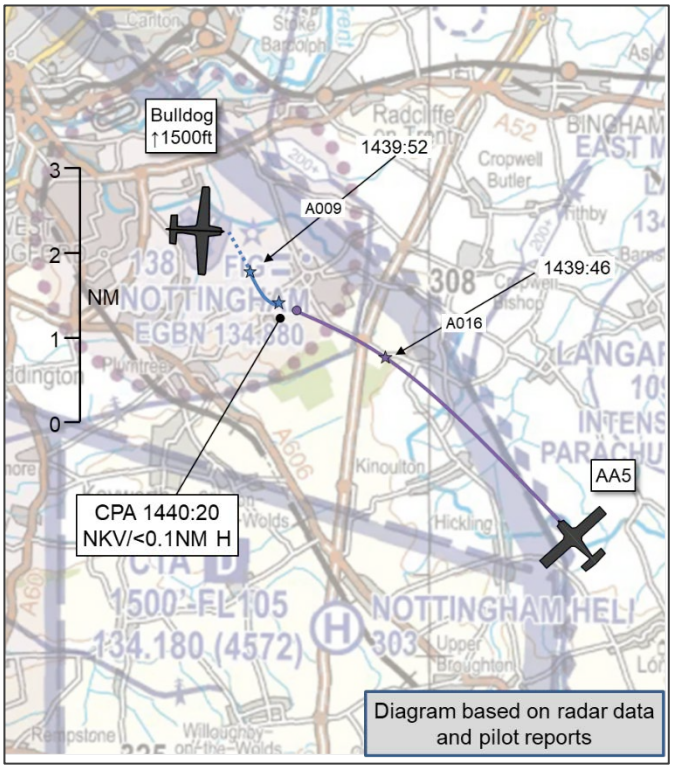
AIRPROX REPORT No 2021039

Date: 23 Apr 2021 Time: 1440Z Position: 5254N 00102W Location: Nottingham

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Bulldog	AA5
Operator	Civ FW	Civ FW
Airspace	Nottingham ATZ	Nottingham ATZ
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Nottingham	Nottingham
Altitude/FL	1400ft	NK
Transponder	A, C	A, C, S
Reported		
Colours	Silver, Blue	White, Red
Lighting	Taxi, Landing	Nav, Beacon, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1500ft	1500ft
Altimeter	QNH	QFE (1024hPa)
Heading	145°	325°
Speed	115kt	NK
ACAS/TAS	SkyEcho	Not fitted
Alert	None	N/A
Separation		
Reported	2-300ft V/0m H	2-300ft V/0m H
Recorded	NK V/ <0.1NM H	



THE BULLDOG PILOT reports that they were departing Nottingham and routing around the top right hand corner of the East Midlands zone before turning south towards Leicester. They initially decided to cruise at 1500ft on the QNH until clear of the airspace above. They heard the AA5 pilot call that they were inbound for an overhead join so thought, as they were just approaching the Nottingham ATZ, that the AA5 would be not below 1800ft on the Nottingham QFE so would be at least 400ft above them. The passenger, (a fellow professional pilot) and Bulldog pilot started looking for the AA5. They were using SkyEcho and had no contact on there so were very much eyes out. Suddenly the passenger saw an aircraft in their 12 o'clock at probably less than 100ft above. The pilot immediately initiated a steep descent and they estimated that they passed about 200-300ft below. The other pilot was talking on the radio and shortly after announced that they had just had an Airprox with a Bulldog. The Bulldog pilot acknowledged that this was them and said that they had seen the other aircraft and taken avoiding action. They noted that as they were heading around controlled airspace they concentrated on that and didn't enter into a discussion on the radio, however, they subsequently contacted the other pilot via e-mail.

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

THE AA5 PILOT reports that they were routing back to Nottingham from the south via Melton Mowbray. They were under the control of Wittering ATC and had been asked by them to report turning overhead Melton Mowbray. Overhead Melton Mowbray at approximately 2400ft they reported as instructed. At this point they had a 6min, 11 mile leg into Nottingham and could see it quite clearly in the distance, so they requested a frequency change to East Midlands. This was approved, but before leaving the controller warned them of an unknown contact in their 12 o'clock at the same height, heading in their direction, 6NM away (just to the south east of Nottingham and in or on the edge of East Midlands 1500ft airspace). They switched to East Midlands radar, however the frequency was very busy and they could

not get in. They then squawked 4572, the listening squawk, and waited to get in. The main reason for not getting in was that the controller was trying to sort out someone who had infringed the airspace on the way to Leicester and was asking them to leave immediately. The intended track would take them through the 1500ft airspace of East Midlands, but as they had not been able to establish contact with East Midlands and get a zone transit, they decided to descend to 1400ft to avoid entering East Midlands airspace. With the knowledge of an unknown aircraft heading for them, presumably descending to clear infringed airspace, they also decided to alter course slightly to the east to completely avoid the 1500ft airspace. They were mindful that Langar was active with parachute drops which narrowed their corridor slightly. By now Nottingham was approaching rapidly so they radioed them for joining instructions, they were at 1500ft. As they had established that RW09 was in use, and that the circuit was not busy, they announced that they would descend deadside and join crosswind RW09. There was no point or intention to climb back up to 2000ft for an overhead join, and at no point did they announce this as their intention. Whilst all of this was happening the pilot and fellow pilot passenger were keeping a good lookout for the contact that they had been told was heading towards them. As the pilot announced the deadside descent they spotted an aircraft, approximately 200ft below, passing slightly right to left underneath their aircraft, the colour of which blended into the ground below. They could see that the other aircraft had taken a rapid descent and so avoiding action was not necessary. They mentioned a possible Airprox on the radio, to which the reply came that they had seen the AA5. A fellow pilot based at Nottingham landed shortly afterwards and said they also spotted the plane coming towards them and gave it a wide berth. The pilot wondered whether the Bulldog pilot was unaware of the airspace restrictions surrounding Nottingham.

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

THE NOTTINGHAM AGO reports that they didn't see the incident as they were occupied with other tasks. They were using RW09 and recalled that they heard the Bulldog pilot tell the AA5 pilot that they had had an Airprox. The AA5 was inbound but the AGO could not recall the position in the circuit.

Factual Background

The weather at East Midlands was recorded as follows:

```
METAR EGNX 231420Z 11010KT 060V160 CAVOK 17/M01 Q1027
```

Analysis and Investigation

UKAB Secretariat

Although neither pilot was receiving a radar service at the time, the incident could be seen on the NATS radars. At Figure 1, the AA5 could be seen displaying a Wittering squawk and was indicating 2000ft. An unknown aircraft was 6NM on a reciprocal heading, indicating 2100ft and was likely to be the subject of the Traffic Information given to the AA5 pilot prior to leaving the Wittering frequency.

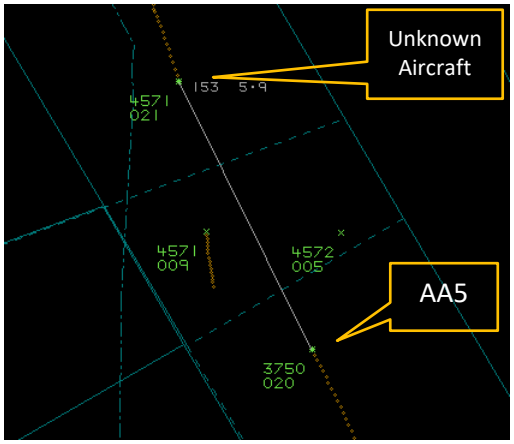


Figure 1: 1434:17

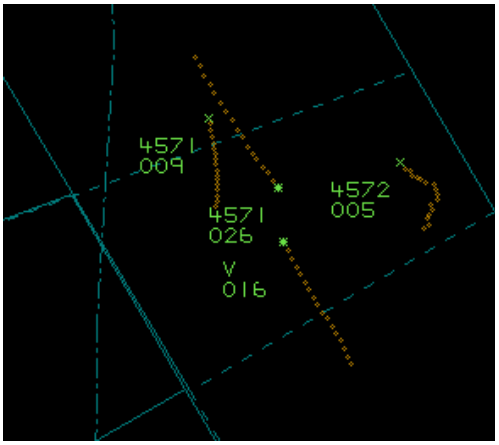


Figure 2: 1435:35

The AA5 squawked changed to 7000, indicating that the pilot had changed to their en-route frequency and descended to 1600ft. The unknown traffic climbed to 2600ft (Figure 2) and the two aircraft crossed shortly afterwards.

As the AA5 transited closer to Nottingham, the squawk disappeared from radar and only the primary contact was visible with the last Mode C indicating 1600ft. At 1439:55 (Figure 3) a radar contact could be seen in the vicinity of Nottingham at 900ft this was likely to be the Bulldog climbing out, but without Mode S this could not be confirmed. The radar tracks were then subject to 'jitter' as the two aircraft approached, particularly the primary only contact of the AA5. The single source Clee Hill radar showed the two aircraft at around 0.3NM apart with no Mode C on the AA5, after which the AA5 disappeared from radar (Figure 5), reappearing at 1440:27 (Figure 6) after the two aircraft had crossed. The veracity of the Mode C on this radar screenshot could not be confirmed because of the radar jitter.

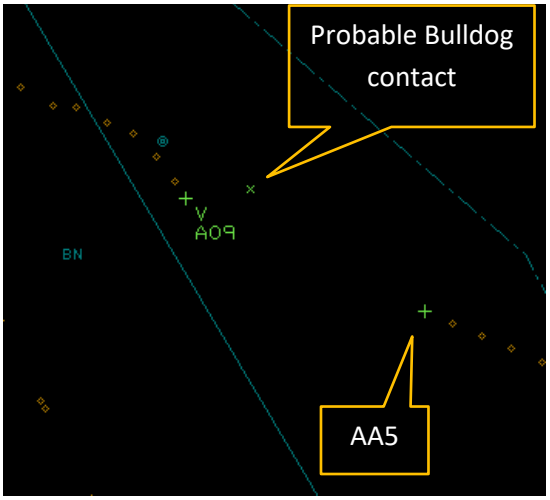


Figure 3: 1439:55

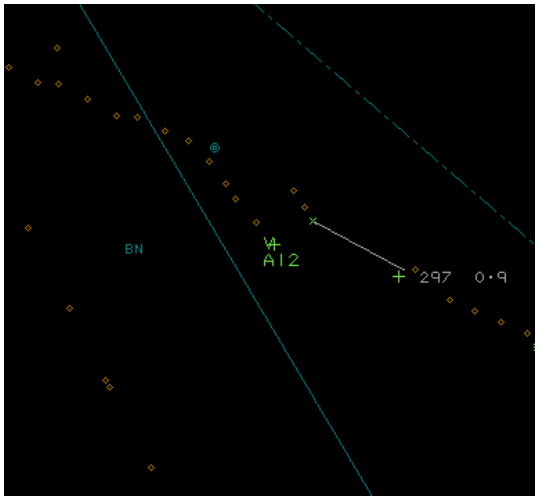


Figure 4: 1440:08

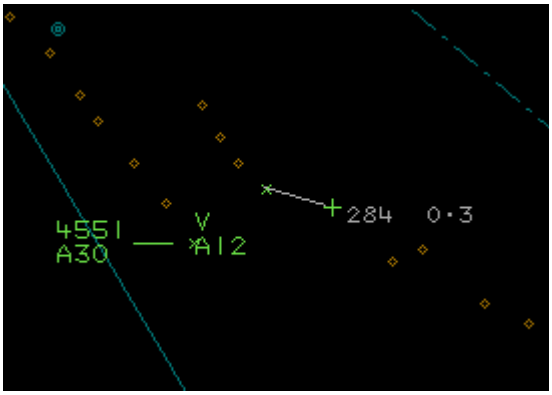


Figure 5: 1440:17

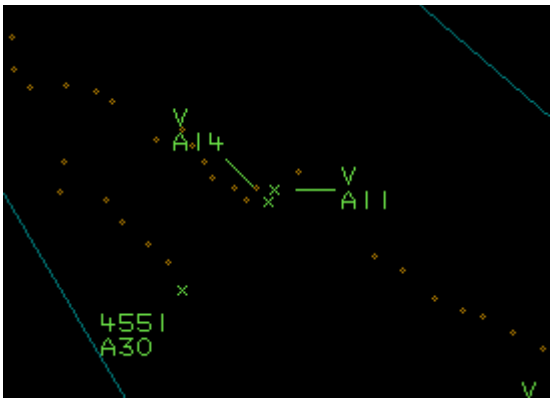


Figure 6:1440:27

The Bulldog and AA5 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] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[3]

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Summary

An Airprox was reported when a Bulldog and an AA5 flew into proximity 3NM southeast of Nottingham at 1440Z on Friday 23rd April 2021. Both pilots were operating under VFR in VMC and both were in receipt of an AGCS from Nottingham.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the AGO involved. 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 Bulldog pilot, they were departing from Nottingham and heard the AA5 pilot call to join, but expected it to join via the overhead, when in fact it was joining for a deadside descent. The SkyEcho in the Bulldog did not alert to the AA5, and the Board were not sure whether this was down to the AA5's transponder or whether it was general aerial obscuration (**CF2**), but it further weakened the situational awareness of the Bulldog pilot (**CF1**) and members noted that it proved that the technology was not infallible and emphasised the continued need for good look-out. Although the pilot saw the AA5 late, they did manage to take effective avoiding action by descending, increasing the vertical separation (**CF3**).

The AA5 pilot had had to alter their plan to join Nottingham due to the difficulties in contacting East Midlands for clearance through their airspace, consequently they approached at a lower altitude than necessary for an overhead join. Without an RT recording, the Board did not know exactly what was said on the joining call, but members noted that it was always worth reiterating the height if joining at an unusual altitude, not least to cue other pilots where to look. Although the pilot was looking out for traffic that had been previously called to them (and had already passed by) they had no specific situational awareness that the Bulldog was departing the circuit and would be a threat (**CF1**) and members thought it was likely that the Bulldog was beneath the nose of the aircraft as they approached, consequently did not see it until the other pilot had already begun the avoiding action (**CF3**). Members noted that for that reason it was always a good idea to include some clearing turns when flying on a continuous heading for some time.

The role of the AGO was briefly discussed, and whilst no criticism was levelled here, some flying members commented that the level of service was variable at airfields around the country, with some having a dedicated AGO passing Traffic Information to everyone and others where only the bare minimum was provided. They noted that this could make it difficult if pilots were used to operating at a unit which normally received an excellent service, but highlighted that if in doubt as to the position of other circuit traffic a call to either the AGO, or the other pilot, was always a better alternative than pressing on and hoping for the best.

Finally, the Board assessed the risk of collision. Some members thought that the description of the avoiding action taken by the Bulldog pilot, with the late sighting and the steep descent, meant that the incident had been risk bearing. However, others countered that the avoiding action, whilst later than desirable, had been effective in eliminating the risk of collision and that the description of the separation by both pilots, at 2-300ft was sufficient to assess this as safety degraded. The latter view prevailed and the Airprox was assessed as Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021039			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
1	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
2	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
3	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots

Degree of Risk: C.

Safety Barrier Assessment[4]

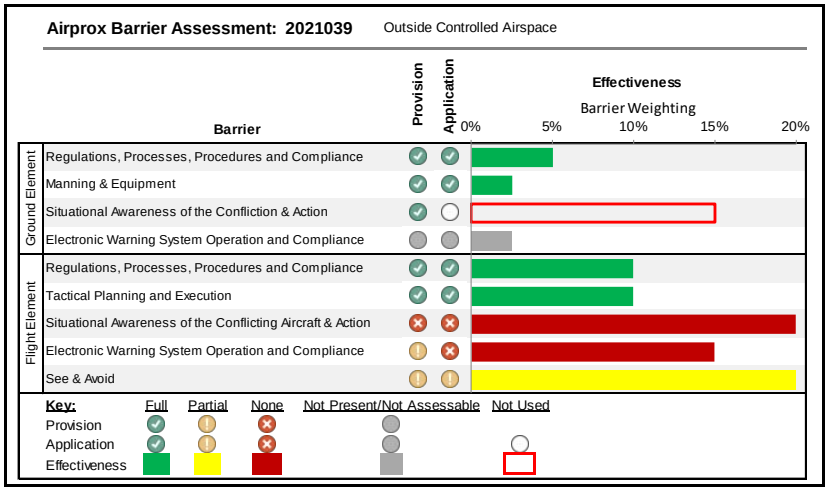
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had any situational awareness on the other prior to the Airprox.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the SkyEcho in the Bulldog did not detect the AA5.

See and Avoid were assessed as **partially effective** because although it had been a late sighting by both pilots, the Bulldog pilot managed to take effective 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.