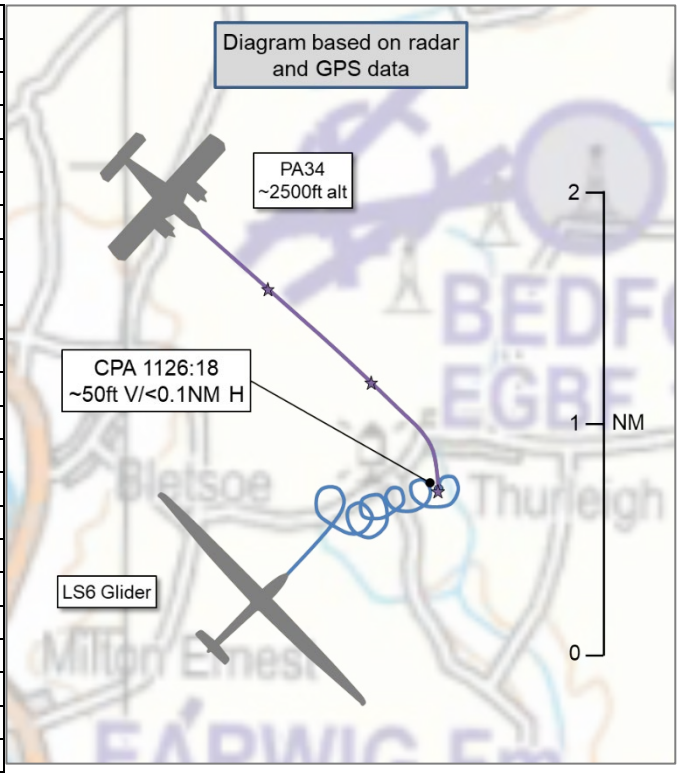
AIRPROX REPORT No 2020082

Date: 29 Jul 2020 Time: 1126Z Position: 5212N 00027W Location: 4NM N of Bedford

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	LS6 glider	PA34
Operator	Civ Gld	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	IFR
Service	None	Procedural
Provider	N/A	Cranfield
Altitude/FL	2500ft	2450ft
Transponder	Not fitted	A, C, S
Reported		
Colours	White	Blue/white
Lighting	NR	Strobes
Conditions	VMC	VMC
Visibility	NR	'Good'
Altitude/FL	2500ft	2300ft
Altimeter	NK	QNH
Heading	180°	NR
Speed	50kt	130kt
ACAS/TAS	Unknown	Unknown
Separation		
Reported	10ft V/0NM H	Not Seen
Recorded	~50ft V/<0.1NM H	



THE LS6 GLIDER PILOT reports flying a cross-country task. They had been established in a weak thermal climb for several turns when, while facing south, a powered aircraft flew directly beneath them from behind, heading roughly north-to-south. The proximity was very close, perhaps measured in feet. The aircraft was close enough such that its outline filled the canopy of their glider. They were able to see that the aircraft had twin engines and was white in colour with dark red or brown markings. They were unable to see any identification markings on the aircraft due to its position directly beneath them. They are familiar and comfortable with glider aerotow procedures, which use ropes 180-200ft in length, so they are well aware of how a powered aircraft in flight 'should' look from that distance. This Airprox was dramatically closer than that. After a few minutes, they were able to continue with their task for a short time, but the shock of the occurrence was enough to persuade them to return to [their destination] where they made a safe landing.

They referred to an online resource to try and identify the other aircraft which, it appeared, was a Piper PA34 performing practise approaches into Cranfield. A reminder will be issued to all Gliding Club pilots to contact the relevant ATSU if at all possible when flying within 10NM of any part of the IAP 'feathers' shown on the 1:500,000 VFR chart.

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

THE PA34 PILOT reports that they were approximately 10NM final for RW21 RNAV approach, just in the turn onto final as published. They did not see the other aircraft and their report is based on their position at 1125Z. The handling pilot was under an IF hood and the examiner was keeping a good lookout as they were in VMC, but this occurred at a very busy time in the cockpit due to their executing a procedural turn onto the final approach.

THE CRANFIELD CONTROLLER reports [a PA34] was conducting 2 approaches for instrument training and there were 2 transits on a similar routing. Traffic Information was passed both ways between the transits and information of the CIT hold and approaches being active, with further specific

Traffic Information given later as they went through the overhead. There were a few gliders that called a lot later on that day, but the controller did not recollect any on frequency during this period.

THE CRANFIELD SATCO reports that they consulted the Flight Progress Strips (FPS) and listened to the RT recordings. The RT did not indicate that there was a glider on frequency at the time of the reported incident, and the aircraft involved did not report any issues. The FPS did not indicate that there was a glider on frequency or in receipt of a service from Cranfield. The ATCO was unaware that gliding was taking place at the time.

Factual Background

The weather at Cranfield was recorded as follows:

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METAR EGTC 291120Z 25010KT 210V300 9999 BKN038 18/10 Q1020=
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Analysis and Investigation

UKAB Secretariat

Analysis of the NATS radar replay revealed an intermittent (approximately 2 or 3 individual radar sweeps) primary contact in the vicinity of the reported Airprox. However, the radar returns were neither identifiable nor consistent enough to be directly attributable to the glider involved in the Airprox. The glider pilot did, however, provide a GPS log file which, when analysed alongside the NATS radar replay, confirmed the proximity of the 2 aircraft in the location reported. CPA was measured as occurring at 1126:18Z and it was possible to establish a vertical separation of ~50ft (measured from 2 different sources) with a horizontal separation of <0.1NM.

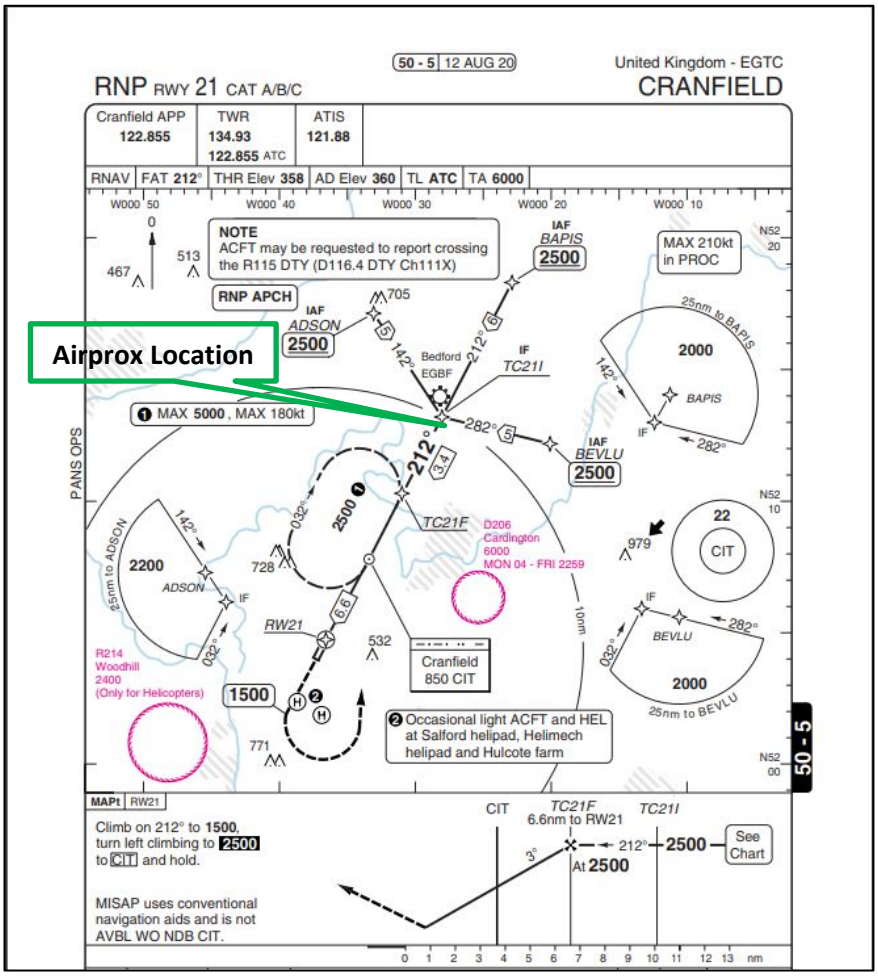


Figure 1 – Extract of Cranfield RNP RW21

The LS6 glider and PA34 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1] If the incident geometry is considered as overtaking then the LS6 glider pilot had right of way and the PA34 pilot was required to keep out of the way of the other aircraft by altering course to the right.[2]

Comments

BGA

This Airprox happened some distance from the IAP 'feathers' as marked on VFR charts, but nevertheless on the procedure that was being followed by the PA34. UKAB has previously recommended (ref 2014097 and 2014126) that the CAA make it simpler for GA pilots to visualise Instrument Procedures located in Class G, and this incident reinforces that need. The LS6 would have been well advised to contact Cranfield, especially in view of their track leading up to the Airprox, but as there is no Radar at Cranfield the best service that could have been provided was generic Traffic Information.

The absence of compatible EC systems also removed a useful barrier.

The suggestion in the legend of the VFR chart that 'Pilots intending to fly within 10NM of any part of the IAP symbol are strongly advised to contact the aerodrome ATSU' is not drawn from either the AIP or the Skyway Code, and is in many cases impracticable due to the proximity of aerodromes. That said, Cambridge Gliding Club (where the LS6 was based) has already issued guidance to all their pilots and is in discussion with Cranfield.

Summary

An Airprox was reported when an LS6 glider and a PA34 flew into proximity 4NM north of Bedford at 1126Z on Wednesday 29th July 2020. The LS6 glider pilot was operating under VFR in VMC and was not in receipt of an Air Traffic Service; the PA34 pilot was operating under IFR in VMC and was in receipt of a Procedural Service from Cranfield.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS log files, 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first considered the actions of the LS6 Glider pilot and heard from a glider member that this had been a very close encounter that had shaken the glider pilot. A glider member mentioned that the advice on the 1:500,000 VFR chart for 'Pilots intending to fly within 10NM of any part of the IAP symbol are strongly advised to contact the aerodrome ATSU' can be, in certain parts of the UK, impossible to achieve due to overlapping areas. Furthermore, previous similar occurrences had led to the Board making a recommendation that the presence of instrument procedures in Class G airspace be made more accessible for GA pilots by depicting the holds (as a minimum) on VFR charts. The recommendation was rejected with the following justification:

- The Aeronautical Information Management Working Group has discussed the UKAB proposals. It has been agreed by those present that the holds should not appear on the VFR chart, the thinking being that their inclusion would add to the general 'clutter' on the charts, something that they are actively seeking

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(3) Overtaking.

to reduce; additionally there is in fact no requirement in Annex 4 to depict such holds on VFR charts. The group also considered the recommendation for a separate chart depicting terminal holding patterns, but all agreed the size and scale of the chart required would render the depiction of the holds as unusable.

Some members felt that the proliferation of RNAV approaches will likely lead to an increase in procedures outside controlled airspace, and that depicting Initial Approach Fixes on VFR charts may be something that could be considered in future; however, the Board stopped short of making a Safety Recommendation in this regard. Ultimately, members agreed that although there had been no specific regulatory requirement to do so, when they had found themselves in the vicinity of an airfield with a published instrument approach procedure the glider pilot may have been better served in contacting Cranfield and informing the controller of their presence (**CF2, CF3, CF4**). As it was, with no prior warning of the presence of the PA34 (**CF5**), the glider pilot had had to rely on their lookout to detect the other aircraft and they had only spotted the PA34 as it flew beneath them (**CF8**). The Board also heard from a CAA advisor that work had been undertaken within the last year to address the perceived reluctance of some glider pilots to contact Air Traffic Service Units (notwithstanding that there is no regulatory requirement for glider pilots to possess an RT licence); there is an ongoing education of the importance of communicating in the air and the CAA is working to better allow glider pilots to communicate with Air Traffic Service providers.

Turning to the actions of the PA34 pilot and the Cranfield controller, members quickly agreed that, without any knowledge of the presence of the glider flying in the vicinity of the instrument approach procedure, the controller had had no situational awareness of the relative proximity of the 2 aircraft and therefore had not been in the position to warn either of the pilots of the presence of the other aircraft, thus denying each of them this situational awareness (**CF1, CF5**). For their part, the PA34 pilot had been under a high workload attempting to capture the final approach track and the Board felt that, similarly, the PA34 instructor's lookout would have been reduced due to the requirement for them to monitor the student's performance during this phase of flight and that this legitimate distraction had been contributory to the Airprox (**CF6**). The Board heard from a GA member with experience as an examiner that the use of Instrument Flying screens, designed to prevent the student from using visual references, can also impede the instructor's/examiner's lookout and that this may have been a factor, as well as the acknowledged low visual signature of gliders in general, in the PA34 crew not having seen the LS6 glider as it passed overhead (**CF8**).

There then followed a lengthy discussion on the interoperability of Electronic Conspicuity devices. Whilst it was unclear in this case if either aircraft had been fitted with and EC device – neither pilot had supplied that information to the UKAB in their Airprox report – members felt that it would have been likely that the glider would have been carrying a FLARM device and the PA34 would possibly have had a TAS or TCAS fitted. Members noted that these 2 systems cannot interoperate and that a solution where all aircraft can detect the presence of other aircraft is essential if this barrier to mid-air collision is to be fully employed. The Board was heartened to hear from a CAA advisor that work is underway to identify not only a common protocol for all air users, but also a concept in which the utilisation by ground elements (notably, Air Traffic Service providers) of the myriad cooperative surveillance systems could be more widely applied.

Members finally considered the risk involved in this encounter. The Board took into account the glider pilot's reported separation and assessment of collision risk, noting that the PA34 pilot had not seen the glider and therefore had been unable to provide that information. They also considered the measured CPA from the radar trace of the PA34 and the GPS file provided by the glider pilot. Although there will always be a degree of inaccuracy when comparing the recorded data from 2 different sources, it was clear to the Board that there had been very little lateral and vertical separation and, given that neither pilot had seen the other aircraft in time to take any meaningful avoiding action, the separation that had been present had been purely providential. Members therefore agreed that a serious risk of collision had existed (**CF7**) and it had been completely by chance that the 2 aircraft had not hit each other; Risk Category A.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020082		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Situational Awareness and Action		
1	Contextual	• Situational Awareness and Sensory Events	The controller had only generic, late or no Situational Awareness
	Flight Elements		
	• Tactical Planning and Execution		
2	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
3	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
4	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate ATS provider
	• Situational Awareness of the Conflicting Aircraft and Action		
5	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
	• See and Avoid		
6	Human Factors	• Distraction - Job Related	Pilot looking elsewhere
7	Contextual	• Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle	Piloted air vehicle
8	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: A

Safety Barrier Assessment[3]

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 **ineffective** because the Cranfield controller did not know of the presence of the LS6 glider and, therefore, could not warn the PA34 pilot.

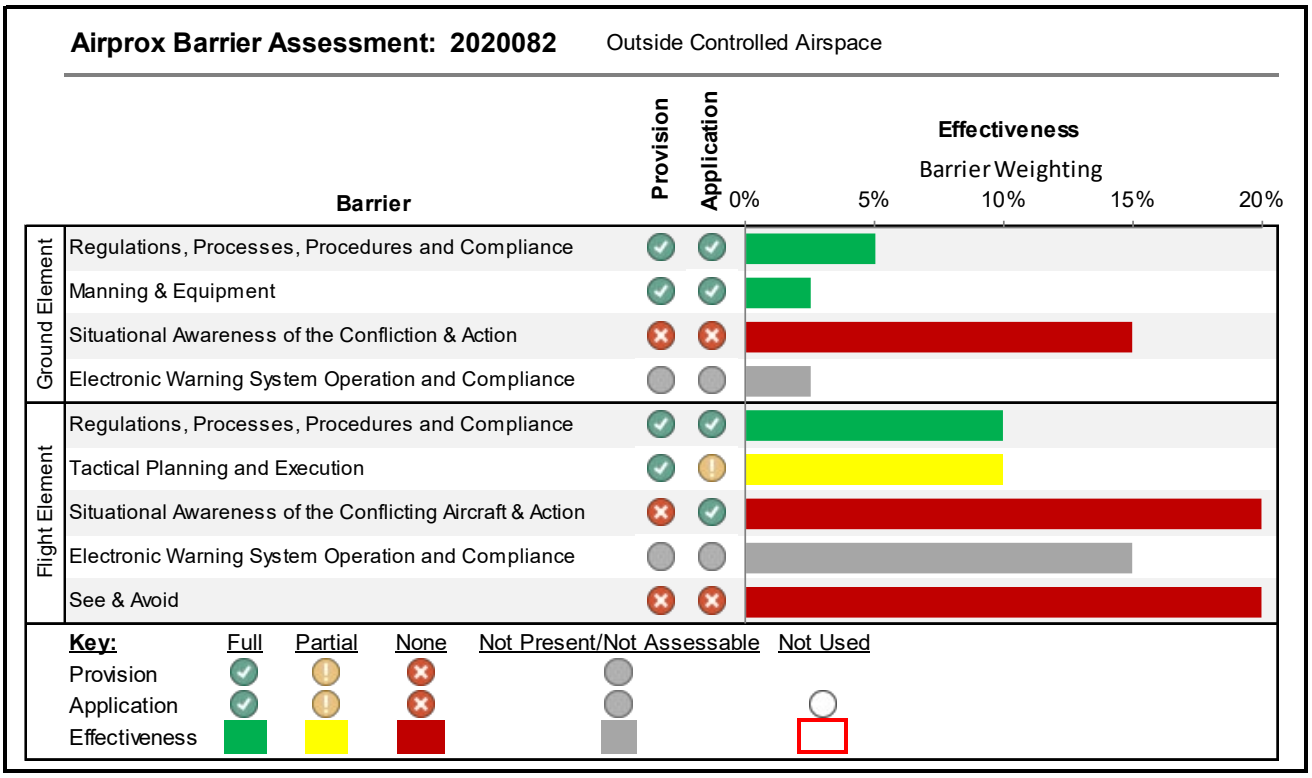
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the LS6 glider pilot was flying within 10NM of an airfield with an Instrument Approach Procedure and did not call the Cranfield controller.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the LS6 glider pilot nor the PA34 pilot were aware of the presence of each other's aircraft.

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

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


Airprox Barrier Assessment: 2020082
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
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
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness