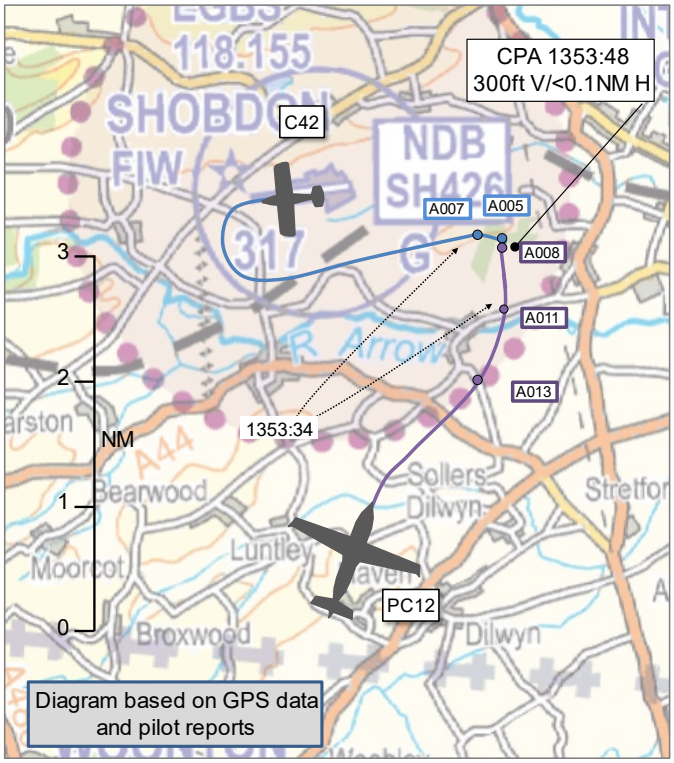
AIRPROX REPORT No 2024091

Date: 08 May 2024 Time: 1354Z Position: 5214N 00250W Location: Shobdon

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C42	PC12
Operator	Civ FW	Civ Comm
Airspace	Shobdon ATZ	Shobdon ATZ
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Shobdon	Shobdon
Altitude/FL	NK	FL007
Transponder	Not fitted	A, C, S
Reported		
Colours	White	Grey
Lighting	Nil	Landing, Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	500ft	1300ft
Altimeter	QFE (1017hPa)	QNH
Heading	080°	040°
Speed	70kt	110kt
ACAS/TAS	PilotAware, SkyEcho	TCAS II
Alert	Information	None
Separation at CPA		
Reported	300ft V/0m H	500ft V/0m H
Recorded	300ft V/<0.1NM H	



THE C42 PILOT reports that they undertook a short local flight. They departed from RW26 and climbed into the microlight circuit, which is 500ft QFE. Shortly after they departed, another aircraft (a flexwing) departed from RW26 behind them. They were flying using SkyDemon which was connected to their CWS unit and they also had [another CWS] operating to transmit their location via ADS-B. As they were intending to depart to the east, their intention was to depart the microlight circuit on the downwind leg and to remain at 500ft QFE to pass below the base leg of the powered circuit, which is at 1000ft QFE, before climbing away en-route. They had advised the Shobdon FISO [sic] of their intentions. As they were on the downwind leg, the FISO [sic] at Shobdon was talking to [PC12 C/S] who announced their intention to join on the base-leg of the powered circuit. The FISO [sic] asked them several times if they could see two microlights in the microlight circuit, specifically mentioning their C42 and the flexwing. The PC12 pilot confirmed that they could see the flexwing, which was behind their own aircraft [the C42], and departing the circuit on the crosswind leg but that they could not see the C42. The C42 pilot was looking to their right to see whether they could see the PC12, as they should have been visible from their position, if they were indeed on the base-leg of the powered circuit at the correct height. They were unable to see it, so assumed that it must have been closer to them and therefore obscured by their right wing. At this point they were receiving warnings from the CWS about a nearby aircraft above and to the right. The Shobdon FISO [sic] was still trying to determine if [the PC12 pilot] could see them. They assessed that the PC12 was descending towards them, so turned slightly to right to try and see it. As they changed course slightly the PC12 appeared just in front of their right wing, a few hundred feet above, at which point they assessed that the risk of a collision was extremely high so took avoiding action, which involved rapidly descending from 500ft to approximately 200ft QFE. Once confident that the PC12 was clear, they climbed to their en-route altitude.

The pilot assessed the risk of collision as ‘High’.

THE PC12 PILOT reports that, from memory, Shobdon Radio mentioned a C42 with which they then became visual. It was below and they considered the C42 to be no factor. They believed that the traffic was tracking southeast leaving the Shobdon ATZ. No avoiding action was required, and they landed as planned from entering a left-base for RW26.

The pilot assessed the risk of collision as 'None'.

THE SHOBDON AGO reports that they observed the PC12 from the VCR on left-base, but inside the usual fixed-wing circuit. It appeared that the C42 was above the PC12. Their next call was going to be to the C42 pilot, but as it rapidly descended clear of the PC12 they did not make the call.

Factual Background

The weather at Shawbury was recorded as follows:

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METAR EGOS 081350Z 25007KT 9999 FEW036 20/10 Q1027 NOSIG RMK BLU BLU=
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The AIP entry for Shobdon states:

1 CIRCUITS

a. Circuit directions:
   i. Powered aircraft circuit: Runway 26 - LH; Runway 08 – RH (south of airfield);
   ii. Gliding circuit (including glider tug): opposite direction to powered aircraft (north of airfield).
b. Circuit heights:
   i. Powered fixed-wing circuits at 1000 FT QFE to the south of the villages of Pembridge and Eardisland;
   ii. Microlight circuits at 500 FT QFE;
   iii. Helicopter circuits at 700 FT QFE inside the normal circuit pattern;
   iv. Gliding circuit (including glider tug) at variable heights as necessitated.
c. Radio failure procedure for a powered aircraft in VMC is for the circuit to be joined overhead not below 2000 FT QFE and to let down on the dead side, joining over the upwind end of the active runway, observing any light signals displayed.
d. Radio failure procedure for a glider in VMC is to join the normal glider circuit, keeping a good look-out for other traffic and land when safe on an available runway.

Analysis and Investigation

Shobdon Investigation

RW26LH was in use, with no significant weather. Traffic levels throughout the day were predominantly low with periods of medium activity. It was an Air Ground Service as the duty FISO was off sick. There were two staff in the VCR – one station validated A/G Operator and one trainee A/G Operator.

The AGO observed the PC12 from the VCR on left-base, but inside the usual fixed-wing circuit. It appeared that the C42 was above the PC12. The AGO's next call was going to be to the C42 pilot but as it rapidly descended clear of the PC12 they did not make the call.

The pilot of the C42 reported that when the PC12 pilot was asked by the AGO if they were visual with the C42, it prompted them to look to their right, at which point they saw the PC12. They immediately descended, which was observed from the tower.

Summary of Radio transmissions with aircraft:

Time	Unit	Transmission
1340	C42 C/S	Shobdon Information Good afternoon [C42 C/S] a C42 on the apron, 2 POB for a local flight request airfield information and radio check over
	AGO	[C42 C/S] – Shobdon Radio Good afternoon you're readability 5, RW26 LH circuit QNH 1029

	C42 C/S	RW26 LH circuit, QF correction QNH 1019 [C42 C/S]
	AGO	QNH 1029
	C42 C/S	1029 [C42 C/S]

Another aircraft called inbound and was given airfield details

Time	Unit	transmission
	Flexwing C/S	Shobdon Radio – [flexwing C/S] Flexwing on the western apron 2 POB for a local flight 30min request radio check and taxi information and outside air temperature please.
	AGO	[Flexwing C/S] – Shobdon Radio you're readability 5. It's RW26 LH circuit QNH 1029
	Flexwing C/S	1029 and could I have the outside air temperature please.
	AGO	Yes, it's 20.6° C
	Flexwing C/S	20.6 [Flexwing C/S]
	PC12 C/S	[PC12 C/S] with you we've got 23 miles to run and in the descent for joining on a left base for 26
	AGO	Station calling Shobdon Radio could you repeat your callsign
	PC12 C/S	Yeah [PC12 C/S] positioning for a left-base 26
	AGO	[PC12 C/S] Shobdon Radio It's RW26 LH circuit QFE 1017
	PC12 C/S	Roger QNH?
	AGO	QNH 1029 afternoon [name]
	PC12 C/S	29 miles to run, left-base if we can
	AGO	Roger what direction are you coming in from?
	PC12 C/S	From the south
	AGO	Roger there is no circuit traffic at present. We just have some aircraft to get out.

An aircraft called for departure and was given the surface wind.

	C42 C/S	[C42 C/S] holding at Alpha ready to depart
	AGO	[C42 C/S] Roger aircraft in the climb-out. Instant wind 210 – 9 knots
	C42 C/S	[C42 C/S]
	Flexwing C/S	[Flexwing C/S] holding at Alpha for RW26 north side grass.

	AGO	[Flexwing C/S] Roger aircraft in the climb-out. Instant wind 210 - 5 knots
	Flexwing C/S	Copy traffic in climb-out. Lining-up and taking-off
	AGO	[PC12 C/S] position report please
	PC12 C/S	Yeah, we've got 4 miles to run positioning for a left base
	AGO	Roger we've just some aircraft just departed – a 152, C42 and a Flex. They haven't reported leaving the circuit as yet.
	PC12 C/S	Roger we are visual – can see somebody just departing

First aircraft reported leaving the circuit, and the destination is confirmed by the AGO.

	AGO	[C42 C/S] we've got a PC12 inbound. It's setting up for a left base join just to advise you of the traffic
	C42 C/S	Thank you. We are going to depart on the downwind and head towards Leominster [C42 C/S]
	AGO	[C42 C/S] roger [Flexwing C/S] did you copy the Traffic Information?
	Flexwing C/S	Affirm we are departing to the south [Flexwing C/S]
	AGO	Roger the PC12 is inbound from the south looking for a left base join
	Flexwing C/S	Roger that we'll keep a good lookout [Flexwing C/S]

Another aircraft reported 7 mile final

	AGO	[C/S] Roger we have a PC12 inbound reported 4 miles to join left base
		Call acknowledged
	PC12 C/S	[PC12 C/S] left base for 26
	AGO	Roger have visual with you. Do you have the C42 visual?
	PC12 C/S	Negative where is he?
	AGO	He's probably above you but just crossing in front of you. Should be higher than you

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and although the PC12 could be seen on the radar and was identifiable through Mode S data, the C42 did not display on the radar at all. At Figure

1 the PC12 could be seen approaching the airfield from the south. Other aircraft can be seen in the visual circuit, including the aircraft that departed ahead of the C42.

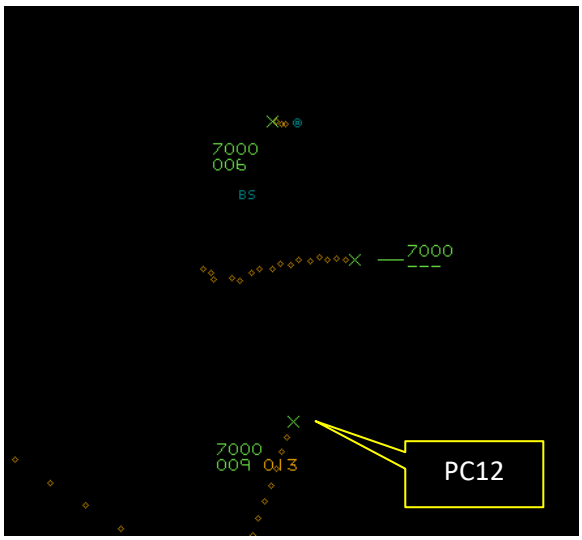

Figure 1 – 1352:19

Both pilots provided GPS data, although the timing on the two GPS sources differed. By comparing both sets of data and aligning the timings with the NATS radar replay, the diagram at the top of the report could be constructed and a separation calculated.

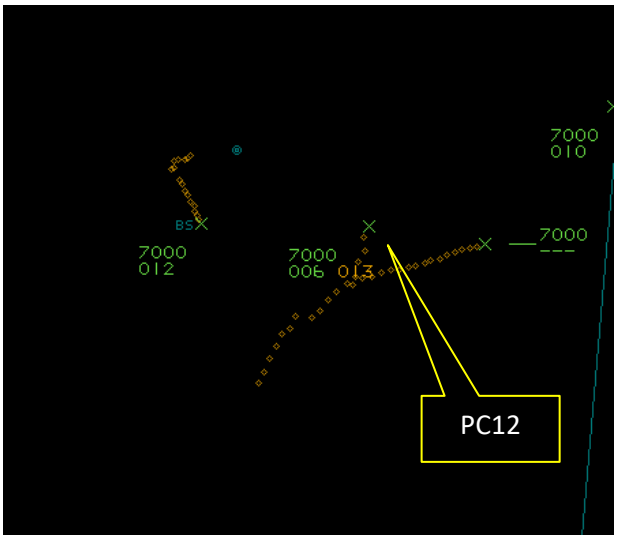

Figure 2 - Approximate CPA ~1353:46

The C42 and PC12 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] 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.[2]

Summary

An Airprox was reported when a C42 and a PC12 flew into proximity at Shobdon at 1354Z on Wednesday 8th May 2024. Both pilots were operating under VFR in VMC, both in receipt of an AGCS from Shobdon.

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS data 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.

The Board first looked at the actions of the C42 pilot. They had been departing downwind and had told the AGO of their intentions. They had heard the PC12 pilot call for a left-base join and had received warnings from their CWS (**CF6**) but at first could not see the PC12. When they had heard the AGO ask the PC12 pilot whether they had been visual with the C42, it had cued the C42 pilot to look right again, at which point they had seen the PC12 at a similar level and so took avoiding action by descending (**CF7**).

The Board then considered the actions of the PC12 pilot. Members noted that it was recommended in the CAA Skyway Code that the joining procedure at uncontrolled aerodromes was via the overhead, in order to enable pilots to become visual with all of the circuit traffic prior to joining the visual circuit.[3] Members thought that this Airprox had been an example of why the overhead join was preferred. The PC12 pilot should have heard the C42 pilot call for the downwind departure on the RT, had been given updated Traffic Information by the AGO on the 3 departing aircraft and it had been for them to avoid, or conform with, the circuit traffic (**CF1**). Members thought that at the very least, on hearing about the 3 departing aircraft, the PC12 pilot could have adjusted their track slightly when they had been told about the departing traffic and joined from the start of the downwind leg, thereby putting themselves behind the departing traffic, rather than trying to fit in between it. However, it appeared that the pilot had not assimilated the information on the C42 and had built an inaccurate mental model on where the C42 had been (**CF3**, **CF4**) because they had continued their left-base join without being visual with it (**CF2**). The Board agreed that the TCAS on the PC12 could not have detected the non-transponding C42, nor the ADS-B from the C42's CWS (**CF5**), so the PC12 pilot had not received any electronic warning about its proximity. Although the PC12 pilot reported that they had been visual with the C42 below, members thought that this had been after the C42 pilot had taken avoiding action, and therefore agreed that this had been effectively a non-sighting of the C42 by the PC12 pilot (**CF8**).

The Board then looked at the actions of the Shobdon AGO. They noted that the AGO had not been required to sequence the aircraft in the circuit, and could not have instructed the PC12 pilot to conduct an overhead join. The AGO had provided Traffic Information to the PC12 pilot about the departing aircraft, and had asked whether the pilot had been visual with the C42, which had alerted the C42 pilot to its proximity. Nevertheless, a CAA adviser to the Board noted that the phraseology used by the AGO had been more akin to that given by an AFISO, i.e. not based solely on pilots' reported positions which, the adviser opined, could have blurred the distinction between the two and promoted confusion amongst the pilots as to the type of FIS being provided at any given time.

When determining the risk of the Airprox, the Board considered the reports from the pilots and the AGO together with the radar and GPS data. Whilst some members thought that, because the PC12 pilot had not been visual with the C42 and the C42 pilot had needed to descend to low-level to increase the separation, there had been a risk of collision. Others countered that the action taken by the C42 pilot had removed that risk by increasing the separation to 300ft. A vote took place and, by a large majority, members agreed that there had been no risk of collision, although safety had been degraded; Risk Category C.

[3] CAA Skyway Code Arrival and Departure procedures, page 104 https://www.caa.co.uk/publication/download/16112

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024091			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
	• Tactical Planning and Execution			
2	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
	• Situational Awareness of the Conflicting Aircraft and Action			
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
4	Human Factors	• Understanding/ Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• Electronic Warning System Operation and Compliance			
5	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
6	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
	• See and Avoid			
7	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
8	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-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:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the PC12 pilot had not conformed with, or avoided, the circuit traffic.

Tactical Planning and Execution was assessed as **partially effective** because the PC12 pilot had not avoided the C42 in the circuit.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the PC12 pilot had not assimilated the Traffic Information that the C42 had been departing downwind and had not integrated with it.

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

See and Avoid were assessed as **partially effective** because although the PC12 pilot had not seen the C42 until after CPA, the C42 pilot had taken avoiding action which had increased the separation.