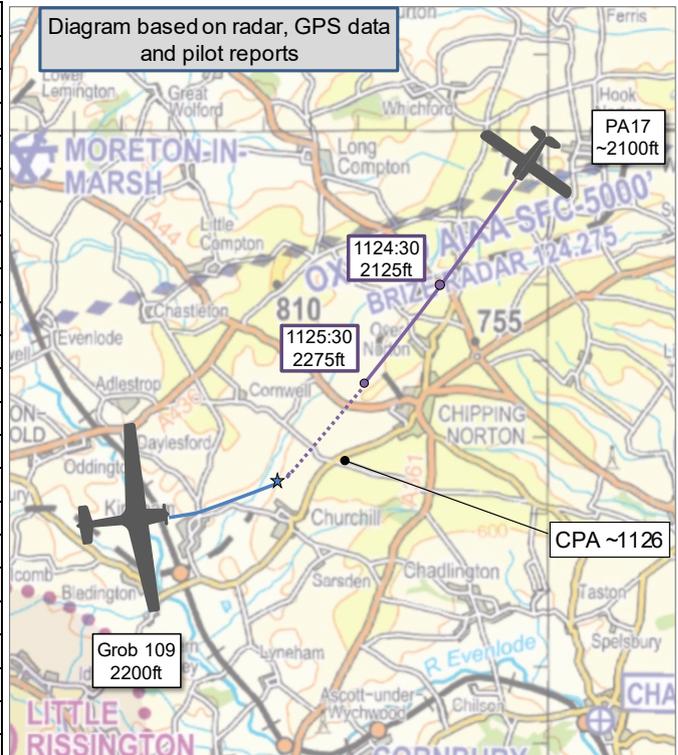


**AIRPROX REPORT No 2024213**

Date: 16 Aug 2024 Time: ~1126Z Position: 5155N 00135W Location: IVO Chipping Norton

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Grob 109	PA17
Operator	Civ Gld	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	NK	~2200ft
Transponder	A, C	Not fitted
Reported		
Colours	White	White, Blue
Lighting	Strobes	Nil
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	2000ft
Altimeter	QFE (1002hPa)	NK
Heading	090°	~180°
Speed	80kt	~70kt
ACAS/TAS	PowerFLARM	SkyEcho
Alert	None	None
Separation at CPA		
Reported	50ft V/'very close' H	30ft V/100m H
Recorded	NK	



**THE GROB 109 PILOT** reports that the other aircraft came from behind them, in the blind spot on the port side. It was a white and blue high-wing SEP, possibly a Eurofox. As soon as they spotted it they took avoiding action by turning to the right and diving. They were pretty sure the other pilot didn't see them, as they made no effort to move. Had the other pilot looked ahead and to their right, given that they were flying a high wing aircraft, they would definitely have seen their aircraft. They noted that they have [EC commonly used by gliders] and ADS-B conspicuity devices fitted, neither of which issued a warning, so they suspected the other aircraft did not have a transponder.

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

**THE PA17 PILOT** reports that they were flying locally, remaining in the vicinity of the aerodrome and following no particular route. Conditions were good VMC. Just south of Chipping Norton and heading south, they suddenly became aware of another aircraft becoming very large in their 2 o'clock, possibly slightly below. It passed in front of them (and again possibly slightly below) on a roughly perpendicular course. The sighting was late enough that it was a considerable surprise, and had it been a direct collision course there is no guarantee that there would have been time to take avoiding action. They were keeping a good lookout and regularly scanning all areas of the sky that the cockpit structure permitted, and the aircraft did not appear from any blind spot. They attributed the incident to the fundamental limitations of see-and-avoid as a collision avoidance strategy, and maintain that those who think they are seeing-and-avoiding are in fact benefitting from it being incredibly unlikely that two relatively small aircraft should attempt to occupy the exact same portion of a relatively large sky at the exact same time. The noted that they were using a [CWS] which at the time of the Airprox did not show the other aircraft, nor was a return from it seen at any time during the flight. It has been their experience that motor-gliders flying from [redacted] do not tend to emit any form of electronic conspicuity, or at least not ADS-B. Given the construction of the PA17, they were confident that the antenna of the [CWS] did not suffer from significant shielding. In general, and especially in that area, they visually sight and hear on the radio a significant number of aircraft which are evidently not emitting ADS-B/Mode S but,

based on their general level of sophistication, might be expected to. They noted that if they could put [a CWS] in something as basic as a PA17, one would think others could do endeavour to do similar, especially the motor-gliders out of [redacted], which is a commercial operation. [UKAB Secretariat note: the Grob 109 was not operating from the airfield suggested by the PA17 pilot]

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

## Factual Background

The weather at Oxford was recorded as follows:

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METAR EGTK 161120Z 10004KT 010V170 9999 FEW040 20/09 Q1016=
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## Analysis and Investigation

### UKAB Secretariat

An analysis of the NATS radar was undertaken and the Grob 109 could be seen squawking 7000 and indicating FL022 (radar QNH 1016hPa). The PA17 could not be seen on the NATS radar replay but was intermittently seen on another aircraft tracking application. Unfortunately, the gap in time between the updates on this application meant that the exact separation between the two aircraft could not be determined.



Figure 1 – 1125:56 Grob 109

The Grob 109 and PA17 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> If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.<sup>2</sup> If the incident geometry is considered as converging then the PA17 pilot was required to give way to the Grob 109.<sup>3</sup>

## Comments

### AOPA

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

<sup>2</sup> (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

<sup>3</sup> (UK) SERA.3210 Right-of-way (c)(2) Converging.

It is heartening to see pilots investing in electronic conspicuity equipment. Until the Department for Transport mandates a common form of electronic conspicuity, Airprox similar to this will continue to occur.

## **BGA**

The carry-on CAP 1391 ADS-B-based TAS on board the PA17 can also be configured to receive transmissions from the EC equipment carried by almost all gliders and many motor gliders (including this Grob 109) and display them via participating EFB applications. Using this option would provide a useful additional safety barrier in airspace where gliders and motor gliders operate.

The EC equipment fitted to the Grob 109 was configured to receive ADS-B transmissions from the PA17's CAP 1391 device and use them to issue proximity alerts. However, the Grob 109 pilot does not report receiving any such alert. It would be useful to understand why this barrier did not function.

## **Summary**

An Airprox was reported when a Grob 109 and a PA17 flew into proximity in the vicinity of Chipping Norton at around 1126Z on Friday 16<sup>th</sup> August 2024. Both pilots were operating under VFR in VMC, neither 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 GPS data. 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 looked at the actions of the Grob 109 pilot. The pilot had reported that they had been flying VFR, when they had suddenly seen the PA17 in close proximity and had taken avoiding action. Members noted that the pilot could have called Brize for a LARS in order to improve situational awareness because, whilst it was not known whether the PA17 had displayed on the Brize radar, members thought that receiving an ATS at least had the potential for receiving Traffic Information either from the controller or simply from hearing other pilots calling on the frequency (**CF1**). The pilot had reported that the aircraft had been fitted with a CWS but that this had not alerted. Members noted that this should have provided information to the pilot on any ADS-B equipped aircraft, but does not transmit ADS-B information out for other pilots to receive reciprocal information. Given that the PA17 had been carrying a CWS that had been transmitting ADS-B information, the CWS on the Grob 109 would have been expected to have provided an alert on this occasion, but none had been reported as having been received (**CF4**). Members wished to highlight to pilots that this particular CWS requires annual updates for its database and regular software updates in order to operate effectively, although for any club aircraft this should be completed during standard aircraft inspections. The Board agreed that, without an ATS or any information from the CWS, the pilot had not received any prior situational awareness on the presence of the PA17 (**CF2**). Members discussed how both aircraft had been on a constant relative bearing to each other, making it difficult for both pilots to see the other aircraft until the last moment, and they discussed how, when flying for some time on the same heading, changing heading, or weaving slightly, could change the aspect presented and make it more likely to see and be seen. Fortunately, although a late sighting, members thought that the Grob 109 pilot had seen the PA17 in time to take avoiding action that had increased the separation between the aircraft. (**CF5**).

Turning to the PA17 pilot, they reported that they had been flying a local sortie and again members thought that the pilot could have called Brize for a LARS in order to assist in getting a better idea of the air picture at the time (**CF1**). The CWS on the PA17 could not have detected the Grob 109, which had not been emitting ADS-B (**CF3**) so, again, the pilot had received no situational awareness on the Grob 109 prior to becoming visual with it (**CF2**). Again, members gave the same advice on changing the aspect of the aircraft in order to assist in both overcoming any blind spots and visual acquisition for other pilots. In this case, the PA17 pilot had seen the Grob 109 late, but had been able to assess that it had not been on a direct collision course (**CF5**).

When discussing the limitations of see-and-avoid, GA members lamented the loss of the old ‘quadrantal’ rule where, for IFR aircraft above 3000ft, the level to be flown was determined by the magnetic track of the aircraft, ensuring at least 1000ft vertical separation for aircraft flying in opposite directions. Whilst this was no longer in operation, still, members thought that it was worth considering for pilots flying VFR below 3000ft. Had both pilots followed it in this case (which the Board acknowledged neither was obliged to do) they would have been vertically separated by a minimum of 500ft (the Grob 109’s track at CPA could not be positively determined). They also highlighted that the semi-circular rule that was in operation for aircraft flying under IFR above transition altitude is still in existence, details of which could be found in the Skyway Code.<sup>4</sup>

When determining the risk of the Airprox, without full radar or GPS data, the Board had only the pilots’ reports to consider. They noted that this had been a late sighting by both pilots and, although the Grob 109 pilot had managed to take avoiding action that had increased the separation, still they assessed that safety had not been assured and that there had been a risk of collision (CF6); Risk Category B.

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

Contributory Factors:

2024213				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Tactical Planning and Execution</b>				
1	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
2	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
<b>• Electronic Warning System Operation and Compliance</b>				
3	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
4	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
<b>• See and Avoid</b>				
5	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
<b>• Outcome Events</b>				
6	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 Assessment<sup>5</sup>

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

**Flight Elements:**

<sup>4</sup> <https://www.caa.co.uk/our-work/publications/documents/content/cap1535s/> page 67.

<sup>5</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

**Tactical Planning and Execution** was assessed as **partially effective** because both pilots could have called Brize Radar for a LARS.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot had any situational awareness of the presence of the other aircraft.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because neither CWS detected the other aircraft.

**See and Avoid** were assessed as **partially effective** because it was a late sighting by both pilots.

Airprox Barrier Assessment: 2024213		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 Conflicting & 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	■	■	■	■	□		