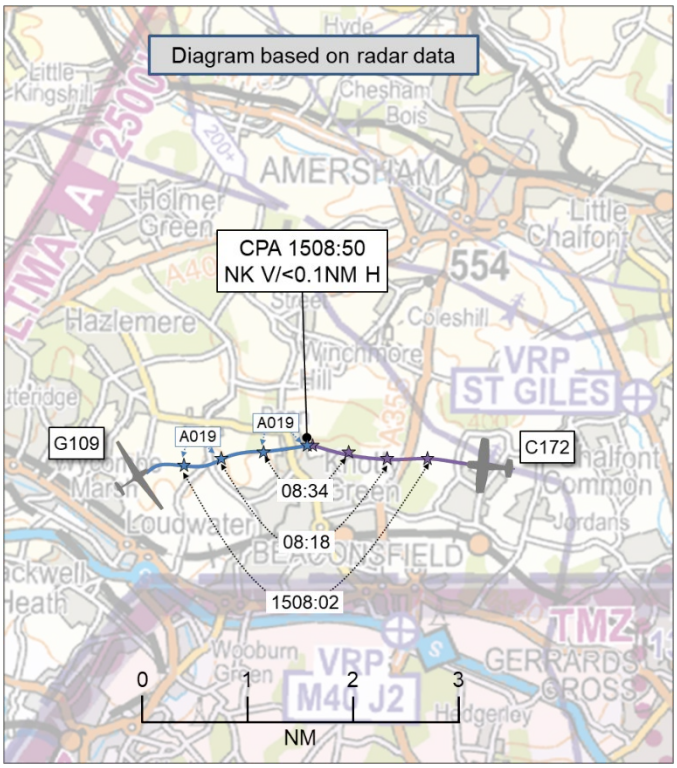
AIRPROX REPORT No 2024188

Date: 04 Aug 2024 Time: 1509Z Position: 5138N 00039W Location: Knotty Green

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	G109	C172
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Listening Out
Provider	Farnborough Rdr	Wycombe Radio
Altitude/FL	1900ft	NK
Transponder	A, C, S	A, C, S[1]
Reported		
Colours	White	White
Lighting	Strobes	Bcn, strobe, nav
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	2100ft	2300ft
Altimeter	QNH (1015hPa)	QNH (1015hPa)
Heading	060°	270°
Speed	85kt	NK
ACAS/TAS	PilotAware	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	60ft V/0m H	Not Seen
Recorded	NK V/<0.1NM	



THE G109 PILOT reports that they were cruising at approximately 2100ft on the Farnborough QNH 1016hPa (or possibly 1015hPa) and receiving a Basic Service from Farnborough Radar. [The aircraft] was equipped with strobes, which were on at the time. They used [EC equipment] to monitor traffic and at approximately 1510, somewhere between the St. Giles and Canal Bend VRPs [they recalled], they spotted what appeared to be a C172 on an opposite course, in their 12 o'clock, approximately 60-70ft above. The aircraft did not come up on their [EC device], nor was traffic reported to them by Farnborough (they appreciated they did not have to report because they were only using a Basic Service).

They judged that turning right, towards Elstree's ATZ, carried a high risk of infringement, so used the Grob's airbrakes to initiate a steep dive beneath the conflicting aircraft. They believed that they passed each other with about 100-150ft to spare, and that if their aircraft were not equipped with airbrakes, they would only have been able to achieve a much lower vertical separation. They do not believe the other pilot saw them; if they did, they took no action to avoid them. They immediately reported the Airprox to Farnborough, so that recordings and radar tracks could be preserved.

To be clear, they were not of the view that the pilot of the Cessna, or the controller at Farnborough, did anything wrong; they were merely reporting this Airprox for statistical reasons, so that information could be used as part of the data that goes into designing airspace and ATC services.

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

[1] The C172 Mode C altitude readout was not available on radar at the time of the Airprox.

THE C172 PILOT reports that they were on a cross-country flight and had not seen another aircraft in proximity. They had filed their report as a response to another pilot who claimed that they were in the vicinity of Knotty Green, Beaconsfield.

They were navigating around Wycombe's ATZ because they did not want to ask for a zone transit. There was static noise on the radio until they switched to Farnborough Radar.

The pilot further reported that the visibility was '*okay*', and that they were flying towards the west and the sun was '*pretty bright at that moment*'. They had not seen the other aircraft.

THE FARNBOROUGH CONTROLLER reports that they were working Farnborough North and East band-boxed, and traffic was medium. At 1509 [the G109 pilot] reported an Airprox to them on frequency which had occurred 1-2min previously. [The G109 pilot] stated that a C172 had overflown them from the opposite direction, about 60-70ft above. The [G109 pilot] was operating VFR outside CAS and on a Basic Service, validated and verified. They were tracking eastbound at the time of the incident, maintaining 2100ft QNH 1015hPa. The incident occurred just west of [Denham] and north of the [Heathrow] CTR. They were not working any other traffic in the vicinity of the reported Airprox.

Factual Background

The weather at Heathrow was recorded as follows:

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METAR COR EGLL 041450Z AUTO 25008KT 220V280 9999 BKN045 22/10 Q1015 NOSIG
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Analysis and Investigation

Farnborough NATS

The pilot of [the G109] contacted the Farnborough LARS North frequency at 1504:49, reported south-east of High Wycombe at altitude 1600ft and requested a Basic Service. The pilot was informed by the Farnborough LARS North controller (LF-LARS-N) they were receiving a Basic Service and was allocated a squawk of 5020.

At 1509:27, the pilot called the LF LARS-N controller with a request and stated, *"can I report an Airprox please?"* The pilot stated the confliction occurred: *"Just north of Beaconsfield, two thousand one hundred, opposite direction, Cessna one seven two, about sixty seventy feet above."* When questioned, the pilot stated this occurred approximately 2 minutes prior whilst maintaining altitude 2100ft. Node radar Mode S indicated the opposite direction aircraft was a Cessna C172 displaying Mode A 7000 with no associated Mode C altitude information.

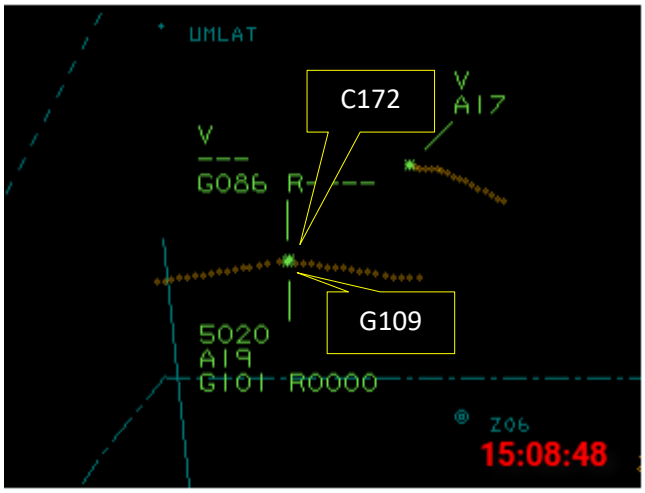

Figure 1- Time 1508:48 NODE Radar depiction

The closest point of approach occurred at 1508:48 and was recorded on the NODE multi-track radar as 0.0NM (Figure 1). The vertical distance could not be established as [the C172] was not displaying Mode C. The Farnborough radar display, however, depicted a time of 1508:50 due to differing radar update rates (Figure 2).

Figure 2 – Farnborough radar display time 1508:50

The radar update prior to the closest point of approach displayed the Mode C of [the G109] climb from 1800ft to 1900ft with further climb to 2000ft. The lateral radar tracks had not displayed that either aircraft had performed a discernible lateral avoidance manoeuvre (Figure 3).

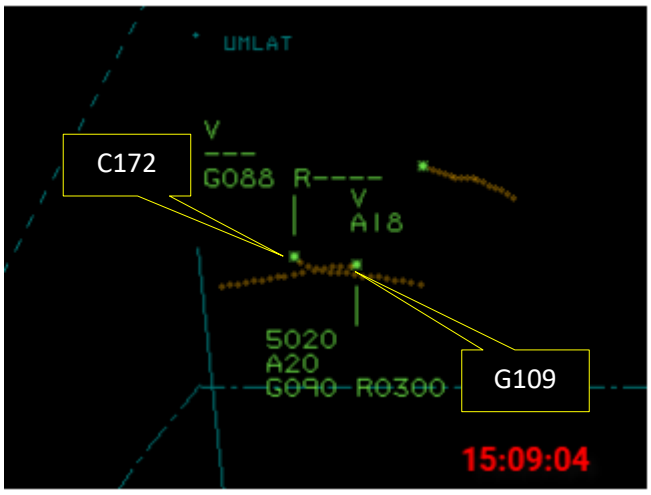

Figure 3 – post CPA positioning of both aircraft.

[From the controller's narrative] there was no reported cognisance of the potential confliction prior to the pilot R/T notification.

The report concludes that the closest point of approach occurred at 1508:48 and was recorded on the NODE multi-track radar as 0.0NM. The vertical distance could not be established as [the C172] was not displaying Mode C.

The Unit Management had no recommendations as a result of their investigation.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were positively identified, however, the C172 displayed no height information. CPA was seen to occur at 1508:50 (Figure 4).

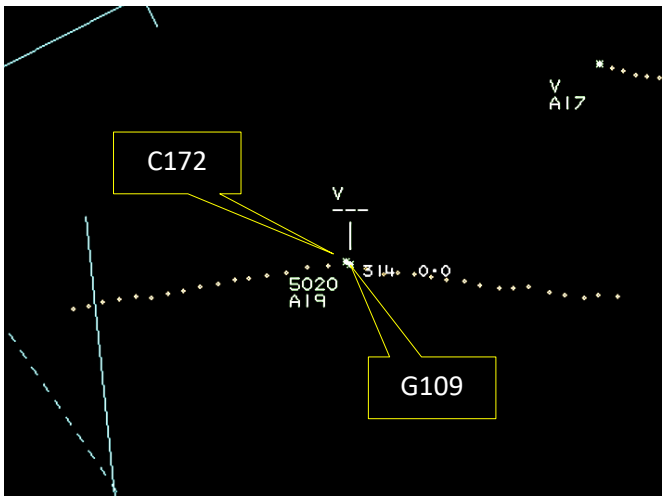

Figure 4 – Time 1508:50 NATS radar replay. Horizontal separation 0NM.

Analysis of ADS-B data sources was also undertaken and both aircraft were positively identified coincident with the positions on the radar depiction. There was no height information from the C172, however, it was notable that altitude readouts became available from 1517:35 (Figure 5). The G109 altitude at CPA was shown as 1925ft (Figure 6).

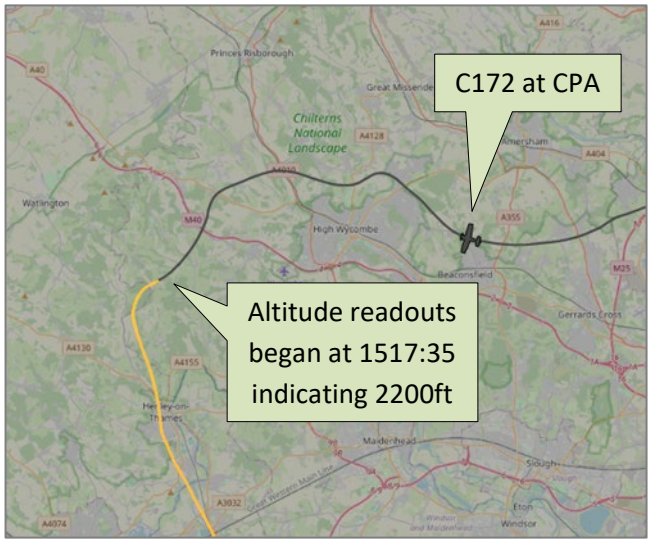

Figure 5 – 1508:50 C172 position at CPA and further ADS-B track.

Figure 6 – 1508:50 G109 position at CPA, altitude 1925ft.

The G109 and C172 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 head-on or nearly so then both pilots were required to turn to the right.[3]

Summary

An Airprox was reported when a G109 and a C172 flew into proximity at Knotty Green at 1509Z on Sunday 4th August 2024. The G109 pilot was operating under VFR in VMC and in receipt of a Basic Service from Farnborough Radar. The C172 pilot was operating under VFR in VMC while listening out on Wycombe Radio, not in receipt of a FIS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, ADS-B data, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 G109 pilot and noted that while the pilot had requested a Basic Service with Farnborough Radar on their route, as they had been in an area that could have been potentially busy, following the northern edge of the London CTR, it would perhaps have been more conducive to the early detection of conflicting traffic to have requested a Traffic Service (**CF2**). Members were heartened that the G109 had been equipped with additional electronic conspicuity equipment, but noted nonetheless that this had not alerted them to the presence of the C172 as would have been expected (**CF4**). Members agreed that the combination of these factors had meant that the G109 pilot had had no situational awareness of the approaching C172 (**CF3**) and that they had achieved only a late sighting of it (**CF5**).

Moving their attention to the actions of the C172 pilot, the Board had at first discussed the pilot's choice of frequency selection, listening out on Wycombe Radio. Members appreciated that the pilot had likely been building situational awareness of Wycombe's traffic prior to approaching their ATZ, yet the Board agreed that a better mental picture, and overall improved situational awareness would likely have been achieved had the pilot been in receipt of a Traffic Service from Farnborough Radar (**CF2**). As a general point, that the Board wished to convey to pilots that situational awareness of local traffic can be gleaned by communicating with a LARS unit (in this case, Farnborough), rather than relying upon the pilot's lookout. The Board also felt that, had the C172 pilot been in communication with Farnborough, they might have learned sooner that their Mode C had not been transmitting, and members wondered whether the Mode C had been inadvertently switched off at the time of the Airprox. The Board agreed that the lack of R/T, in combination with a lack of electronic conspicuity equipment, had meant that the C172 pilot had had no situational awareness of the presence or position of the G109 (**CF3**), and commented that the C172 pilot might have been better served had the aircraft been fitted with electronic conspicuity equipment in addition to the transponder. The Board further discussed the commonality of electronic conspicuity equipment and hoped that a mandate for carriage of equipments operating to the same protocol(s) would be forthcoming from the Department for Transport in the near future. Finaly, members agreed that the C172 pilot had not sighted the G109 (**CF6**).

The Board then considered the actions of the Farnborough controller and noted that, as the G109 pilot had only been in receipt of a Basic Service, the controller had not been required to monitor the flight (**CF1**). Members acknowledged that the controller had been moderately busy at the time of the Airprox and had been unaware of the impending proximity of the 2 aircraft.

In determining the risk, members agreed that the late sighting by the G109 pilot of the C172 and the non-sighting by the C172 pilot of the G109 had resulted in safety margins being much reduced below

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

the norm, and that the emergency avoiding action that had been taken by the G109 pilot at the last minute had increased separation and averted a likely collision but not removed the risk entirely (**CF7**). As such, the Board assigned Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024188			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
	Flight Elements			
	• Tactical Planning and Execution			
2	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
	• 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
	• Electronic Warning System Operation and Compliance			
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
	• See and Avoid			
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
6	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			
7	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[4]

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **not used** because the Farnborough controller had not been required to monitor the G109 flight under a Basic Service.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because both the G109 pilot and the C172 pilot could have requested a Traffic Service where one was available.

[4] 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 Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had been aware of the presence or position of the other's aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the G109's electronic conspicuity equipment had not alerted when it would have been expected to have done so.

See and Avoid were assessed as **partially effective** because the C172 pilot had not sighted the G109 and the G109 pilot only sighted the C172 at a late stage.