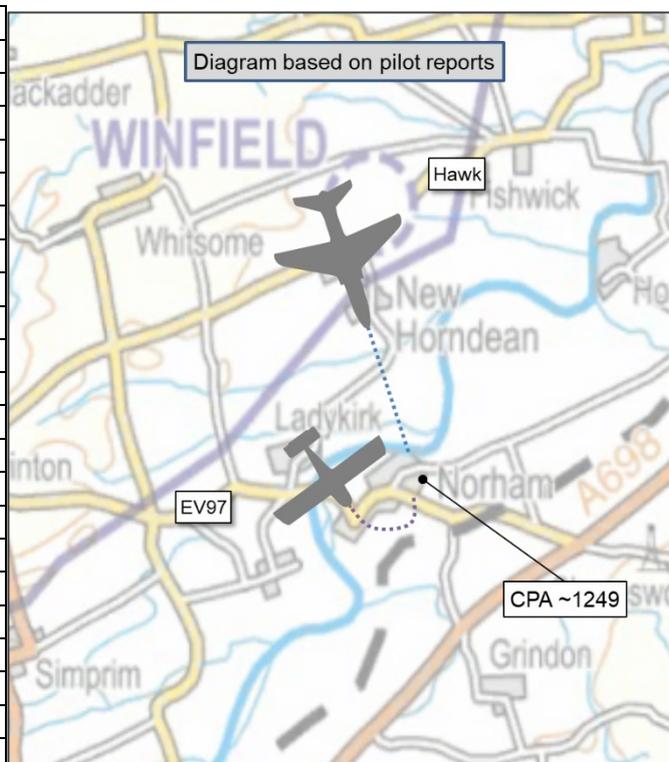


AIRPROX REPORT No 2020119

Date: 14 Sep 2020 Time: 1249Z Position: 5527N 00153W Location: Norham

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk	EV97
Operator	HQ Air (Trg)	Civ FW
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Swanwick(Mil)	Scottish Information
Altitude/FL	NK	NK
Transponder	A, C, S	A, C, S
Reported		
Colours	Black	Blue, Silver
Lighting	HISLs, Nose, Nav	Wing-tip strobes
Conditions	VMC	VMC
Visibility	20km	10NM
Altitude/FL	500ft	800ft
Altimeter	RPS (1017hPa)	QNH
Heading	170°	010°
Speed	420kt	88kt
ACAS/TAS	Not fitted	Not fitted
Alert	N/A	N/A
Separation		
Reported	0ft V/0.5NM H	0ft V/800m H
Recorded	NK	



THE HAWK PILOT reports that at the conclusion of the final merge of a convex sortie for the wingman (low-level aggressor) they rolled out of a 4.5G turn to the right and almost immediately saw an aircraft in the left 11:30 at the same altitude and a range of approximately 1NM, over the town of Norham. The aircraft was low wing, mainly white with a single propeller. They broke right and called over the formation chat frequency "hard right, avoid the town", followed by words to describe the aircraft seen. Shortly after, the wingman who was behind and approximately 700ft agl called 'tally'. The Airprox aircraft passed down the left-hand side, although after breaking right it was not seen again. The wingman believed the aircraft started to turn after they passed but was unsure if the other pilot saw the formation. As planned, the formation climbed out of low-level shortly afterwards for recovery to RAF Leeming via Swanwick(Mil). Swanwick was advised of the Airprox and took details. In the sortie plan a route was entered on CADS as normal, with a 20NM circle in the operating area. There were 3 conflicts on CADS - a pipeline inspection flight that was south-west of their intended operating area and 2 sets of formations that conflicted on recovery to Leeming only. They also checked glidernet and noted a couple of civilian aircraft operating around Alnwick and so briefed that they would ask for Traffic Information from Newcastle in the transit to the area, as they intended to transit with them. The lead pilot spoke with Swanwick by phone prior to the sortie to arrange for a service for the No2 Hawk who would be operating in both medium-level and low-level; the lead would be solely at low-level once in the area. They requested the No2 to be given a Traffic Service as far as possible (noting they would also be at low-level at times) and the No1 Hawk be provided with a Basic Service. Swanwick asked them to speak with them from departure. During the transit to the area the plan was again discussed with Swanwick and in the descent No2 was provided with a Traffic Service, with Basic Service below height 4000ft and No1 was provided with a Basic Service. Additionally, during the transit, they asked for Swanwick to obtain any relevant traffic from Newcastle in the area, nothing was passed. During the low-level portion of the sortie the No1 pilot was unable to communicate with Swanwick, most likely due to being at low-level.

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

THE EV97 PILOT reports that they were on a sightseeing flight had just completed two orbits over Northam when they saw an RAF black Hawk with nose-light on at a similar height and at a range of 1NM. They increased the right-hand orbit turn rate to remain clear, but did not consider the incident to be an Airprox.

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

THE SWANWICK(MIL) CONTROLLER reports that at approximately 1250z a pair of Hawks who had been operating in and out of low-level, called for pickup and recovery to base. Once identified and given a climb, the lead pilot reported they had had an Airprox whilst low-level, just prior to pulling up. The incident took place just prior to receiving a service from Swanwick. The controller applied a service, climb and vector and requested details, which were given as follows: the Hawks were approximately 5527N 00153W (from console right click facility), the Airprox reported as about 5NM NNW of 'Millfields' gliding site. The Hawks were tracking south, the conflictor was tracking north. The conflictor was reported as a light aircraft, possibly a Bulldog, with red and white markings. No conflicting aircraft was noted at the time, however the controller was busy with other aircraft.

The controller perceived the severity of the incident as 'Low'.

THE SWANWICK(MIL) SUPERVISOR reports they were positioned in the Ops room in close proximity to the TAC and were first made aware of the incident by the TAC requesting that a handover be conducted on another callsign whilst they were taking the details of the incident. The Hawks were identified and there was no other radar contact sighted within their vicinity. They continued to climb FL160 and returned to base with no further issue.

Factual Background

The weather at Edinburgh was recorded as follows:

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METAR EGPB 141220Z 25007KT 9999 BKN027 19/14 Q1020=
METAR EGPB 141250Z 22008KT 9999 OVC028 19/14 Q1020=
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Analysis and Investigation

NATS Investigation

The NATS MRT radar was reviewed for 20 minutes before and after the reported Airprox time. Nothing of note was spotted. A review of the Scottish Information frequency and telephone calls 20 minutes before and after the reported Airprox time showed that no mention of traffic was made by the EV97 pilot. R/T occupancy was noted to be very high throughout. The Scottish Information FISO was interviewed 2 weeks after the event once Prestwick Centre received the Airprox notification. The FISO could not recall anything notable about the day in question or the specific aircraft involved. They could loosely remember working the EV97 on the south bank of the Forth but could not recall seeing [the EV97] or [the Hawks] on the Flight Information Display. The FISO did mention that they were aware that military Hawk aircraft often perform manoeuvres in that area but were unaware of anything specific that day.

Military ATM

The Hawk was operating at low-level as part of a formation of two Hawks conducting a convex sortie in the vicinity of Northam. Prior to getting airborne the Hawk pilot spoke with the Swanwick(Mil) Supervisor and requested an ATS for both Hawks, advising them of the operating area and intended altitudes. The Hawk pilot also reported that as part of their brief they checked CADS and glidernet and planned to ask for Traffic Information from Newcastle. On route to the low-level entry point the Hawk advised Swanwick(Mil) of their intentions, however, following a change of controller at 1217:37, the Hawk pilot was again asked for their intentions and this time provided them as 'we're

doing er an exercise between Newcastle and Leuchars and er we'd like a Traffic Service for [Hawk 2 c/s] who'll be operating between surface and medium level and er [Hawk 1 c/s] will be low level and no service required'.

Only the frequency on which the Hawks were operating was transcribed by the Swanwick(Mil) investigation, therefore, it is unknown how many other aircraft were being provided an ATS by the Swanwick(Mil) controller however, the tape transcript provided highlights that at least one other aircraft was under their control. The Hawk formation was initially provided a Traffic Service until the Hawk descend to low-level at which time the ATS was downgraded to a Basic Service, with the second Hawk retaining a Traffic Service. The second Hawk was provided with a mixture of Traffic Service and Basic Service depending on their altitude. The Swanwick(Mil) controller occurrence report stated that the Hawk was not under an ATS, however, the tape transcript showed that a Basic Service was given and was not terminated, or the Hawk was not advised to change to an en-route frequency, therefore the Hawk pilots may have believed a Basic Service was still being provided. The tape transcript also showed that during the duration of the Hawk sortie, prior to the Airprox, there had been three controller changes.

The EV97 was not observed in the vicinity of the Hawk on the radar replay conducted by the Radar Analysis Cell therefore, there are no screenshots available. The radar synopsis reported that the Hawk was intermittent on radar and no other Air Systems were visible at the time of the Airprox.

Due to the limits of surveillance cover in the operating area, the Swanwick(Mil) controller would not have been able to see the EV97 at their reported altitude therefore, the conflict was not identified, and Traffic Information was not passed. A lack of local investigation by Swanwick(Mil) meant that it is unknown whether the Hawk pilot or the Swanwick(Mil) controller requested Traffic Information from Newcastle to aid the situational awareness. It could be assumed that the Swanwick(Mil) controller did not believe they were providing a Basic Service to the Hawk once they had entered low-level due to the Hawk earlier stating that a service would not be required. At 1223:40 the Hawk pilot called '*[Hawk C/S] is descending low level recall you on way back out of low level*'. To which the controller replied, '*you are responsible for your own terrain clearance speak to your shortly*'. However, the controller should have either terminated the service, sent the Hawk to an en-route frequency, or clarified the potential ambiguity in the initial request for a Basic Service. Again, due to a lack of investigation by Swanwick(Mil) it also is unknown whether the Electronic Flight Strip for the Hawk was maintained by the controller, or cancelled down at this point, which would have indicated whether the controller believed the Hawk was still under a Basic Service or not. When the Hawks called back on the frequency 7min later, it was a different controller in position. It is also worth noting that Swanwick(Mil) radars are not optimised for the altitudes that the Hawk formation were operating at, therefore, Swanwick(Mil) were not necessarily the most appropriate ATS provider.

UKAB Secretariat

The Hawk and EV97 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 head-on or nearly so then both pilots were required to turn to the right.²

Comments

HQ Air Command

The Hawk T1 is not fitted with a CWS; therefore, lookout remains the primary means to avoid MAC at low-level. The crews of both Hawks are to be commended for their detailed planning, using several resources available to avoid any possible conflicts and providing Swanwick(Mil) with a detailed plan of their sortie in advance. Although tools such as CADS are good for building SA, this occurrence has highlighted some of the limitations, particularly when it comes to GA. Hawks routinely fly at speeds of 420kts plus at low-level and when you have two unsighted Air Systems

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.

pointing at each other, distances can erode in a matter of seconds and requires quick reactions to prevent a serious accident. The crew of the EV97 thought that the risk of collision was so low that they didn't consider this an Airprox. This was part and parcel to the proactive lookout and hard manoeuvring carried out by the Hawk pilots – a later 'Tally' may have resulted in a different opinion.

As this airspace is routinely used by the Hawks from RAF Leeming, the Station is keen to raise awareness of this activity in the Regional Airspace Users Working Group (RAUWG). RAF Leeming has had a lot of success with the local gliding communities with this forum and hope this collegiate thinking could transpose to the GA community.

Summary

An Airprox was reported when a Hawk and an EV97 flew into proximity at Norham at 1249Z on Monday 14th September 2020. Both pilots were operating under VFR in VMC, the Hawk pilot in receipt of a Basic Service from Swanwick(Mil) and the EV97 pilot in receipt of a Basic Service from Scottish Info.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. 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 looked at the actions of the Hawk pilot. They commended them for their extensive pre-flight planning, noting that they had used all the tools available to try to glean as much situational awareness as possible prior to the flight. Members wondered whether the pilots were aware that Swanwick(Mil) would not be able to see the formation on the radar when they were low-level, but without the RT transcript from the Supervisor's console at Swanwick(Mil) they could not know whether the Swanwick(Mil) Supervisor had informed them or not. However, they also noted that there was no better option, in that there were no ATC units which would have been able to provide a radar service in the area. The Hawk T1 was not fitted with a CWS, and the Board were informed by a military member that although there was a plan to fit a CWS into the Hawk and the funding line was in place, it was unlikely to be introduced until 2023/24. Consequently, without a CWS or any information from ATC, the Hawk pilots had no prior situational awareness that the EV97 was in the area (**CF3**). Members commended the pilot on their look-out and noted that this was a situation where see-and-avoid worked, as the pilot saw the EV97 1NM away and took action to ensure that they remained clear. The Board also commended RAF Leeming's efforts in encouraging attendance of GA members at the RAUWG, noting that such events promoted education and understanding on both sides.

For their part the EV97 pilot was receiving a Basic Service from Scottish Information and was not fitted with a CWS, so also had no prior situational awareness that the Hawks were in the area until they saw them (**CF3**). Again, the Board commended the pilot for their look-out and for not allowing themselves to be distracted by the sight-seeing. Having seen the Hawk, they tightened their right-hand turn in order to increase the separation and judged the risk of collision to be 'low'.

Members then commenced a long discussion about the CADS used by the Hawk pilots for situational awareness on traffic in the low-level system. The system is primarily used by the military and allows pilots to enter their routing and note any potential conflicts, but can be accessed by certain organisations such as the police, coastguard and pipeline inspections. Some members opined that the GA and ATC community could also benefit from the additional situational awareness if they were able to have access to the system. However, military members highlighted that the system was designed for deconfliction planning in the Military Low Flying System to allow units to co-operate and collaborate, with its accuracy (after planning) dependent on an 'on-time-on-track' execution of a flight. As such they

highlighted the danger of assuming that it provided a real-time representation of where military (and limited other) aircraft may be as the information in the CADS was only as good as the route inputted by the pilot and so was only accurate at the planning stage. The security implications of universal access to the system were also raised as an area of potential concern. This view was echoed by ATC members who thought that another computer-based system that was only accurate for planning would have little benefit to them and would not be practicable for everyday controlling.

Turning to the role that ATC had to play, members noted that despite the confusion over exactly what type of service the Hawks were receiving from Swanwick(Mil), under a Basic Service ATC were not required to monitor the aircraft and anyway did not have either aircraft on the radar, so could not provide any Traffic Information (**CF1**, **CF2**). Likewise, the Scottish Information FISO did not have access to a radar and so also had no knowledge that the Hawks were in the area (**CF1**).

In determining the risk, the Board quickly agreed that there had been no risk of collision, however, there followed a discussion about whether this was a Category E event, standard procedures and processes pertained, or whether the timely action taken by both pilots averted a more serious incident, Category C. Eventually, the Director called a vote and by a small majority the Board agreed Risk Category E.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020119		
CF	Factor	Description	Amplification
Ground Elements			
• Situational Awareness and Action			
1	Contextual	• ANS Flight Information Provision	Not required to monitor the aircraft under the agreed service
• Electronic Warning System Operation and Compliance			
2		• Any other event	Aircraft were beneath radar cover
Flight Elements			
• Situational Awareness of the Conflicting Aircraft and Action			
3	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness

Degree of Risk: E.

Safety Barrier Assessment³

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 the Hawks were low-level and therefore could not be seen on the radar.

Electronic Warning System Operation and Compliance were assessed as **not used** because neither aircraft was showing on the radar so STCA would not alert.

Flight Elements:

³ 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 any situational awareness that the other was in the area.

Airprox Barrier Assessment: 2020119		Outside Controlled Airspace		Effectiveness				
Barrier		Provision	Application	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:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○				
Effectiveness	■	■	■	■	□			