

## AIRPROX REPORT No 2022209

Date: 29 Jul 2022 Time: 1343Z Position: 5208N 00036W Location: 4NM N Cranfield

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	Grob Astir
Operator	Civ FW	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Establishing	None
Provider	Cranfield	
Altitude/FL	2300ft	~2550ft
Transponder	A, C, S	Not fitted
Reported		
Colours	White	White
Lighting	NR	None
Conditions	VMC	VMC
Visibility	NR	NR
Altitude/FL	2500ft	NK
Altimeter	NK	NK
Heading	North	NK
Speed	100kt	NK
ACAS/TAS	TAS	FLARM
Alert	None	None
Separation at CPA		
Reported	300ft V/100m H	Not Seen
Recorded	~250ft V/<0.1NM H	



**THE DA42 PILOT** reports that they were climbing out VFR from RW03 on a northerly heading, when they had to take immediate avoiding action for a glider thermalling directly ahead and above, on a collision course. An immediate descent was initiated with negative G. The glider was within 100m vertically and horizontally. There was no advance warning from TAS, no aural alert, and no indication/diamond on the MFD/inset box. There was also no warning from ATC. The avoiding action was initiated during the initial call to the Cranfield Approach frequency. The flight continued with no further incident.

**THE ASTIR PILOT** reports that they had no recollection of an Airprox. Their flight log showed that they were the pilot flying that day, and they could remember the flight. With reference to the incident reported, they had no recollection whatsoever. In conducting their normal process of keeping a good lookout they did not recall catching sight of another aircraft in a compromising position at this stage of the flight. Throughout the flight their CWS was on, but again they did not recall it giving any warnings of other aircraft in close proximity at the time indicated. The pilot reported that they would normally call ATC when they were close to an airfield, but could not recall whether they had on this occasion.

**THE CRANFIELD CONTROLLER** reports that they had no recollection of the incident. R/T recordings were checked and indicated that the pilot of the DA42 reported a 'glider going across us', to which the ATCO responded that there were none on frequency. FPS<sup>1</sup> indicated that, although there had been gliders on frequency at various times during that day, none were on frequency at the time the event was reported.

<sup>1</sup> Flight Progress Strips.

## Factual Background

The weather at Cranfield was recorded as follows:

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METAR EGTC 291320Z VRB03KT CAVOK 24/09 Q1019=  
METAR EGTC 291350Z 03004KT 320V070 CAVOK 24/10 Q1019=
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## Analysis and Investigation

### UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The DA42 could be seen climbing out of Cranfield (see Figure 1). A number of primary radar returns, which were possibly gliders, could be seen in the area, although none in close proximity to the DA42.

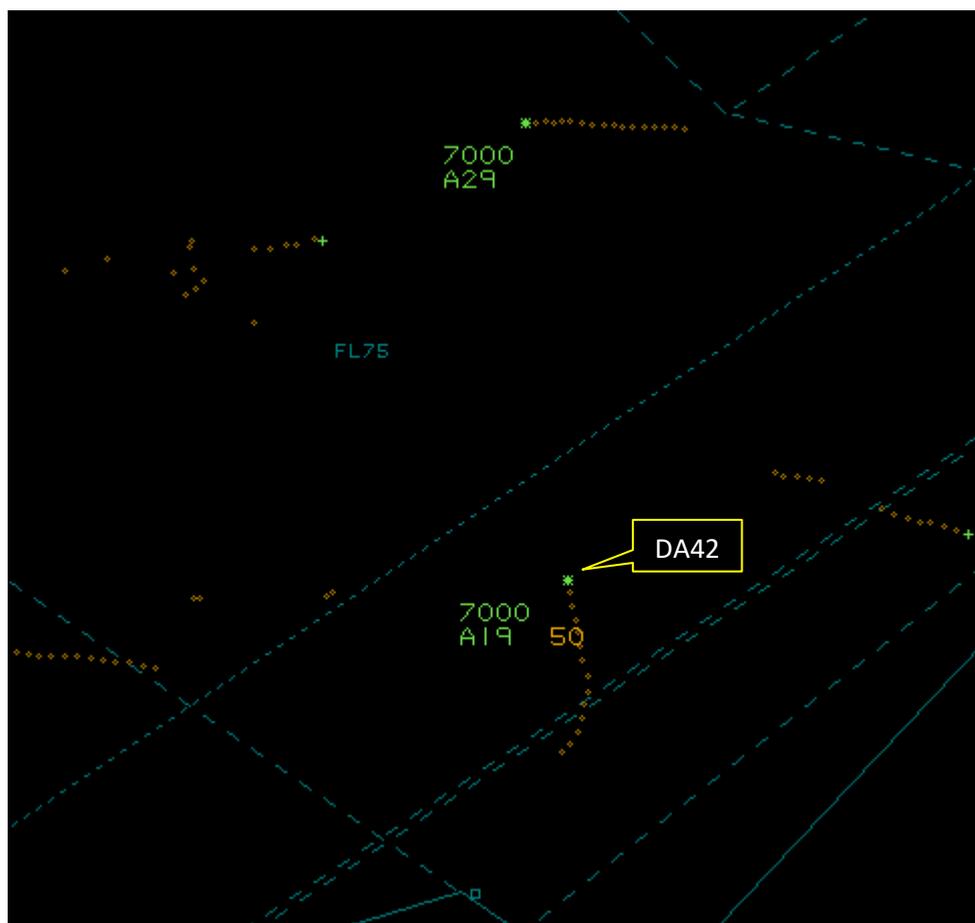


Figure 1- 1342:52

By 1343:22 the DA42 could be seen passing 2400ft, still climbing (Figure 2), however, on the next radar sweep the DA42's altitude indicated 2300ft (Figure 3), before returning to 2400ft and continuing the climb. No other radar returns could be seen in the area at this time.

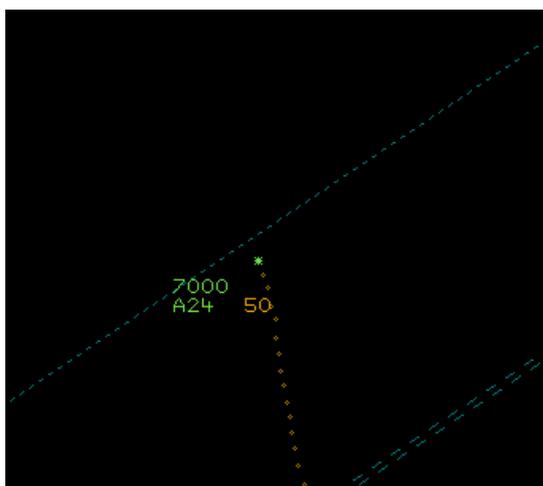


Figure 2 -1343:22

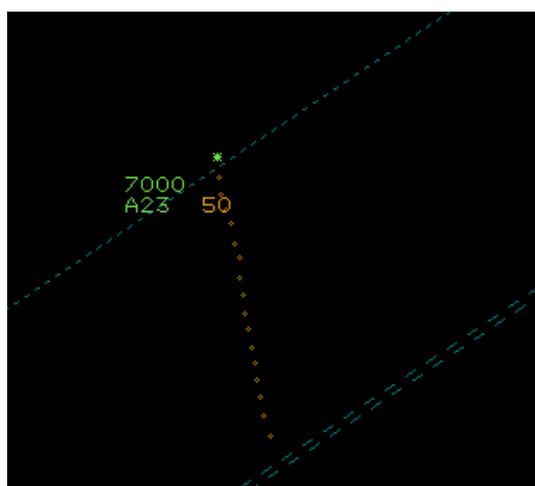


Figure 3 – 1343:26

Initially, a transponder equipped glider (squawking 7000 on Figure 1), was traced as the likely Airprox glider because, at around 1345, the DA42 crossed 300ft above this glider. However, given that this did not accord with the DA42 pilot's report on descending to avoid, further analysis was undertaken using a GPS data tool which showed numerous gliders in the area at this time, including the Astir thermalling at around 2600ft. The Cranfield RT available did not have a relevant time stamp, however, after initially calling Cranfield "[C/S] Cranfield Approach just passing 2400" the call appeared to be abruptly stopped. The controller replied with an acknowledgement and applied a Basic Service, and the DA42 pilot reported "Yeah, Basic Service, er, that was a glider just going across us". The controller confirmed that there were no gliders on frequency (Cranfield is not equipped with radar). Given that the NATS radar indicated that the DA24 was approaching 2400ft at 1343, it is likely that the Airprox occurred at around this time. As a consequence to initially tracing the incorrect glider pilot, there was a significant delay and, when contacted, the Astir pilot had no recollection of the event. GPS data was compared to the radar data to compile the diagram at the top of the report and provide an approximate separation.

The DA42 and Astir 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 head-on or nearly so then both pilots were required to turn to the right.<sup>3</sup> If the incident geometry is considered as converging then the DA42 pilot was required to give way to the glider.<sup>4</sup>

## Comments

### BGA

Where the necessary Flight Radio Telephony Operator's Licence (FRTOL) is held, and cockpit workload permits, glider pilots are encouraged to contact the relevant ATSU when flying near an Instrument Approach Procedure (IAP) in Class G airspace, to make controllers aware of their presence.

Those in communication with an ATSU or listening-out should make an initial report of an Airprox as soon as practicable, by radio, to the ATS Unit that they are with. They should prefix the message with the word "Airprox". Such initial reports act as an important trigger to allow the ATS unit involved to preserve any information relevant to the incident, and for the controllers involved to note the circumstances of the incident for use in future investigations. (UK AIP ENR 1.14.3.2 - see also CAP 413 9.14)

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

<sup>3</sup> (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

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

With no interoperable Electronic Conspicuity between the DA42 and the Astir, and no shared ATS, see-and-avoid was the only operating MAC safety barrier in this incident. The DA42 pilot is to be commended for maintaining a good lookout, and manoeuvring to remain clear of the Astir.

## Summary

An Airprox was reported when a DA42 and an Astir glider flew into proximity 4NM north of Cranfield at 1343Z on Friday 29<sup>th</sup> July 2022. Both pilots were operating under VFR in VMC, the DA42 pilot was in the process of establishing a service from Cranfield App and the Astir pilot was 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, GPS data and a report from the air traffic controller involved. 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 DA42 pilot. They had been climbing-out from Cranfield and had been in the process of making their initial call to Cranfield Approach when they reported seeing a glider. Members reminded pilots that when they considered an Airprox to have taken place, reporting it on the frequency in-use at the time greatly enhances any post-incident investigation. In this case, it may have prevented the incorrect glider pilot being first approached, and may have resulted in the Astir glider pilot having had a better recollection of the event. Although the DA42 pilot had called the Cranfield controller, without any radar and without the glider on frequency, the controller had had no knowledge that the glider had been in the vicinity and so could not have provided any Traffic Information. The EC equipment on the DA42 could not have detected the glider (**CF3**) and so without any information from either ATC or their EC equipment, no situational awareness on the glider had been available to the DA42 pilot (**CF2**). With see-and-avoid being the final barrier to mitigate against MAC, it was fortunate that the DA42 pilot had seen the Astir in time to take avoiding action, albeit late (**CF4**).

The Board thought it had been unfortunate that, through no fault of the Astir pilot, they had had only a limited recollection of the flight. However, the pilot seemed certain that they had not seen another aircraft in close proximity. Members noted that when thermalling, it could be difficult for glider pilots to see aircraft climbing up from beneath them as they were often obscured by the wings, and that the DA42 gave a particularly slight profile when viewed head-on and so was notoriously difficult to see. It therefore seemed likely to the Board that, on this occasion, the glider pilot had not seen the DA42 at all (**CF5**). The Astir's EC equipment had not been compatible with that on the DA42, nor could it detect the transponder on the other aircraft, and some members opined that the Astir's EC equipment was only ever going to detect other gliders anyway (**CF3**). Although the glider pilot had noted that they would normally call an ATSU when operating close to an airfield, the Cranfield controller had said that no gliders had been on frequency at this time, therefore the Board concluded that they had not called on this occasion (**CF1**). Members reminded pilots that best practice was to call an ATSU when operating near any unit that had 'feathers' printed on the VFR charts and that Cranfield in particular, without any radar, relied upon pilots calling them in order to maintain a full air picture on other aircraft operating in the vicinity. Without compatible EC equipment and without an ATS, no prior situational awareness had been available to the Astir pilot about the DA42 climbing in their area (**CF2**) and they had not seen it as it crossed below.

The Board briefly looked at the role of Cranfield ATC. The DA42 pilot had only just called on frequency and they had not been providing a service at the time of the Airprox. The controller had had no knowledge that the glider had been operating in the vicinity and so the Board thought that there had been little more that the Cranfield controller could have done to prevent the Airprox. However, from the radar replay and GPS data it could be seen that there had been numerous gliders in the area that day. Knowing that Cranfield operated without a radar, some members wondered whether Cranfield had considered operating with a Flight Information Display which provides an opportunity to utilise data from

a variety of electronic conspicuity devices. They noted that the CAA had recently produced new policy and guidance allowing ATSU's to use such equipment.<sup>5</sup>

When assessing the risk of the Airprox, the Board took into consideration the reports from both pilots and the controller, together with the radar and GPS data. They noted that although the Astir pilot had not seen the DA42 at all, the DA42 pilot had reported taking avoiding action by rapidly descending, which members thought probably increased the separation and averted a more serious encounter. The Board therefore agreed that safety had been much reduced and a risk of collision had existed (**CF6**); Risk Category B.

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

### Contributory Factors:

2022209				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Tactical Planning and Execution</b>				
1	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
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
2	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>				
3	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>				
4	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
5	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>				
6	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:**

**Tactical Planning and Execution** was assessed as **partially effective** because the Astir pilot, operating within 10NM of an airfield marked with instrument approach feathers, could have called Cranfield ATC.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot knew the other was operating in the area.

<sup>5</sup> See CAA CAP 493 SI 2022/10

<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](#).

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the EC equipment on the two aircraft was not interoperable.

**See and Avoid** were assessed as **partially effective** because the DA42 pilot managed to take emergency avoiding action to increase the separation.

Airprox Barrier Assessment: 2022209		Outside Controlled Airspace		Effectiveness				
Barrier		Provision	Application	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	■	■	■	■	□			