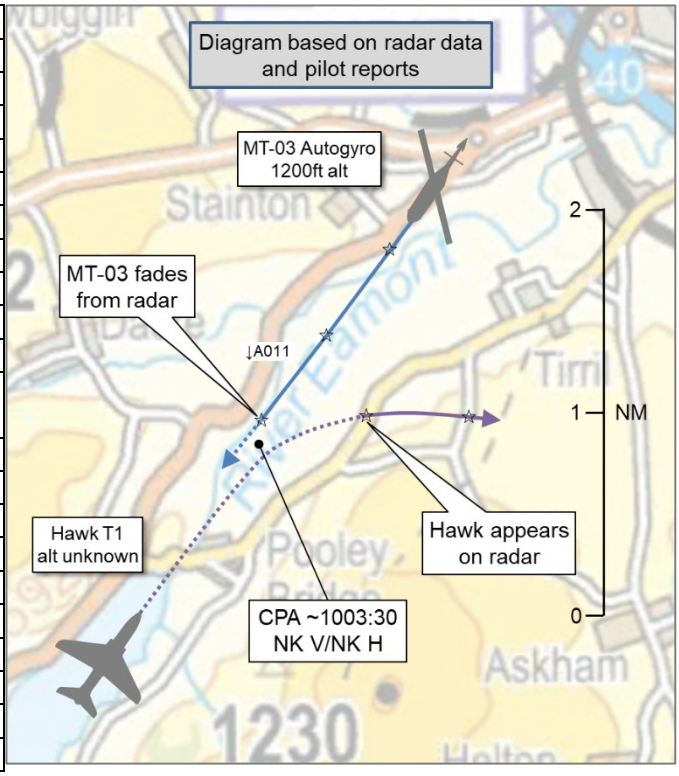
AIRPROX REPORT No 2020132

Date: 25 Sep 2020 Time: ~1003Z Position: 5437N 00249W Location: 3NM SW of Penrith

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk T1	RotorSport MT-03
Operator	HQ Air (Ops)	Civ Helo
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	NK	FL014 (1100ft alt)
Transponder	A, C	A, C, S
Reported		
Colours	Black	Yellow
Lighting	Strobes, nav, landing lights	Strobe
Conditions	VMC	VMC
Visibility	>10km	15km
Altitude/FL	300ft agl	800ft
Altimeter	RPS (990hPa)	NK
Heading	045°	210°
Speed	360kt	70kt
ACAS/TAS	Not fitted	Not fitted
Separation		
Reported	Within 1000ft	50ft V/100m H
Recorded	NK V/NK H	



THE HAWK T1 PILOT reports being the wingman of a 2-ship Hawk T1 formation. Following the cancellation of a front-line affiliation task, they were re-tasked to conduct a composite training sortie including low-level and air combat. Five minutes into the sortie, their leader had a birdstrike and had to return to base. After shadowing them until safe landing, they requested to continue with the sortie as per their authorisation. After a further 10min of low-level, they were exiting Ullswater at approximately 300ft and spotted a yellow gyrocopter directly ahead at less than 1NM. It was co-altitude, travelling in the opposite direction to the flow arrow and they assessed the collision risk as extremely high. They initiated a 4g climbing break to the right to avoid, and estimate their subsequent miss distance to be approximately 1000ft during this manoeuvre. There was no immediate reaction from the gyrocopter, but they could clearly see it had two occupants. It continued SW along Ullswater until they lost visual contact.

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

THE MT-03 AUTOGYRO PILOT reports undertaking a pleasure flight. At approximately the mid-point of their journey they encountered a Hawk which appeared to be taking evasive action and passed their left-hand side at approximately the same altitude and disappeared in seconds. The Hawk was in a right-hand bank and climbing when first seen, at a distance of approximately 1km and travelling directly towards them. The relative speeds of the 2 aircraft meant that avoiding action on their part would be ineffective. They were aware that RAF jets used the area for low-level training so were being vigilant.

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

Factual Background

The weather at Newcastle Airport was recorded as follows:

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METAR EGNT 250950Z 34017KT 9999 FEW021 10/07 Q1004=
METAR EGNT 251020Z 35022KT 9999 SCT022 11/06 Q1004=
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Analysis and Investigation

UKAB Secretariat

Analysis of the NATS radar replay showed the MT-03 autogyro tracking southwest towards Ullswater, at an altitude of 1100ft (FL014) in the moments preceding the Airprox. The final radar sweep before the aircraft faded from radar is timed at 1003:21 (approximately 5-10sec prior to CPA) and can be seen at Figure 1. No other radar returns were observed within at least 10NM of the MT-03. The radar return of the Hawk first appeared at 1003:33 and at an altitude of 1300ft (FL016). A screenshot of the radar replay, taken at 1003:38, is at Figure 2 and showed the Hawk tracking towards the east, which is coherent with the pilot's report that they executed a climbing right-hand turn on sighting the autogyro. The radar return of the MT-03 was still not visible on the replay at this time.

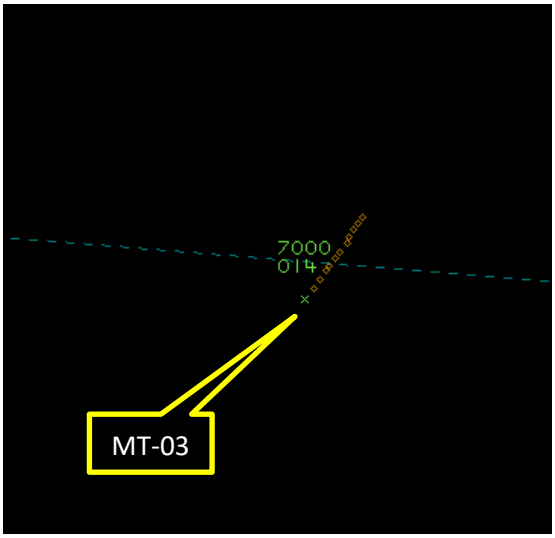


Figure 1 – 1003:21

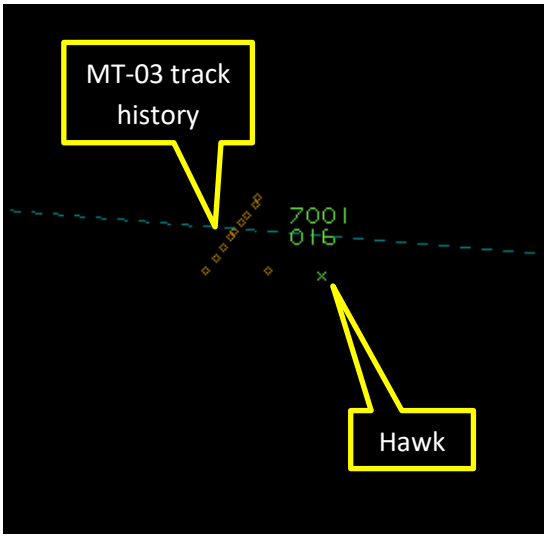


Figure 2 – 1003:38

Although both aircraft were detected by the NATS radar, these detections were not coincident with the time of the Airprox and so an accurate measurement of CPA was not possible.

The Hawk T1 and MT-03 autogyro 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]

Occurrence Investigation

Due to similar occurrences in the same area, the investigation centred on the known gyrocopter operators from [two local] airfields. Telephone conversations took place with the senior operators at [both these local airfields] and ascertained that neither believed it to be a locally-operated gyrocopter. They explained that there has been a proliferation of gyrocopters within the UK and it was most likely to be a visiting aircraft.

[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.

An email was received from the senior gyrocopter operator at [one of the local] airfields stating that this incident had been highlighted to all operators including a wider publication of the RAF Low Flying Chart (LFC) with associated Ullswater and Windermere/Keswick flow arrows.[3] This was for information only, as civilian aircraft are not mandated to follow the LFC flow arrows. The British Rotorcraft Association was also contacted; they agreed to publish a warning to gyroplane pilots who may wish to venture into the Lake District and who may not be aware of the military low-flying traffic.

Comments

HQ Air Command

This Airprox was subject to a Local Investigation. The Lake District is widely utilised for military low-flying operations owing to the diverse terrain and valleys, many of which have flow arrows associated with them. Fast jet low-flying has been in a gradual state of decline over recent years; therefore, the chances of encountering a fast-moving military aircraft are lower. It is important to note that, although it has reduced, the training requirement for military aviators to train at low-level still exists and remains a fundamental skill. All users of the low flying environment, both GA and military, should be alive to that and always expect the unexpected.

A major risk when low flying is the 'blind spots' caused by terrain that affects see and avoid, the detection range of a CWS and radar coverage. This occurrence is a classic example of a late pick up caused by a valley 'blind spot'. Thankfully, see and avoid worked and the Hawk T1 crew was able to take timely and appropriate avoiding action, thus reducing the risk of collision. If the Hawk T1 had been fitted with a CWS, the chances of picking up the MT-03 would have been slim, but one cannot rule out the potential for it having alerted the crew sooner.

It is heartening to learn of the subsequent communications between the military, local airfields and the British Rotorcraft Association with the aims of raising awareness and providing a collegiate approach to prevent a recurrence. As previously mentioned, civilian pilots are not mandated to obey the Low Flying Chart flow arrows. However, there is still the requirement to highlight the hazards associated with flying against a flow arrow at a height where the military fast jets are likely to be (~250–500ft agl). This occurrence also serves as a reminder to military crews to be vigilant and not assume the flow arrow will protect them against other aircraft.

Summary

An Airprox was reported when a Hawk T1 and a RotorSport MT-03 autogyro flew into proximity 3NM SW of Penrith at approximately 1003Z on Friday 25th September 2020. Both pilots were operating under VFR in VMC; neither pilot was in receipt of an Air Traffic Service.

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 considered the actions of the Hawk pilot and heard from a military pilot member that, although the amount of low-flying training conducted by military pilots has been in decline over recent years, military aircraft can still be encountered at low-level in many places in the UK, and particularly in the Lake District as this region offers suitable topography for low-flying skills to be practised. The Board

[3] Details of military flow arrows are available in ENR 6-76 of the UK eAIP at: https://www.aurora.nats.co.uk/htmlAIP/Publications/2020-12-03-AIRAC/html/index-en-GB.html

was encouraged by the efforts taken by the Hawk pilot's unit to inform users of local airfields of common military activity in the Lake District, including the flow arrows in certain lakes that are mandatory for military pilots but which are not depicted on the civil VFR charts (see Figures 3 and 4 below). Notwithstanding, the Board wished to draw to the attention of civil pilots that these flow arrows can be found in the UK eAIP ENR 6-76.

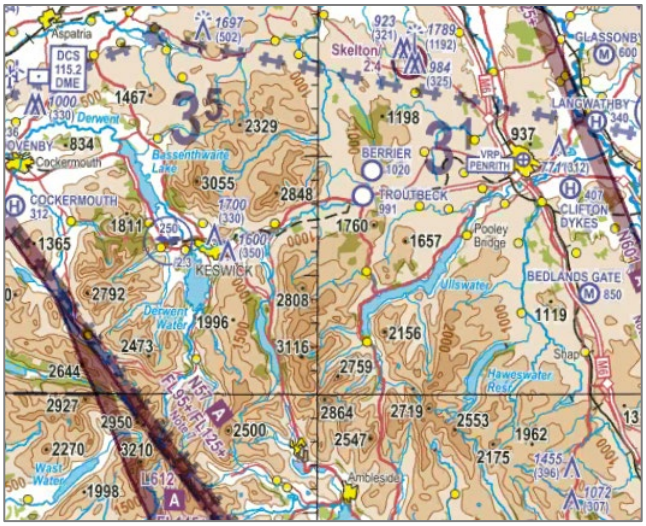


Figure 3 – Civil 1:500,000 VFR Chart

Figure 4 – Military 1:500,000 VFR Chart

There then followed a brief discussion on whether or not these flow arrows should be depicted on the civil VFR charts even though civil pilots do not need to follow them, somewhat akin to the depiction of Military Aerodrome Traffic Zones (MATZs); this could increase civilian pilots' awareness of the flow arrows' existence. The Board stopped short of making a Safety Recommendation in this regard, but Director UKAB undertook, on behalf of the Board, to approach the organisation responsible for the Military Low-Flying System to specifically highlight this discussion and to offer relevant Airprox data as examples to support any educational campaign they may wish to consider running. Returning to the event itself, members agreed that, without any form of CWS on-board the Hawk, the pilot had had no means of gaining situational awareness of the presence of the autogyro (**CF1**). Thus, the pilot had been relying solely on visual detection of any conflicting aircraft. Given the heights at which the 2 aircraft were flying, and the reduction in line-of-sight due to the topography, members agreed that, although the Hawk pilot had seen the autogyro as soon as could have reasonably been expected, this had nevertheless been a late sighting on the part of the Hawk pilot (**CF3**).

Turning to the actions of the autogyro pilot, the Board concluded that they had been in a similar position to the Hawk pilot in terms of situational awareness, in that there had been no way in which the autogyro pilot could have known that the Hawk was travelling at a similar height and in the opposite direction to them (**CF1**). A military member mentioned that an ongoing initiative of a low-level common VHF frequency is in existence for pilots flying north of Latitude N56°. The member opined that had this frequency been in use more widely across the UK then there may have been an opportunity for the pilots to have communicated with each other and thus alert each other to their relative proximity. The Board was heartened to hear that this work had recently been reinvigorated with a view to trialling a VHF common frequency south of Latitude N56°. In the event, and without any situational awareness of the presence of the Hawk, the Board agreed that the autogyro pilot had not seen the approaching Hawk until it was already in its avoiding turn and that, therefore, they could not have materially affected CPA by manoeuvring their aircraft (**CF2**).

Finally, the Board considered the risk involved in this Airprox. Members noted that the Hawk pilot had conducted a 4g turn away from the autogyro as soon as they had seen it. They also wondered if this could have been considered to be 'emergency avoiding action', but again heard from a military pilot member that a 4g turn was a standard manoeuvre for a Hawk aircraft at low-level. Therefore, and taking into account that the Hawk pilot had assessed that they had generated approximately 1000ft of miss-

distance, the Board concluded that, although safety had been reduced, the actions of the Hawk pilot had removed any risk of collision. Accordingly, a risk category C was assigned to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020132		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
	• Situational Awareness of the Conflicting Aircraft and Action		
1	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
	• See and Avoid		
2	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
3	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots

Degree of Risk: C

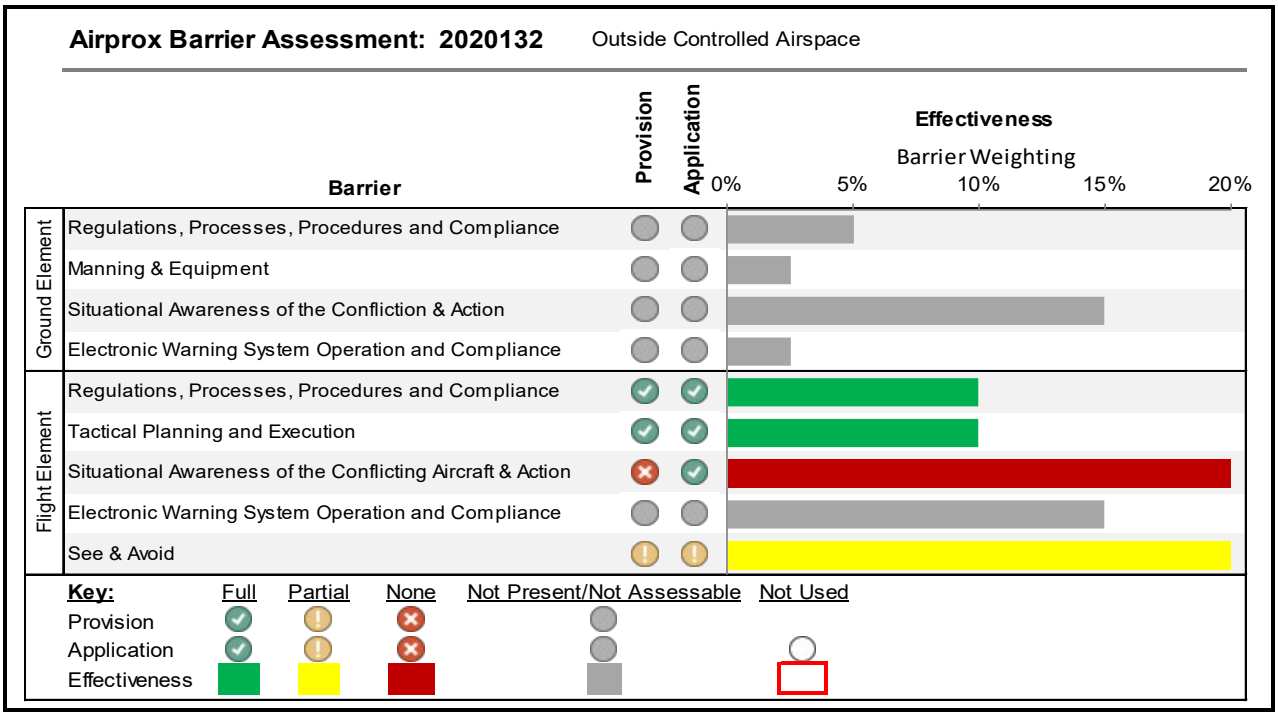
Safety Barrier Assessment[4]

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 of the presence of the other aircraft.

See and Avoid were assessed as **partially effective** because the MT-03 autogyro pilot did not see the Hawk in time to take any action that would have materially affected the separation between the 2 aircraft, and the Hawk pilot only saw the MT-03 autogyro in time to take immediate avoiding action.



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