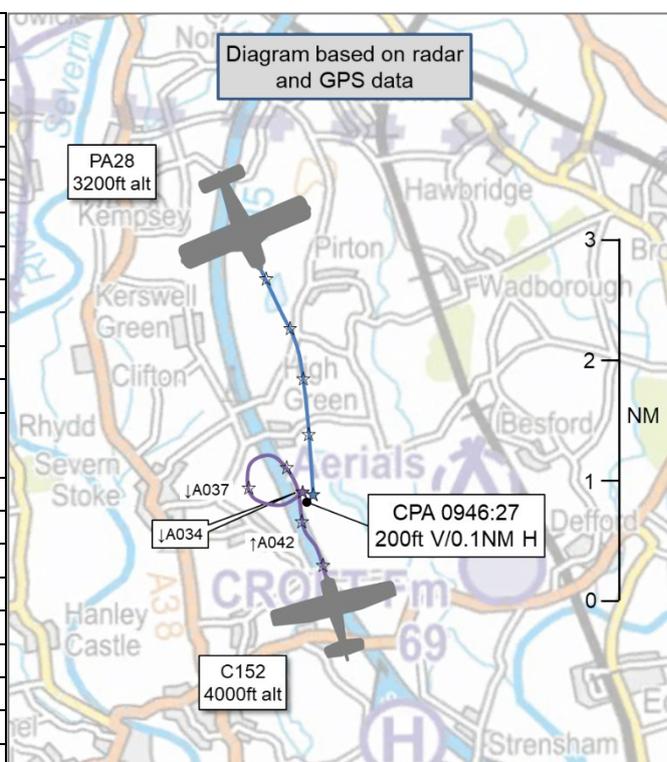


AIRPROX REPORT No 2021090

Date: 23 Jun 2021 Time: 0946Z Position: 5206N 00211W Location: 6NM S of Worcester

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	C152
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Gloster Approach	Gloster Approach
Altitude/FL	3200ft	3400ft
Transponder	A, C, S	A, C
Reported		
Colours	Red, white	White, blue
Lighting	Strobes, nav lights	Beacon, landing light
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	3000ft	Desc from 3500ft
Altimeter	RPS (1021hPa)	QNH (1024hPa)
Heading	165°	'Turning'
Speed	90kt	90kt
ACAS/TAS	SkyEcho	Not fitted
Alert	None	N/A
Separation		
Reported	0ft V/50ft H	50ft V/0m H
Recorded	200ft V/0.1NM H	



THE PA28 PILOT reports that they were PIC on a navigation exercise routing via Stourport, Tewkesbury and Chipping Norton. As they were tracking 165° from Stourport to Tewkesbury, their passenger spotted a C152 high and right of their position carrying out manoeuvres. They continued to monitor it and, because they saw it was descending, they started to descend as well to maintain clear. The C152 then turned to the left and went behind them. As they looked out of their left-hand window, they saw the aircraft come into view crossing their track approximately perpendicular at a range of 50-100ft behind them and descending through their level. The C152 then turned away from them and continued to descend slightly before clearing away. They made an Airprox call to Gloster Approach about 60sec after the incident. The Gloster controller acknowledged and passed a telephone number to call on landing.

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

THE C152 PILOT reports conducting a steep turns training flight. They were just finishing the flight with a steep descending turn, initially to the left. As the C152 is a high wing aircraft, the view to the left is obscured when in a left turn. They were looking out to the right as they descended and thought the area was clear, so instructed the student to turn to the right. Obviously, they had not spotted the aircraft below. A couple of seconds into the right turn, they noticed something pass underneath the aircraft and realised that they had come very close to another aircraft. There was no time to take avoiding action. They stopped the turn and levelled the aircraft. The other aircraft reported an Airprox with Gloster Approach.

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

THE GLOSTER APPROACH CONTROLLER reports that [the PA28 pilot], under a Basic Service from Gloster, reported an Airprox at 0947. The pilot advised that a Cessna had passed behind at

approximately 50ft. The registration they gave was not recognised by Approach, but a home-based aircraft with a similar callsign advised that they believed that they were the aircraft in question. The C152 was also under a Basic Service carrying out a local flight. The pilot of [the PA28] was requested to ring the Tower after landing to provide further details.

Factual Background

The weather at Gloucestershire Airport was recorded as follows:

METAR EGBJ 230950Z 27005KT 9999 FEW027 17/09 Q1024=

Analysis and Investigation

Gloucestershire Airport Air Traffic Services

[The PA28 pilot] called Gloster Approach at 0942 requesting a Basic Service at Worcester routing from [departure airfield] to [destination airfield]. [The C152 pilot] was local flying at varying altitudes and in unknown locations in the local area. [The PA28 pilot] was placed on a Basic Service and requested to report north-east abeam by the APP ATCO.

At 0947 [the PA28 pilot] reported that they would like to file an airborne Airprox report. They stated that they were on a track maintaining altitude 3000ft. [The other aircraft] was manoeuvring and came down 50ft behind them at the same level ([the C152 c/s] is the assumed traffic to which they were referring). A very short period after, [the C152 pilot] reported that the conflicting aircraft was them, that they were fairly close and just to get the registration right.

The radar performance at the unit is particularly poor (primary only) and is currently only being used as an ATM, therefore it would have been very unlikely that the APP ATCO would have seen either aircraft on radar. Aircraft conducting local flights (e.g. general handling, stall turns etc) regularly change tracks and levels therefore do not give this information to ATC as it would be academic and immediately out-of-date information. As [the C152 pilot] was local flying there was not really any way of the APP ATCO knowing where or at what level that aircraft was. It is also not uncommon to have over 10 aircraft local flying at a time in various areas and in all directions. Traffic that departs to the north does not necessarily remain to the north either. Sometimes pilots will state, however, that they are general handling in a certain area, e.g. Malvern, so that generic Traffic Information can be passed if transit traffic is routeing through that area.

It is the opinion of the unit that there is not much that the APP ATCO could have done in this instance based on the circumstances. Whilst ATC clearly has a responsibility to endeavour to pass Traffic Information on known traffic if there is believed to be a risk of collision, in accordance with the rules of a Basic Service it is ultimately the pilot's responsibility for collision avoidance and to listen-out on the frequency for other traffic that may be in the vicinity. One would assume that it is more important for the pilot to do so when general handling and knowing that ATC does not know where or at what level they are. From a unit perspective, there are no ATCO contributory factors.

UKAB Secretariat

An analysis of the NATS radar replay and GPS data provided by the PA28 pilot was undertaken. The NATS radars detected both aircraft on secondary radar and, intermittently, the PA28 on primary radar. All altitudes displayed on the radar are in Flight Levels – the QNH input to the radar processor was 1024hPa; aircraft altitude is derived by adding 300ft (11hPA x 27ft = 297ft) to the indicated Flight Levels. The PA28 was tracking in a southerly direction at an indicated altitude of 3200ft \pm 100ft. In the moments leading up to the Airprox, the C152 was manoeuvring to the south of the PA28 at 4100ft \pm 100ft. At 0946:07, the C152 entered a descending left turn; the aircraft were separated by 0.4NM and 700ft at this time (see Figure 1). The secondary radar track of the C152 was unstable throughout the period of the Airprox; however, the Mode C readout remained visible and showed the C152 descending to an altitude of 3400ft at CPA (see Figure 2).

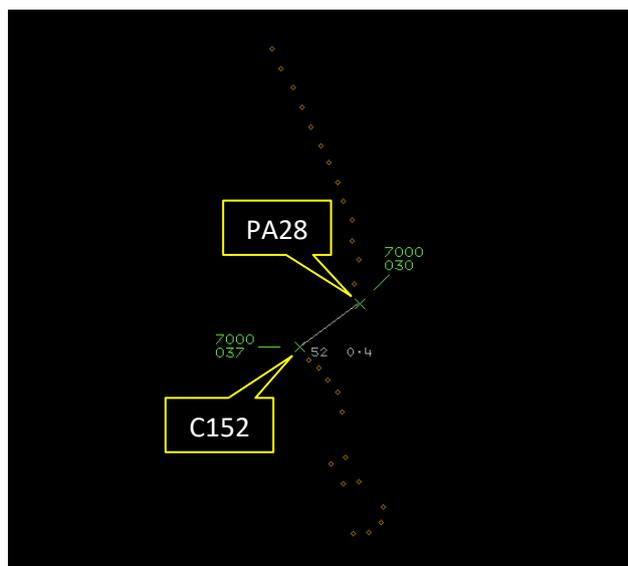


Figure 1 – 0946:07

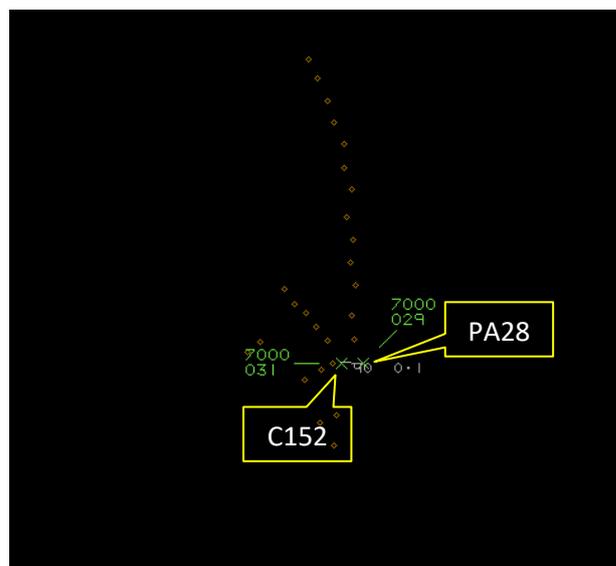


Figure 2 – 0946:27 – CPA

The PA28 and C152 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 PA28 and a C152 flew into proximity 6NM S of Worcester at 0946Z on Wednesday 23rd June 2021. Both pilots were operating under VFR in VMC and both pilots were in receipt of a Basic Service from Gloster Approach.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 considered the actions of the PA28 pilot and was heartened to hear that their passenger had been assisting with the lookout task and acknowledged that it had been they that had first sighted the C152. The Board noted that the PA28 pilot had been in receipt of a Basic Service from Gloster Approach, and agreed that this would have been of limited value since the Gloster Approach controller had not been working with surveillance equipment. The Board also noted that the PA28 pilot had been carrying a SkyEcho device to assist them with the detection of other aircraft. Members agreed that, because no Traffic Information on the C152 had been forthcoming from the Gloster Approach controller and no information from the SkyEcho device had been presented to the PA28 pilot, they had not had any situational awareness of the presence of the C152 prior to it being spotted by their passenger (**CF2**). The Board also agreed that the SkyEcho could not have detected the C152 as that aircraft had not been fitted with a Mode S transponder (**CF3**). Members noted that, after the initial sighting of the C152, the PA28 pilot had elected to descend to try and maintain separation from the C152, but considered that they may have been better served by also initiating a degree of lateral separation, given that the C152 had been manoeuvring. The Board considered that the PA28 pilot had clearly been comfortable with the initial separation from the C152 but that they had lost sight of the other aircraft as it had passed behind them and had therefore no longer been in a position to effectively manage the

¹ (UK) SERA.3205 Proximity.

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

separation between the 2 aircraft. Therefore, the Board found that this effective non-sighting had been contributory to the Airprox (**CF4**).

Turning to the actions of the C152 pilot, the Board noted that they had also been in receipt of a non-surveillance-based Basic Service from Gloster Approach and, as for the PA28 pilot, this would have been of limited value because the Gloster Approach controller had not been in a position to pass Traffic Information on the PA28. The Board agreed that this had meant that the C152 pilot had not had any situational awareness of the presence of the PA28 (**CF2**) and that had left them to rely on the See and Avoid Barrier to detect the presence of the PA28. Members agreed that, in a high-wing aircraft in a left-hand turn, the C152 pilot's view of the relative position of the PA28 would have been restricted (**CF5**) and that this had highlighted the importance of conducting thorough lookout turns prior to commencing any manoeuvring. In the event, the restricted view of the C152 pilot had led to them not sighting the PA28 until it had been too late for them to materially increase the separation between the 2 aircraft (**CF4**).

The Board then considered the actions of the Gloster Approach controller and quickly agreed that there was little that they could have done to prevent the Airprox. Members noted that there had not been any surveillance equipment available to the controller and that they had also not received any position reports from either pilot that might indicate that the 2 aircraft were in proximity to each other. The Board agreed that, under the terms of a Basic Service, the controller had not been required to monitor either aircraft (**CF1**) and that therefore the Ground Element Situational Awareness Barrier had not been used in this Airprox.

Finally, the Board considered the risk involved in this event. The Board discussed at length the difference in reported separation from each pilot and the separation recorded on the NATS radar, particularly in the vertical plane. The Board understands that there are tolerances within not only the radar equipment but also transponder equipment, and so concluded that, although the radar displayed a height difference of 200ft at CPA, in reality it is feasible that it could have been less than this and more akin to the figures reported independently by both pilots. The Board was unanimous that a risk of collision had existed (Risk Category A or B) (**CF6**), but some members felt that the 2 aircraft had missed each other entirely by chance whilst others considered that the actions of the PA28 pilot in descending when they had first sighted the C152 had lessened the likelihood of a collision. The Board was evenly balanced in these views and so the Chair invited members to vote; a Risk Category A (serious risk of collision) was assigned to this Airprox by a count of 8 votes to 7.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2021090				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
Flight Elements				
• Situational Awareness of the Conflicting Aircraft and Action				
2	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				
3	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				
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: A

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:

Ground Elements:

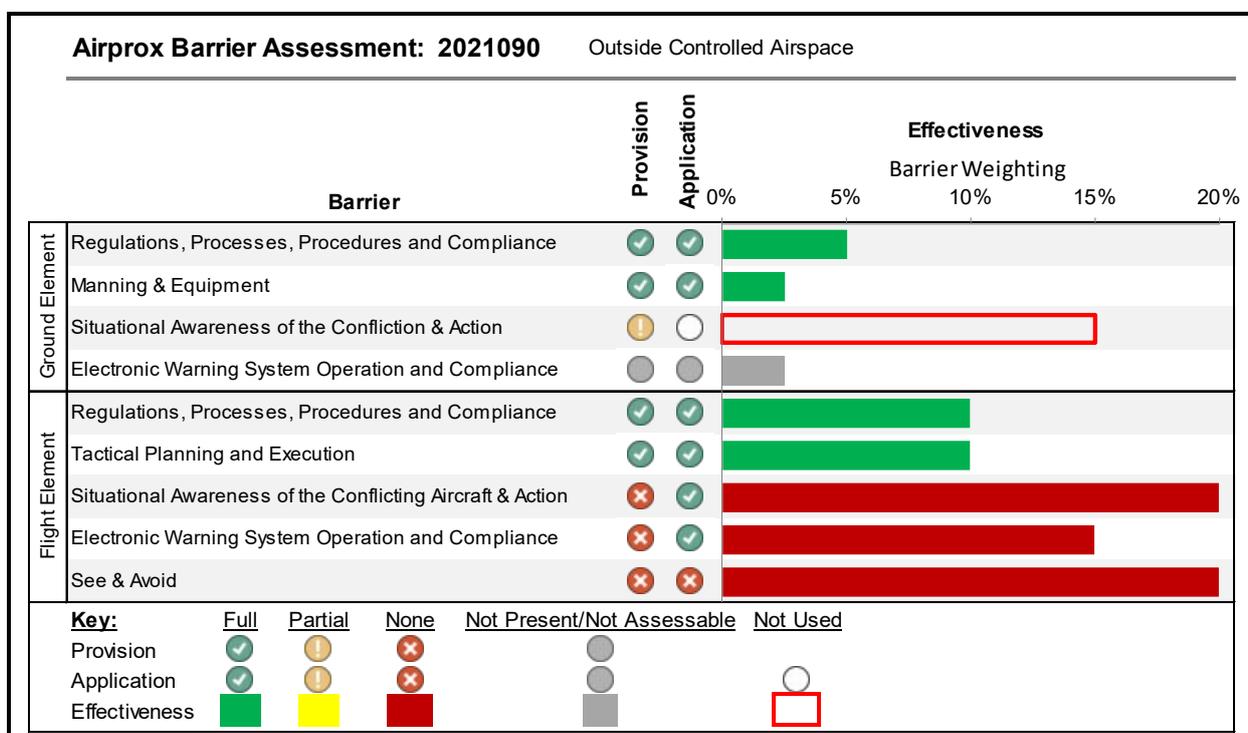
Situational Awareness of the Confliction and Action were assessed as **not used** because the Gloucester Approach controller was not required to monitor the flight of either aircraft under the terms of a Basic Service.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had any prior warning of the presence of the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the SkyEcho on the PA28 could not detect the non-Mode S transponder signals from the C152.

See and Avoid were assessed as **ineffective** because the C152 was in a left-hand turn which limited the C152 pilot’s ability to see the PA28, and neither pilot saw the other aircraft in time to materially affect the separation.



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