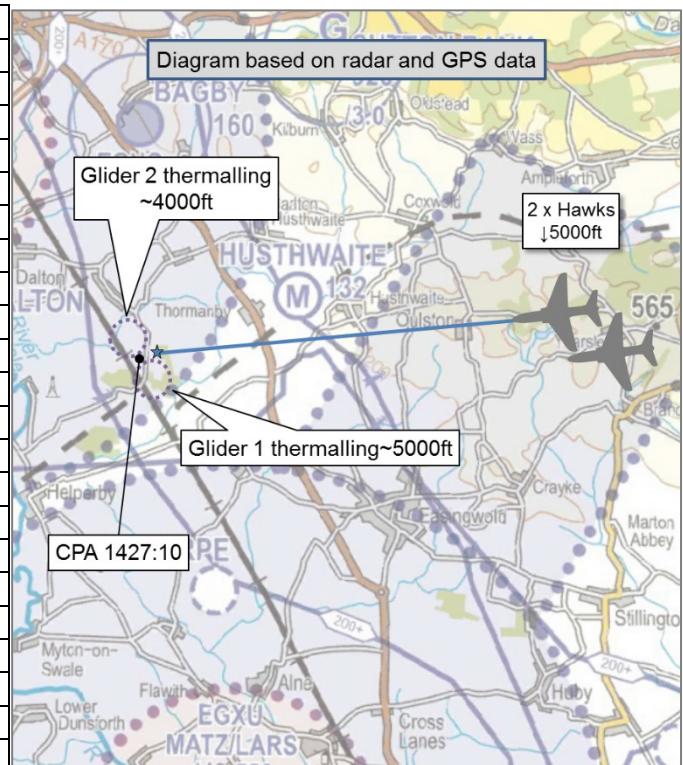


AIRPROX REPORT No 2019099

Date: 13 May 2019 Time: 1430Z Position: 5408N 00117W Location: Vale of York

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk	Glider 1 and 2
Operator	HQ Air (Ops)	Civ Gld
Airspace	VoY AAIA	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	None
Provider	Swanwick (Mil)	N/A
Altitude/FL	5200ft	~5000ft
Transponder	A, C, S	Not fitted
Reported		
Colours	Black	White
Lighting	HISL, Nose, Nav	Not fitted
Conditions	VMC	VMC
Visibility	NK	NK
Altitude/FL	6000ft	~5000ft
Altimeter	RPS (1034hPa)	NK
Heading	270°	Thermaling
Speed	300kt	NK
ACAS/TAS	Not fitted	FLARM
Alert	N/A	None
Separation		
Reported	0ft V/400m H	Not Seen
Recorded	NK	



THE HAWK PILOT reports that he was the lead pilot in a formation of two Hawks. They had just completed a training sortie in the Vale of York and were heading west from the Pickering area, intending to route to the south of Linton before recovering visually to Leeming. They were receiving a Traffic Service from Swanwick(Mil) and descending from 9000ft to 5000ft. Earlier in the sortie they had noted that Sutton Bank glider site was active, so the aim was to pass to the south of it remaining above 5000ft. The Swanwick controller passed Traffic Information on a contact 10nm west-southwest, heading north at FL60. This was conflicting traffic so the formation leader elected not to fly further left of track until that traffic was above the formation, whilst aiming to give Sutton Bank a wider berth. This traffic was sighted co-alt in the descent at the same time as additional traffic was called by Swanwick to the south at 5nm and also FL60. Shortly afterwards, the formation lead was visual with both of these contacts which were Tucanos and, because the Hawk formation was passing below, the conflict was resolved vertically with the formation approaching 5000ft. The position of the two contacts was reported by the formation lead to the wingman on the intra-formation frequency. Following this transmission, on looking to the front the lead pilot saw a glider at close range, tail-aspect, slightly to the right of their flightpath and co-altitude. With the wingman in Fighting Wing formation on the right, it was assessed that the wingman was likely to pass extremely close to the glider so the lead pilot broke left and transmitted on both frequencies "break left glider on your nose". The handling pilot of the No2 Hawk saw the manoeuvre, heard the transmission and pulled up and left without seeing the gliders. While in the left-hand break, the lead pilot saw a second glider at very close range in the 8 o'clock position a few hundred feet below pointing towards and so rolled the aircraft level. On rolling out, a third glider was seen at very close range in the 2 o'clock position also pointing towards and slightly low. The conflict was fleeting and the flightpath nothing more than fortuitous. It was assessed that the formation had flown through a circling stack of gliders, all passing within 250-300m of the lead Hawk. The No2 pilot did not see any of the gliders in the incident, both aircraft were being flown dual. The Airprox was reported to Swanwick and the recovery continued. He opined that due to the activation of the over-land portions of D323 (H, J, K) the formation was forced to operate in the central portion of the Vale of York AAIA. This compressed operating area

also reduced the handover time to the local radar unit who may have had a better appreciation of the local glider situation.

The glider club was contacted post flight but there had been no reported incidents at the time although the club said that it was a "busy day". There was no NOTAM of unusual activity or any other common local notification of increased glider activity.

He assessed the risk of collision as 'High'.

THE GLIDER 1 PILOT reports that he was local-soaring on the day in question and, although the thermals were reasonably good, he had no plans to fly cross country. He was predominately flying to the south of Sutton Bank so he had Linton on Ouse on dual watch on the radio but because he had no intention of crossing either the MATZ or their extended centrelines he did not establish 2-way comms. In fact the frequency was surprisingly quiet. Near the end of the flight he joined a thermal with 3 other gliders and at a height of approximately 4500ft. This was over Little Sessay, about 4.2nm SE of RAF Topcliffe. On reaching a height of about 5100ft, he heard jet noise so rolled out of the thermal on a NE heading and shortly thereafter decided to return to Sutton Bank to terminate the flight, purely because he had had enough of going in circles and not going anywhere. At no time did he see any jets despite looking after he heard them. He heard nothing on the Linton frequency to suggest anything unusual.

GLIDER 2 PILOT reports he was local soaring on the day in question because he didn't think the thermals were going to be good enough for cross-country flying. As he rigged the glider in the morning he watched two Hawks doing high-G manoeuvres above the club, which at the time he thought strange. Then they departed south. After that he went flying locally, meeting up with other gliders in thermals. His radio was on Sutton Bank and Linton frequencies (dual watch) and the glider was also fitted with FLARM 'radar' which was transmitting and had a moving map which shows up other gliders nearby. Near the end of the flight he joined a thermal with 2 other gliders and was thermaling up to cloud base. About 4.2 nm SE of RAF Topcliffe at 4000ft, he heard jet noise (this was checked against the FLARM trace later). He didn't see any of the jets, so presumed they were above the cloud base as they passed.

[UKAB Note: The secretariat received IGC files and reports from 2 of the glider pilots, but the third could not be traced.]

THE SWANWICK(MIL) CONTROLLER reports that he was under training at the time of the incident with 2x Hawks on frequency. They had finished general handling in the Vale of York, 6000ft to 22,000ft on the RPS. They called 2min to completion, at which point he asked them to do a radio check with a BLACKDOG frequency (a request from them earlier, presumably to assist with kit issues). Hawk 2 did the radio check, with 1 remaining on frequency. They then elected to descend to 5000ft on completion of the radio check. They were fairly close to Leeming after passing the results of the radio check, so he opened the direct line to initiate an un-prenoted handover. As the line opened, he called traffic south west of the Hawks, tracking north, slow moving, indicating FL60. He then proceeded to pass the initial details to Leeming but then called further traffic on a second track, south-west tracking north indicating FL50. The Hawk pilot transmitted that they were visual, but the controller was concerned as the comms were fairly crackly, so checked which aircraft it was that they were visual with. The Hawk pilot responded that they were visual with the first traffic that was called in his left 9 o'clock, and was subsequently visual with the further traffic called. A moment later, the pilot declared an Airprox and the instructor stepped in to acknowledge. They halted the handover with Leeming and the Hawk pilot stated that they had just had an Airprox with 3 gliders that had passed across their nose. The pilot stated that it was not the traffic that had been called, but in fact a further 3 gliders that were not called to him. Unfortunately, they could not see any other radar returns whatsoever, apart from the 2 that were called, and so couldn't provide any Traffic Information.

He perceived the severity of the incident as 'High'.

THE SWANWICK(MIL) SUPERVISOR reports that he had just taken over the watch a few minutes prior to the incident and was informed by the controller that the Airprox had been declared. There were no warning signs of a developing scenario as the conflicting aircraft hadn't been showing on the radar.

Factual Background

The weather at Leeming was recorded as follows:

METAR EGXE 131350Z 15006KT CAVOK 21/06 Q1038 BLU NOSIG=

Analysis and Investigation

Military ATM

The Hawks were conducting convex training in the Vale of Pickering prior to recovery to RAF Leeming and were in receipt of a Traffic Service from Swanwick(Mil). Shortly after initiating a handover to Leeming (but prior to the handover being completed) the Hawk lead reported seeing a glider at close range and similar altitude and assessed that the second Hawk was likely to pass very close to the glider. The formation leader issued an instruction to 'break left, glider on your nose' and initiated a turn to the left. Whilst avoiding the first glider, the Hawk lead reported seeing a second glider at very close range and initiated a turn away. Following this manoeuvre, the Hawk lead then spotted a third glider slightly below. The Hawk lead assessed that the formation had flown through a stack of circling gliders all of which he assessed passed within 250-300m of the lead Hawk. The second Hawk pilot did not see any gliders. The Swanwick(Mil) Controller reported that there was nothing showing on their radar display.

Only 4mins elapsed from the time the Hawks reported ready for recovery to Leeming and the Airprox occurring. Analysis of the radar replay showed that a primary radar return (which was possibly one of the gliders involved) was on the screen for 25secs in total (for 10secs and 15secs). During this first exposure, the Swanwick(Mil) controller was passing Traffic Information on an aircraft 7nm southwest indicating FL60 (later identified as a Tucano). The second exposure coincided with the Hawk Lead requesting an update on the Traffic Information passed.

Figure 1 depicts the point at which a primary radar contact is visible for 10secs. The appearance of this contact coincides with Swanwick (Mil) passing Traffic Information to the Hawks on the 4531 Squawk.

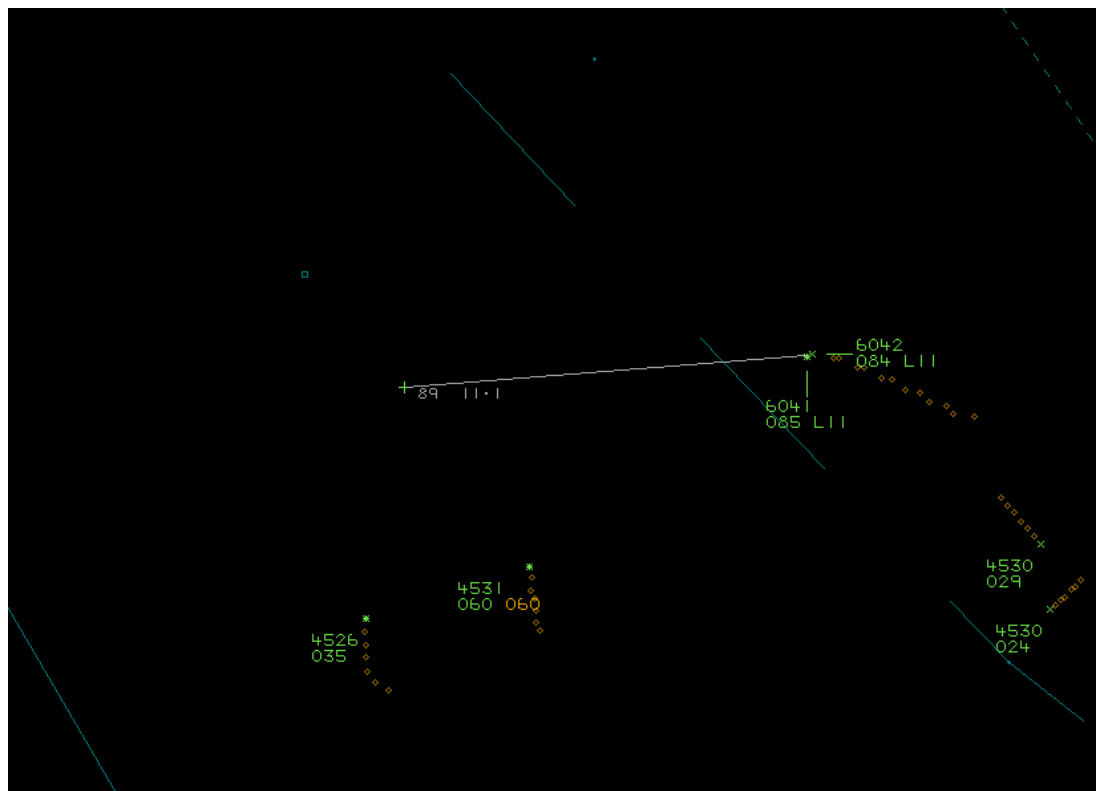


Figure 1 -First Primary Contact

Figure 2 depicts the point at which a primary radar contact is visible for 15secs. During this time, the Hawk Lead is requesting an update on the Traffic Information passed.

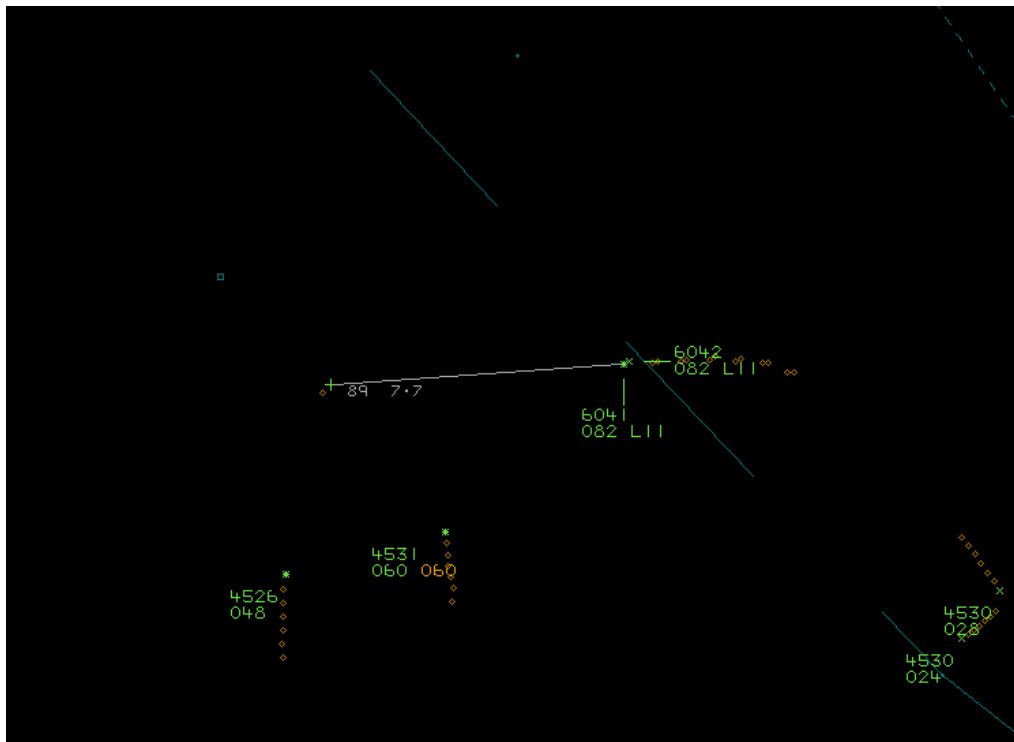


Figure 2 – Second Primary Contact

The Hawk lead reported issuing a 'Break Left' instruction to avoid a glider and this manoeuvre can be seen on radar. This turn is coincident with the appearance of two primary radar contacts but the Radar Analysis Cell is unable to determine if one of the returns is actually the second Hawk.

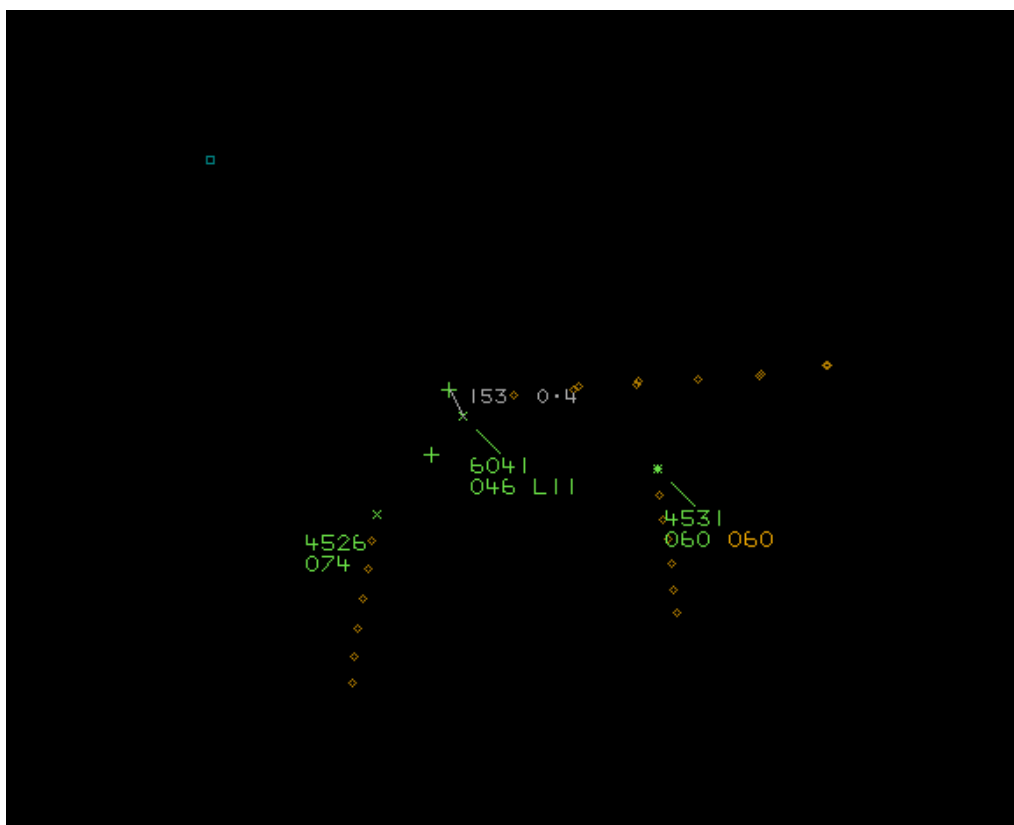


Figure 3 - CPA

The controller involved passed Traffic Information on conflicting aircraft in the vicinity of this Airprox (the Tucano) so it is evident that his attention was in the area and that he was scanning for conflicts. The fleeting appearance of the primary radar contacts (25 secs over a 4 minute period) whilst the controller was involved in other RT exchanges meant that, even if they had been detected, there would have been no opportunity to pass Traffic Information and thus the controller's actions in this incident were appropriate.

UKAB Secretariat

The Hawk and glider pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right². If the incident geometry is considered as converging then the Hawk pilots were required to give way to the gliders³.

Comments

HQ Air Command

This incident took place in the busy Class G airspace in the Vale of York. Plan-to-avoid was unavailable because neither pilot had prior information on the routing or area of operation of the other aircraft. The ATS barrier was weakened because there was no secondary radar information on the gliders and the primary radar return only appeared fleetingly. This led to the controller being unable to pass Traffic Information on the gliders to the Hawks. The final – and only available – barrier was lookout, which was also weakened as the Hawk pilots were trying to gain visual with other, transponding aircraft that had been called to them by the controller. Fortunately the Hawk pilots gained visual with the gliders in time to manoeuvre to increase separation; it appears that none of the glider pilots saw the Hawks.

This Airprox has many similarities with a previous event that took place overhead Leeming in September last year (Airprox 2018266). It is disappointing that the glider pilot, having chosen to select the Linton frequency to listen to, did not speak to the controller to let them know of his location and intentions – this may at least have allowed the controllers to pass the information to the Hawks' controlling agency to steer the recovering Hawks around the known position of the gliders. Recommendations from the previous incident included briefings to local gliding clubs and increased engagement in the local area regarding sharing the busy airspace in the Vale of York. This work must continue as it is in the interest of all air users to decrease the risk of mid-air collision.

BGA

Two of the 3 gliders were fitted with working FLARM. If the ATS units concerned had access to FLARM traffic displays, their SA would have been improved.

Summary

An Airprox was reported when a pair of Hawks and 3 gliders flew into proximity southwest of Sutton Bank glider site at 1430hrs on Monday 13th May 2019. All pilots were operating under VFR in VMC, the Hawk pilots were in receipt of a Traffic Service from Swanwick(Mil). The glider pilots were not receiving an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities. Relevant contributory factors mentioned

¹ SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

³ SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

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 Hawk pilots. The formation had been general handling to the east and was transiting back to Leeming, knowing that Sutton Bank was active with gliders they planned to be above 5000ft whilst in the vicinity, which the Board commended them for. Members commented that it was unfortunate that the formation was with still with Swanwick(Mil) at this point in the transit because Leeming may have had more information about the gliders from their FLARM display (**CF3**) whereas Swanwick(Mil) did not have FLARM for operational reasons due to their extensive area of radar responsibility and concomitant radar display scale. As a result, the Swanwick controller had no local knowledge of the gliders and, without them persistently displaying on the radar (the gliders were not transponder equipped) was not able to provide any Traffic Information on them, or resolve the conflict, through no fault of their own (**CF1, CF2, CF3, CF4**). At the time of the Airprox, the lead pilot was looking for other traffic called by the controller and, once he saw it, looked forward and saw a glider in close proximity ahead. Given their close proximity, he called for the formation to 'break left' and, whilst taking the avoiding action, saw two further gliders, (**CF7**). Modern gliders are notoriously difficult to see from a tail-on aspect and members with military experience commented that at the likely closure speeds the Hawk pilot may not have seen the gliders ahead even had he been continually looking forward. The Board were told by the military member that the Hawk squadron had since installed a GliderNet capability in their Ops room so that pilots could check the prevailing situation prior to getting airborne. The Board were heartened to hear that they were taking active steps to reduce the risk, although they noted that even having checked GliderNet beforehand, the situation was likely to have changed considerably by the time the Hawks were on recovery.

Turning to the role of the gliders, neither of the pilots traced had seen the Hawks, only heard them (**CF6**). Members noted that both of the pilots were listening out on the Linton frequency, although neither had called Linton. Although listening out would give the glider pilots situational awareness on anything on the frequency, it did not help any of the military traffic in the area who would still not know the gliders were there (**CF3**). When questioned whether a call to Linton would have helped Leeming, members were told that Linton and Leeming had a good working relationship and in all likelihood Linton ATC would have passed the details onto Leeming that gliders were operating in the area. However, it would be unlikely that a similar call would be made to Swanwick(Mil) who had a UK-wide area of responsibility that encompassed many gliding areas of activity. Although the gliders were fitted with FLARM, the Hawks were not (**CF5**) and so the glider pilots had no situational awareness that the Hawks were transiting through their area (**CF4**). Equally, because none of the gliders had transponders fitted, there was no indication on the radar for the controller to see the confliction.

When discussing why the Hawks were speaking to Swanwick(Mil) rather than a local radar unit that might have knowledge of the gliders, the Board were informed that the Hawks were receiving a service from Swanwick(Mil) because they had been operating in a block above the level at which Leeming could control. The Board was told that a recent change to D323 had meant that the Hawks now had to operate further away from the coast, over the land, in order to keep clear of D323. An unintended consequence was that, being closer to their operating base, there was less time for the Swanwick(Mil) controllers to complete handovers on traffic returning to Leeming. They were told that as soon as the Hawks had reported complete, the controller initiated a handover to Leeming, but that the Tucanos transiting northbound presented a confliction which meant the handover could not be completed as swiftly as hoped. In discussing the choice of radar unit, some members wondered whether it would be better in future for aircraft recovering to Leeming or Linton to hold at higher altitude until the handover was complete rather than conduct the recovery during the handover. Although this thought had merit as a guiding principle, it was acknowledged that individual circumstances pertaining at the time might often preclude its practical application.

Finally, the Board assessed the risk and quickly agreed that although the Hawk pilot had taken avoiding action, this had been a situation where separation from all 3 gliders had been reduced to the minimum and largely due to providence. Accordingly, they assessed the risk as Category A.

PART C: ASSESSMENT OF CAUSE AND RISK

Contributory Factors:

2019099-Barriers.x			
CF	Factor	Description	Amplification
Ground Elements			
• Situational Awareness and Action			
1	Contextual	• Situational Awareness and Sensory Events	Only generic, late or no Situational Awareness
2	Human Factors	• Conflict Detection - Not Detected	
Flight Elements			
• Tactical Planning and Execution			
3	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate controlling authority
• Situational Awareness of the Conflicting Aircraft and Action			
4	Contextual	• Situational Awareness and Sensory Events	Pilot had no, only generic, or late Situational Awareness
• Electronic Warning System Operation and Compliance			
5	Technical	• ACAS/TCAS System Failure	Incompatible CWS equipment
• See and Avoid			
6	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
7	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots

Degree of Risk: A.

Safety Barrier Assessment⁴

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 Swanwick(Mil) controller had no knowledge of the gliders.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because none of the pilots knew about the other aircraft prior to the Airprox.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the Hawks were not fitted with FLARM (the FLARM in the gliders could not detect the Hawks' transponder), and the gliders were not fitted with transponders.

See and Avoid were assessed as **partially effective** because although the Hawks managed to take avoiding action on the first glider, this unwittingly put them into conflict with other, previously unseen gliders.

⁴ 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: 2019099

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 Used		
Provision	✓	⚠	✗	●				
Application	✓	⚠	✗	●				
Effectiveness								