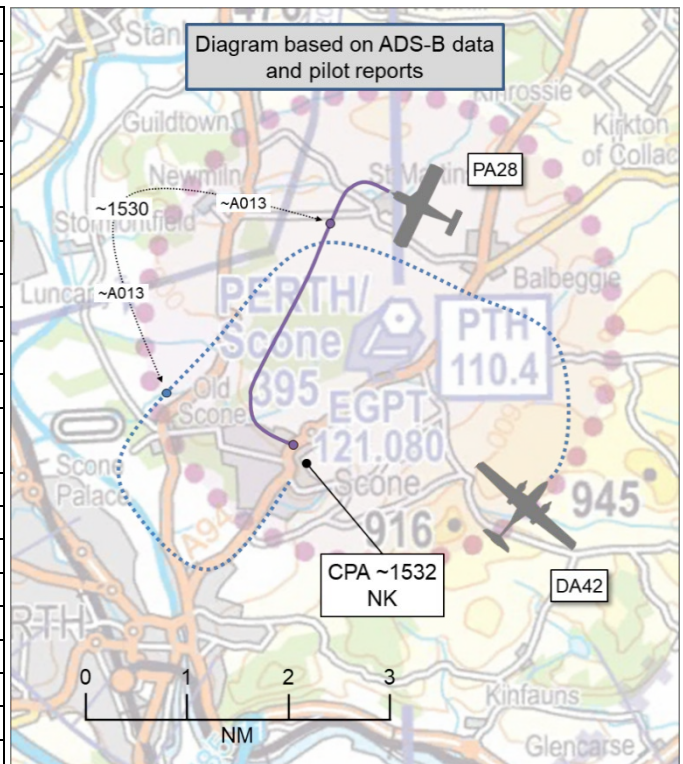


AIRPROX REPORT No 2023261

Date: 05 Dec 2023 Time: ~1532Z Position: 5625N 00324W Location: Perth ATZ

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	PA28
Operator	Civ FW	Civ FW
Airspace	Perth ATZ	Perth ATZ
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Perth Radio	Perth Radio
Altitude/FL	NK	~890ft
Transponder	A, C, S+	NK
Reported		
Colours	White	White
Lighting	Landing, taxi, position, strobes	Landing, position, strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	900ft	1000ft
Altimeter	QNH (1016hPa)	QNH (1016hPa)
Heading	030°	120°
Speed	90kt	70kt
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	50ft V/100ft H	100ft V/50m H
Recorded	NK	



THE DA42 PILOT reports that they were on an IFR training sortie, recovering to Perth visually for a visual approach to RW03. Perth Radio informed them that there were 2 other aircraft in the circuit so they did an overhead join. When crosswind, they noticed an aircraft taking-off from RW03. While on the downwind leg, they thought that a slower aircraft was in front of them so they slowed down and extended downwind for separation. Just before turning base leg, they asked Perth Radio for information regarding the position of the other circuit traffic. They were told that both other aircraft in the circuit were behind them so they turned onto base leg and then onto final for RW03.

While descending on final approach, and passing about 900ft QNH, the student that was seated in the back reported a single-engine aircraft above and at their 11 o'clock position. At the same time, the pilot of that aircraft called on the radio and said "visual with the DA42 on final, going around". The aircraft crossed the [DA42's] flightpath about 400-500ft above them and positioned on the right-hand side of the runway.

As [the pilot of the DA42] continued their approach, clear of the first aircraft, the student in the back seat pointed out a second aircraft, subsequently identified as [PA28 callsign], which was in their 11 o'clock position, slightly above them and about 100ft in front. It was initiating a turn onto the final approach. Considering their proximity to [the PA28], the position of the aircraft that had previously gone-around in front of them that was flying much slower than them, and the fact that there was no other conflicting traffic in the circuit, [the pilot of the DA42] took control and, as an avoiding action, turned left and repositioned at the end of the downwind leg.

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

THE PA28 PILOT reports that, at the time of the incident, they were flying their last circuit and intending to land on RW03. They heard on the radio that a DA42 was joining the circuit. When [the pilot of the PA28] was on the downwind leg, the sun ahead was almost level with them at circuit height. They were

dazzled by the sun and could not identify the exact location of the DA42 ahead. When they were at the end of their base leg and still affected by the sun, they had heard no pilots reporting 'final' and had not seen the DA42, so they turned onto final. As soon as they were on final, they heard [the pilot of the DA42] announcing a go-around. This was when [the pilot of the PA28] realised that they had cut in front of the [pilot of the DA42] which, they later learnt, had extended their downwind leg and had positioned for a long final. [The pilot of the PA28] continued to land as they didn't want to disturb the traffic any further.

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

THE PERTH AIR/GROUND RADIO OPERATOR reports that [the pilot of the DA42] joined the RW03 circuit at Perth, ahead of two PA28s. The [DA42 pilot] flew a long downwind leg before turning base and final, which is the usual circuit pattern for this type of aircraft. The pilot of the first of the two PA28s, [PA28 c/s], turned base and final, cutting into the path of [the DA42]. The [pilot of the PA28] was alerted as the [pilot of the DA42] broke off their approach.

At the time, the proximity of the two aircraft could not be estimated from the 'Tower' and official notification of an Airprox was not given until [8 days] after the incident had taken place.

Factual Background

The weather at Dundee was recorded as follows:

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METAR EGPN 051550Z 0000KT 9999 FEW030 02/00 Q1017
METAR EGPN 051520Z 0000KT 9999 FEW030 02/01 Q1016
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Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. No aircraft were observed on radar in the moments leading up to CPA. The DA42 was observed from MLAT data (Figure 1) although the track data was fragmented and the DA42 disappeared from view at approximately 1530:10.

The narrative report provided by the pilot of the DA42 described two PA28s in the circuit, both of which had crossed in front of them during their final approach, and that it had been the second PA28 that had been the subject of their Airprox report.



Figure 1 – Aircraft positions at 1531:10 (approximately 30sec before CPA) (MLAT and ADS-B data)

A review of ADS-B data replay was undertaken and both PA28s were observed. The pilot of PA28(1) (who supplied a narrative report as reproduced above) appeared to have been ahead of PA28(2) in the circuit and had turned onto final-approach in the moments leading up to CPA (Figure 2). The relative positions of all 3 aircraft at the moment of CPA could not be determined.

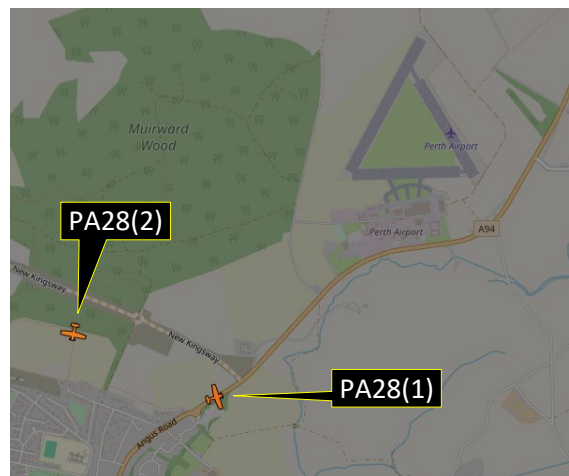


Figure 2 - The relative positions of PA28(1) and PA28(2) at 1531:40 (approximate time of CPA) (ADS-B data)

The diagram was constructed by integration of MLAT and ADS-B track data and the pilot's narrative reports. The separation at CPA could not be determined.

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 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 DA42 and a PA28 flew into proximity in the Perth ATZ at approximately 1532Z on Tuesday 5th December 2023. Both pilots were operating under VFR in VMC, in receipt of a AGCS from Perth Radio.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, MLAT and ADS-B data, and a report from the Air/Ground Radio Operator 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. Members noted that they had been informed by the Perth AGO that there had been 2 aircraft in the circuit and that they had, consequently, joined via the overhead and had descended into the circuit pattern. Members noted that the pilot of the DA42 had believed that there may have been a slower aircraft ahead of them in the circuit and had elected to reduce their speed and extend their downwind leg outside the ATZ to accommodate this slower aircraft. Members noted that the pilot of the DA42 had made a call to the Perth AGO to clarify the positions of the other aircraft. It was noted by members that the narrative report provided by the Perth AGO had also recalled that message and that their response had been that both PA28s had been behind the DA42 (nominally labelled as PA28(1) and PA28(2) for ease of understanding). It was therefore inferred by members (although had not been specified by the Perth AGO) that the order in the circuit had been that the DA42 had been 'leading' the pattern, followed by PA28(1), followed by

¹ (UK) SERA.3205 Proximity.

² (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

PA28(2). Consequently, members agreed that the pilot of the DA42 had gathered situational awareness of the presence of both PA28s in the circuit and had held a generic awareness of their relative positions **(CF6)**.

Members considered the downwind leg that had been extended outside the ATZ. It was agreed that, whilst the pilot of the DA42 may have considered it to have been a normal procedure for their aircraft type to have extended their circuit in this manner, they had been aware that there had been other pilots in the circuit, and may not have appreciated that those pilots would have been constrained to have followed a similar circuit pattern. As such a wide circuit would not have been considered normal, or typical, for the pilot of a PA28, members were in agreement that it would have been prudent for the pilot of the DA42 to have transmitted their intention to have flown a wide circuit, particularly as they had, effectively, formed a pattern of traffic outside the ATZ **(CF2)**.

Members pondered the descriptions of how the subsequent events had unfolded as recalled in the narrative reports provided by the pilot of the DA42, the pilot of PA28(1) and the Perth AGO, and noted some apparent inconsistencies with the accounts. On one hand, the pilot of the DA42 had described that, as they had turned onto final, a pilot had 'cut-in' and had subsequently conducted a go-around and had positioned to the dead-side. Then, moments later, a second pilot had also 'cut-in' and that it had been that second aircraft with which they had declared the Airprox. Had that been the case, members deduced that, by reference to the order of the aircraft within the circuit, it had appeared to have been the pilot of PA28(2) that had been involved in the Airprox. On the other hand, members noted that the pilot of the DA42 had identified the registration of PA28(1) as having been the aircraft with which they had had the Airprox encounter. In addition, the account of events provided by the pilot of PA28(1) suggested to members that the Airprox encounter had actually occurred with their aircraft. This was because the pilot of PA28(1) did not recall having heard another pilot transmitting that they had been conducting a go-around ahead of them. Also, the pilot of PA28(1) had not initiated a go-around themselves, nor had they positioned to the deadside of the circuit but had, in fact, continued to land. Members agreed that a corroborating factor for that version of events had been the narrative report provided by the Perth AGO that suggested that it had been the first PA28 to have 'cut-in', i.e., PA28(1), that had been the subject of the Airprox. On balance, members were satisfied that it had been the pilot of PA28(1) that had been the pilot involved in the Airprox encounter and subsequently referred to their aircraft as 'the PA28' without specifying an identifying number.

Turning their attention to the moment that the PA28 had been visually acquired, members noted that a rear-seat passenger in the DA42 had sighted the PA28 approximately 100ft ahead of them and had alerted the pilot of the DA42 accordingly. As such, members agreed that the pilot of the DA42 had sighted the PA28 late **(CF7)**. Members were keen to emphasise the imperative of a very thorough and effective lookout, particularly when operating in the visual circuit.

Members next considered the actions of the pilot of the PA28. Noting that they had heard the pilot of the DA42 call on the radio to join the circuit via the overhead, members agreed that the pilot of the PA28 had gathered generic situational awareness of the DA42 **(CF6)**. Further, members agreed that, if the pilot of the PA28 had heard the call on the radio made by the pilot of the DA42 to clarify the position of 'the other traffic' in the circuit, they may have concluded that the DA42 had been ahead of them in the pattern. In consideration of their subsequent turn onto final, members agreed that it would have been imperative for the pilot of the PA28 to have been certain of the position of the DA42 and fully satisfied that it had been safe for them to have initiated their turn. However, members noted that the low sun had hindered the PA28 pilot's vision **(CF9)**, and suggested that it would have been most prudent indeed for them to have made a call on the radio to have ascertained the position of the DA42 if they had been unsure **(CF5)**, prior to having made the turn onto final.

Whilst appreciating that the pilot of the PA28 may not have expected the DA42 pilot to have flown such a wide circuit, members agreed that the pilot of the PA28 had not complied with the correct circuit procedure in that they had not conformed with the existing pattern of traffic **(CF1)**. In further consideration of the PA28 pilot's turn onto final, members were in agreement that they had 'cut-in' in front of the DA42 and had not conformed with, nor had effectively avoided, aircraft in the circuit **(CF4)**. It was further agreed that the pilot of the PA28 had not executed their flight within the circuit correctly

(CF3) given that they had not visually acquired the DA42 (CF8) and had assumed that it had remained ahead of them or, perhaps, that it had left the circuit altogether.

Turning to the matter of electronic conspicuity, members were surprised that neither aircraft had been fitted with additional EC equipment. Members wished to strongly encourage the fitment of additional EC equipment which, on this occasion, may have provided a timely alert to the proximity of conflicting traffic.

In consideration of the actions of the Perth AGO, members agreed that there had been little more that they could have done within the privileges of their licence to have assisted in the situation.

Concluding their discussion, members were in agreement that the pilot of the PA28 had not been aware of the position of the DA42 and had not executed the circuit procedure correctly. Members also agreed that the pilot of the DA42 had not relayed their intention to have extended their downwind leg outside the ATZ and, after having turned onto final approach, had visually acquired the PA28 late. Although the separation at CPA could not be determined, members were in agreement that safety had not been assured and that the situation had presented a risk of collision (CF10). It was agreed that the actions of the pilot of the DA42, which had increased separation at the last minute, may have averted a far more serious outcome. As such, the Board assigned Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2023261				
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	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
3	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
4	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				
5	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
6	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
• 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
9	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	
• Outcome Events				
10	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:

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **not used** because the Perth AGO had not been required to have sequenced the aircraft in the ATZ.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the pilot of the PA28 had not conformed with, nor had avoided, the pattern of traffic formed by the pilot of the DA42.

Tactical Planning and Execution was assessed as **ineffective** because the pilot of the PA28 had not conformed with the pattern of traffic in the circuit.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the PA28 had not requested additional information that may have assisted their situational awareness of the position of the DA42.

See and Avoid were assessed as **partially effective** because the pilot of the PA28 had not sighted the DA42 that had been positioned on final approach.

Airprox Barrier Assessment: 2023261		Outside Controlled Airspace		Effectiveness				
Barrier		Provision	Application	Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]				
	Manning & Equipment	✓	✓	[Green bar to 2.5%]				
	Situational Awareness of the Confliction & Action	!	○	[Red bar to 15%]				
	Electronic Warning System Operation and Compliance	●	●	[Grey bar to 2.5%]				
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗	[Red bar to 10%]				
	Tactical Planning and Execution	✓	✗	[Red bar to 10%]				
	Situational Awareness of the Conflicting Aircraft & Action	!	✗	[Red bar to 20%]				
	Electronic Warning System Operation and Compliance	●	●	[Grey bar to 15%]				
	See & Avoid	!	!	[Yellow bar to 20%]				
Key:		Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision	✓	!	✗	●				
Application	✓	!	✗	●	○			
Effectiveness	■	■	■	■	□			

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