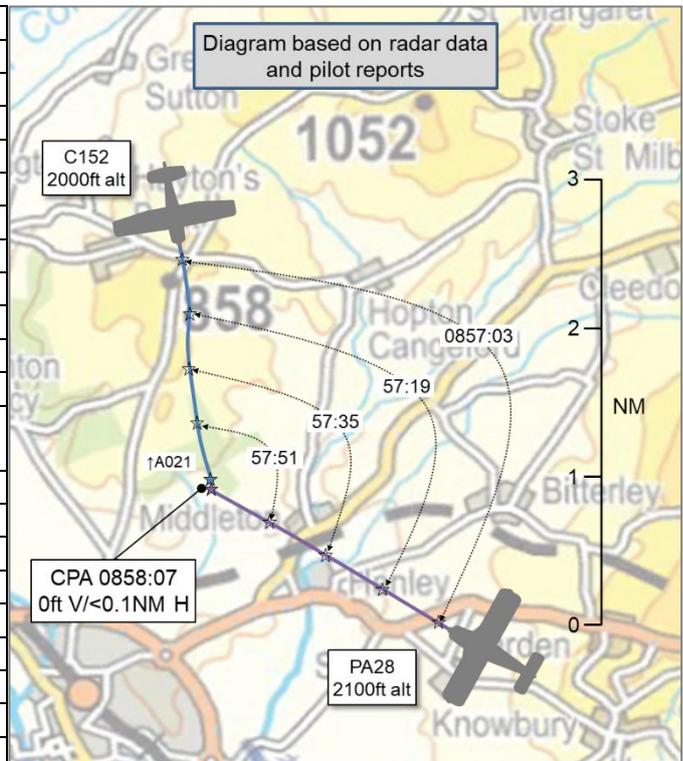


AIRPROX REPORT No 2021147

Date: 14 Aug 2021 Time: 0858Z Position: 5224N 00243W Location: 1.5NM NNE of Ludlow

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C152	PA28
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Listening Out
Provider	N/A	Shobdon Info
Altitude/FL	2100ft	2100ft
Transponder	A, C, S	A, C
Reported		
Colours	White, blue	White
Lighting	Strobes, nav, landing, beacon	Strobe, nav, beacon
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1900ft	2100ft
Altimeter	QNH (1018hPa)	QNH (NK hPa)
Heading	180°	280°
Speed	92kt	95kt
ACAS/TAS	TAS	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	50ft V/100ft H	50ft V/50m H
Recorded	0ft V/<0.1NM H	



THE C152 PILOT reports flying a dual instruction navigation exercise. Approaching their first turning point, while discussing ground features to positively identify Ludlow, they observed [the PA28] passing left-to-right just above and just ahead of their aircraft. [The PA28 pilot] did not appear to have seen them or take any avoiding action. However, the aircraft was only in view for a few seconds from their blind spots.

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

THE PA28 PILOT reports that they were one of two well rested operating crew (1 x CPL and 1 x PPL holder) conducting a VFR navigation sortie departing [their departure airfield] at approximately 0820 en route to [their destination airfield] via the Lleyn Peninsula. The weather was clear with great visibility throughout the flight, with the crew constantly assessing conditions and maintaining contact with ATC or maintaining an active listening watch on relevant ATC frequencies through all stages of flight. Approximately 30min into the flight, the aircraft was maintaining 2100ft on a QNH pressure setting with a position 1NM north of Ludlow. As PIC, they suddenly noticed an aircraft at their 2 o'clock position at a similar altitude (their estimation is that the opposing aircraft was at 2000ft) and closing with a range of approximately 200m. They had to take evasive action in the form of a non-standard steep climbing left turn in order to maintain the safety of the aircraft and their co-pilot. Once they had climbed above the other aircraft, it appeared that the [pilot of the] opposing aircraft did not make any attempt to avoid a collision at any stage – before, during or after the incident. Throughout the manoeuvre, their aircraft remained within flight parameters at all times and the flight continued as normal, landing at [their destination] on time.

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

Factual Background

The weather at Shawbury was recorded as follows:

METAR EGOS 140850Z AUTO 26007KT 9999 OVC080/// 17/12 Q1018 RERA=

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. Both aircraft were detected by the NATS radars on secondary surveillance radar only. Aircraft Mode C readouts are in Flight Levels – the QNH input to the radar processor was 1021hPa, giving a difference of approximately +216ft (altitude being higher than FL). The C152 was tracking in a southerly direction at a steady altitude of 2000ft until 4sec (one radar sweep) prior to CPA, when its altitude changed to 2100ft. The PA28 was tracking in a north-westerly direction at a steady altitude of 2100ft until CPA and remained on a near-constant relative bearing with respect to the C152. Neither aircraft appeared to alter track and the reported avoiding action climb executed by the PA28 pilot was not detected by the NATS radars (no change in Mode C readout). CPA occurred at 0858:07 as the PA28 passed in front of the C152 at a range of <0.1NM with no indicated vertical separation (see Figure 2). The altitude of the C152 returned to 2000ft (indicated by Mode C) 4sec (one radar sweep) after CPA.

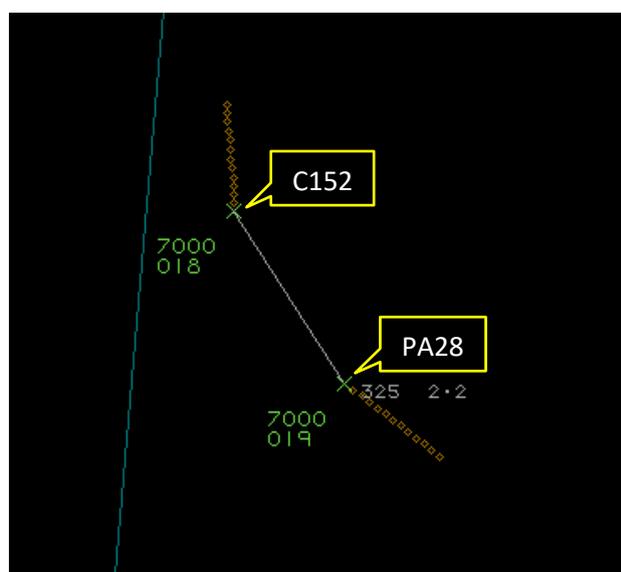


Figure 1 – 0857:18

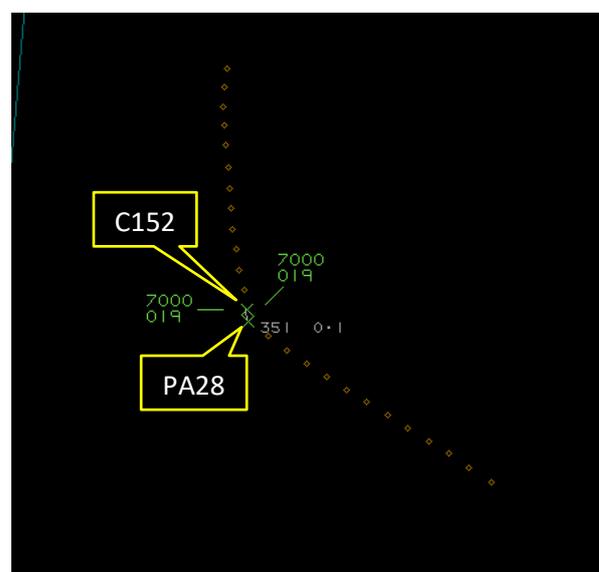


Figure 2 – 0858:07 - CPA

The C152 and PA28 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 converging then the PA28 pilot was required to give way to the C152.²

Summary

An Airprox was reported when a C152 and a PA28 flew into proximity 1.5NM NNE of Ludlow at 0858Z on Saturday 14th August 2021. Both pilots were operating under VFR in VMC; the C152 pilot was not in receipt of an ATS and the PA28 pilot was listening out on the Shobdon Information frequency.

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

¹ (UK) SERA.3205 Proximity.

² (UK) SERA.3210 Right-of-way (c)(2) Converging.

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 C152 pilot and heard from a GA pilot member that the area in which the Airprox took place, although technically within the LARS coverage of Shawbury, is an area where it is notoriously difficult to get a reliable ATS. That said, this was not a factor in this particular case because the Airprox occurred on a Saturday, when Shawbury does not provide a LARS, and so the Board did not attribute a contributory factor to the lack of an ATS. The Board agreed that the C152 pilot had been relying on their lookout and electronic conspicuity (EC) device to detect the presence of other aircraft and, on this latter point, noted that the EC device carried by the C152 pilot had been incapable of detecting the non-Mode S transponder signals from the PA28 (**CF2**). This had left the C152 pilot without any situational awareness of the presence of the PA28 (**CF1**) and thus relying purely on visual acquisition of other aircraft. Members noted that the C152 pilot reported sighting the PA28 as it passed "left-to-right just above and just ahead of their aircraft" and judged that this had meant that, on sighting the PA28, the C152 pilot had not had any time to materially increase the separation between the 2 aircraft (**CF4**). The Board also agreed with the C152 pilot's observation that the PA28 would have been partially obscured by the structure of the C152 cockpit and canopy arches, and considered this to have been contributory to the Airprox (**CF5**).

The Board then considered the actions of the PA28 pilot and quickly agreed that they had been subject to the same limitations in terms of an ATS as the C152 pilot; namely the unavailability of Shawbury LARS at the weekend. However, in the case of the PA28 pilot, they had not been carrying any additional EC equipment and so had not had any way of gaining any situational awareness of other aircraft in their vicinity (**CF1**). Members agreed that the PA28 pilot had been relying solely on their lookout and their ability to visually detect the C152 had been hampered by the known phenomenon of aircraft on a constant relative bearing presenting no relative movement to the observer. The Board agreed that this had led to a late acquisition of the C152 by the PA28 pilot (**CF3**) and that they had had to take emergency avoiding action.

Turning to the risk involved in this encounter, the Board noted that both pilots had independently estimated the vertical separation to be 50ft, and that the recorded vertical separation had been measured at 0ft from Mode C data. Furthermore, the horizontal separation had been recorded at less than 0.1NM and assessed by both pilots to have been within ~200ft, leading the Board to conclude that safety had not been assured and a risk of collision had existed (**CF6**). However, members assessed that the PA28 pilot had taken sufficient avoiding action so as to avert a likely collision and therefore assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2021147				
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	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
• 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
4	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
5	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other
• Outcome Events				
6	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B

Safety Barrier Assessment³

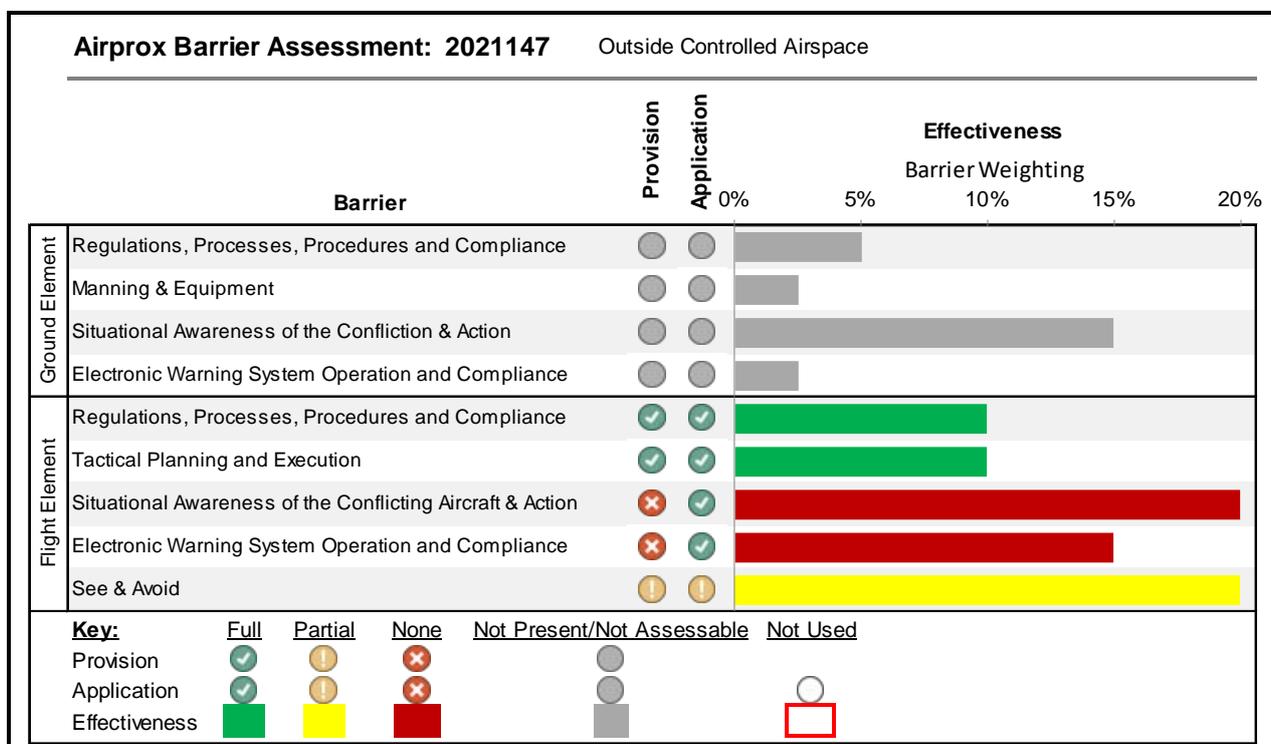
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

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.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the collision warning equipment carried by the C152 pilot was not capable of detecting the non-Mode S transponder fitted to the PA28.

See and Avoid were assessed as **partially effective** because the C152 pilot did not see the PA28 in time to manoeuvre to materially increase separation, and the PA28 pilot saw the C152 late and took emergency avoiding action.



³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).