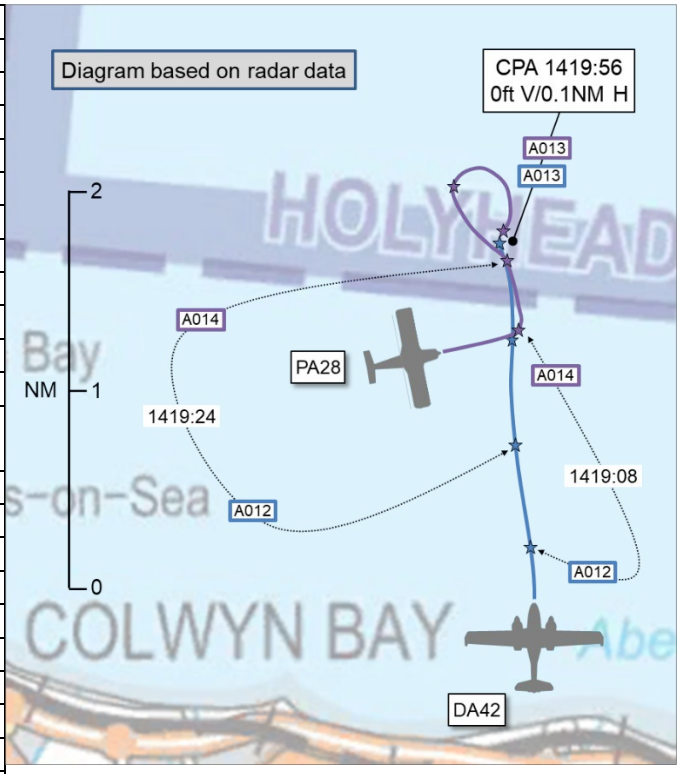
AIRPROX REPORT No 2023026

Date: 28 Feb 2023 Time: 1420Z Position: 5321N 00339W Location: 3.5NM NE Colwyn Bay

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	PA28
Operator	Civ Comm	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Listening Out
Provider	N/A	Liverpool Radar
Altitude/FL	1300ft	1300ft
Transponder	A, C, S+	A, C, S
Reported		
Colours	White	White, orange
Lighting	Landing, taxi, nav, strobes	Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1800ft	1500ft
Altimeter	QNH (NK hPa)	QNH (NK hPa)
Heading	360°	NK
Speed	130kt	95kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	0ft V/0.2NM H	500ft V/2NM H
Recorded	0ft V/0.1NM H	



THE DA42 PILOT (in the RHS) reports that their flight took off from [departure airfield] for a training survey flight. Thirteen minutes and 33 seconds after take-off, whilst crossing the coastline 7NM QDR 194° from MALUD, heading northbound to intercept a training leg, the [DA42 pilot] spotted a fixed-gear PA28 at approximately 2-3NM, cruising at the same altitude (1800ft) and in roughly the same direction. The PA28 pilot initially made a turn to the left, approximately 30° AOB, with a change of heading to 330°. The [DA42 pilot] then cross-checked that the aircraft appeared on the TAS on their G1000 [PFD/MFD]. After completing the turn, the other aircraft proceeded straight into a steep right-turn, approximately 45-60° AOB. Halfway through the turn, a "TRAFFIC, TRAFFIC" annunciation was triggered and the [DA42 pilot] announced "*straight ahead, same altitude. I have control*" as the [DA42 pilot] assessed that the aircraft might have continued the turn and would then conflict with the [DA42's] flightpath. Fourteen minutes and 37 seconds after take-off, the [DA42 pilot] disconnected the autopilot and entered a steep left-turn using full aileron deflection. The [DA42 pilot] was aware that a standard way to avoid would be a right-turn but feared this would place them flying straight into the conflicting traffic. A steep-turn was also conducted to increase visibility of their aircraft to the conflicting traffic in the hope that they would also take evasive action.

At the time of conducting the evasive manoeuvre, the conflicting traffic was between 12 and 1 o'clock, completing a turn to the south (opposite direction). Fourteen minutes and 47 seconds after take-off, the [DA42 pilot] saw the conflicting PA28 flying wings-level, overlapping [the DA42's] previous flightpath. The [DA42 pilot] assessed that the traffic was no longer a factor and rolled-out and proceeded back northbound. The conflicting traffic left the area and proceeded eastbound.

[The pilot of the DA42 believed that, at the time of the incident, they] had been in receipt of a Basic Service from London Information as Hawarden had poor radio coverage in that area at such low altitude.

The [DA42 pilot's] assessment is that the MFD was set to the AUX page, [which had] prevented them from seeing transponding traffic on the main map view. [This particular DA42] has been known to [automatically] reset the inset scale and, at the time of the incident, the only map showing traffic had self-reset to 2NM (it was previously set by the LHS pilot to 8NM). [The DA42 pilot opines that] the PA28 pilot had stopped their turn on a southerly heading, and it is unclear whether this was part of their exercise or an evasive action. Visual scanning played a significant role in avoiding the traffic. It was highly likely that the two aircraft would have collided if the [DA42 pilot] had not adjusted their flight path to avoid the traffic.

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

THE PA28 PILOT reports that they were outside controlled airspace, listening out on Liverpool Radar, instructing a student on the use of VOR radials and DME fixes. After a 360° turn, they noticed a twin-engine aircraft leaving WAL [VOR/DME] on a westerly heading and seemed to be climbing. Having a constant bearing on it, they turned right for avoidance but it turned left so they stopped the turn and [the DA42] passed [the PA28] on their right-side and above, at a distance of 1-2NM. In their opinion, there was no risk of collision and they were visual with [the DA42] at all times.

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

THE LONDON INFORMATION FISO reports that they were informed retrospectively that an aircraft, [DA42 callsign], was involved in an Airprox. The aircraft subsequently called London Information to request a Basic Service at 1420.

The [DA42 pilot] made no mention of the Airprox on frequency at the time. Unfortunately, [the London Information FISO] had no recollection of any pertinent information. The events described have not been checked for accuracy against the appropriate RTF recording.

THE LIVERPOOL RADAR CONTROLLER reports that they were the Radar ATCO monitoring a trainee at the time [of the Airprox]. There was neither a pilot report on the RT nor a telephone call received about an Airprox subsequently and therefore they had no further details to add.

Factual Background

The weather at Hawarden was recorded as follows:

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METAR EGNR 281420Z 01008KT 9999 SCT028 BKN036 08/03 Q1036
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Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. Both aircraft could be positively identified from Mode S data. At 1418, the DA42 was observed to be south of the coastline and tracking to the west. The PA28 was observed to be broadly north of the coastline, tracking to the east. The pilot of the DA42 then turned northwards and crossed the coastline. At 1419, the pilot of the PA28 also turned northwards, directly ahead of the DA42 by approximately 1NM. It had been after the pilot of the PA28 had commenced a steep turn to the right that the CPA occurred (see Figure 1). The separation at CPA was determined, and the diagram constructed, from the radar data.

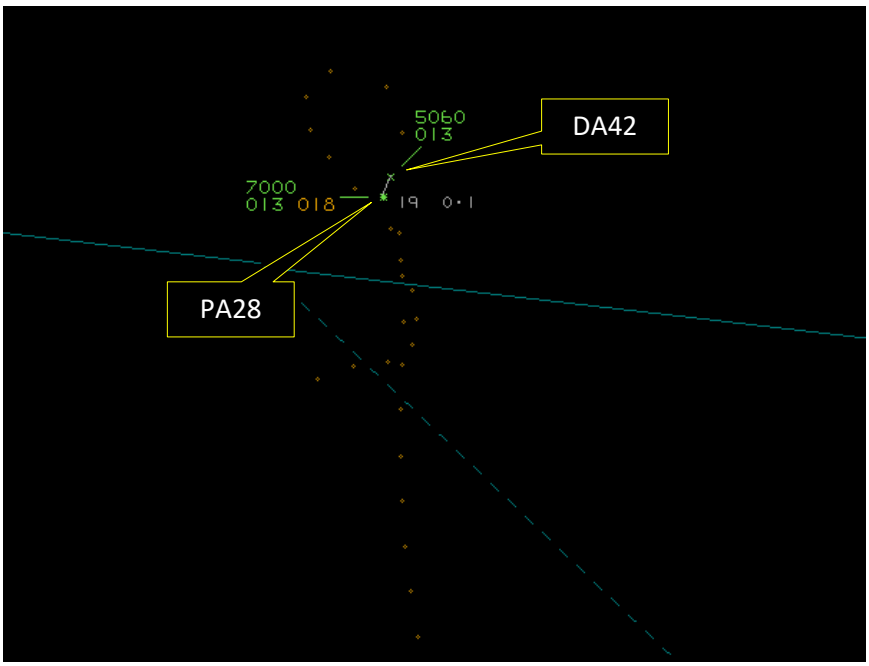


Figure 1 – CPA at 1419:56

The DA42 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 head-on or nearly so then both pilots were required to turn to the right.[2]

Summary

An Airprox was reported when a DA42 and a PA28 flew into proximity 3.5NM northeast of Colwyn Bay at 1420Z on Tuesday 28th February 2023. Both pilots were operating under VFR in VMC, the DA42 pilot not in receipt of an ATS, the PA28 pilot listening out on Liverpool Radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and reports from the air traffic controller and FISO 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 considered the actions of the pilot of the DA42 and members noted that they had not been in receipt of an ATS. Pondering the area in which their flight had taken place, their altitude and the distance that they had been from the nearest ATS units, members agreed that there had been a limited selection of potential agencies that could have delivered an air traffic service. It was suggested that it may have been prudent to have contacted the controller at Liverpool Airport and to have sought the highest level of service available in the circumstances. Although members noted that the two pilots involved had not been on a common frequency, it was acknowledged that the PA28 had been visually acquired when both aircraft had been heading northwards. The pilot of the DA42 had effectively been following the PA28, approximately 1NM behind and 200ft lower. It was further noted that the pilot of the DA42 had checked their TAS and had seen that it had detected the PA28 ahead of them.

Members noted that the pilot of the DA42 reported that their MFD had been set to a page which had prevented them from seeing transponding traffic on the main map view. It was agreed by members that, having visually acquired the PA28, it had been of paramount importance to have maintained visual contact and to not have allowed any unnecessary distraction to have drawn their focus into the cockpit. It was clear to members that the pilot of the DA42 would not have known the intentions of the PA28

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on.

pilot just ahead of them and that they may not have expected the PA28 pilot to have turned as they did. However, members agreed that, having sighted a single-engine aircraft heading out to sea, it could have been reasonably anticipated that the PA28 pilot might have subsequently turned to head back towards land. Therefore, members suggested that it may have been prudent for the pilot of the DA42 to have formulated their dynamic plan in preparation of such a turn given that they were directly behind the PA28 and unlikely to be sighted in the PA28 pilot's visual scan. Members acknowledged that the nature of the DA42 pilot's flight had been instruction in the conduct of a survey flight and that there may have been a slight, perhaps subconscious, reluctance to have changed heading unnecessarily. Nevertheless, it had been the case that the pilot of the DA42 had elected to maintain their course after they had noticed the PA28 pilot had started to turn. It had been the TAS equipment that had alerted the pilot of the DA42 to the potential conflict (**CF4**). Members agreed that to have received such an alert suggested that the plan to have remained behind the PA28 at relatively close range had not adequately taken into account the possibility for the encounter to have unfolded precisely in the way that it had. Therefore, members were in agreement that the dynamic plan had not fully met the needs of the situation (**CF1**). It was further agreed that, given that the DA42 pilot had been conducting a training flight, the late decision had not provided an optimal demonstration of a dynamic plan and preparedness to their trainee (**CF2**). Notwithstanding, members acknowledged that the last-minute avoiding action had successfully increased the separation between the aircraft. In conclusion of this part of the discussion, members agreed that the pilot of the DA42 had been concerned by the close proximity of the PA28, despite having acquired it visually, but having elected to have maintained their position behind the PA28 and in having not anticipated the PA28 pilot's turn (**CF5**).

Turning their attention to the actions of the pilot of the PA28, members first discussed the prudence of having conducted a flight in a single-engine aircraft beyond gliding distance from land. Further, given that they had not been in receipt of a service and had been at relatively low altitude, members expressed concern that they may not have been able to summon assistance if they had needed to do so in an emergency. Members noted that the pilot of the PA28 had been teaching their trainee in the use of VOR radials and DME fixes and, given that the nature of such instruction may have led to extended moments where both pilots were 'heads-in', it was suggested that the area chosen for such a flight might have been considered preferable given the reduced traffic in that area. As such, members were keen to emphasise that a thorough and effective lookout remained of paramount importance. Members noted that the pilot of the PA28 had been aware of the DA42 when it had been over land, but when both aircraft had been heading northwards over the sea, the pilot of the PA28 had had no situational awareness of the presence of the DA42 (**CF3**). Members noted that the PA28 had not been fitted with any additional electronic conspicuity equipment which, on this occasion, may have provided some additional information to aid visual acquisition. It was for pilots to decide on their own requirements for additional equipment according to their needs and the Board wished to highlight to pilots that additional funding has been made available for electronic conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2024[3].

Members again stressed that when 'see-and-avoid' becomes the final barrier for mid-air-collision avoidance, the emphasis on a thorough and effective visual scan cannot be overstated. Members were surprised that the DA42 had not been sighted before, during or after their tight-turn (**CF6**).

Concluding their discussions, and in determination of risk, members were in agreement that it had been the non-sighting of the DA42 by the PA28 pilot, and the late decision by the DA42 pilot to have taken avoiding action, that had reduced safety in this encounter to much below the norm. There had been a risk of collision and it had been largely by the last minute avoiding action by the pilot of the DA42 that had increased the separation between the aircraft (**CF7**). As such, the Board assigned Risk Category B to this event.

[3] https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023026			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Late Decision/Plan	Events involving flight crew making a decision too late to meet the needs of the situation	
	• Situational Awareness of the Conflicting Aircraft and Action			
2	Human Factors	• Mentoring	Events involving the mentoring of an individual	
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
	• Electronic Warning System Operation and Compliance			
4	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
	• See and Avoid			
5	Human Factors	• Lack of Individual Risk Perception	Events involving flight crew not fully appreciating the risk of a particular course of action	Pilot flew close enough to cause concern
6	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
	• Outcome Events			
7	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 Assessment[4]

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

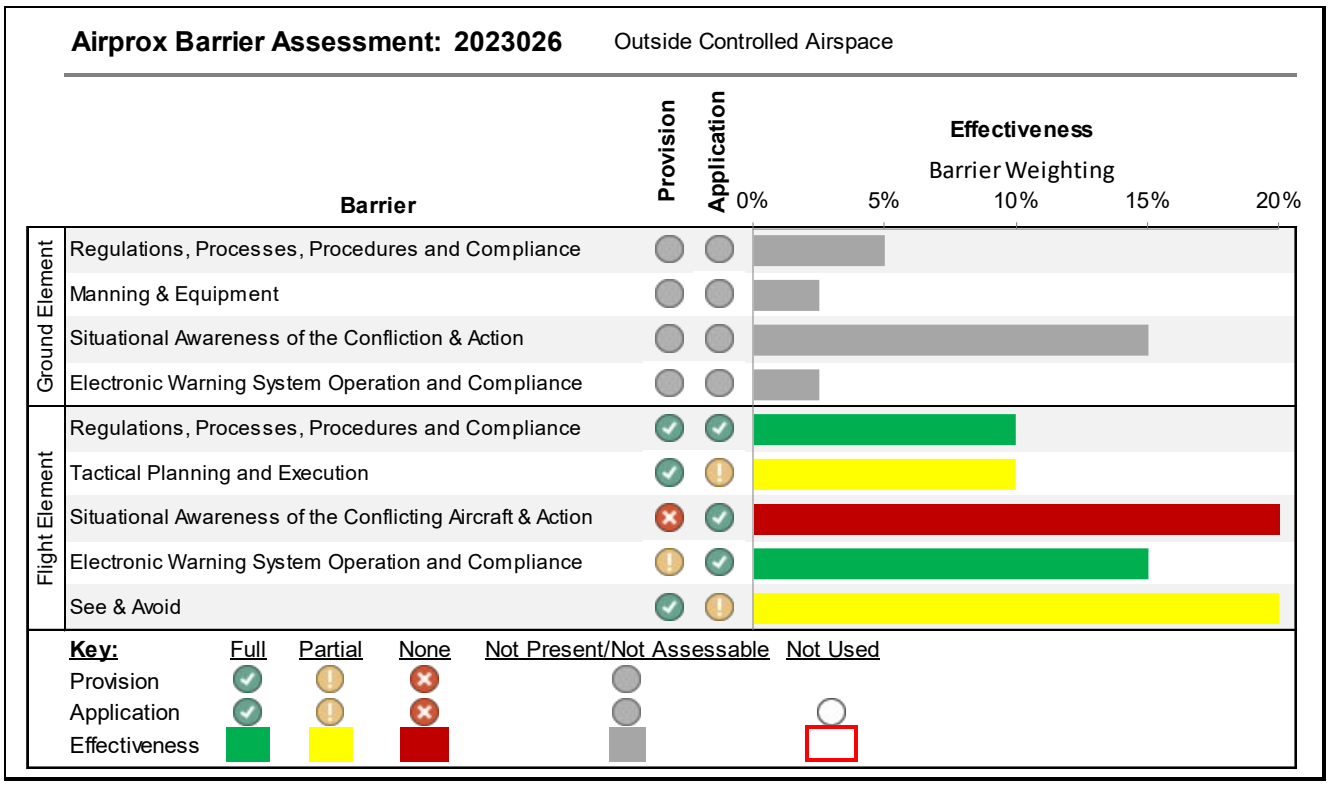
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the pilot of the DA42 had taken late avoiding action.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the PA28 had not had any situational awareness of the presence of the DA42 behind them as they had been heading northwards.

See and Avoid were assessed as **partially effective** because the pilot of the PA28 had not sighted the DA42 in the moments before CPA, and the DA42 pilot, although visual with the PA28, had taken late avoiding action after the PA28 pilot had commenced a turn back towards the DA42.

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


Airprox Barrier Assessment: 2023026
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness