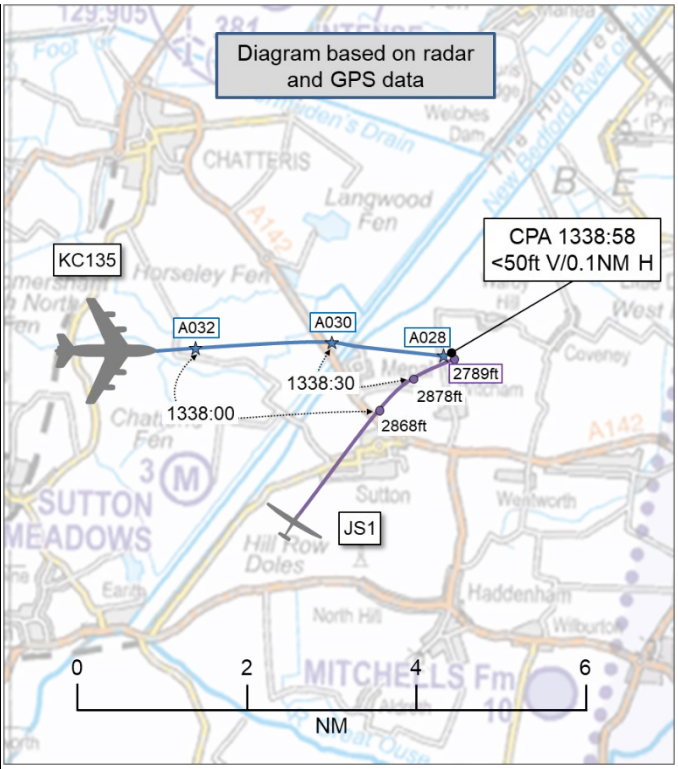
AIRPROX REPORT No 2025056

Date: 08 Apr 2025 Time: 1339Z Position: 5225N 00009E Location: 4NM west of Ely

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	KC135	JS1
Operator	Foreign Mil	Civ Gld
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	None
Provider	Mildenhall Approach	None
Altitude/FL	2800ft[1]	2789ft[2]
Transponder	A, C, S+	None 'OFF'
Reported		
Colours	Grey	White
Lighting	Nav & anti-col	Nose strobe
Conditions	IMC	VMC
Visibility	NR	>10km
Altitude/FL	2000ft	2700ft
Altimeter	QNH	QNH
Heading	100°	067°
Speed	200kt	85kt
ACAS/TAS	TCAS II	FLARM
Alert	None	None
Separation at CPA		
Reported	0ft V/100ft H	N/K
Recorded	<50ft V[3]/0.1NM H	



THE KC135 PILOT reports that, while flying the ILS for RW10 approach into Mildenhall, they had a very close call with a glider aircraft. They were IFR routeing inbound to Mildenhall from holding and Lakenheath ATC had given generic information for multiple unidentified aircraft in their vicinity. [They noted that] on nice days, gliders regularly operate in that area and they had 4 crew members looking outside to increase the ability to sight the traffic. The glider happened to be just above their visibility for their approach and tough to see in the conditions. It was moving right-to-left in their windscreen and the pilot flying saw it first. They were co-altitude (the glider possibly 10-20ft above) and on a converging path towards it. The pilot flying aggressively manoeuvred to 30° of bank to the right and narrowly avoided it, coming within about 100ft horizontally. Had they not seen the aircraft and manoeuvred accordingly, there was a good chance they would have collided with the glider. They were able to manoeuvre back and intercept the glideslope and continue the approach afterwards. It was an incredibly unsafe location for any aircraft not talking to a control authority to be flying in, especially one that has restricted manoeuvring capabilities.

It was later noted by the pilot that they had been IMC at the time of the Airprox, having just descended out of the bottom of cloud. As they transitioned from looking in to looking out, the glider appeared as described. The crew of the KC135 was surprised at the glider being so close to the base of the cloud.

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

THE JS1 PILOT reports they were on a cross-country glider flight and, whilst west of Ely and clear horizontally of the Mildenhall MATZ, they noticed a KC135 on the climb-out from, they assumed, Mildenhall. They remembered holding their heading for maybe 40sec or so to create separation as

[1] KC135 altitude data based on radar sources
[2] JS1 altitude data based on pressure data sources.
[3] Recorded vertical separation based on an approximation of available data.

opposed to turning toward an obvious thermal to their east-southeast. They watched as the KC135 very quickly climbed through their altitude and turned, they thought, southeast-bound. When clear, they turned toward the previously mentioned thermal. At no point did they hear the KC135 (a sure indicator of being close by!) and they personally thought the collision risk was very low.

The pilot sent their glider's navigation file [to UKAB] and noted that gliding frequently takes place in and around East Anglia, [stating that, usually,] they do not call ATC units unless they will or believe they might need to enter their respective Class D airspace. [They opined that] this is because the average controller does not really understand gliding and its limitations. At no point did this flight enter Mildenhall/Lakenheath ATZ. In fact, apart from just over 1min in the far southeast corner of the Mildenhall/ Lakenheath MATZ, they did not even enter their MATZ either vertically or horizontally. They do, however, remain extra vigilant when in the vicinity of places like Mildenhall. Their glider has a Mode S transponder but, unless required, they leave it off principally to preserve their battery. This is allowable in a glider. A secondary consideration is the fact that their departure and destination point was located in Class D airspace and if they used the conspicuity code 7000 and forgot to switch it off when returning to [their destination] it could have caused huge problems [with the pertinent ATC unit] who have to assume an intruder. [They then stated that] because they are human and therefore capable of forgetting things, again, they leave their transponder off. They accepted that had their transponder been on it was likely that the KC135 could have been vectored clear but in their opinion it comfortably cleared them in any event as a result of good lookout and not being in their MATZ. They would very much like NATS to consider implementing a specific gliding conspicuity code that [the previously mentioned ATC unit] could then ignore as they would be aware it was a glider returning to [destination].

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

THE MILDENHALL APPROACH CONTROLLER reports that they were working the Approach control position for RAF Lakenheath and Mildenhall, the Radar controller had just issued clearance to [the KC135 pilot] for the ILS RW10 Mildenhall. The controller observed a 'pop-up' primary track moving slowly, converging with the final approach track. The controller called the traffic to [the KC135 pilot] at 5NM and continued to update with relevant information until [the KC135] had passed the primary contact. Once the traffic was not considered a factor, the controller switched [the KC135 pilot] to Tower. [The KC135 pilot] did not report sighting the traffic or report an Airprox on frequency. The controller was aware of the prevalence of non-transponding glider traffic that transits the area.

The controller had recorded the QNH as 1027hPa (30.32inHg).

Factual Background

The weather at RAF Mildenhall was recorded as follows:

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METAR EGUN 081355Z 14004KT 9999 FEW050 SCT250 16/03 A3030 RMK AO2A SLP264 T01590030 $=
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Analysis and Investigation

USAFE RAF Lakenheath

An investigation was completed by an RAF Lakenheath Radar Approach Control (RAPCON) CCTLR [Chief Controller] assigned to RAF Mildenhall. The CCTLR interviewed the Watch Supervisor and line controllers that were working during the times noted on the HATR[4] form. The controller's workload was light with moderate complexity and weather did not appear to be a factor. The controller issued appropriate Traffic Information on primary radar returns and provided all necessary requirements in accordance with the Traffic Service agreed upon. The aircrew never advised Air Traffic Control (ATC) at RAF Lakenheath or RAF Mildenhall that they observed a glider or had to make any aircraft flightpath adjustments to avoid a glider aircraft.

[4] Hazardous Air Traffic Report.

The RAPCON investigation was closed with a determination that appropriate ATS was provided by the controller and this data will be used as a lesson learned for ATC on the local glider hazard.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the KC135 was positively identified using Mode S data. The JS1 was displayed as a primary track coincident with the GPS navigation track on the data file provided by the JS1 pilot.

Further analysis of ADS-B data sources positively identified both aircraft and the CPA was assessed to have occurred at 1338:58 (Figure 1).

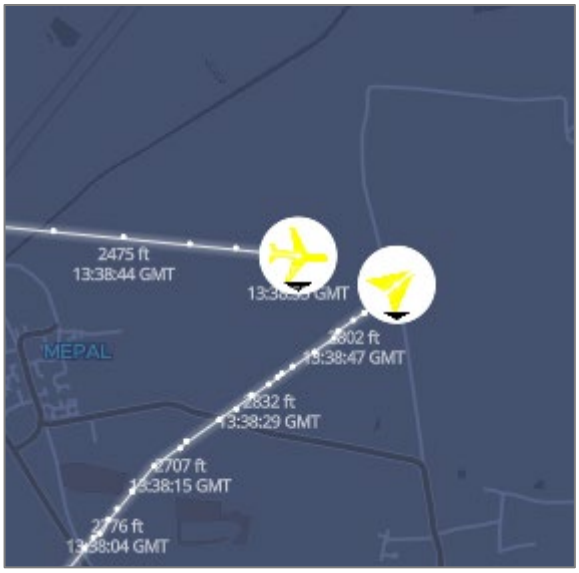

Figure 1 Time 1338:58

Pressure and GPS data sources were analysed in order to establish an accurate vertical separation. Data sources were combined to establish the CPA, which is shown as an approximation due to the combination of data sources. ADS-B sourced data indicated that the KC135 passed slightly beneath the JS1.

The KC135 and JS1 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[5] If the incident geometry is considered as converging then the KC135 pilot was required to give way to the JS1.[6]

Comments.

USAFE

Whilst reviewing this Airprox the military operator had identified the need to consider selection of services, such as a Deconfliction Service, when operating IMC in Class G airspace. Unfortunately, in reality it was often a balance between limitations as a result of the service and the ability to operate into/out of the airfields with the weight of unknown air traffic that enjoyed the freedom of uncontrolled airspace in the area. Crews had also been reminded of the importance of alerting ANSPs with the prefix: 'Airprox' to enable prompt investigation.

This Airprox, like 2024162, underscores the persistent safety concerns arising from gliders operating without transponders near busy military airfields such as Lakenheath/Mildenhall. The recurring theme of glider pilots prioritising battery conservation raised serious concerns. Whilst permitted under UK SERA.13001(c), this practice had significantly compromised safety, particularly given the

[5] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[6] (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

high density of military traffic. The KC135 crew's reliance on visual acquisition, even with multiple crew members scanning and after receiving generic Traffic Information from ATC, demonstrated the inherent risks.

Whilst the glider pilot's post-incident communication was commendable, it had also indicated a misunderstanding of the limitations of relying solely on 'see and avoid' and [EC equipment common to gliders]. The absence of an operational transponder had prevented integration with TCAS, a critical safety net, and hindered the controller's ability to provide specific Traffic Information. The assertion that controllers lacked understanding of gliding operations, while perhaps reflective of some individual experiences, had not negated the responsibility of all airspace users to maximise situational awareness and to have contributed to a safe operating environment.

The general arguments for disabling fitted transponders were further weakened by the ready availability of affordable, lightweight, and high-capacity lithium batteries. Prioritising battery life over the safety benefits of an active transponder and/or EC device, especially in such busy airspace, was questionable.

Continued outreach and education are essential, emphasising the critical role of transponders and electronic conspicuity devices in mitigating risk. This education could also address the practical aspects of transponder operation, allaying concerns about inadvertent code usage and clarifying local procedures. The military operator's recognition of the challenges posed by uncontrolled traffic in the area underscores the need for a collaborative approach. By working together, the gliding community, military operators, and air traffic control can foster a safer, more integrated airspace for all.

BGA

This incident occurred 2.7NM from the boundary of the Lakenheath/Mildenhall CMATZ, which has one of the highest densities of military aircraft traffic in the UK. Where the legally-required Flight Radio Telephony Operator's Licence (FRTOL) is held and cockpit workload permits, glider pilots are encouraged to inform the Controlling Aerodrome ATC Unit if flying in or near any MATZ or CMATZ. The BGA has recently published a briefing note specifically about the Lakenheath/Mildenhall CMATZ[7] and a MATZ information piece is also planned for the August/September 2025 issue of "Sailplane and Gliding" magazine, read by the majority of UK glider pilots.

If the glider's transponder had been switched on, it may have registered on either the KC135's TCAS or Lakenheath's radar, either of which could have warned the KC135 pilot of the impending conflict. Given recent rapid advances in rechargeable battery technology, owners of transponder-equipped gliders should consider re-equipping with higher-capacity batteries that allow them to run their transponders for longer in flight.

The electronic conspicuity (EC) equipment fitted to almost all gliders warns of impending conflicts with other similarly-equipped aircraft. This mitigates the risk of Airprox with other gliders, but basic installations do not detect aircraft equipped only with transponders or ADS-B-out (such as "Mode S+"), as the KC135 was in this case. However, recent versions of this EC equipment can optionally include a 1090MHz receiver, and thereby warn of conflicts with transponder and ADS-B-out-equipped aircraft. Updating glider EC hardware to include a 1090MHz receiver provides a useful additional safety barrier in airspace with a high density of transponder or ADS-B-out equipped aircraft.

Other airspace users should note that gliders climbing in the rising air under convective clouds (so-called "thermals") typically do not break off their climbs until at convective cloud base. Descending through (rather than between) convective clouds in areas where gliders operate may therefore lead to very late sightings of gliders operating at or near cloudbase.

[7] BGA briefing note about Lakenheath and Mildenhall.

Summary

An Airprox was reported when a KC135 and a JS1 glider flew into proximity 4NM west of Ely at 1339Z on Tuesday 8th April 2025. The KC135 pilot was operating under IFR in IMC in receipt of a Traffic Service from Mildenhall Approach and the JS1 glider pilot was operating under VFR in VMC 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, navigation data from the JS1, ADS-B-derived track information, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 turned their attention to the actions of the KC135 pilot and noted that they had been training at Mildenhall, initially performing radar-vectored circuits at 3000ft followed by a radar-vectored approach on to the ILS for RW10 at Mildenhall. The Board also noted that the pilot had neither communicated to ATC that they were IMC nor requested vectoring away from the potential conflict from a primary radar track which had been passed to them as Traffic Information. Members therefore agreed that the pilot had had only generic situational awareness of the presence of converging traffic (**CF5**) without height information, and that they had not requested additional information (**CF4**), or possibly vectors or a Deconfliction Service, which may have helped to prevent the Airprox. The Board thought that it was unfortunate, in this case, that the pilot's situational awareness had not been enhanced by the advantage of having a TCAS system fitted to the KC135 because it had been unable to detect the EC fitted to the JS1 and could not have detected the transponder which had been selected to 'off' by the JS1 pilot (**CF6**). The Board further noted that the pilot described having actioned an aggressive manoeuvre right to have avoided the JS1 on seeing it, but members agreed that this had been at or shortly after CPA and had therefore been an effective non-sighting of the JS1 by the KC135 pilot (**CF7**).

Turning their attention to the actions of the JS1 pilot, the Board noted that they had planned to fly in an area where there had been a high potential for traffic to have been approaching into Mildenhall. Members had a lengthy discussion about flight preparation, awareness of other airspace users, and the importance of communications where available. Members were disappointed that the pilot had indicated that they would usually only consider calling the ATC unit associated with Class D airspace if and when entering their airspace. The Board discussed the benefits of calling the ATC unit associated with any nearby MATZ or ATZ to inform ATC and other airspace users on frequency of their intentions, alongside improving their own situational awareness of traffic operating in their vicinity, and members agreed that the pilot had not communicated their intentions to Mildenhall (**CF2**) as they had passed through the approach path of RW10. Some members had initially shown concern that a potentially inexperienced glider pilot may not have appreciated the potential danger of flying close to the cloudbase in such a position but noted that, in this case, the pilot had been experienced. The Board wondered why the pilot would be in such a position, but on considering the Mildenhall METAR (actual weather report) the cloudbase in the vicinity of the Airprox could not be corroborated to ascertain the pilot's proximity to cloud. Notwithstanding the provisions of (UK)SERA.13001(c), some members expressed surprise that the JS1 pilot had elected to have their transponder turned 'off' primarily to conserve battery life, and members wondered why the transponder had, presumably, not been fitted with higher capacity batteries. Notwithstanding, the Board agreed that the pilot had not selected the transponder 'on' when it may have been prudent to have done so, and that this had denied an important safety barrier to mid-air collision (**CF3**). Members noted that the JS1 had been fitted with an EC device typically used by glider pilots, and had been capable of detecting other gliders or like-for-like EC devices, therefore, the Board agreed that the EC fitted to the JS1 could not have detected the KC135's transponder (**CF6**). The Board further discussed the pilot's awareness of the KC135 traffic and noted that they had seen a KC135 taking off and flying away from them, but some members were puzzled that they had neither seen nor heard the KC135 returning for the vectored ILS approach. Other members surmised that perhaps the KC135 had not been seen as it had been in cloud and that, possibly, the engine sound had been diminished by power reduction in the descent. However, members agreed that, without two-way

radio communications with Mildenhall and no EC alert, the JS1 pilot had had no situational awareness of the presence of the KC135 (**CF5**). Further considering the JS1 pilot's position relative to the RW10 ILS approach, some members thought that the pilot may have been aware of the 2600ft platform for the RW10 ILS approach, while others considered it unlikely because the specific approach information was not openly available. Members agreed that it had been unfortunate that the JS1 pilot had gone through or only marginally above the ILS approach profile at the same time that a KC135 had been at that point of the approach. Members noted that the pilot had been unaware of the KC135's proximity beneath them and the Board agreed that the JS1 pilot had not seen the KC135 (**CF7**).

On moving their consideration to the actions of the Mildenhall Approach controller, the Board briefly discussed the use of R/T communication and it was established that the USAF controllers R/T language was compliant with UK Military ATC standards. The Board noted that the Mildenhall controller had provided the KC135 pilot with a Traffic Service and had alerted the pilot to a converging primary track and, because the pilot had not informed them that they were in IMC or requested assistance, the controller had done all that was required of them in this instance. Members agreed that the controller had passed all the information available to them and had had only generic situational awareness of the position of the JS1 associated with the primary track (**CF1**), not having had access to altitude information.

Before concluding their discussion and assessing the risk categorisation of this Airprox, members returned to the topic of transponder use as they were concerned about the JS1 pilot's rationale and reasoning for leaving their transponder turned off. During the conversation the Board learned that the JS1 pilot's departure and destination point had been situated in Class D airspace, and that the glider site has a Letter of Agreement (LoA) in place with the primary ATC provider in that airspace. It transpired that the LoA includes a specific transponder code for the glider pilots to select when operating in that airspace and that this allows the controllers of that airspace to deem those specific returns as non-threatening. Although members saw the LoA as an agreeable arrangement, they also recognised the potential for errors if a glider pilot flew into that site with the 7000 VFR conspicuity squawk displayed, albeit inadvertently. It became apparent to the Board that the rationale for some pilots turning their transponders 'off' may have been more likely out of concern for creating an infringement alert than any perceived disregard for other airspace users. One of the controller members described the NATS Controlled Airspace Infringement Tool (CAIT) and wondered if that particular airspace actually had it in place, although the Board agreed that specific airspace infringement tools should not lead to pilots being concerned to the degree that any error in applying the actions required by local agreements could lead to sanction. The Board reviewed the JS1 pilot's closing comment that *'they would very much like NATS to consider implementing a specific gliding conspicuity code that* [the previously mentioned ATC] *could then ignore as they would be aware it was a glider returning to* [destination]*.'* Members thought that provisioning gliders with a specific SSR code may provide glider pilots with more security and incentive to use their transponders more frequently and without fear of inadvertently creating an infringement alert. The Board therefore agreed to issue the following recommendation to the Civil Aviation Authority:

'*The CAA considers implementing a discrete conspicuity SSR code for gliders*.'

Concluding the conversation, the Board noted that the JS1 pilot had had no situational awareness of the presence of the KC135 and the KC135 pilot had had only generic situational awareness of the approximate position of unknown traffic based on Traffic Information which had advised of a converging primary radar track. Furthermore members noted that the JS1 pilot had not seen the KC135 and the KC135 pilot had not seen the JS1 in time to have materially improved matters. The Board agreed that separation had been reduced to a bare minimum and noted that the recorded vertical separation of less than 50ft was even more concerning when taking into consideration the size of the KC135 and the point from which its altitude may have been measured. The Board therefore agreed that providence had played a major part in the KC135 and JS1 having avoided each other and that there had been a serious risk of collision (**CF8**).As such, the Board assigned a risk category A to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2025056			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Situational Awareness and Action			
1	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Tactical Planning and Execution			
2	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
3	Human Factors	• Transponder Selection and Usage	An event involving the selection and usage of transponders	
	• Situational Awareness of the Conflicting Aircraft and Action			
4	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
5	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			
6	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
	• See and Avoid			
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: A.

Recommendation: The CAA considers implementing a discrete conspicuity SSR code for gliders.

Safety Barrier Assessment[8]

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 **ineffective** because, given the location that the JS1 pilot was operating in, it would have been prudent to have relayed their intentions to the Mildenhall controller.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the JS1 pilot had no situational awareness of the position of the KC135 and the pilot of the KC135 had had only generic situational awareness of the presence of the glider from the Traffic Information passed to them by the Mildenhall controller.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC device fitted to the JS1 would not have been expected to have detected the KC135.

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

Additionally, the TCAS fitted to the KC135 had been unable to detect either the EC device or the non-operative transponder equipment in the JS1.

See and Avoid were assessed as **ineffective** because the KC135 pilot had not seen the JS1 until at or shortly after CPA, and the JS1 pilot had not seen the KC135.