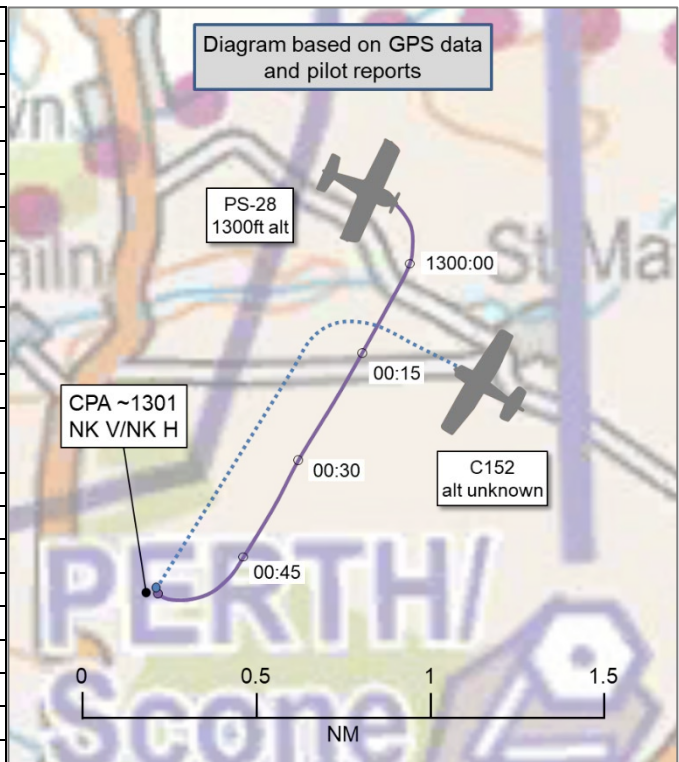


AIRPROX REPORT No 2021246

Date: 17 Dec 2021 Time: ~1301Z Position: 5627N 00324W Location: Perth visual circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|--------------------------|-------------------|-----------------------|
| Aircraft | C152 | PS-28 |
| 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 | NR | 1300ft ¹ |
| Transponder | None ² | None ³ |
| Reported | | |
| Colours | White | White, blue |
| Lighting | Beacon | Strobes, landing, nav |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 1400ft | 1300ft |
| Altimeter | QNH (1042hPa) | QNH (1042hPa) |
| Heading | 210° | 275° |
| Speed | 90kt | 98kt |
| ACAS/TAS | Not fitted | Not fitted |
| Separation at CPA | | |
| Reported | 50ft V/10m H | 200ft V/0m H |
| Recorded | NK V/NK H | |



THE C152 PILOT reports that they were completing a final circuit (RW03 in use) on a Flying Instructors' Course (FIC) flight. They had mentally noted that, before its departure, the pilot of the other aircraft stated that they were carrying out one circuit to test systems before continuing to destination airfield. Their student instructor had completed the turn from the crosswind to downwind leg. At this point, they visually scanned the RW climb-out area twice, looking for this particular aircraft, but did not make visual contact and concentrated their scan ahead in order to confirm their spacing (No 3) behind a gyrocopter (No 2) and a fixed-wing (No 1) would be sufficient for them to conduct a glide approach to land on RW03. They were approaching the downwind leg position when [the PS-28] was spotted by the FIC Instructor [the reporting pilot] in their 11 o'clock position approximately 10m away and 50ft below, moving left-to-right perpendicular to the downwind leg. There was insufficient time to react and take avoiding action. The FIC student sitting in the right-hand seat observed the aircraft emerging on their side of the aircraft moving in the same direction. The aircraft was then observed to turn initially in an upwind direction before turning back to the original direction. The aircraft was then no longer visible to them and they continued downwind with the other circuit traffic in sight and continued their original planned glide approach without further incident. They briefly discussed the incident on the taxi-in and during the classroom debrief, where they noted the effect of nil wind on their climb-out gradient. However, their downwind leg had not been wide, as evidenced by the successful glide approach being conducted with the throttle closed on the downwind leg abeam the landing threshold with surplus energy at all stages until just prior to landing. They believe the other aircraft completed a touch-and-go and then continued en-route.

¹ GPS-derived.

² The C152 pilot reports transponding Modes A and C, but these were not detected by the NATS radars whilst the aircraft was in the Perth visual circuit.

³ The PS-28 pilot reports transponding Modes A, C and S, but these were not detected by the NATS radars whilst the aircraft was in the Perth visual circuit.

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

THE PS-28 PILOT reports that they believe that they made two errors here. First, they did not leave sufficient space after the C-172 [actually the Airprox C152] in front of them before commencing their take-off roll. The result was that they would have converged on the C-172 [sic] as it started its downwind leg. Therefore, they elected to fly behind and under the C-172 [sic] (their second error) and perform an orbit in order to increase separation. This resulted in poor vertical and horizontal separation because they did not take account of the performance difference between the two aircraft. Contributory factors were:

- The C-172 [sic] was flying a much larger circuit than they had anticipated (possibly due to training).
- Lack of currency (they were collecting the aircraft from an extended maintenance check and had not flown in approximately 8 weeks).
- Poor situational awareness exacerbated by lack of familiarity with the circuit in use that day (RW03). They have been unable to find any published information on the circuit pattern in Scone Airport SOPs, and there is no visual representation of it on SkyDemon as is common with other aerodromes. Notwithstanding their own errors here, which they will learn from, they feel that provision of this information for visiting pilots would increase safety.

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

A PERTH AIR GROUND OPERATOR reports that they consulted the Tower log for that day and established that the C152 took-off at 1151 for 1 hour's local flying, during which time it conducted 3 circuits and landed at 1302. The PS-28 took-off at 1257 and was booked out to [destination airfield] with no indication that the pilot wished to conduct a circuit. At the time of the PS-28's take-off, the circuit was active with the aircraft mentioned above and one or 2 others (it is not possible to give a definitive number).

Factual Background

The weather at Dundee Airport was recorded as follows:

METAR EGNP 171250Z 25003KT CAVOK 06/05 Q1042=

Analysis and Investigation

UKAB Secretariat

The Airprox took place below the coverage of the NATS radars. However, the PS-28 furnished the UKAB with their GPS log file from the flight, from which it was possible to establish the PS-28's track and altitude whilst in the Perth visual circuit. Because no such data was available for the C152, it has not been possible to measure the CPA.

The C152 and PS-28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.⁴ 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.⁵

Summary

An Airprox was reported when a C152 and a PS-28 flew into proximity in the Perth visual circuit at approximately 1301Z on Friday 17th December 2021. Both pilots were operating under VFR in VMC, and both pilots were in receipt of an AGCS from Perth Radio.

⁴ (UK) SERA.3205 Proximity.

⁵ (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 and a report from the air ground operator. 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 C152 pilot and heard from a GA pilot member that there was little that the C152 pilot could have done to avoid the Airprox. The Board agreed that the C152 pilot had been aware that the PS-28 had been behind them in the circuit, but that they had not had specific situational awareness regarding how close the PS-28 had been to their aircraft (**CF4**). Members noted that neither aircraft had been fitted with any additional form of electronic conspicuity equipment, and considered that, had the C152 been so equipped, this may have assisted its pilot in gaining sufficiently accurate situational awareness to have been able to manoeuvre to increase separation from the PS-28 before sighting it. Although there was no guarantee that this would have been the case, 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 2023.⁶ Returning to the incident itself, members discussed the See and Avoid barrier's effectiveness from the perspective of the C152 pilot and agreed that, because the PS-28 had been behind the C152, the C152 pilot had not been able to see the PS-28 until it had been passing under their aircraft and this had been too late for the C152 pilot to take any action to increase separation (**CF6, CF7**).

Turning to the actions of the PS-28 pilot, the Board was grateful for their open and honest analysis of their performance and lessons identified from this Airprox. Members agreed that the catalyst for this Airprox had been that the PS-28 pilot had not left sufficient time (and therefore distance) between the C152's take-off ahead of them and their own departure (**CF1**), noting that the PS-28 pilot had identified this themselves at the time. Members felt that the PS-28 pilot may have misjudged the climb-rate of the C152 – which had 2 occupants – compared to their own aircraft with only one occupant which had probably exacerbated the potential for the PS-28 to catch up with the C152. Notwithstanding, the Board agreed that it had been for the PS-28 pilot to integrate with the pattern formed by the C152; however, the Board has often commented that the practice of orbiting in the visual circuit to maintain or generate separation from other aircraft should only be executed at airfields with air traffic controllers, because the controller will be able to assist the pilot in achieving adequate separation from other circuit traffic whilst an AFISO or AGO can only pass information to pilots when airborne. Therefore, the Board concluded that the PS-28 pilot's plan to generate separation from the C152 by orbiting had not been effective in integrating their aircraft into the circuit and that the PS-28 pilot had flown into conflict with the C152 (**CF2, CF3, CF5**).

Finally, the Board considered the risk involved in this Airprox. Members noted that the C152 pilot had been unsighted on the PS-28 until it had been too late for them to take any effective action to increase separation, but that the PS-28 pilot had been visual with the C-152 as they tried to integrate into the circuit behind it. Although there had been no GPS or radar data for the C152 available to the Board, members noted that both pilots had assessed there to be very little lateral separation, although their assessments of vertical separation differed by 150ft. Members considered that directly under-flying another aircraft should be avoided because any unpredicted change in altitude of the aircraft being under-flown will naturally present a higher risk to the under-flying aircraft. Therefore, the Board agreed that safety had not been assured and that a risk of collision had existed (**CF8**). Accordingly, the Board assigned a Risk Category B to this incident.

⁶ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

| 2021246 | | | | |
|---|---------------|--|---|---|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 1 | Human Factors | • Action Performed Incorrectly | Events involving flight crew performing the selected action incorrectly | Incorrect or ineffective execution |
| 2 | Human Factors | • Insufficient Decision/Plan | Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation | Inadequate plan adaption |
| 3 | 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 | | | | |
| 4 | 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 | | | | |
| 5 | Contextual | • Loss of Separation | An event involving a loss of separation between aircraft | Pilot flew into conflict |
| 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 |
| 7 | Contextual | • Visual Impairment | Events involving impairment due to an inability to see properly | One or both aircraft were obscured from the other |
| • Outcome Events | | | | |
| 8 | 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 Assessment⁷

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 Conflicting Aircraft and Action were assessed as **not used** because both pilots were operating with an Air Ground Communications Service and, as such, the Air Ground Operator can only pass information to pilots.

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the PS-28 pilot did not leave sufficient separation from the C152 before commencing their take-off roll, and subsequently did not conform with the pattern of traffic formed by the C152.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the C152 pilot only had generic situational awareness of the PS-28 being behind them and entering the visual circuit.

⁷ 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 the PS-28 pilot, although visual with the C152, did not take early enough action to ensure sufficient separation.

| Airprox Barrier Assessment: 2021246 | | Outside Controlled Airspace | | Effectiveness | | | | |
|--|--|-----------------------------|--------------------|--------------------------|-----------------------------------|-----------------|-----|-----|
| Barrier | | Provision | Application | 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: | | <u>Full</u> | <u>Partial</u> | <u>None</u> | <u>Not Present/Not Assessable</u> | <u>Not Used</u> | | |
| Provision | ✔ | ⚠ | ✘ | ⊘ | | | | |
| Application | ✔ | ⚠ | ✘ | ⊘ | ○ | | | |
| Effectiveness | | | | | | | | |