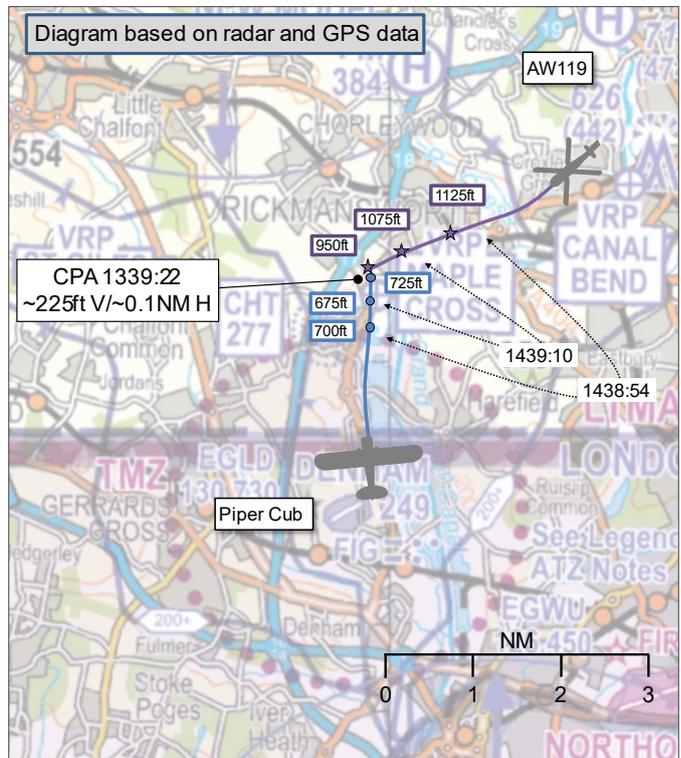


AIRPROX REPORT No 2024255

Date: 03 Oct 2024 Time: 1339Z Position: 5137N 00030W Location: Maple Cross VRP

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Piper Cub	AW119
Operator	Civ FW	Civ Helo
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Denham	Denham
Altitude/FL	~725ft	950ft
Transponder	Not fitted	A, C, S
Reported		
Colours	Yellow	Green
Lighting	NR	Anti-cols, Nav, Landing
Conditions	VMC	VMC
Visibility	NR	>10km
Altitude/FL	1000ft	1300ft
Altimeter	QNH (1021hPa)	QNH
Heading	North	245°
Speed	68kt	120kt
ACAS/TAS	SkyEcho	TAS
Alert	Unknown	Information
Separation at CPA		
Reported	150ft V/0m H	300ft V/100ft H
Recorded	~225ft/~0.1NM H	



THE PIPER CUB PILOT reports that they were departing Denham VFR and had just reported Maple Cross VRP, which is the departure VRP. The AW119 was inbound. Approximately 20sec after they reported Maple Cross, heading north at 1000ft with QNH 1022 set, the AW119 was spotted approximately 3sec before the closest point of contact, approximately 150ft above. The minimum separation was approximately 150ft vertically and almost zero horizontally. They were convinced that the other pilot never saw their aircraft. They noted that they were in the rear seat of the Cub, which has a high wing which obscured the AW119 until it appeared in the top right corner of the windshield. They then watched through the perspex roof as it passed above and very slightly in front of their aircraft, until it was obscured by the port wing. They would estimate that they were looking up at a greater than 45° angle.

They opined that the pilot of the AW119 caused the Airprox by displaying very poor airmanship, situational awareness and judgement. The AW119 was routed directly overhead the departure VRP, at considerable speed, whilst at circuit altitude during arrival at Denham. The other pilot continued directly over the departure VRP, despite a departing aircraft reporting overhead the same VRP approximately 20sec prior. This indicates the pilot was not listening out for other aircraft on frequency. The AW119 pilot then reported overhead the arrival VRP “St Giles” when it had actually routed several miles away, direct to a base leg for RW06, meaning [pilots of] other aircraft on frequency were looking in the wrong place for it. The Airprox was witnessed by an instructor at the Denham Pilot Centre who was on frequency and queried whether the AW119 was routeing to the correct VRP, and also witnessed by the AGO.

The pilot reported that they were using a [CWS] tethered to SkyDemon to assist with navigation and to provide ADS-B in/out. Any aircraft equipped with ADS-B in should be able to see the Cub on ‘virtual radar’, their iPad is always put away when close to the airfield as it would be more of a distraction than

an assistance. They checked FR24 for their track post incident which had patchy reception, however, the GPX file from the SkyDemon log which utilises the [CWS] GPS was provided so they had no reason to think it malfunctioned.

THE AW119 PILOT reports that they had the aircraft set up to recover to a busy local Denham area, there were multiple aircraft in vicinity of the aerodrome. They remained on Farnborough Radar until past Watford to maintain Traffic Service and SA on the high traffic density. The pilot initially positioned toward the commonly used Maple Cross entry lane but it became apparent on changing frequency to Denham that RW06 was in use, which required the St Giles entry lane. They were aware of outbound traffic from Denham and elected to maintain height. A TA was declared 0.5NM to Maple Cross but, given the high traffic density, the pilot was unable to verify the absolute of the TA declared against the Airprox aircraft. However, they recalled first seeing the yellow aircraft in their 9:30 at a range of 1NM. Once clear of the Airprox aircraft, the pilot descended into the Denham visual circuit, albeit on a slightly more direct track to base than the promulgated entry lane procedure.

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

THE DENHAM AGO reports that RW06LH was in use. The Piper Cub departed at 1336, routeing via Maple Cross. Just prior to this, the AW119 reported inbound, they were passed the runway in use and asked to report St Giles. The Piper Cub pilot then called at Maple Cross and asked if the helicopter above them had seen them. The AW119 pilot did not report St Giles and joined late downwind, landing at 1343, the pilot did not mention seeing the traffic at Maple Cross.

Factual Background

The weather at Northolt was recorded as follows:

METAR EGWU 031320Z 05010KT 9999 FEW032 BKN060 16/08 Q1021 NOSIG RMK BLU BLU=

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. A primary track could be seen getting airborne from Denham and routeing to Maple Cross, this track corresponded with GPS data provided by the Piper Cub pilot. The AW119 could be identified using Mode S data, routeing towards Maple Cross indicating 1300ft (London QNH 1021), Figure 1.

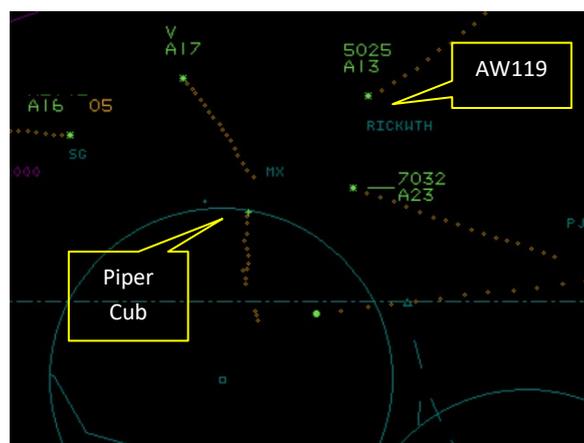


Figure 1 – 1338:36

The two aircraft continued to close until 1339:25, when the Piper Cub, whose radar contact had become jittery, faded from the radar replay (Figure 2) at or around CPA. Amalgamating the radar data with the GPS enabled the diagram at the top of the report to be compiled. Additionally, by using an alternative airspace analyser tool, on which both aircraft could be seen, a vertical separation of approximately 225ft was ascertained.

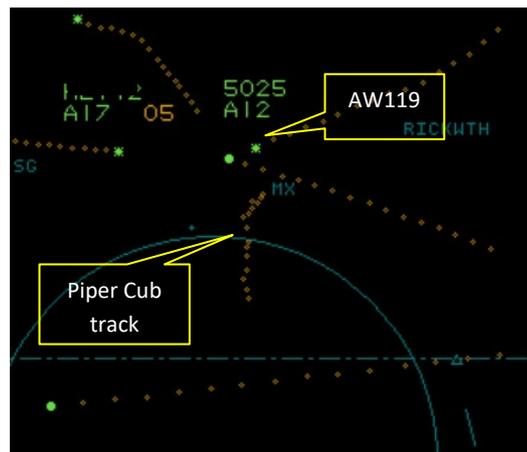


Figure 2 – 1339:25

The Piper Cub and AW119 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 as converging then the Piper Cub pilot was required to give way to the AW119.²

Summary

An Airprox was reported when a Piper Cub and a AW119 flew into proximity in the vicinity of Maple Cross VRP at 1339Z on Thursday 3rd October 2024. Both pilots were operating under VFR in VMC and in receipt of a ACGS from Denham.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS data and a report from the Air Ground Operator. 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 discussed the actions of the Piper Cub pilot. Members familiar with Denham noted that the VRPs are crucial for pilots to exit and enter the very busy airspace around Denham without infringing controlled airspace. Whilst it would not normally be advisable for pilots to route directly over VRPs, as entry and exit points to Denham, these were an exception. The Piper Cub pilot had been departing from Denham and would not have expected to encounter inbound aircraft at the Maple Cross VRP. The AW119 pilot reported switching to the Denham frequency late, and so the Piper Cub pilot would not have received advance warning that the AW119 had been approaching. Without access to their iPad displaying their CWS, the pilot had not received any prior situational awareness on the AW119, and once they had heard the other pilot call inbound, they would have expected it to have been routing via the St Giles VRP (**CF3**). Members noted that the Piper Cub pilot reported that the high-wing of their aircraft had obscured their view of the AW119 when in close proximity, but they noted that the other aircraft had been there to be seen at range, albeit that the constant relative bearing would have made it difficult to see, highlighting the need for a good lookout when departing via VRPs. Consequently, by the time the pilot had seen the AW119, as it had passed over their roof, it had been too late to take avoiding action, making this effectively a non-sighting (**CF7**).

Turning to the AW119 pilot, members noted that the pilot had reported remaining on the Farnborough frequency for Traffic Information; some members opined that a service from Thames Radar or Heathrow Special might have been more likely to detect the low-level traffic at Denham, but anyway wondered why the pilot had not called Denham on their second radio to ascertain the runway in use. Members reasoned that the late call, and subsequent discovery that Denham was using RW06, had been key to setting up the ensuing events (**CF1**). Once the pilot had realised that they had needed to reposition for

¹ (UK) SERA.3205 Proximity.

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

St Giles, members opined that they should have avoided Maple Cross by a greater margin, maintaining height if necessary in order to remain well clear of any outbound traffic (CF2). The Board thought that the AW119 pilot had probably not assimilated that the Piper Cub had been departing and would have been a factor (CF4) and, although their TAS had provided information on other aircraft in the area, it could not detect the non-transponding Piper Cub (CF5). It was agreed that the description of the event by the AW119 indicated a late sighting, with some members opining that if the pilot had seen the other aircraft at 1NM (CF6), they would have been better placed taking avoiding action by turning away, rather than continuing on track.

The Board then briefly turned to the actions of the AGO. The Board agreed that they had not been required to sequence the aircraft, and members noted that there might have been an opportunity for the AGO to have passed Traffic Information to the AW119 pilot on the outbound Piper Cub, which appeared to have been missed, but without an RT recording, the exact information passed to the pilots was not known.

When determining the risk, members considered the reports from both pilots and the AGO together with the radar replay recordings and GPS data. Members discussed that the AW119 pilot had reported being visual with the Piper Cub and some members thought that this had been enough to reduce the risk of collision, but others countered that the late sighting, together with the effective non-sighting by the Piper Cub pilot, described a situation whereby safety had not been assured and there had been a risk of collision. After a vote, the latter view was agreed upon and the Board agreed that there had been a risk of collision (CF8); Risk Category B.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024255			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Tactical Planning and Execution				
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	• 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
• Situational Awareness of the Conflicting Aircraft and Action				
3	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
4	Human Factors	• Understanding/Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
• Electronic Warning System Operation and Compliance				
5	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
• See and Avoid				
6	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
7	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
• Outcome Events				
8	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 Assessment³

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

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the AW119 pilot had not established contact on the Denham frequency early enough to ascertain the runway in use.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the Piper Cub pilot had not known that the AW119 would be in the vicinity of Maple Cross and the AW119 pilot had not assimilated that the Piper Cub would be a factor.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS on the AW119 could not detect the non-transponding Piper Cub.

See and Avoid were assessed as **partially effective** because the AW119 pilot had seen the Piper Cub late, and the Piper Cub pilot had not seen the AW119 with sufficient time to take action to increase separation.

Airprox Barrier Assessment: 2024255		Outside Controlled Airspace																									
Barrier	Provision	Application	Effectiveness																								
			Barrier Weighting																								
			0%	5%	10%	15%	20%																				
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]																							
	Manning & Equipment	✓	✓	[Green bar to 2.5%]																							
	Situational Awareness of the Confliction & Action	✓	○	[Red bar to 15%]																							
	Electronic Warning System Operation and Compliance	●	●	[Grey bar to 2.5%]																							
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 10%]																							
	Tactical Planning and Execution	✓	!	[Yellow bar to 10%]																							
	Situational Awareness of the Conflicting Aircraft & Action	!	×	[Red bar to 20%]																							
	Electronic Warning System Operation and Compliance	×	✓	[Red bar to 15%]																							
	See & Avoid	!	!	[Yellow bar to 20%]																							
Key: <table style="display: inline-table; vertical-align: middle;"> <tr> <td>Full</td> <td>Partial</td> <td>None</td> <td>Not Present/Not Assessable</td> <td>Not Used</td> </tr> <tr> <td>✓</td> <td>!</td> <td>×</td> <td>●</td> <td>○</td> </tr> <tr> <td>✓</td> <td>!</td> <td>×</td> <td>●</td> <td>○</td> </tr> <tr> <td>[Green]</td> <td>[Yellow]</td> <td>[Red]</td> <td>[Grey]</td> <td>[Red Box]</td> </tr> </table>								Full	Partial	None	Not Present/Not Assessable	Not Used	✓	!	×	●	○	✓	!	×	●	○	[Green]	[Yellow]	[Red]	[Grey]	[Red Box]
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³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).