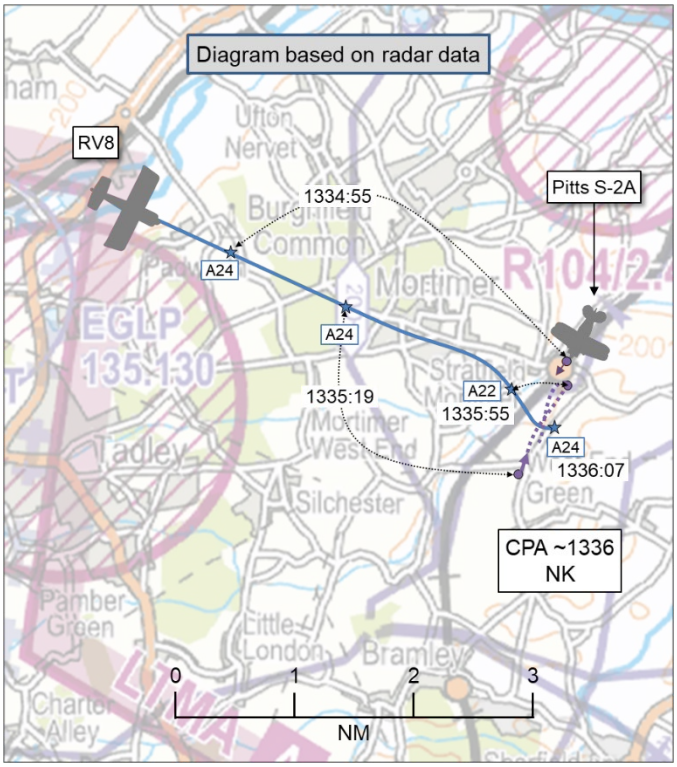
AIRPROX REPORT No 2025029

Date: 16 Mar 2025 Time: ~1336Z Position: 5122N 00102W Location: SW of Mortimer

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	RV8	Pitts S-2A
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Listening Out
Provider	Blackbushe Info	Farnborough Radar
Altitude/FL	2200ft	NK
Transponder	A, C, S	Not fitted
Reported		
Colours	Silver & black	Yellow
Lighting	Strobes, landing	Not fitted
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2100ft	2000-3000ft
Altimeter	QFE (1023hPa)	QNH
Heading	110°	NK
Speed	160kt	NK
ACAS/TAS	SkyEcho	SkyEcho[1]
Alert	None	None
Separation at CPA		
Reported	0ft V/150m H	Not seen
Recorded	NK	



THE RV8 PILOT reports that they were inbound to Blackbushe, in a slow descent from 3000ft, passing 2100ft, heading 110°. They observed an aircraft in their 11 o'clock position in a spinning manoeuvre descending through their level approximately 1-2NM away. They observed the aircraft exit the spin below them in their 11-12 o'clock position approximately ½NM away, on a track of approximately 160°. They saw the aircraft begin to pitch up, so they made a hard turn to the left to avoid it and commenced a climb. As they rolled out of the avoiding turn they looked over their right shoulder to see the aircraft, which they believed to be a Pitts Special or similar, pass 100-200m away in a vertical climb in their 5 o'clock position. They had ADS-B [electronic conspicuity equipment] fitted and nothing was shown on their display, and the aircraft was not in contact with [the Blackbushe] AFISO or Farnborough LARS. Had they not seen the aircraft and initiated avoiding action they believed a collision would have occurred.

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

THE PITTS S-2A PILOT reports a high level of experience on the aircraft type and that they always carry out a thorough pre-flight preparation with the standard elements incorporating the flight objectives, the planned aerobatic manoeuvres and the objectives of these manoeuvres, [and various other risk mitigations]. For the flight in question, they planned to go 1NM south of [restricted zone] R104/2.4 for three aerobatic manoeuvres on an east-west axis with manoeuvres between 2000ft and 3000ft QNH.

The east-west axis to the south of zone R104/2.4 was chosen because it limits crossings with aircraft travelling on a north-south axis due to [the restricted zone being to the north of them] and is in [Class G airspace] up to 4500ft, leaving a margin with Class A [airspace] above. The chosen east-west axis

[1] SkyEcho was fitted to the aircraft but the pilot reported that it had lost GPS signal.

would not fly over residential areas. The altitude of 2000-3000ft was chosen to limit noise pollution on the ground and was high enough in case it was necessary to recover from an abnormal situation.

Listening to the Farnborough Radar frequency was planned to enable the identification of transiting aircraft in communication. The manoeuvres were all carried out in an almost fixed position in space with a maximum deviation of 0.5NM horizontally and 1000ft vertically. In terms of systems, [they used navigation software] on [a mobile phone] with the Traffic ON option connected to an [electronic conspicuity] ADS-B IN/OUT transceiver. The flight was carried out according to this schedule without deviation, with the exception of the [electronic conspicuity] system, which lost its signal from the first upside down manoeuvre and never recovered it until the end of the flight. During the flight and manoeuvres, they used the visual scanning technique, particularly during the aerobatics phase, but with a faster scan because it was otherwise impossible during the performance of figures, concentrating on the key areas and in particular in the direction of movement (for example above the plane in the case of an upward vertical manoeuvre) and using peripheral vision at the same time. The manoeuvring phases were intense and were limited to just a few minutes. All the manoeuvring phases, including the HASELL/HELL control phases beforehand, lasted around 15min. The flight went according to plan and despite the visual control technique and the HASELL/HELL checks, they did not detect the potential conflict with the RV8 aircraft, detection made more difficult due to the high speed of the RV8 of 160kt arriving very quickly at their, almost fixed, position. The loss of the signal by the [electronic conspicuity] system also made it impossible to identify the potential conflict.

THE BLACKBUSHE AFISO reports that [the RV8] was booked in to land at Blackbushe. The aerodrome details were provided to [the pilot of the RV8 and a] Basic Service on their initial call. Due to the minimal circuit traffic, the [pilot] elected to join left base for RW07.

The [pilot of the RV8] asked if they were working a yellow Pitts aircraft to the northwest of the field but this aircraft was unknown traffic to Blackbushe Information.

A further aircraft called for join, and upon passing Traffic Information as reported by [the pilot of the RV8], the pilot remarked *"[they] almost hit me".* Upon landing a conversation was had with [the pilot of the RV8] and they suggested that an Airprox be reported.

Factual Background

The weather at Farnborough Airport was recorded as follows:

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1320Z 04012KT 360V080 9999 FEW040 08/M02 Q1024
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Analysis and Investigation

CAA ATSI

With only the [RV8 pilot] on the Blackbushe frequency, the AFISO would not have been aware of the presence of [the Pitts S-2A] and therefore no Traffic Information could be passed.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the RV8 was positively identified using Mode S data. The RV8 was seen making a slight right turn away from the Pitts S-2A manoeuvring area at 1335:55 with an indicated separation of 0.4NM (Figure 1).

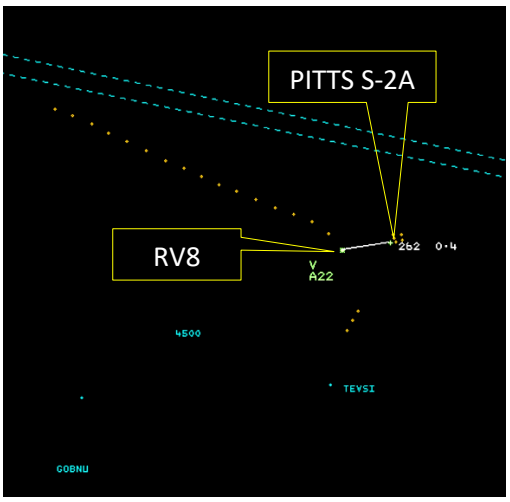


Figure 1 Time 1335:55

They then made a left turn shortly afterwards. A primary track was seen that correlated with the manoeuvring Pitts S-2A. CPA was assessed to have been at approximately 1336 and the separation could not be ascertained (Figure 2).

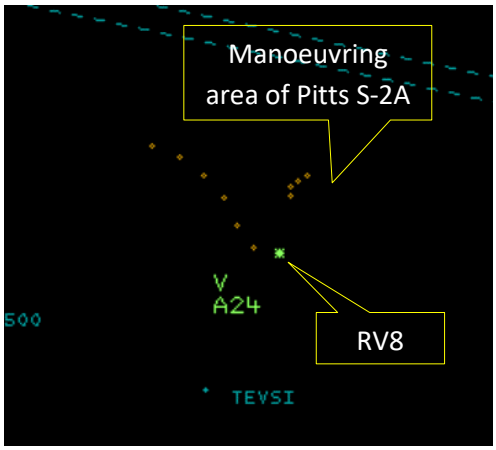


Figure 2 Time 1336:07 Pitts S-2A primary return lost

Further analysis of ADS-B tracking software was undertaken, the RV8 was visible and the Pitts S2A was not visible. The avoiding manoeuvre described by the RV8 pilot could be seen on the various tracks available via radar and ADS-B coincident with the time of CPA.

The RV8 and Pitts S-2A 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 an RV8 and a Pitts S-2A flew into proximity southwest of Mortimer at approximately 1336Z on Sunday 16th March 2025. The RV8 pilot was operating under VFR in VMC in receipt of a Basic Service from Blackbushe and the Pitts S-2A pilot was operating under VFR in VMC listening out on the Farnborough Radar frequency, not in receipt of a FIS.

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

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a GPS track file from the RV8 pilot, a report from the AFISO 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 RV8 pilot and noted the pilot had seen the Pitts S-2A performing a dynamic aerobatic manoeuvre from approximately 1-2NM away. Members agreed that the RV8 pilot may have been better served to have made an exaggerated manoeuvre away from the Pitts S-2A at this point, so as to avoid approaching the aircraft's area of operation and to help enable the pilot of the Pitts S-2A to realise that the RV8 had clearly not been directed toward them, should they have sighted it. The Board, therefore, agreed that the RV8 pilot had not adapted their plan to adequately to avoid the Pitts S-2A (**CF2**) and, as a consequence, had flown into conflict with it (**CF5**). The Board felt that it was unfortunate that the RV8's electronic conspicuity equipment had not been able to detect the Pitts S-2A (**CF4**) due to the Pitts S-2A not emitting an ADS-B signal at that time and, as such, the Board agreed that the RV8 pilot had had no situational awareness of the presence or position of the Pitts S2A prior to sighting it (**CF3**).

Turning their attention to the actions of the Pitts S-2A pilot, one pilot member described the scenario of performing a dynamic aerobatic sequence from the back seat of a biplane with a limited visual arena. Members discussed the pilot's pre-flight planning and, while acknowledging that it had been comprehensive, had wondered about the wisdom of using the restricted zone as a shield from north-south tracking aircraft when it had been quite likely that other aircraft may have been routeing around such zones. The Board further discussed the Pitts S-2A pilot's opportunities to have assisted the awareness of other airspace users by making a call to London Information or Blackbushe, for example, but concurred that the pilot had been 'listening out' likely because, given the nature of their flight, it had been difficult to get an appropriate service from either Farnborough or Blackbushe. Members acknowledged that the pilot had fitted a secondary electronic conspicuity device that had been capable of detecting, and being detected by, the RV8 but that this equipment had ceased to function correctly after an inverted manoeuvre, and that the pilot, therefore, had had no situational awareness of the presence of the RV8 (**CF3**). The Board was informed that the owner/operator of the Pitts S-2A had been fully aware of the importance of fitting full ADS-B in and out capable equipment to their aircraft and members learned that the transponder, recorded as 'not fitted' on this occasion, was being repaired at the time of the Airprox flight. Members agreed that, without situational awareness, the Pitts S-2A pilot had had no cue to visually acquire the RV8 and had remained unsighted on it (**CF6**).

Moving the conversation on to the actions of the Blackbushe AFISO, the Board agreed that the AFISO could not have known about the aircraft performing aerobatics 5.5NM west-northwest of their ATZ boundary and that they had not been required to monitor the RV8 on a Basic Service in any case (**CF1**).

Concluding their discussion, members turned their attention to the determination of the risk of collision. Members surmised that neither pilot had had situational awareness of the presence of each other's aircraft until the RV8 pilot had sighted the Pitts S-2A spinning through their level from 1-2NM away. Furthermore, the RV8 pilot had then flown sufficiently close to the Pitts S-2A that safety had no longer been assured and the RV8 pilot had taken emergency avoiding action at the last minute to avert a likely collision (**CF7**) as the Pitts S-2A pilot recovered altitude. As such, the Board assigned a Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2025029			
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	• 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
	• Electronic Warning System Operation and Compliance			
4	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			
5	Contextual	• Loss of Separation	An event involving a loss of separation between aircraft	Pilot flew into conflict
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 Blackbushe AFISO was not required to monitor the RV8 under a Basic Service.

Flight Elements:

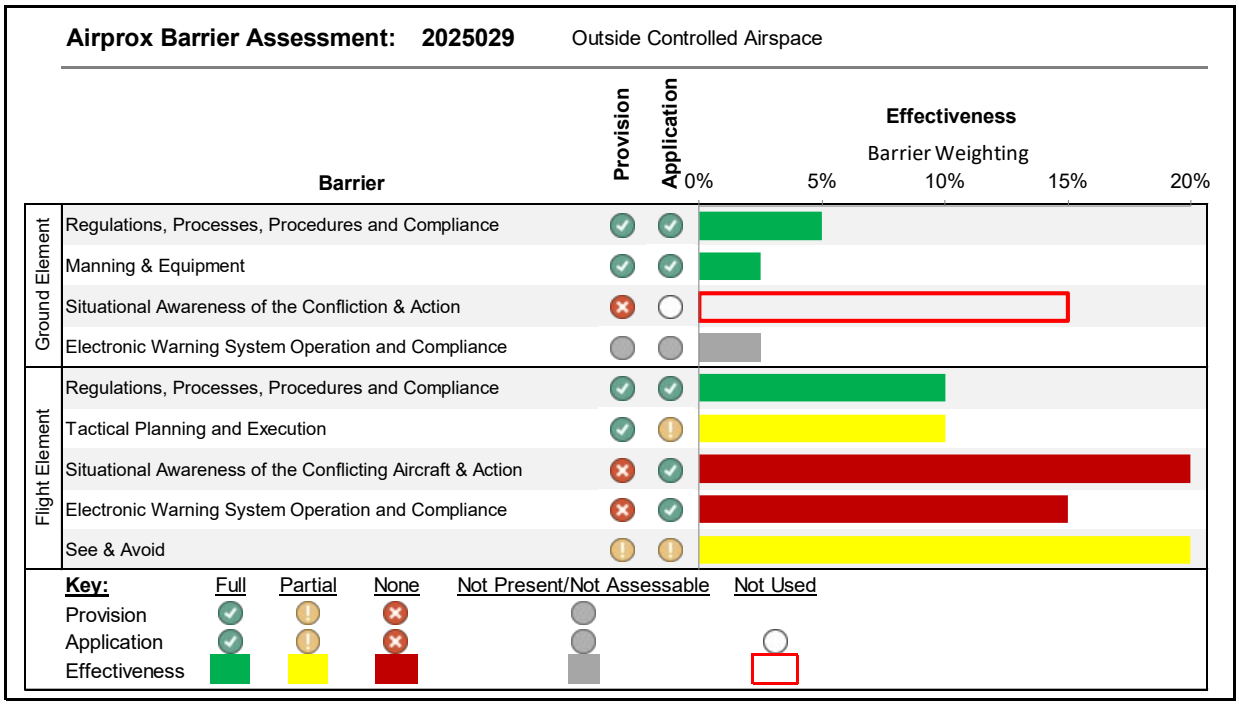
Tactical Planning and Execution was assessed as **partially effective** because the RV8 pilot could have adapted their route more effectively on first sighting the manoeuvring Pitts S-2A.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the RV8 pilot nor the Pitts S-2A pilot had situational awareness of the presence or position of the other pilot's aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the RV8's electronic conspicuity equipment could not detect the Pitts S-2A which had lost its electronic conspicuity signal during an aerobatic sequence.

See and Avoid were assessed as **partially effective** because the RV8 pilot, having sighted the manoeuvring Pitts S-2A at a distance of 1-2NM, did not avoid the aerobatics area by sufficient margin, and the Pitts S-2A pilot had not seen the RV8.

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


Airprox Barrier Assessment: 2025029
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