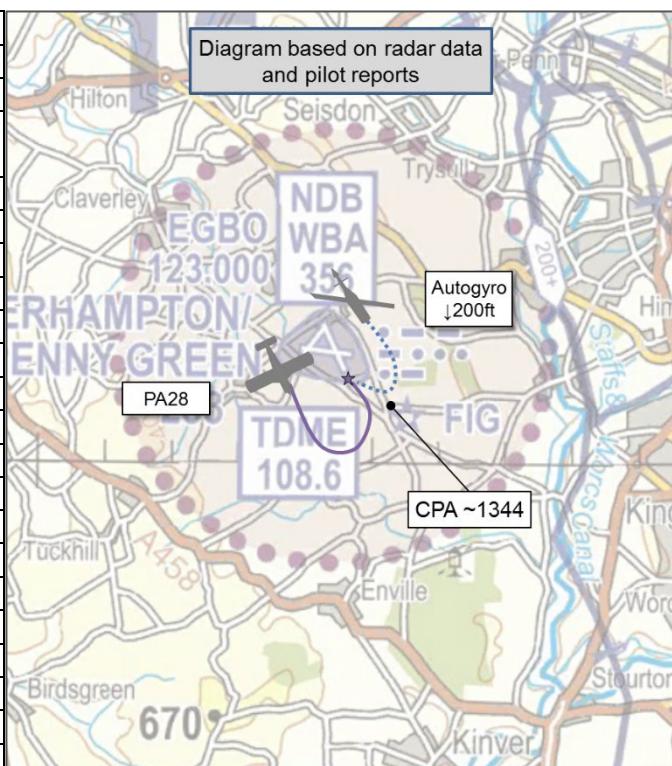


## AIRPROX REPORT No 2019212

Date: 05 Jul 2019 Time: 1340Z Position: 5230N 00215W Location: Halfpenny Green

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	Cavalon Autogyro
Operator	Civ FW	Civ Helo
Airspace	Halfpenny Green ATZ	Halfpenny Green ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Halfpenny Green	Halfpenny Green
Altitude/FL		
Transponder	A, C	A, C
<b>Reported</b>		
Colours	Red, White	White
Lighting	Strobes	Strobes, Nav
Conditions	VMC	VMC
Visibility	NR	5km
Altitude/FL	400ft	300ft
Altimeter	QFE (1008hPa)	QFE
Heading	340°	NK
Speed	75kt	NK
ACAS/TAS	Not fitted	PilotAware U/S
Alert	N/A	None
<b>Separation</b>		
Reported	0ft V/50m H	NK
Recorded	NK	



**THE PA28 PILOT** reports that he was conducting an instructional flight with a student with a lapsed SEP(L) rating. The instructor was in the front-right seat. The student was carrying out the handling with the instructor conducting the RT. At 1330, they called for a re-join. They were given the QFE and RW and told that there was one autogyro in the LH circuit. They elected to join downwind, with the autogyro on the crosswind leg in the climb. They turned onto the downwind leg at 1000ft and called downwind to land. The AFISO advised them to call final. Very soon afterwards the autogyro pilot called downwind and was advised to call final, and told there was one ahead. The PA28 pilot could see it behind and inside them, in the 7 or 8 o'clock position at a range of about  $\frac{3}{4}$  nm. The autogyro pilot then reported 'climbing to the overhead at 1500ft for a right-hand PFL'. The PA28 pilot turned base leg and configured for approach, again he visually acquired the autogyro in the overhead a little to the east of RW34 at about 1500ft. They turned onto final approach on an extended centreline at 600ft, the final call was delayed due to other radio traffic, one call of which was the autogyro pilot calling commencing PFL. He called final at around 400ft and was told to land at his discretion. He acknowledged, and immediately afterwards the autogyro pilot called final touch-and-go. He looked to visually acquire the autogyro, but couldn't see it from the right-hand seat so concluded it must be behind them, the student was fully occupied with flying the aircraft at the time. The autogyro suddenly descended from directly above and behind on a steep approach, passing no more than 50m ahead, through their flight path towards the runway threshold. The instructor took control and initiated a full-power go-around and turned right to clear the runway centreline. He called going around and continued to do another circuit to land. The autogyro pilot continued with his circuit detail completely oblivious to the near-collision that he had been responsible for. He later spoke with the AFISO and they concluded that the autogyro pilot had no awareness of their presence on final approach.

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

**THE CAVALON AUTOGYRO PILOT** reports that he was carrying out a circuit detail with multiple powered, glide and hover descents with the circuit clear. After leaving the circuit to simulate an engine failure he re-joined the circuit behind the PA28. On his downwind call he requested clearance to carry out a PFL using a right-hand circuit to RW34 so that he could keep the runway threshold in sight at all times. The FISO requested that he called commencing the PFL. He then turned to a high-key position abeam the RW34 threshold, observing the PA28 continuing downwind. He had flown a tight circuit, so almost immediately called commencing the PFL, which was acknowledged by the AFISO, he was not told there was one ahead and he now believed he had priority to land. The entire descending turn was conducted well within the airfield boundaries. Once abeam the threshold, effectively on the deadside at 600ft, he was at an AOB that meant he could not see any traffic in the approach to RW34 because the autogyro is side-by-side seating and the PIC sits on the right. When he was at an angle of about 70° off the centreline and at 300ft he heard the PA28 pilot call finals, at which point he realised he was late in making his final call, so he immediately alerted the FISO and the PA28 of his position. He did not have the PA28 in sight, but believed it to be a mile from the threshold and some distance behind him, so he felt the safest thing to do was to carry on with the approach, carry out a touch-and-go and clear the runway for the aircraft behind. As he was lifting up after touchdown, he heard the PA28 pilot call going around. At about 50ft he saw it in his 3 o'clock, on the deadside, at about 300ft. He was unaware of the seriousness of the incident until after he had landed and spoken to the AFISO. He noted that he tried to carry out the Farley personal currency checklist<sup>1</sup> on a regular basis, and had conducted numerous PFLs on a left-hand circuit when flying with a fellow passenger, but found that flying a right-hand circuit was preferable when flying solo. Previously he had thanked the AFISO for allowing the manoeuvre contrary to the circuit pattern and had been informed that they watched him all the way around and that this knowledge may have given him a false confidence in performing the manoeuvre. Autogyros had been operating at the airfield for the last 4 years and the characteristics should be known by all other users, the glide ratio is a fraction of the fixed-wing aircraft, and calling a PFL at abeam the threshold is effectively a finals call for this advanced manoeuvre in autorotation, as would be the case for a helicopter. He opined that he had noticed that some flying school aircraft call finals at a very late stage in the circuit pattern, often at 200ft and 500m from the threshold, and he wondered whether they were distracted by the teaching. With hindsight he believed that the PA28 pilot was not aware of his position and intentions and it may have been wise to have got an acknowledgement that he was ahead of them, but at the time he believed they were visual and had expected them to extend downwind to fit in behind him. He was also disappointed that the FISO had been unaware of their relative positions and thought it was a matter of concern that the airfield recording system was unserviceable.

**THE HALFPENNY GREEN AFISO** reports that the PA28 pilot joined the left-hand circuit for RW34 and reported downwind. The autogyro had flown a series of left-hand circuits and reported downwind for RW34, he was informed that there was traffic ahead. He acknowledged and said he would climb to 1500ft for a PFL, and make a right-hand circuit. He was asked to report commencing the PFL, which he subsequently did. The FISO could not see the autogyro and had to walk to the far side of the tower before being able to see it in the overhead. He saw the PA28 on final at about 1nm and the autogyro still in the overhead. The PA28 pilot reported final and he responded with 'land at your discretion' but the autogyro pilot transmitted at the same time and he just heard the word 'final', he saw the autogyro over the RW34 threshold at a height of 50ft with the PA28 close behind at approximately the same height, he estimated horizontal separation to be 100m. The PA28 appeared to be going around, climbing and turning slightly right away from the autogyro, which continued to carry out a touch-and-go. Both aircraft then climbed straight ahead and turned into the left-hand circuit.

## Factual Background

The weather at Birmingham was recorded as follows:

METAR EGGB 051320Z 27008KT 220V340 CAVOK 23/08 Q1018=

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<sup>1</sup> GASCO recommended currency checklist

## Analysis and Investigation

### UKAB Secretariat

The PA28 and 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<sup>2</sup>. When two or more aircraft are approaching an aerodrome to land, the aircraft at the higher level shall give way to the aircraft at the lower level, but the latter shall not take advantage of this rule to cut in front of another which is in the final stages of an approach<sup>3</sup>.

### Summary

An Airprox was reported when a PA28 and a Cavalon autogyro flew into proximity in the Halfpenny Green visual circuit at 1440hrs on Friday 5<sup>th</sup> July 2019. Both pilots were operating under VFR in VMC, and both were in receipt of an AFIS from Halfpenny Green.

### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from the pilots of both aircraft, radar photographs/video recordings and a report from the AFISO 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.

The Board first looked at the actions of the PA28 pilot. Members noted that he was established in the visual circuit and knew about the autogyro conducting the PFL but had lost sight of it as its pilot positioned towards his high-key point. Some members wondered whether the PA28 pilot was familiar with the dynamics of an autogyro PFL, and whether he had assimilated that it would be making a very steep approach that might put the two aircraft into conflict (CF7). Although the autogyro pilot was required to integrate and sequence with him in the visual circuit, GA members commented that, in these circumstances, once he lost sight of the autogyro a precautionary call requesting its position would have been of value to update his situational awareness before he himself turned final and committed to his approach. As it was, the positioning and steep angle of the autogyro's approach meant that he didn't see it until it descended directly in front of him (CF9).

Turning to the Autogyro pilot's actions, helicopter members confirmed that, when conducting a PFL, an autogyro doesn't glide as such but descends rapidly and steeply like a helicopter. This led them to comment that perhaps the 'final' call would be more appropriate when commencing the descent at high key because clearly the pilot felt that he was committed to the runway from that point. Notwithstanding, the autogyro pilot knew that the PA28 was in the circuit because the AFISO had told him about it and he had reported being visual with it when it was downwind. Having consequently elected to climb to high-key to allow the PA28 space, it was then for the autogyro pilot to ensure that he would remain integrated with the PA28 during his PFL manoeuvre. It appeared to the Board that the autogyro pilot had then lost situational awareness on the PA28 and its projected track such that when he commenced his PFL he did not assimilate that the PA28 would be a factor (CF7). Understandably focused on his PFL manoeuvre, the PA28 was nevertheless ahead in the circuit, and at a lower level on finals, so it was for the autogyro to integrate behind it (CF3, CF5, CF8). Some members wondered whether he took the acknowledgement from the AFISO that he would be conducting a PFL as permission, and that the AFISO would have only acknowledged if he thought the autogyro would be clear to conduct his manoeuvre. The Board reminded pilots that an AFISO cannot give (or deny) permission to aircraft when airborne, and was not responsible for the sequencing of aircraft in the circuit. The autogyro pilot's late finals call had not helped matters because in its absence the PA28 pilot was led to believe that the autogyro was integrating behind him (CF6). Ultimately, members wondered why, having heard the PA28 pilot call final before him, the autogyro pilot hadn't just discontinued his approach and climbed back up to high-key (CF4); the Board agreed that it had been inappropriate for the autogyro pilot to

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<sup>2</sup> SERA.3205 Proximity.

<sup>3</sup> SERA 3210 Right-of-way.

continue his approach after another aircraft had called finals and him not being in visual contact with that aircraft.

The Board also looked at the actions of the AFISO and, although noting that he was not required to integrate traffic into the visual circuit (**CF2**), some members wondered whether, given the highly dynamic nature of the autogyro's PFL he could have provided more Traffic Information to the pilots about each other, although they acknowledged that he was having difficulty seeing the autogyro in the overhead. Given that the PA28 pilot may not have fully known what to expect from the autogyro's PFL, members thought that more information may be required for other pilots in order for them to understand the potential confliction points. The Board noted that there appeared to be no published procedures specifically for autogyros in the Halfpenny Green aerodrome manual (**CF1**) and, although they stopped short of making a recommendation to that effect, they urged the Halfpenny Green operating authority to consider publishing formal procedures in the aerodrome manual for all operators to see.

In considering the risk, the Board agreed that this had been a very close call, especially given that neither pilot had seen each other's aircraft until after CPA. Some members thought that the dynamics of the situation had meant that it had only stopped short of an actual collision because providence had played a major part in events (Category A). Others opined that, although they agreed that the aircraft had only missed each other by good fortune, the PA28 pilot's assessment of 50m horizontal separation indicated that the encounter had not been so close as to describe it as having been reduced to the bare minimum. After much discussion the latter view prevailed and the risk was assessed as Category B.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

	2019212		
CF	Factor	Description	Amplification
<b>Ground Elements</b>			
<b>• Regulations, Processes, Procedures and Compliance</b>			
1	Organisational	• Organisational Documentation and Publications	Inadequate regulations or procedures
<b>• Situational Awareness and Action</b>			
2	Contextual	• Situational Awareness and Sensory Events	Not required to monitor the aircraft under the agreed service
<b>Flight Elements</b>			
<b>• Regulations, Processes, Procedures and Compliance</b>			
3	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
<b>• Tactical Planning and Execution</b>			
4	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
5	Human Factors	• Aircraft Navigation	Did not avoid/conform with the pattern of traffic already formed
6	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>			
7	Human Factors	• Understanding/Comprehension	Pilot did not assimilate conflict information
8	Human Factors	• Monitoring of Other Aircraft	Pilot did not sufficiently integrate with the other aircraft
<b>• See and Avoid</b>			
9	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
10	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: B.

#### Safety Barrier Assessment<sup>4</sup>

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

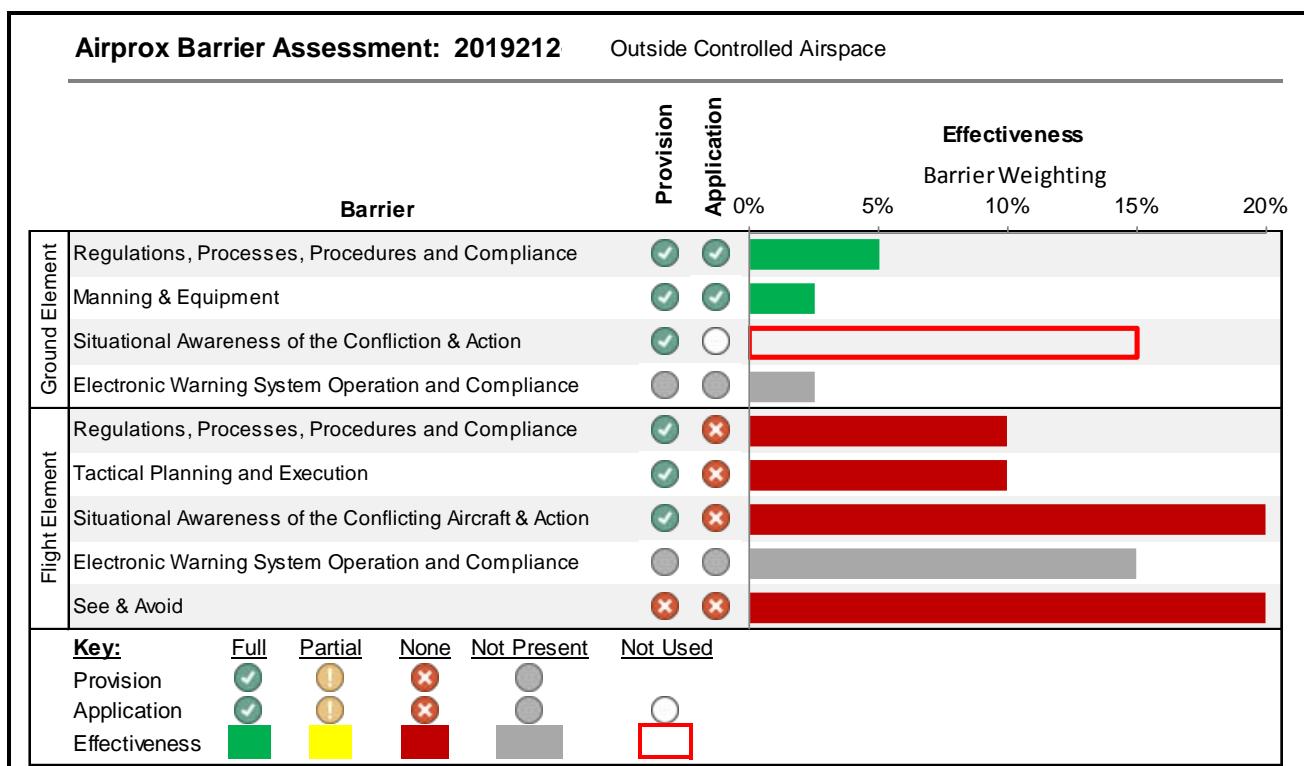
#### **Flight Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the autogyro pilot did not give way to the PA28 who was on finals and lower than him.

**Tactical Planning and Execution** was assessed as **ineffective** because the autogyro pilot should have delayed starting his PFL to allow the PA28 to get ahead.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the autogyro pilot was aware of the PA28 but did not alter his circuit to allow for it.

**See and Avoid** were assessed as **ineffective** because neither pilot saw the other before CPA.



<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).