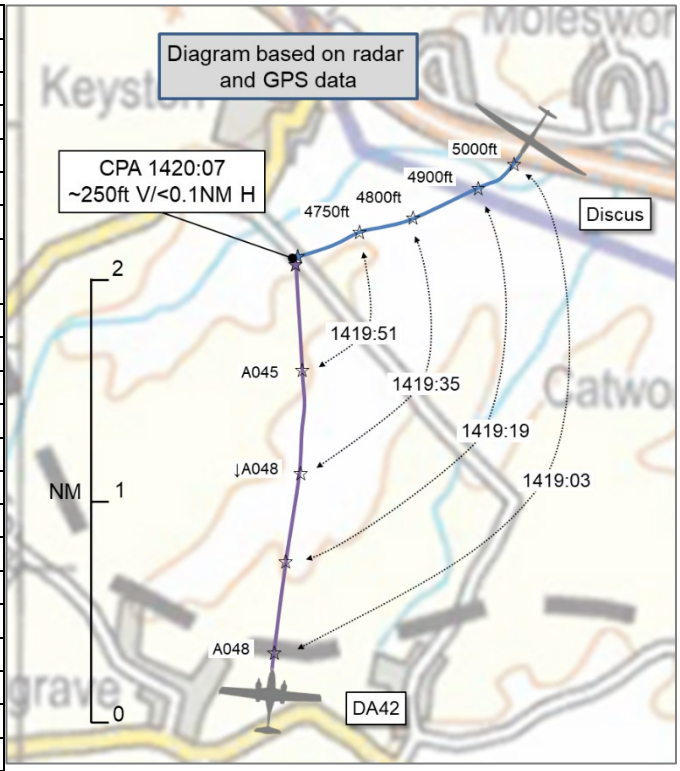
AIRPROX REPORT No 2022134

Date: 11 Jul 2022 Time: 1420Z Position: 5221N 00028W Location: 3NM SE Thrapston

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Discus	DA42
Operator	Civ Gld	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None[1]	Basic
Provider	N/A	Cranfield Approach
Altitude/FL	4750ft	4500ft
Transponder	A, S[2]	A, C, S+
Reported		
Colours	White	White
Lighting	Nil	'standard'
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	4600ft	3000–5000ft
Altimeter	QFE (NK hPa)	QNH (1022hPa)
Heading	240°	NK
Speed	65kt	NK
ACAS/TAS	TAS/FLARM	TAS
Alert	None/Information[3]	None
Separation at CPA		
Reported	100ft V/100ft H	0ft V/400m H
Recorded	~250ft V/<0.1NM H	



THE DISCUS PILOT reports that, whilst they were flying a leg Ramsey to Rushden, there was an alarm from [their EC equipment] and they saw the powered aircraft ahead and to their left. It was close enough that they immediately dived. They recovered to level flight and did not see the other aircraft again. The [EC alert] may have been from another glider but they saw no other aircraft during this incident. Their recollection is not 100% clear but they're not sure that the urgency of the alarm corresponded to the closeness of the other aircraft. They also had ADS-B on board but don't recall any warning from it. They did not see any action being taken by the other aircraft. Being white, it probably didn't stand out well against the sky. They weren't able to make any notes at the time so their inputs are all approximate.

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

THE DA42 PILOT reports that whilst carrying out an instructional flight in a multi-engine aircraft, demonstrating critical speed, generally in a straight line, but varying in altitude, with high nose attitude, a glider-type aircraft passed in front, left-to-right [they recalled], at a similar altitude. There was no TAS alert or even symbol displayed on their G1000 MFD screen. The previous few minutes had been spent positioning themselves to avoid all TAS returns in the area. It is difficult to position aircraft [which have departed from their departure airfield] away from likely conflict with other GA aircraft outside controlled airspace whilst leaving sufficient margin not to infringe controlled airspace above, as all are flying at similar levels. No avoiding action was taken as there was no time. Their flight continued with no further incident.

[1] The pilot was monitoring a cross country situational awareness frequency.
[2] No Mode C readout was displayed on the NATS radar replay.
[3] This EC system is not compatible with that carried on the DA42 and therefore the reported 'alarm' would likely have been generated as a result of compatible EC carried on another aircraft in the vicinity.

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

THE CRANFIELD APPROACH CONTROLLER reports that they were informed that an Airprox had [occurred involving] aircraft under their control on the 11th of July. They do not recall any Airprox being reported on the frequency at the time and were unaware of the confliction.

Factual Background

The weather at Cambridge was recorded as follows:

```
METAR EGSC 111420Z 31003KT 230V360 CAVOK 32/11 Q1022
```

Analysis and Investigation

CAA ATSI

CAA ATSI reviewed the RT recording for this event and noted the following points:

- The DA42 pilot called the Cranfield Approach controller at 1409:25, stating their intention to route to [a nearby area] for general handling with a maximum level of 6000ft.
- At 1410:45, the Cranfield Approach controller passed Traffic Information to the DA42 pilot on relevant traffic known to them at the time.
- There were no further communications with the DA42 pilot during the relevant time period.
- The Discus pilot did not call Cranfield for a service.
- Cranfield Approach is not surveillance equipped. Therefore, the Approach controller would not have been aware of the presence of the glider, nor indeed any other traffic in the area with which they had not been in contact.

UKAB Secretariat

The NATS radar replay was reviewed for this event. Cranfield Approach is not surveillance equipped and so the radar data used for this analysis would not have been available to the controller at the time and is used solely to provide additional information relating to the event. The Discus and the DA42 were both detected by the NATS radar and identified using Mode S data, but there was no Mode C altitude information recorded for the Discus. However, the Discus pilot was able to supply the UKAB Secretariat with a GPS data file which included altitude data. Although the horizontal separation was measured using the NATS radar, the vertical separation has been determined by combining the radar and GPS data and, as a result, has been recorded as an approximation.

The Discus pilot reported receiving an alert on their (commonly used by glider pilots) EC equipment and stated that 'they're not sure that the urgency of the alarm corresponded to the closeness of the other aircraft'. At 1418:07, the NATS radar detected a primary-only contact in the vicinity of the Discus which was visible for 22sec before it disappeared, during this time the separation between the primary-only contact and the Discus was measured at 0.8NM, see Figure 1. Although it cannot be confirmed, it is possible that the primary-only aircraft had been equipped with compatible EC equipment which may have triggered the alarm to which the Discus pilot referred. The primary contact disappeared from radar 1min 39sec before the recorded CPA, at which time the horizontal separation between the Discus and the DA42 was 3.9NM, Figure 2.

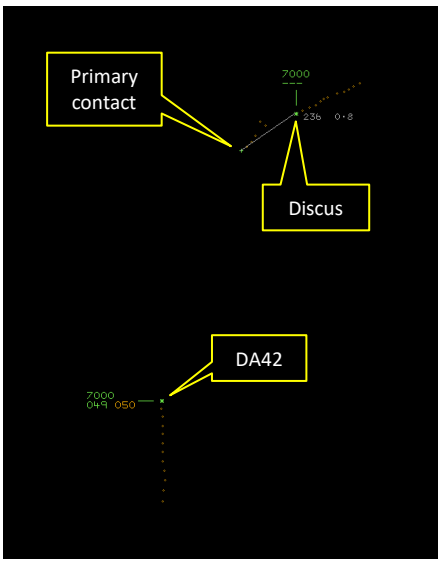


Figure 1 – Discus range to to primary contact

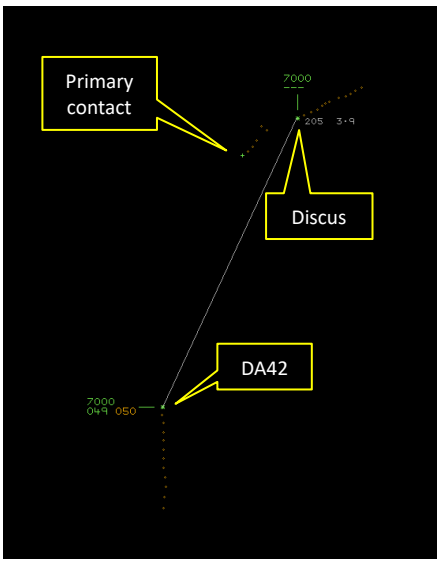


Figure 2 – Discus range to DA42

The Discus and DA42 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[4] If the incident geometry is considered as converging then the DA42 pilot was required to give way to the Discus.[5]

Comments

AOPA

The issue of compatible electronic conspicuity (EC) was again discussed at the recent AOPA Training and Education Working Group, resulting in a letter being prepared for submission to the DfT on this subject. As this Airprox shows, lookout is the primary mid-air collision avoidance tool. Pilots should report an Airprox on the radio to the nearest ATC unit.

BGA

Both aircraft were fitted with compatible Mode S transponders and Traffic Alert Systems; it's therefore concerning that the DA42 pilot received no warning at all from their TAS, and the Discus pilot received, at best, a very late TAS alert (and possibly no alert at all about the DA42, but about another glider instead). It would be useful to understand why.

Many powered-aircraft pilots now opt to permanently switch on forward-pointing high-intensity landing lights, even in full daylight, to enhance their visual conspicuity to other aircraft ahead of them.

Summary

An Airprox was reported when a Discus and a DA42 flew into proximity 3NM southeast of Thrapston at 1420Z on Monday 11th July 2022. Both pilots were operating under VFR in VMC, the DA42 pilot in receipt of a Basic Service from Cranfield Approach and the Discus 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, a report from the air traffic controller involved and a report from the appropriate operating authority. Relevant

[4] (UK) SERA.3205 Proximity.
[5] (UK) SERA.3210 Right-of-way (c)(2) Converging.

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 Discus pilot and members were encouraged that the pilot had carried a variety of EC equipment. A glider pilot member stated that there are a number of different ways which EC equipment such as this can be configured and the information displayed which, when an alert is generated, can result in it not being immediately clear which EC device has generated the alert . A discussion followed regarding the alert that the Discus pilot reported, and members agreed that as the pilot had stated that they were '*not sure that the urgency of the alarm corresponded to the closeness of the other aircraft*', it had been likely that the DA42 had not been detected, although the system would have been expected to have done so (**CF4**). The Board then considered whether the Discus pilot would have had any prior awareness of the DA42 and agreed that, having not been in receipt of an ATS, and without receiving an EC alert, they would have had none (**CF2**). Members noted that, on becoming visual with the DA42, the Discus pilot had elected to descend, however, the Discus had been recorded as having been higher than the DA42. Members also noted that it had been necessary to use differing data sources to measure vertical separation at CPA, and as a result this had been recorded as an approximation. Therefore, the vertical separation between the aircraft may have been less, leading the Board to agree that the Discus pilot had become visual with the DA42 at a later than optimum point (**CF5**).

Next, members considered the actions of the DA42 pilot and were once again encouraged by the EC equipment that the pilot had been carrying, and by the way in which they had been using the information presented. However, the TAS used had not been compatible with the EC equipment on the Discus (**CF3**) and so it had not been detected. A GA pilot member stated that, when carrying out manoeuvres of this type, maintaining an awareness of the local traffic picture is extremely important and that a good lookout is vital. That this can be supplemented by not only good use of EC equipment, but also by utilising an appropriate ATS. The Board noted that the DA42 pilot had been in receipt of a Basic Service and examined the available options for a surveillance based ATS in this area and found that, although there are surveillance equipped ATSUs in the area, no LARS provision is available. A CAA advisor stated that, under the Airspace Modernisation Strategy proposal, the availability of surveillance-based Air Traffic Services will be increased, however, there would likely be a significant period of time before this would occur. Therefore, the Board resolved to recommend that '*The CAA, in consultation with the MAA through an appropriate forum (such as the JANSC), considers a means by which existing facilities are utilised to provide a LARS in areas that are currently not included in existing UK LARS provision, prior to the implementation of the Airspace Modernisation Strategy.'* Members went on to agree that the DA42 pilot had not had any prior awareness of the presence of the Discus (**CF2**) and that, although they had become visual with it, it had been at a time too late for them to have been able to take any effective avoiding action (**CF6**).

The Board then examined the involvement of the ground elements and quickly agreed that, under the Basic Service they had been delivering, the controller had not been required to monitor the flight (**CF1**). Members also agreed that, as Cranfield is a non-surveillance unit, and the Discus pilot had not been in contact with them, the controller would not have had any awareness of their presence.

Finally, in assessing the risk of collision, the Board discussed that although the pilots of both aircraft had had EC equipment on board, it had either not alerted when expected, or been incompatible with the EC equipment on the other aircraft. Members concluded that similar situations will continue to arise whilst a variety of EC equipment exists which utilise differing protocols. The Board agreed that lookout had been the remaining barrier against collision and, although the Discus pilot had become visual with the DA42, this had been at a later than optimum time. Whilst the Discus pilot had been able to take avoiding action, which had reduced the risk of collision, it had not removed it entirely. Members agreed that, in this case, safety had not been assured and that there had been a risk of collision (**CF7**). Accordingly, the Board assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022134			
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			
	• Situational Awareness of the Conflicting Aircraft and Action			
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
	• Electronic Warning System Operation and Compliance			
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
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
	• 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

Recommendation: The CAA, in consultation with the MAA through an appropriate forum (such as the JANSC), considers a means by which existing facilities are utilised to provide a LARS in areas that are currently not included in existing UK LARS provision, prior to the implementation of the Airspace Modernisation Strategy.

Safety Barrier Assessment[6]

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, when providing a Basic Service, the controller is not required to monitor the flight.

Flight Elements:

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

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had had any awareness of the presence of the other aircraft prior to sighting it.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because, as there had been no Mode C signal from the transponder carried by the Discus pilot, it had been incompatible with the TAS fitted to the DA42 and, although one would have been expected, the Discus pilot had not reported an alert on their TAS regarding the DA42.

See and Avoid were assessed as **partially effective** because, although the DA42 pilot had become visual with the Discus, it had been too late for them to take any effective avoiding action and the Discus pilot had become visual with the DA42 at a later than optimum point.