

## AIRPROX REPORT No 2022062

Date: 30 Apr 2022 Time: 1229Z Position: 5159N 00103W Location: 2NM west of Buckingham

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	SR22	ASG29
Operator	Civ FW	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	None
Provider	Turweston Radio	N/A
Altitude/FL	2900ft	2900ft <sup>1</sup>
Transponder	A, C, S+	Not fitted
<b>Reported</b>		
Colours	Grey, black	White
Lighting	Strobes, landing	Nil
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	3000ft	3400ft
Altimeter	QNH (1029hPa)	QFE (NR hPa)
Heading	180°	NR
Speed	150kt	NR
ACAS/TAS	TAS	FLARM
Alert	None	Unknown
<b>Separation at CPA</b>		
Reported	200ft V/0m H	Not Seen
Recorded	~0ft V/<0.1NM H <sup>2</sup>	



**THE SR22 PILOT** reports that, having departed from overhead [their departure aerodrome], they climbed to 3000ft. They were aware of the gliding site at Bicester and maintained a good lookout. On levelling out, they were completing top-of-climb checks, checking engine parameters and leaning the fuel flow. On looking outside after the checks, they observed a white glider in what appeared to be a turn crossing in front of the aircraft from left-to-right. They immediately descended to maintain clearance.

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

**THE ASG29 PILOT** reports that they were 1hr into a cross-country glider flight with good conditions and visibility. They were in a thermal climb from 2000ft to 3400ft QFE with no other aircraft visible to them. After changing altitude, they continued on their flight in a north-easterly direction.

### **Factual Background**

The weather at Oxford Airport was recorded as follows:

METAR EGTK 301220Z VRB03KT 9999 FEW044 14/03 Q1029=  
 METAR COR EGTK 301250Z 17003KT 9999 FEW038 15/04 Q1028=

<sup>1</sup> Altitude derived from GPS information.

<sup>2</sup> Separation derived from a comparison of radar data for the SR22 and GPS data for the ASG29.

## Analysis and Investigation

### UKAB Secretariat

An analysis of the NATS radar replay and GPS data for the ASG29 was undertaken. The SR22 was first detected by the NATS radars at 1227:13 in the overhead of Turweston aerodrome and at an altitude of 2700ft (see Figure 1). As the SR22 proceeded south-eastbound, the aircraft's Mode C readout stabilised at 2900ft (+/-100ft) until CPA. The ASG29 glider was not detected by the NATS radars, but GPS data from the aircraft showed that it was established in a thermal, making tight right-hand turns at the time the SR22 passed through the area. The radar position of the SR22 was compared with the GPS position of the ASG29 to determine the CPA.



Figure 1 – 1227:13

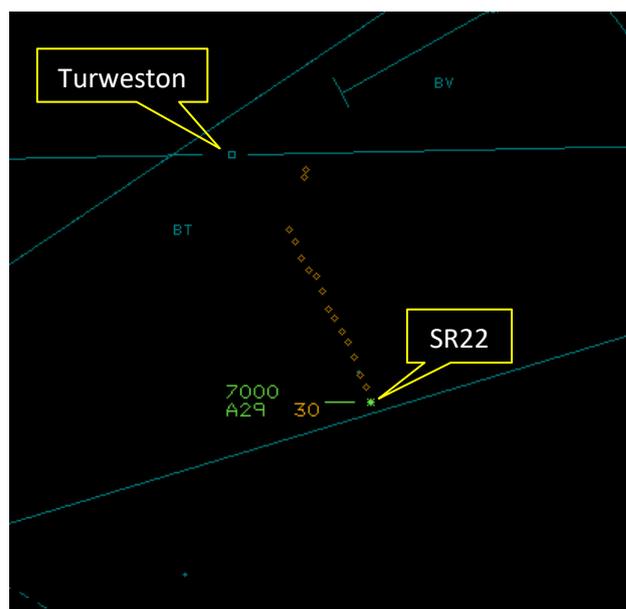


Figure 2 – 1228:33 - CPA

The SR22 and ASG29 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>3</sup> If the incident geometry is considered as converging then the SR22 pilot was required to give way to the ASG29.<sup>4</sup> If the incident geometry is considered as overtaking then the ASG29 pilot had right of way and the SR22 pilot was required to keep out of the way of the other aircraft by altering course to the right.<sup>5</sup>

## Comments

### AOPA

When flying in the vicinity of airfields and in class G airspace, effective lookout is essential – break each task down to smaller ones then lookout before undertaking another task, especially if electronic conspicuity or a radar service aren't available. Whilst listening-out on a frequency, it is considered to be good airmanship to call the airfield and this would also help other pilots' situational awareness. Additionally, an Airprox should be reported as soon as possible by radio, which permits ATC to take the necessary immediate actions to preserve data for any subsequent investigation.

### BGA

This incident once again highlights the difficulty of seeing a small aircraft approaching head-on at high speed, as the SR22 would have appeared from the perspective of the ASG29 pilot. Where

<sup>3</sup> (UK) SERA.3205 Proximity.

<sup>4</sup> (UK) SERA.3210 Right-of-way (c)(2) Converging.

<sup>5</sup> (UK) SERA.3210 Right-of-way (c)(3) Overtaking.

forward-pointing high-intensity landing lights are fitted, many pilots now opt to leave them permanently switched on in daylight, to aid visual conspicuity in this direction.

A glider circling in a thermal climb will typically complete one 360° turn every 20sec, during which time an aircraft approaching at 150kt would cover 0.8 NM. The pilot of a thermalling glider must look for aircraft approaching from every direction; although continuously turning facilitates 360° lookout, it also leaves the pilot unsighted in any specific direction for about half the time.

Both pilots are to be commended for carrying additional ACAS/TAS equipment, but unfortunately the two products chosen use incompatible radio protocols, so this did not provide an additional safety barrier.

## Summary

An Airprox was reported when an SR22 and an ASG29 flew into proximity 2NM west of Buckingham at 1229Z on Saturday 30<sup>th</sup> April 2022. Both pilots were operating under VFR in VMC, the SR22 pilot listening-out on the Turweston Air/Ground frequency and the ASG29 pilot not 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 supplied by the ASG29 pilot. 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 SR22 pilot and heard from a GA pilot member that it is good practice to divide attention between cockpit checks (with eyes inside the cockpit) and lookout, breaking-up the checks as necessary to scan outside the aircraft. The Board was encouraged by the SR22 pilot's decision to leave their landing light on, as this can increase the visual conspicuity of an aircraft, although this did not assist the glider pilot in becoming visual with the SR22 on this occasion. Members also noted that the Airprox occurred on a Saturday, when opportunities to secure a LARS are generally fewer than on a weekday, leaving the SR22 pilot with only their electronic conspicuity equipment to aid situational awareness of the presence of other aircraft. The Board agreed that, due to the incompatibility of the SR22's and ASG29's electronic conspicuity equipment (**CF2**), the SR22 pilot had not had any situational awareness of the presence of the ASG29 (**CF1**) and that this had left them relying on their lookout. It had been unfortunate that the SR22 pilot had been conducting checks as they approached the location of the ASG29, and the Board agreed that this had contributed to the SR22 pilot sighting the ASG29 at a late stage (**CF3**), albeit with sufficient time for them to take action to ensure separation. The Board also wished to remind pilots to report an Airprox event as soon as possible on the radio to the agency with which they are communicating, or the next agency they speak to.

The Board then considered the actions of the ASG29 pilot and heard from a glider pilot member that the ASG29 pilot had executed 3 turns in the thermal in the lead-up to the Airprox, each of which would have taken approximately 20sec to complete. This had given the ASG29 pilot 3 potential opportunities to sight the SR22, but the member went on to say that there is also a great deal of time, when thermalling, where the glider pilot will be unsighted in any particular direction. Coupled to this, the SR22 would have presented a very low visual cross-section to the ASG29 pilot, further decreasing the likelihood of the ASG29 pilot sighting the approaching aircraft as they turned in the thermal. The Board also noted that the ASG29 had been equipped with electronic conspicuity equipment but that this had been incompatible with the equipment fitted to the SR22 (**CF2**). Therefore, the Board agreed that the ASG29 pilot had not had any situational awareness of the approaching SR22 (**CF1**) and that they had also not sighted the aircraft at any stage (**CF4**).

Finally, the Board considered the risk involved in this event. Members were grateful to the ASG29 pilot for having supplied their GPS log file from the flight, as this had greatly enhanced the Board's understanding of the geometry of the event. Members noted that the SR22 pilot had reported a vertical separation in the order of 200ft, but that the recorded data (radar and GPS) had indicated that there had been no vertical separation. The Board therefore agreed that a risk of collision had existed (**CF5**).

and the discussion then turned to whether or not the SR22 pilot's actions had materially increased the CPA. Taking into account that there is often 'lag' in the recorded altitude output from a transponder, the Board considered it likely that the SR22 pilot had introduced some vertical separation with their actions on sighting the ASG29. Consequently, the Board agreed that safety had been much reduced and assigned a Risk Category B to this Airprox.

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

### Contributory Factors:

2022062				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
1	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>				
2	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
<b>• See and Avoid</b>				
3	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
4	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
<b>• Outcome Events</b>				
5	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>6</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:**

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

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the TAS fitted to the SR22 was unable to detect the non-transponding ASG29, and the electronic conspicuity equipment carried by the ASG29 could not detect the transponder signals from the SR22.

**See and Avoid** were assessed as **partially effective** because the SR22 pilot sighted the glider at a late stage, and the ASG29 pilot did not see the SR22.

<sup>6</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

<b>Airprox Barrier Assessment: 2022062</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>				
				<b>Barrier Weighting</b>				
				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	⚠	⚠					
<b>Key:</b>		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	●	⚠	⊗	○				
Application	●	⚠	⊗	○		○		
Effectiveness	■	■	■	■		□		