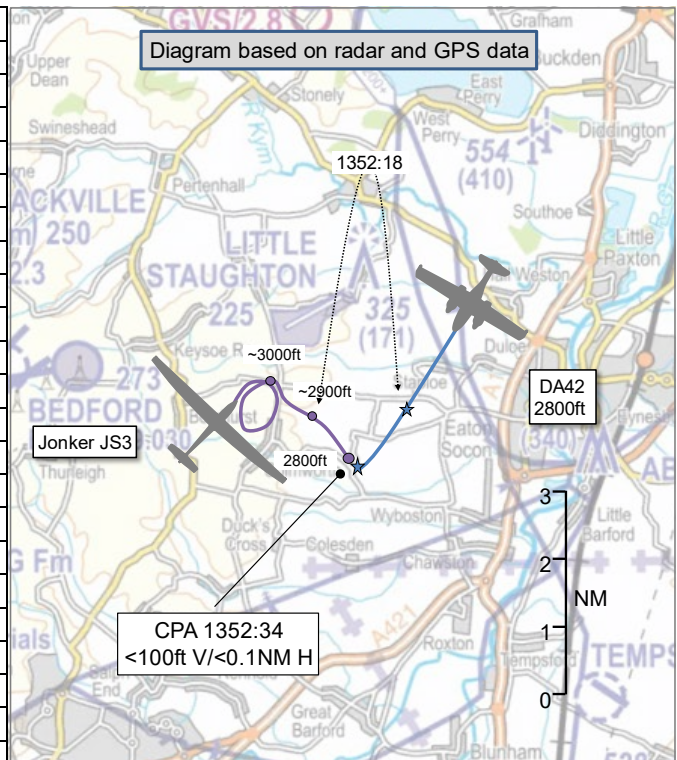


**AIRPROX REPORT No 2022230**

Date: 11 Aug 2022 Time: 1353Z Position: 5212N 00021W Location: IVO Bedford

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	Jonker JS3
Operator	Civ FW	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	2800ft	~2800ft
Transponder	A, C, S+	Not fitted
<b>Reported</b>		
Colours	NR	White
Lighting	NR	NR
Conditions	VMC	VMC
Visibility	NR	NR
Altitude/FL	~3500ft	NK
Altimeter	NK	NK
Heading	NR	NR
Speed	NR	NR
ACAS/TAS	TAS	FLARM
Alert	None	Unknown
<b>Separation at CPA</b>		
Reported	0ft V/100ft H	Not Seen
Recorded	<100ft V/<0.1NM H	



**THE DA42 PILOT** reports that on returning to Cranfield, they were joining from Bedford, two gliders were at the same altitude, 3500ft soaring. The gliders were into sun and less than 100ft away, coming towards their aircraft. They opined that this was the closest they had been to a mid-air collision in the last ten years. The only safe measure was drastic nose-down emergency descent, so much so that they banged their head on the roof. There was no TAS alert.

**THE JONKER JS3 PILOT** reports that although they recalled seeing some DA42 aircraft during practise days, they did not classify any such meeting as a near mid-air and from their point of view the situation was not a dangerous one. They noted that during the competition<sup>1</sup> they were surprised by the number of powered aircraft flying in their vicinity, in their country the maximum height for powered flying VFR is 1000ft agl, so they hardly ever meet any, otherwise, powered aircraft fly in controlled airspace, which gliders avoid.

**THE GLIDER COMPETITION ORGANISER** reports that they did a comprehensive airspace briefing, both as a self-briefing document issued in the Spring, and as a detailed presentation at the start of the competition, so that all pilots understood the UK airspace structure, which is quite different from some nations, and had an appreciation of likely areas of high activity. The date in question was a practise day for the competition which took place two days later.

**THE CRANFIELD CONTROLLER** reports that the Airprox was not reported on frequency. The R/T recordings did not indicate any aircraft on frequency in the 10min before and after the time of the Airprox. The FPS did not indicate any aircraft that would have been in conflict, although the FPS did indicate that there had been gliders on frequency that day, and the Departure ATIS did warn of gliders in the vicinity.

<sup>1</sup> 13<sup>th</sup>- 27<sup>th</sup> August 2022

## Factual Background

The weather at Cranfield was recorded as follows:

METAR EGTC 111420Z VRB05KT CAVOK 30/12 Q1021=  
 METAR EGTC 111350Z VRB04KT CAVOK 30/11 Q1021=

## Analysis and Investigation

### UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The DA42 could be identified using Mode S data and at 1350:44 could be seen 6.5NM northeast of Bedford airfield, squawking 7000 and indicating 2800ft (London QNH 1020hPa), see Figure 1. A number of primary-only contacts, possibly gliders, could be seen in the vicinity.

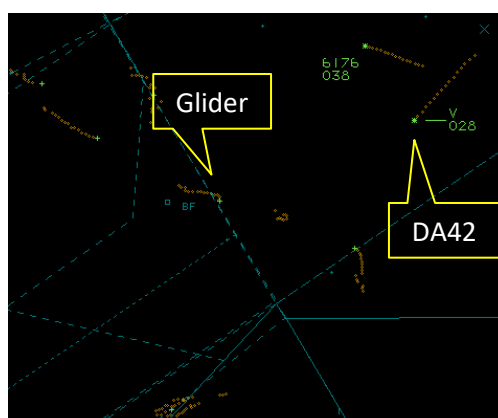


Figure 1- 1350:44

At 1352:34 a primary contact could be seen in the vicinity of the DA42 and the DA42 had begun a descent, Figure 2. By the following radar sweep at 1352:38, the DA42 had descended 200ft to 2500ft, Figure 3. The UKAB Secretariat was able to obtain GPS data showing a track for the Jonker glider, enabling the diagram at the top of this report to be compiled. However, due to the necessity to combine two differing data sources, the measured separation has been recorded as an approximation.

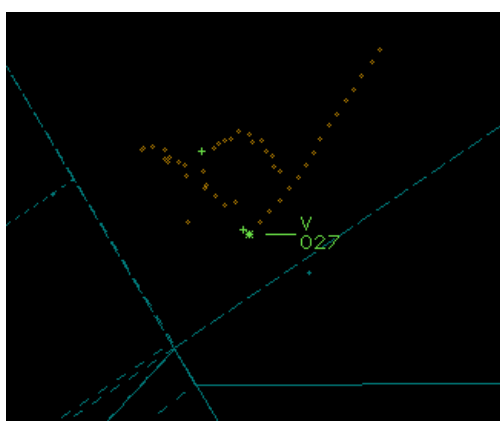


Figure 2 – 1352:34

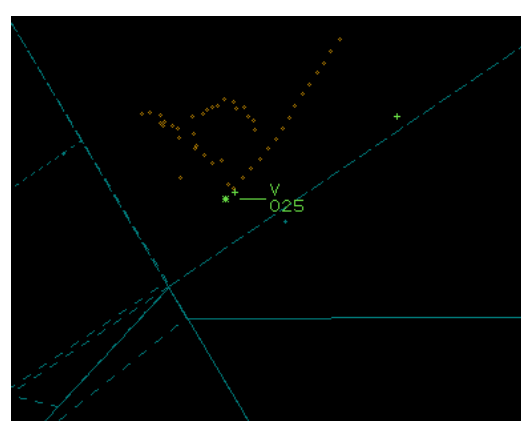


Figure 3 – 1352:38

The DA42 and Jonker 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>2</sup> If the incident geometry is considered as converging then the DA42 pilot was required to give way to the Jonker.<sup>3</sup>

<sup>2</sup> (UK) SERA.3205 Proximity.

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

## Comments

### AOPA

When pilots are not communicating with an ATC unit, or do not have compatible Electronic Conspicuity equipment, the last barrier for MAC avoidance is lookout. In this case see-and-avoid was hampered by the glider being into sun, resulting in a very late sighting.

### BGA

With no interoperability between the Electronic Conspicuity equipment fitted to the JS3 and the DA42, and neither in receipt of an ATS, see-and-avoid was the only operating MAC safety barrier in this incident. It's fortunate that the DA42 pilot was able to take avoiding action, albeit at the last moment.

## Summary

An Airprox was reported when a DA42 and a Jonker JS3 flew into proximity in the vicinity of Bedford at 1353Z on Thursday 11<sup>th</sup> August 2022. Both pilots were operating under VFR in VMC, neither was in receipt of an ATS.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from both pilots, GPS track data and radar photographs/video recordings together with a report from Cranfield ATC. 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 DA42 pilot. They had been recovering to Cranfield but had not yet called ATC for a service. Members noted that they would normally advise pilots to call ATC as soon as possible but, given that Cranfield does not have a surveillance radar, it was unlikely to have made any difference on this occasion. The CWS on the DA42 could not have detected the non-transponding gliders, nor had it been compatible with the EC carried by the gliders (**CF2**). The Cranfield ATIS warned pilots that there had been a lot of glider activity in the area, thus providing the DA42 pilot with generic situational awareness. However, without an ATS, or any warning from the CWS, the DA42 pilot had been without any specific situational awareness that the gliders had been operating in close proximity (**CF1**). Members noted that this area was frequently very busy with gliders and wondered whether the company that operated the DA42 should consider fitting a CWS which had the ability to also detect the most common glider EC. In this event, the final barrier to mid-air collision had been see-and-avoid, fortunately the DA42 pilot had seen the gliders, although later than desirable (**CF3**), and had been able to take emergency avoiding action that had generated more vertical separation.

The gliders had been operating on a practise day for an international competition that had been due to take place a few days later. The Board was told by the BGA representative that a gliding competition would be NOTAM'd, to give other airspace users a warning that large numbers of gliders would be operating in the area, but that for an international competition there would normally be practise days prior to the competition to allow pilots to become familiar with UK airspace. However, current BGA procedures did not require a NOTAM to be issued on practise days, only on competition days. The BGA intended to discuss these procedures further to decide whether in future a NOTAM should be issued on practise days as well. Members were heartened to hear this and agreed that a NOTAM would provide useful information to other airspace users. The glider pilots had been operating as a pair and, although both aircraft had been fitted with a standard glider CWS, that had not been compatible with the CWS on the DA42 (**CF2**), so again the pilots had been without any situational awareness that the DA42 had been in the vicinity (**CF1**). Given that the pilots were pair flying, with one in trail to the other, members thought that it had been surprising that neither pilot had seen the D42 at all, especially as it had flown past in such close proximity (**CF4**).

When assessing the risk, members considered the reports from both pilots together with the radar screenshots. They noted that the glider pilot had not seen the DA42 at all, but that the DA42 pilot had seen the glider, and had managed to take avoiding action. Noting that the radar indicated that the DA42 pilot had descended 200ft in the space of 4sec, members thought that this emergency avoiding action had materially increased the separation, but that there had been an element of providence and so a risk of collision had still existed (**CF5**); Risk Category B.

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

### Contributory Factors:

2022230				
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>4</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 the DA42 pilot had gained only generic situational awareness about glider activity in the area from the Cranfield ATIS, however, the glider pilot was not aware that the DA42 was in the vicinity.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the TAS on the DA42 could not detect the EC on the glider and the CWS on the glider could not detect the DA42.

**See and Avoid** were assessed as **partially effective** because the DA42 pilot managed to take avoiding action, albeit late.

<sup>4</sup> 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: 2022230** 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	⚠	⚠					
<b>Key:</b>								
	Full	Partial	None	Not Present/Not Assessable	Not Used			
Provision	●	○	⊗	○				
Application	●	○	⊗	○	□			
Effectiveness	■	■	■	■	□			