

## AIRPROX REPORT No 2023035

Date: 27 Mar 2023 Time: 1153Z Position: 5227N 00107W Location: 4NM W Husbands Bosworth

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	ASW 27	PA28
Operator	Civ Gld	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None <sup>1</sup>
Provider	N/A	N/A
Altitude/FL	~2500ft	FL026
Transponder	Not fitted	A, C, S+
<b>Reported</b>		
Colours	White	White, Blue
Lighting	Nil	Strobes, Nav, Beacon
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2500ft	3000ft
Altimeter	QNH (1026hPa)	QNH (1023hPa)
Heading	Circling	045°
Speed	50kt	135kt
ACAS/TAS	SkyEcho, <sup>2</sup> PowerFLARM	SkyEcho
Alert	None	Information
<b>Separation at CPA</b>		
Reported	Not Seen	100ft V/0.5NM H
Recorded	~100ft V/~0.1NM H	



**THE ASW 27 PILOT** reports that they were circling with another glider when the other glider pilot notified them of a near miss from a powered aircraft. On investigating flight traces and ADS-B websites, the other aircraft was identified as [PA28] which passed very close to the two thermalling gliders. At the point of closest contact, the PA28 was approaching from behind (overtaking) and could not be seen from the cockpit of the glider. The pilot noted that whilst their glider-generic EC would display ADS-B targets on their LCD display in-cockpit, they do not receive proximity warnings from it, and they used the other EC device as an 'out beacon' only with no further display in-cockpit.

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

**THE DISCUS (WITNESS) PILOT** reports that they were thermalling and locally soaring for around 35min and were in a thermal when [the ASW 27] joined them. The ASW 27 was lower in the thermal and almost opposite. They had seen that the other glider had just come off tow and this was their first thermal. After a few anti-clockwise turns in the thermal as they turned past [a heading of] ~180° they saw a white and blue single-engined, low winged, 4-6 passenger aircraft flying right-to-left slightly lower than their aircraft. The white/blue aircraft was flying straight and level. It was immediately clear that it was not on a collision course with them, but they firmly believed they were watching an accident in progress and they attempted to mentally form the words to explain to the ASW 27 pilot how to avoid the aircraft, which they could not do, so they did not broadcast, fearing it would cause the ASW 27 pilot to straighten up. It took perhaps 4- 5sec from first sighting until the white/blue aircraft was upon the ASW 27, they saw the fuselage of the white/blue aircraft pass behind the right-hand wingtip of the ASW

<sup>1</sup> The pilot reported receiving a Basic Service from Coventry and was displaying a Coventry squawk, however Coventry were closed on this day.

<sup>2</sup> Used purely as an ADS-B out device.

27 (which was in a 45° [AOB] thermalling turn). The relative sizes of the aircraft very strongly indicated to them that the aircraft were very close when they passed each other. The white/blue aircraft continued to fly straight and level and away from both gliders. No other aircraft were visible. They called to the launch point to ask if anyone had seen the incident, and then they called the ASW 27 pilot to ask if they had even seen the aircraft as they had not reacted either. The ASW 27 pilot radioed back to say they had not seen the aircraft. They left the thermal and marked a 'Pilot Event Marker' in their logger to mark the rough time and location. They considered whether they should land, however, given the danger had passed, they felt this was not strictly needed. Upon landing, they went to the launch point and used FlightRadar24 to identify the white/blue aircraft. They recorded the incident and the aircraft details in the airfield overflight logbook, found the ASW 27 pilot and discussed the matter with them.

**THE PA28 PILOT** reports that they were in straight and level flight in good visibility. They had no visual contact with the glider until it appeared on their port side, it looked like it was ascending from below. The glider pilot performed a steep turn to port, they immediately turned to starboard to an approximate heading of 090° before resuming back on track of 045°. There had been very little chance of conflict as both pilots took avoiding action.

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

**THE EAST MIDLANDS CONTROLLER** reports that neither aircraft were on the East Midlands (EMA) Radar/LARS frequency at the time of the Airprox. The [PA28] had changed from a squawk of 0420 to the EMA FMC squawk at 1153:20, the pilot then called on the Radar frequency (first contact) at 1154:40 and was allocated the conspicuity squawk and put under a Basic Service. The glider was a primary-contact.

## Factual Background

The weather at East Midlands was recorded as follows:

METAR EGNX 271150Z VRB02KT 9999 SCT027 BKN042 06/M00 Q1026=

## Analysis and Investigation

### East Midlands Investigation

The controller on duty was not aware of the Airprox at the time, neither aircraft were on the EMA frequency at the time of the Airprox.

1153:05 [PA28 C/S] (displaying a 0420 SSR code) was seen in the vicinity of the reported Airprox, Figure 1.

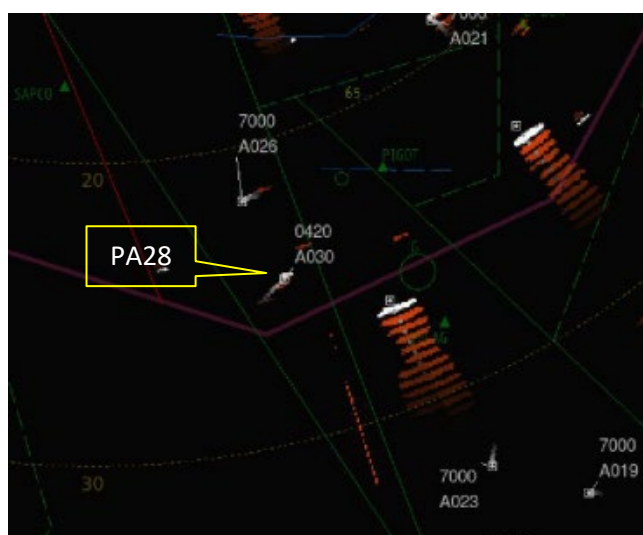


Figure 1

1153:26 An unknown primary-only contact, very intermittent, was seen briefly in the vicinity of the aircraft. At this point the pilot was just in the process of changing their squawk to 4572, (the EMA FMC squawk).

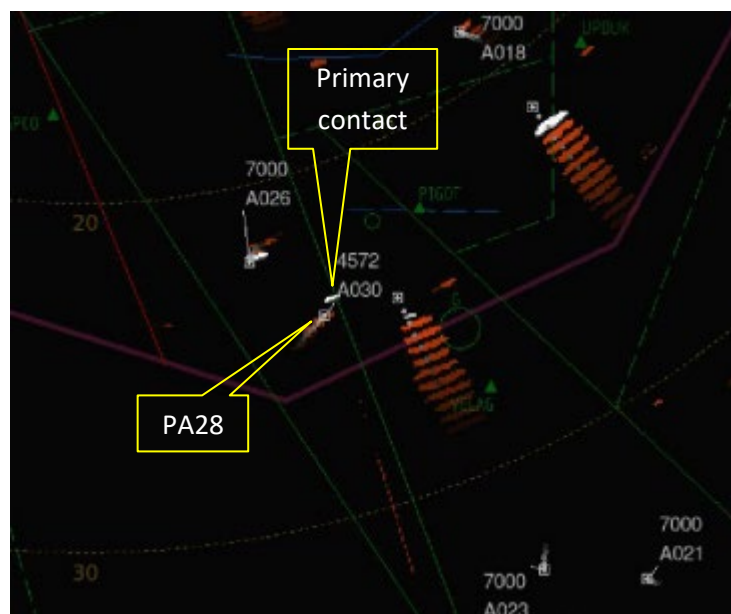


Figure 2

3sec later at 1153:29, the radar display converted the 4572 squawk to display EMA (the conversion for traffic listening-out only to EMA Radar). The previously seen primary-only contact had disappeared from the display.



Figure 3

At 1154:30 [PA28 C/S] called EMA and requested a Basic Service. The pilot advised that they were a PA28 Arrow from [departure airfield] to [destination airfield] at 3000ft. A squawk code of 4571 was assigned and a Basic Service provided. At 1155:11 the RT exchange for the Basic Service was completed, the pilot had selected the assigned 4571 squawk, (the EMA Basic Service conspicuity), and this was displayed on the radar screen. The primary-only contact had been seen a few times briefly, always intermittently.

The UKAB Secretariat advised EMA ATC a few days after the Airprox had occurred. [PA28 C/S] had been on a north-easterly track in the vicinity of Husband's Bosworth. At the time of the Airprox, the pilot appeared to be in the process of changing RT frequency and SSR code setting. The 0420

code had been displayed for a significant portion of the flight leading up to the reported time of the Airprox. The primary-only contacts were very intermittent throughout, this is usual when the radar is detecting gliders. By electing to listen-out only, the pilot of the PA28 did not announce their presence on the frequency, therefore the Radar controller was not aware of the aircraft. Around 3min after the Airprox, [PA28 C/S] had established 2-way communication with EMA and requested a Basic Service. At this point, the aircraft was around 3.5NM north-east of where the primary contact had been.

## Conclusions

Correct ATC actions were followed throughout. The Radar controller was not aware of the PA28 at the time of the Airprox, and it was unclear whether or not the pilot was even listening-out to EMA at the time, as the squawk was in the process of being changed at the time the Airprox was thought to have occurred. Even if the controller had noticed the aircraft listening-out on the frequency, there is no requirement for EMA to attempt to establish communication and pass information. Husbands Bosworth does not currently inform EMA when they are active, therefore it is unlikely that the controller would have even be aware of gliders in the vicinity.

## UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the PA28 could be identified using Mode S information. The ASW 27 could not be seen on the radar, however, the pilot supplied the UKAB Secretariat with a GPS logger file which was used to compile the diagram at the top of this report. At Figure 4 is the PA28 at 1153:34, as seen on the NATS radar, with the position of the Airprox marked by a white cross.



Figure 4 - 1153:34

The ASW 27 and PA28 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 PA28 pilot was required to give way to the ASW 27.<sup>4</sup> If the incident geometry is considered as overtaking then the ASW 27 pilot had right of way and the PA28 pilot was required to keep out of the way of the other aircraft by altering course to the right.<sup>5</sup>

## Comments

### BGA

A glider circling in a thermal climb typically completes one 360° turn every 20sec, during which time an aircraft approaching at 135kt would cover 0.75NM. The pilot of a thermalling glider must look for

<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.

aircraft approaching from every direction; although continuous turning facilitates 360° lookout, it also leaves the pilot unsighted in any specific direction for about half the time.

The difficulties of sighting another aircraft approaching head-on with no relative motion are well-known. Many pilots now opt to permanently switch on forward-pointing high-intensity landing lights, even in full daylight, to aid visual conspicuity in this direction.

Although both aircraft were equipped with compatible EC devices, the PA28 had ADSB-out capability via its Mode S+ (Extended Squitter) transponder, and the glider could also receive ADS-B via a separate Electronic Conspicuity receiver, none of this equipment seems to have given either pilot adequate warning of the other aircraft's presence. It would be helpful to understand why this barrier did not function.

## AOPA

When flying it is advisable to obtain the best possible surveillance service that is available, especially until a common standard in electronic conspicuity is achieved. Communication with the appropriate ATC service enhances everyone's situational awareness. Effective lookout is therefore the last barrier for mid-air collision avoidance in Class G.

## Summary

An Airprox was reported when an ASW 27 and a PA28 flew into proximity 4NM west of Husbands Bosworth at 1153Z on Monday 27<sup>th</sup> March 2023. Both pilots were operating under VFR in VMC, neither in receipt of a FIS.

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

Information available consisted of reports from both pilots and a witness pilot, radar photographs, GPS track data and a report from air traffic control. 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 ASW 27 pilot. They had been released from the tow and had established in a thermal. The BGA representative told members that, once in a thermal, the nature of the manoeuvre had meant that the PA28 would have been behind the glider for long periods of time and the pilot would have only had the opportunity to see the PA28 approximately every 20sec, once a full rotation had been completed. Coupled with the known difficulties of seeing an aircraft approaching head on, they thought that it was not surprising that the ASW 27 pilot had not seen the PA28 as it approached (**CF4**). There followed some discussion on the CWS fitted to the glider, members learned that the CWS fitted did not produce an audible alert, but displayed on a moving map on screen instead, clearly this required the pilot to be looking at their screen in order to see the information and, although it was not known whether the information had been available to the pilot or not, the glider pilot had reported not receiving it (**CF3**). Therefore, the Board agreed that, without an ATS and with no warning from their CWS, the glider pilot had not had any prior situational awareness that the PA28 had been approaching (**CF1**).

Turning to the PA28 pilot, they had been transiting through the area and had not been receiving an ATS at the time of the Airprox, but shortly afterwards called East Midlands. Members briefly discussed whether the pilot could have called Husbands Bosworth as they transited past, but agreed that as they had been about 4NM away, and there was no guarantee that any gliders in the area would have been operating on that frequency, members were not convinced it would have made much difference on this occasion and thought that calling East Midlands for a Basic Service had been the best option. The pilot had reported receiving some 'information' from their CWS (**CF2**) but whether this had been from the glider (which had been equipped with ADS-B out) was unclear, however the pilot had not reported being cued to look for the glider, so it seemed likely to the Board that they had received no prior situational awareness that the glider had been in the vicinity (**CF3**). Again, members commented that gliders were notoriously difficult to see when head-on and the thermalling glider would not have been easy to see at

range, members thought that the PA28 pilot's report of seeing the glider on their port-side and descending had been effectively a non-sighting, i.e. too late to have increased the separation (**CF4**).

The Board noted that the PA28 pilot had not been receiving a service from East Midlands at the time of the Airprox, but they thanked East Midlands for their report as it added useful context when assessing the incident. Likewise, the witness glider pilot report had added useful information and the Board thanked them for taking the time to submit it.

When determining the risk, the Board assessed the reports from both pilots and the witness pilot, together with the radar and GPS data. They noted that neither pilot saw the other in time to materially affect the separation and agreed that there had been a risk of collision (**CF5**) and that safety had been much reduced; Risk Category B.

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

### Contributory Factors:

	2023035			
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	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
3	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
<b>• See and Avoid</b>				
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 that the other aircraft had been in the vicinity.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the CWS in the ASW 27 would have been expected to alert, but none was reported.

**See and Avoid** were assessed as **ineffective** because neither pilot saw the other aircraft in time to materially affect the separation.

<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: 2023035</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	■	■	■	■	□			