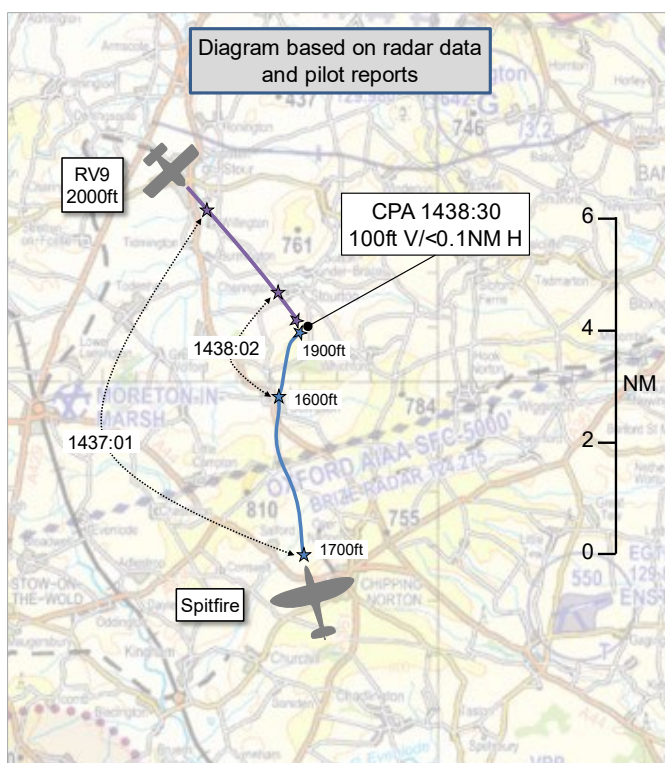


AIRPROX REPORT No 2023070

Date: 07 May 2023 Time: 1438Z Position: 5201N 00134W Location: 4NM north of Chipping Norton

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Spitfire	RV9
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	AGCS
Provider	Oxford Radar	Enstone Radio
Altitude/FL	1900ft	2000ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Camouflage	Red and white
Lighting	Not in use	Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	2170ft
Altimeter	QNH (1017hPa)	QNH (NK)
Heading	360°	135°
Speed	180kt	110kt
ACAS/TAS	PilotAware	Not fitted
Alert	None	None
Separation at CPA		
Reported	100ft V/50m H	Not Seen
Recorded	100ft V/<0.1NM H	



THE SPITFIRE PILOT reports that this Airprox had occurred while they had been operating a Safety Standards Acknowledgement and Consent (SSAC) flight from [departure airfield] on behalf of [the operator] during the 4th sortie of the day. They had departed Oxford’s ATZ to the northwest and commenced a slow climb to the north of Chipping Norton. While they had been climbing through approximately 2000ft they saw an aircraft at their 10 o’clock position and slightly higher than them, on a converging heading. They had immediately pitched forward and had started to roll to the right while maintaining good visual contact [with the other aircraft] so as to pass approximately 100ft lower and to the right of it. The aircraft was a cream and red RV6 or 7A (they had thought) [which] did not seem to change attitude or heading. Once they had become clear and stable they had immediately checked the [TAS] screen and confirmed that the aircraft had not displayed. The [TAS equipment] had been functioning very well, displaying multiple glider contacts between Edgehill and Bidford gliding sites. Their attention had then focused on their passenger and navigating the remainder of their flight, so they had not reported the incident to Oxford ATC from whom they had been receiving a Basic Service throughout the flight. They had believed that the RV pilot had not been in communication with Oxford. It had been heading towards Enstone.

The pilot assessed the risk of collision as ‘High’.

THE RV9 PILOT reports they had been towards the end of a flight, returning from [departure] to [destination] in excellent weather with good visibility. They believed that at the time of the Airprox, as reported, they had been 4NM north of Chipping Norton (therefore about 6NM northwest of Enstone) about to commence their descent to land back at [destination]. They had called Enstone Radio when they had been about 9NM from Enstone to request airfield information and they had been advised that the runway in use was 26 with a right-hand circuit. They had announced that they would join downwind. Apart from two other aircraft, one in the circuit and one joining from, they had thought, the north for an overhead join, they had heard no other traffic calling Enstone Radio and at no time did they or their

passenger (a commercial airline pilot) see any Spitfire or indeed any other aircraft with which they had conflicted.

THE OXFORD CONTROLLER reports they had been made aware of an Airprox that had occurred between an aircraft (Spitfire) that had been on their frequency and an unknown aircraft. They had no recollection of any incident, nor had the pilot declared one on the RT or [phoned] the tower afterwards. They recalled that Sunday had been busy in the local area and they also recalled that the Spitfire had got airborne numerous times throughout the day and had been receiving a Basic Service.

THE OXFORD SUPERVISOR reports that the [Spitfire] was under a Basic Service from Oxford. The [Spitfire] pilot had presumably become concerned regarding the closeness of another unknown aircraft. A Basic Service provides a limited barrier as the controller had had no responsibility for providing information. They opined that it had been disappointing that the pilot neither reported the Airprox in the air nor to the unit when on the ground such that an early investigation could have taken place. The unit had investigated the incident and the MOR had been closed.

THE ENSTONE AIR GROUND OPERATOR reports that they had been the duty AG operator at the time of the reported incident. The [RV9 pilot] had called Enstone Radio north of the aerodrome for joining instructions at approximately 1437. These had been relayed to the [RV9 pilot] who had made joining and circuit calls and landed at approximately 1446. At no time had there been any comment made regarding the possibility of an Airprox and at no time had there been a call from [the Spitfire] on Enstone's frequency.

Factual Background

The weather at Oxford was recorded as follows:

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METAR EGTK 071520Z 25008KT 210V290 9999 FEW028 19/11 Q1018=  
METAR EGTK 071450Z 22010KT 9999 SCT025 18/12 Q1018=
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Analysis and Investigation

Oxford Investigation

The [Spitfire] had been airborne from Oxford at time 1432 and the initial contact between the crew and Oxford Radar had been at 1433:07 requesting a Basic Service which had been confirmed with 'no level restriction'.

The [Spitfire] had continued to track north-westbound, and no other comms had been exchanged between the crew and ATC until after the CPA occurred with the other unknown aircraft. No communication referencing the occurrence had been relayed via the RT and the ATC watch logs likewise had no reference to this.

The [Spitfire pilot] had been operating under a Basic Service at the time of the Airprox, and with that in mind, in accordance with CAP774, the pilot should not expect any form of Traffic Information from a controller under this service and that whether Traffic Information had been provided or not, the pilot remained responsible for collision avoidance without assistance from the controller. Likewise, even though the controller had access to surveillance-derived information, it was noted again [that the Spitfire pilot] had been operating under a Basic Service and thus the controller had not been required to identify nor monitor the aircraft's flight. It had been, however, noted that the controller had 'selected' and highlighted the aircraft just prior to the CPA, and it could be argued that at this time Traffic Information under 'duty of care' would have been beneficial. It was noteworthy, though, that on selecting the return of [the Spitfire], the Mode C of this aircraft had been indicating A018 and the unknown aircraft's Mode C had been indicating A022. Also, such Traffic Information under 'duty of care' had been passed to other aircraft in receipt of a Basic Service even in the short period that had been listened to for this review. They had been content that the controller in question had been aware of this responsibility.

To conclude, it appeared that this Airprox had occurred between [the Spitfire] and an aircraft which had been, at the time, unknown to Oxford Radar. [The Spitfire] had been operating under a Basic Service at the time and therefore the controller had not been required to identify this aircraft, monitor the flight, or provide Traffic Information. This had occurred in Class G airspace where ultimately, regardless of the ATS that had been provided, the pilots had been responsible for collision avoidance. The controller had recalled that the Spitfire had been operating through the period of duty but had no recollection of an incident and no incident or Airprox had been reported.

UKAB Secretariat

An analysis of the radar replay showed that the Spitfire pilot departed Oxford to the northwest in a climb to 1700ft via the Oxford Area of Intense Aerial Activity (AIAA) and the RV9 passed to the southeast of Shipston-on-Stour at 2000ft at time 1437, approximately where the RV9 pilot reported making an initial call to Enstone Radio for an Air Ground Communication Service (Figure 1).

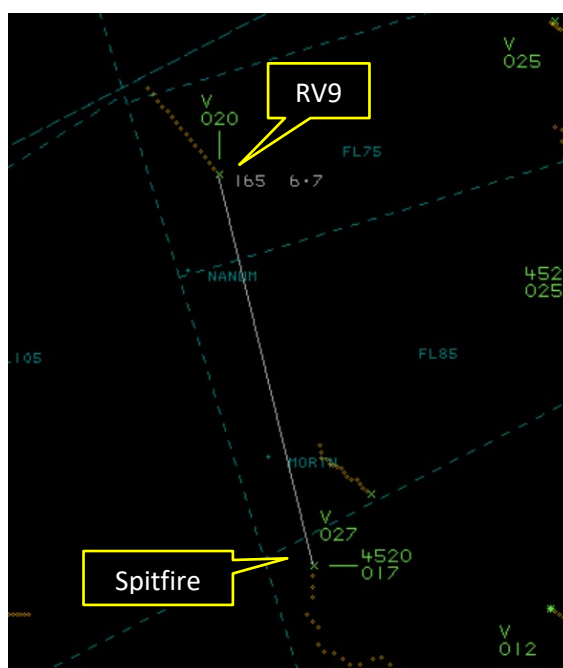


Figure 1 – Spitfire operating in the Oxford AIAA northwest of Oxford at 1437

One minute later at 1438 the two aircraft continued on converging headings with the Spitfire indicating an altitude of 1600ft and the RV9's Mode C altitude was not known (Figure 2). Their relative distance decreased from 6.7NM to 1.9NM.

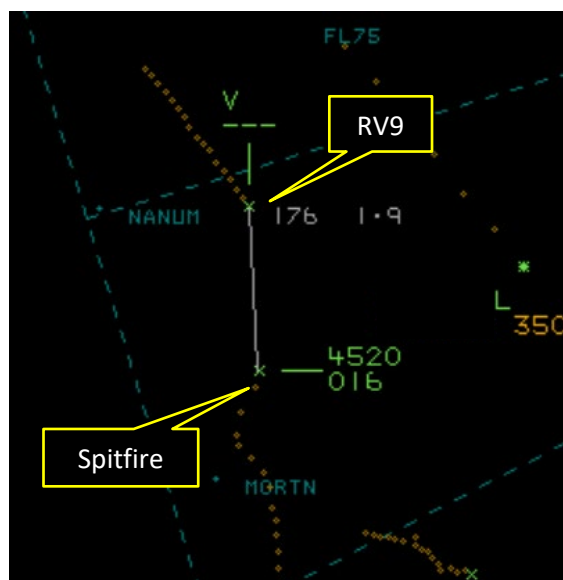


Figure 2 – Spitfire and RV9 remain on converging headings at 1438

The RV9 passed overhead the Spitfire at time 1438:30 (Figure 3)

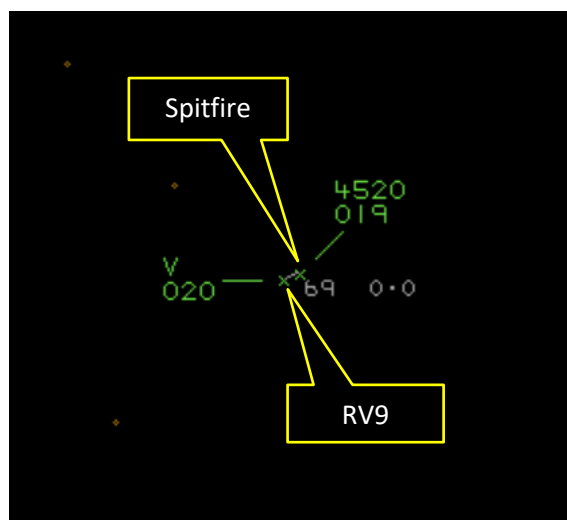


Figure 3 – The Spitfire and RV9 closest point of approach at 1438:30

The Spitfire and RV9 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 head-on or nearly so then both pilots were required to turn to the right.² If the incident geometry is considered as converging then the RV9 pilot was required to give way to the Spitfire.³

Summary

An Airprox was reported when a Spitfire and a RV9 flew into proximity 4NM north of Chipping Norton at 1438Z on Sunday 7th May 2023. Both pilots were operating under VFR in VMC, the Spitfire pilot in receipt of a Basic Service from Oxford Radar and the RV9 pilot in receipt of an AGCS from Enstone Radio.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. 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 Spitfire pilot and noted that the pilot had been operating within the Oxford Area of Intense Aerial Activity under a Basic Service from Oxford Approach. Noting that a surveillance-based Air Traffic Service may not always be available, the Board considered that, operating on an SSAC flight in the Oxford AIAA, the Spitfire pilot may have been better served requesting a higher level of service (**CF2**). The Board agreed that, in the event, the Spitfire pilot had not had any situational awareness of the presence of the RV9 and that this had been contributory to the Airprox (**CF3**). Members also discussed the compatibility of various electronic conspicuity (EC) devices after noting that there had been no alert reported from the Spitfire's EC equipment (**CF4**) when it would have been expected to have detected the presence of the RV9's transponder signals. The Board agreed that this had left the Spitfire pilot relying on their lookout for the detection of other aircraft and that, in the event, the pilot had sighted the RV9 at a later than optimum stage (**CF5**).

¹ (UK) SERA.3205 Proximity.

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

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

Turning to the RV9 pilot's actions, the Board agreed that the call to Enstone Radio for joining instructions had been timely, however, the discussion about which service the pilot may have been receiving prior to the frequency change led the members to consider if this had had any bearing on the pilot's situational awareness. With that aspect being unknown, members concluded that the RV9 pilot had not had any situational awareness of the presence of the Spitfire (CF3). The Board also noted that the RV9 had not been fitted with any additional electronic conspicuity equipment, and the discussion turned to the availability of a partial rebate for EC equipment from the CAA - a scheme which closes in March 2024.⁴ Returning to the incident itself, the Board concluded that without any situational awareness from on-board or off-board sources, the pilot had been relying on their lookout to detect potential threat aircraft, and had not seen the Spitfire at any point (CF6).

Turning their attention to the actions of the Oxford controller, overall the Board agreed that the option to provide the Spitfire pilot with Traffic Information on the RV9 was subjective, as some members felt that this should have been passed under 'duty of care', while others considered that the controller had seen a 400ft altitude difference at the time of noting the proximity of the RV9 and had not passed Traffic Information on that occasion, which had been in accordance with the terms of the Basic Service being provided to the Spitfire pilot (CF1). Nonetheless, members agreed that, taking into consideration the dynamic manoeuvring capability of the Spitfire, Traffic Information may have made a difference and would likely have been passed if a higher level of service had been in place.

In determination of risk, members were in agreement that neither pilot had been aware of the other in their vicinity until a late sighting by the Spitfire pilot, and that a combination of unavailable or unused surveillance-based Air Traffic Service and no alert from the EC device carried by the Spitfire pilot had reduced safety much below the norm. The Board considered that there had been a risk of collision (CF7) and that it had been largely fortuitous that the Spitfire pilot's avoidance manoeuvre had managed to increase the separation. Consequently, the Board assigned Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2023070				
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

⁴ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

• 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 Assessment⁵

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 Oxford controller had been providing a Basic Service to the Spitfire pilot and had not been required to monitor the flight.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the Spitfire had not requested a higher level of service whilst operating within the Oxford AIAA.

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 the Spitfire pilot's EC equipment did not alert to the presence of the RV9 when it would have been expected to do so.

See and Avoid were assessed as **partially effective** because the Spitfire pilot saw the RV9 late and took immediate avoiding action, and the RV9 pilot did not see the Spitfire.

⁵ 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: 2023070 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 Conflicition & 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:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	!	✗	○				
Application	✓	!	✗	○				
Effectiveness								