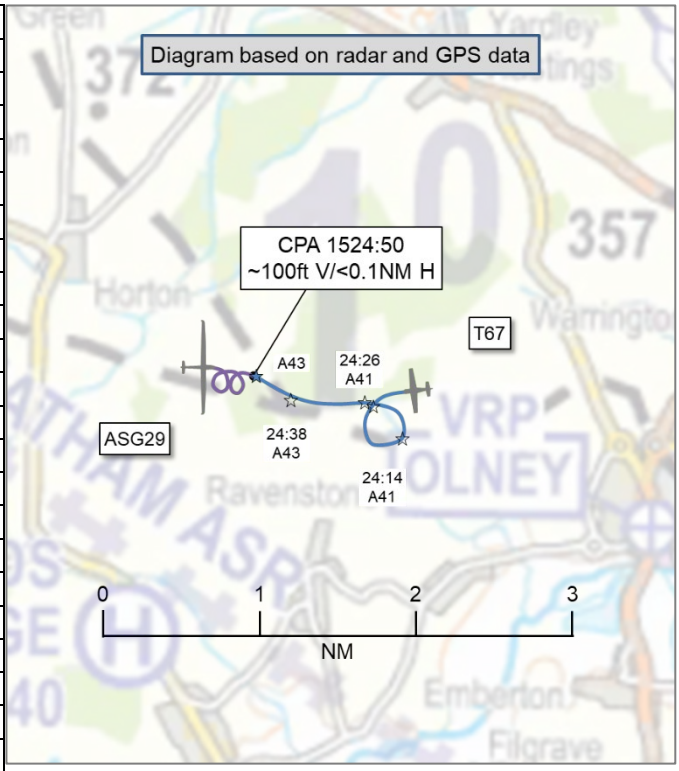
AIRPROX REPORT No 2022158

Date: 04 Aug 2022 Time: 1525Z Position: 5210N 00046W Location: ivo OLNEY VRP

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	T67	ASG29
Operator	Civ FW	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	None
Provider	Cranfield	N/A
Altitude/FL	~4200ft	4300ft
Transponder	A, C, S	Off
Reported		
Colours	Yellow, black	White
Lighting	Nav, landing	Not fitted
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	4400ft	4000ft
Altimeter	QNH (1016hPa)	QNH (NK hPa)
Heading	Turning	Turning
Speed	110kt	60kt
ACAS/TAS	PowerFLARM	FLARM
Alert	None	None
Separation at CPA		
Reported	200ft V/300m H	Not seen
Recorded	~100ft V/<0.1NM H	



THE T67 PILOT reports performing a steep turn for demonstration purposes, also taking the opportunity to look out for other traffic before starting a sequence of dynamic manoeuvres including aerobatics. They didn't see the glider until they were rolling towards wings level, by which time it was about 200ft below them and about 300m away, in a right turn towards them. The T67 pilot elected to keep turning left, checking for other gliders as they sometimes converge on the same thermal, before they applied full power, climbed to a higher altitude and vacated the area. They heard no RTF transmissions from a glider pilot reporting at or transiting near or via Olney VRP, and nor did the onboard EC equipment give an indication of there being other traffic nearby. The EC equipment aerials were pointing towards the glider moments before, so the T67 pilot considered it unlikely there was a blanking issue. It was an unpleasant shock to find a glider continuing to turn towards them at relatively close range and they were unable to determine if it was climbing, level or descending in its turn before they lost sight of it.

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

THE ASG29 PILOT reports their Airprox report is in response to an Airprox filed by a T67 pilot on 4 Aug 2022 at 1524. They did not see the other aircraft so their narrative is derived entirely from the reported time, date and location and their flight logger file. They were on a glider cross-country flight, returning to home base on the last leg of the flight, west of Olney. The pre-flight briefing was by studying NOTAMs, Met reports and forecasts. Weather was clear with good visibility and cumulus cloudbase at around 5500ft or 6000ft QNH. From the logger file, they could see that they were near the reported location when they commenced a right hand turn in a thermal at around 1522 at 3300ft QNH, probably around 30° angle of bank and airspeed close to 60kt and rate of climb about 400ft/min. They left the thermal at 1526:34 at 4700ft QNH. They were certainly transmitting on [their EC equipment] and also '80% probable' that they were squawking 7000 with Mode S.[1] They did not see or hear the other aircraft. If

[1] The NATS Ltd radar replay showed primary returns only in the vicinity of the T67 secondary returns.

the reported time is accurate then they were in a glider, circling, and a powered aircraft should, under SERA, in any case have avoided them.

THE CRANFIELD CONTROLLERS report that they had no recollection of an Airprox being reported.

Factual Background

The weather at Cranfield was recorded as follows:

```
EGTC 041550Z 31010KT 280V340 CAVOK 21/06 Q1016
EGTC 041520Z 31011KT CAVOK 21/07 Q1016
EGTC 041450Z 32011KT CAVOK 22/07 Q1016
```

Analysis and Investigation

UKAB Secretariat

The T67 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.[2] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[3] If the incident geometry is considered as converging then the T67 pilot was required to give way to the ASG29.[4] If the incident geometry is considered as overtaking then the ASG29 pilot had right of way and the T67 pilot was required to keep out of the way of the other aircraft by altering course to the right.[5]

Cranfield Occurrence Investigation

Neither the Tower nor Approach controllers had a recollection of an incident with [the T67]. [The T67] was airborne at 1517 and was instructed by Tower to contact Approach at 1519:40. They reported on frequency with Approach at 1519:52. No report of traffic was made by the pilot on either frequency. The Flight Progress Strip did not indicate an aircraft [had] conflicted with [the T67]. The only aircraft in receipt of a service from Cranfield that had the potential to be the subject aircraft was a DA42 belonging to a based training academy, which had departed from Cranfield and reported to Approach at 1513:19 that it was climbing out to the northwest (the local training area). Without surveillance, speed, or routing information on both aircraft, this could not be confirmed by the unit.

Comments

AOPA

When flying in class G with no ATC service the mitigation to MAC is helped by compatibility of EC, which didn't occur in this case, which only leaves lookout, which was effective but late.

BGA

While typical climb rates of 300-500ft/min achieved by thermalling gliders in the UK may seem modest compared to that of an aerobatic single-engine piston aircraft at sea level, thermals may be just as strong above 4000ft AMSL. At these altitudes the maximum climb rate of a normally-aspirated SEP aircraft will be significantly reduced, so that aiming to out-climb a glider may not be an effective way of achieving safe separation. Gliders also rarely ascend at an absolutely steady rate, as the thermals themselves often contain bubbles of faster rising air which may boost climb rates temporarily; more than 1,000fpm is not unknown in the UK.

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.
[4] (UK) SERA.3210 Right-of-way (c)(2) Converging.
[5] (UK) SERA.3210 Right-of-way (c)(3) Overtaking.

Both aircraft were fitted with compatible EC equipment which should have warned each pilot of the other's presence. It would be useful to understand why this barrier did not function.

The T67 pilot is to be commended for flying with landing lights switched on, to aid head-on visual conspicuity. However, this incident once again highlights the difficulty of seeing an aircraft approaching head-on and co-altitude when flying continuous thermalling turns in a glider.

Summary

An Airprox was reported when a T67 and an ASG29 flew into proximity near the Olney VRP at 1525Z on Thursday 4th August 2022. Both pilots were operating under VFR in VMC, the T67 pilot in receipt of a Basic Service from Cranfield Approach and the ASG29 pilot not in receipt of a FIS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and GPS track data. 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 members first discussed the pilots' actions and agreed, given the radar/GPS tracks picture and the T67 pilot's assessment of separation at first sighting, that they had probably seen the ASG29 about 15-20sec after rolling out of their turn. This sighting had occurred at a late stage (**CF6**), compounded by the intrinsic difficulty of seeing a glider due to its low conspicuity and, in this case, the lack of a TAS alert (**CF5**). Members wondered why neither aircraft's compatible TAS equipment had alerted and could only surmise that aerial placement in one or both aircraft had been such that a signal had not been received. Members noted that the T67 TAS had the capability to detect both the glider TAS and its SSR transponder, but that the ASG29 transponder had been selected off at the time of the Airprox (**CF2**) rendering it incompatible (**CF4**). It was acknowledged that some gliders' battery fits could not support a long flight with the SSR transponder remaining selected on with all Modes, but Board members urged glider pilots to prioritise their EC capability by fitting sufficient high-capacity modern batteries to support such long flights. The Board commended the ASG29 pilot for fitting an SSR transponder but observed that the preponderance of the airborne MAC threat to gliders – powered aircraft – used TAS that alerted from SSR transponder signals and hence that the operation of the transponder should be prioritised. A gliding member commented that the winter months provided an ideal opportunity for glider pilots to check that their TAS installation was correct and as efficient as could be achieved. A GA member pointed out that powered aircraft operated under a Permit to Fly required a TAS installation to be signed-off by a certified engineer, thereby providing a degree of assurance as to airborne performance, but that this was not a requirement for gliders. With neither of the pilots in receipt of a surveillance based FIS, SA could not have been provided from the ground (**CF1**), and the lack of TAS alerting left the only remaining barrier to MAC as see-and-avoid (**CF3**). A non-sighting by the ASG29 pilot (**CF7**) had degraded the barrier but the T67 pilot had seen the glider, albeit at a late stage, and had taken avoiding action. The Board noted the information provided by the BGA, essentially that whilst normally aspirated piston-engine aircraft climb performance can reduce markedly with altitude, thermal strength, and hence glider climb performance, could be equally strong at higher altitudes. In effect, the difference between powered aircraft and glider climb performance narrowed with altitude. Some members felt that the T67 pilot may have been better served by turning away from the glider to the right, rather than continuing their left turn and then climbing. Members discussed the risk and agreed that it appeared neither pilot had been sighted on the other aircraft at CPA. The glider pilot did not report hearing another aircraft but, given the estimated separation at CPA, the Board agreed that safety had been much reduced (**CF8**). Finally, members pointed out that the glider pilot's assertion that '… a powered aircraft should, under SERA, in any case have avoided them.' was incorrect. Whilst a powered aircraft pilot is required to give way to a glider on a converging course, under all circumstances both pilots share an equal responsibility for collision avoidance, i.e. avoiding action, and not to operate in such proximity to other aircraft as to create a collision hazard, i.e. taking action to resolve a potential collision hazard if it is perceived.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022158			
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	• Transponder Selection and Usage	An event involving the selection and usage of transponders	
	• 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	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
5	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			
6	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
7	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			
8	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[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 neither pilot was in receipt of a FIS that required ATC monitoring and Cranfield ATSU does not operate a surveillance capability.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the ASG29 transponder was selected off and hence could not alert the T67 TAS.

[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 SA on the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because although the aircraft's TAS were compatible, neither alerted.

See and Avoid were assessed as **partially effective** because although the ASG29 pilot did not see the T67, the T67 pilot saw the glider at a late stage and took action to ensure separation.