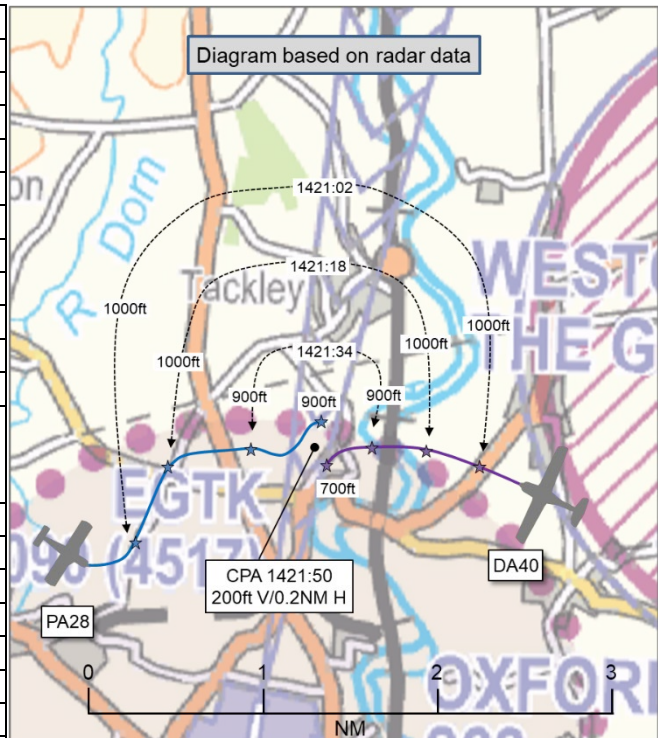


AIRPROX REPORT No 2024054

Date: 13 Apr 2024 Time: 1422Z Position: 5152N 00118W Location: Oxford Kidlington ATZ

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|--------------------------|-----------------------------------|------------------------------------|
| Aircraft | PA28 | DA40 |
| Operator | Civ FW | Civ FW |
| Airspace | Oxford ATZ | Oxford ATZ |
| Class | G | G |
| Rules | VFR | VFR |
| Service | ACS | ACS |
| Provider | Oxford Tower | Oxford Tower |
| Altitude/FL | 900ft | 700ft |
| Transponder | A, C, S | A, C, S+ |
| Reported | | |
| Colours | Blue and brown | White |
| Lighting | Landing, Taxi, Navigation, Beacon | Landing, Taxi, Navigation, Strobes |
| Conditions | VMC | NR |
| Visibility | >10km | NR |
| Altitude/FL | 1000ft | 900ft |
| Altimeter | QNH | QNH |
| Heading | 100° | NR |
| Speed | 75kt | NR |
| ACAS/TAS | Not fitted | Not fitted |
| Separation at CPA | | |
| Reported | 300ft V/1.0NM H | 1000ft V/2NM H |
| Recorded | 200ft V/0.2NM H | |



THE OXFORD CONTROLLER reports that, following a period of reflection over 24hrs, they have elected to file an Airprox on a serious near-miss which occurred whilst they had been operating as an OJTI to a very low hours (less than 10) ADI/ADV trainee. At approximately 1420, they had been required to take control of the RT and issue an immediate instruction to [the PA28 c/s] to "break left, break left, break left" (repeated twice) to prevent what they perceived as a possible serious near-miss/mid-air collision between the PA28 and a DA40 on the right and left base (respectively) of the visual circuit for RW19. This assessment had been based on the position of each aircraft, head on, and the displayed vertical separation from the Mode C of each aircraft from the ATM. This situation occurred because the PA28 pilot had turned onto right-base from a pre-planned orbit at the end of downwind right-hand leg and into direct conflict with the DA40 which had been on left-base. The pilot of the PA28 had been informed twice, whilst in the orbit, that they had been number two to a DA40 on left-base and to report the traffic in sight. The pilot of the PA28 made a transmission stating they had been "visual" and was instructed to report final number two. After this instruction, the trainee had been giving further taxi instructions to [the pilot of] another DA40 who had just landed from an ILS approach to vacate the runway, when the Oxford controller had noticed, primarily from observation of the ATM, that the PA28 pilot had started a turn onto right-base and into direct conflict with the DA40. Owing to a strong westerly wind (18-20kts) the rate of closure between the two aircraft had been significantly increased and the time to react severely limited. The Oxford controller initiated the RT response action outlined above in what they believed to have been the best course of collision prevention. From their best recollection, the PA28 pilot had executed a left-hand turn to the north without any acknowledgement. [They recall that] at that point, from information seen on the ATM, the aircraft had almost merged and there had been a Mode C separation of 100ft indicated on the SSR responses. The bright, cloudy, weather conditions had made it difficult to see both aircraft clearly from the Tower perspective to make an accurate visual assessment of miss-distance. The DA40, flown by a solo student, landed safely with no comment made about this occurrence and the PA28

pilot, who had subsequently been instructed to orbit after the left turn instruction had then been instructed to land very shortly afterwards. There had been no RT exchange from the pilot of the PA28.

THE PA28 PILOT reports that they are a commercial pilot but currently working as a flight instructor. The incident had occurred on a PPL training flight with a student where they had been performing circuits at Oxford. RW19 had been in use at the time and is normally a LH circuit unless otherwise stated by the controller. The PA28 pilot and student performed one LH circuit on RW19 and, [whilst on the climb-out], had been asked by the controller to perform a RH circuit as probably [they thought] it had got a bit busy in the circuit. The student appeared confused with the RH circuit, so the Instructor pilot had to direct them how to establish on the RH circuit for RW19. During the second RH circuit on RW19 the student had been asking questions on how best to establish and fly [the procedure] correctly because it had been unusual to them and at the same time they had been trying to pay as much attention as they could to the communication on the radio between the controller and traffic. As they had been flying on right mid-downwind RW19 the controller had instructed them to perform a left orbit at a late downwind position, which they did. The PA28 instructor pilot had directed the student to perform the left orbit. As they had been completing the left orbit they had seen traffic on short final. Once they had fully completed the left orbit the controller had said to stop the orbit and turn on right base and report final number 2 and this is what they had read back plus that they had the traffic in sight (because they had seen traffic during the left orbit). The student had then turned on right-base for RW19 and they had been trying to spot the number 1 traffic but couldn't and then after a while a different voice from the tower (controller) had said to 'break left break left' and the instructor had taken over the control from the student, who had been flying up to that point, and turned left. The altitude had been around 1000ft on QNH and speed around 75kt when the controller had said to break left. The PA28 instructor pilot had been told by [an]other instructor that there had been training in the tower hence the different voices heard. The instructor pilot noted that 'until today they have been asking themselves and wonder why the controller had told them to stop the left orbit and establish on right-base RW19 when there had been other traffic on left base RW19 (as they had been told that by the tower after they had landed) and thought that it would have been better to continue the left orbit or extend the downwind leg which would have created a safe separation distance between their aircraft and the other traffic'. After the incident the controller had requested them to stop flight training and land and they had complied. The PA28 instructor pilot believes that the DA40 had also been asked to land. In a few words, what happened had been that the PA28 pilot had been told to turn on right base RW19 as number 2 when on left base RW19 the number 1 traffic had been there, which doesn't really make sense as it would bring the two aircraft closer.

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

THE DA40 PILOT reports that they had been on left-base and had been told from Oxford Tower that they were "number 1 to land and report final." The other aircraft had been told they were "number 2 to land after the DA40 on 2NM final." Just before the DA40 pilot had started their turn onto final, they had heard ATC tell the other aircraft (number 2) to turn left immediately to avoid a collision. The DA40 pilot had seen the traffic ahead and began their turn early. They had then continued their approach on final and had been cleared to land.

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

Factual Background

The weather at Oxford/Kidlington was recorded as follows:

METAR EGTK 131420Z 24014KT 9999 FEW040 17/09 Q1019=

Analysis and Investigation

OXFORD ATC INVESTIGATION

Timeline

PA28 had previously been instructed to orbit downwind right-hand until advised.

DA40 had been routeing in from the east, VFR, for a left-base join.

Whilst the DA40 had been in a left-base position, the Tower trainee had issued the following:

1421 - OXF TWR: [PA28 c/s], number 2, number 1 is a DA40 on left-base, report traffic in sight

1421 - PA28 pilot - Traffic in sight, [PA28 c/s], number 2.

1421 - OXF TWR: [PA28 c/s], Roger, cancel orbit, report final, number 2 follow the DA40 on left-base.

1421 - PA28 pilot: follow the traffic, number two, report final, [PA28 c/s].

1421 - OXF TWR (OJTI): [PA28 c/s], break left, break left, you're head on to opposite direction traffic.

1422 - OXF TWR (OJTI): [PA28 c/s], break left, break left.

1422 - PA28: Breaking left, [PA28 c/s].

1422 - OXF TWR (OJTI): [DA40 c/s], the Cherokee has broken left, fairly close to you there.

1422 - OXF TWR (OJTI): [PA28 c/s], just continue in the orbit until advised.

1422 - PA28: Continue orbit until advised, [PA28 c/s].

1422 - OXF TWR (OJTI): OK, the instruction was quite clear you were number two to that traffic, you almost collided with it.

1423 - PA28 pilot: Number two traffic, [PA28 c/s], copied.

From here the Oxford Tower OJTI informs the PA28 pilot to report final and that this approach will be to land (aircraft had been established in the circuit).

Analysis

Prior to knowing this event was going to be submitted as an Airprox, the CFI for the operator of the PA28 was contacted reference the event, they provided the following information: "I've spoken to the instructor involved as you had. They explained the situation from their point of view and whilst all can read the transcript and agree the instruction from the Tower controller had been clear, this might be an example how even a clear instruction can be misunderstood".

Background

This was not a new pilot instructor but new to Oxford and new to the busy environment there. They had not been used to being put under time pressure and had been trying to fit in their required students for that day. The student [in this event] had been asking questions right at the time the instructions were being transmitted by the Tower controller. Whilst orbiting, the PA28 crew had spotted the aircraft that was on very short finals and had assumed that that had been the aircraft to follow rather than the one on left-base. Even when explaining what had happened, they hadn't known that the other aircraft they were supposed to be following had been on the opposite base. [...]. They had [subsequently] discussed at length things to look out for in the future as well as making sure their flying days have a limited number of students to help them manage their time better. [...].

Oxford Tower was operating in light to moderate traffic, in the Tower position was a new Tower trainee with less than 10 hours training prior to this date. The OJTI was an experienced controller and former UA. [The Ground Movements Control position] was not open but was available had traffic loading dictated. It was noteworthy that the CFI from the flying organisation involved noted that the instructor had specified "whilst orbiting he had spotted the aircraft that was on very short finals and ended up making an assumption that that was the aircraft to follow rather than the one on left-base." It was difficult from an investigation point of view to ascertain from the radar recording whether the aircraft ahead of these two aircraft (another DA40) had touched down when the Traffic Information and landing order was passed to the pilot of the PA28 the first time around. The Mode C on the aircraft ahead was A003, this is standard for when an aircraft is on the ground but equally could be on very short final. On speaking with the Tower trainee at the time, they were confident that it had touched down prior to the landing order being relayed to the PA28 pilot. The Traffic Information and position report the PA28 pilot was required to follow was very clear and accurate and as the transcript above shows was passed twice together with what was thought to be a visual sighting report from the crew of the PA28. The emerging situation was spotted and ultimately rectified in a timely manner by the Oxford OJTI. It remains unclear as to whether either of these two aircraft ever got a sufficient sighting of each other or whether it was only through the OJTI's instructions to "break left" that a collision was ultimately avoided. We await the Airprox report reference this following their investigation and consultation with pilots involved. The only item for the unit here is whether the DA40 ahead of both aircraft who'd just completed an ILS approach to land had touched down when the PA28 pilot had

been told they were “number 2”, as previously stated. However, the radar return was showing A003 which would lead the investigator to [believe] it had just touched down. With this, the Tower controller’s Traffic Information on the position of the aircraft which needed to be followed (passed twice as “left base”) was very clear and accurate and as such, an aircraft anywhere near short final [they would argue] shouldn’t have generated this confusion.

Root cause analysis

Misidentification of aircraft in the circuit by the instructor pilot on board the PA28.

Root cause corrections

Importance of appropriate landing order instructions to be passed by Tower ATCOs should be monitored by the Oxford Airport UCS. (Note: there is no clear evidence of an incorrect landing order being specified within this report).

Recommendations

Event to be utilised for unit training (pending approval from those involved).

CAA ATSI

The Oxford investigation report appears to highlight a mis-identification of the DA40 by the PA28 pilot. The RT had been standard, and the controller had been within their right to assume that when the PA28 pilot had reported visual with the traffic they were given (on left base), that the pilot had correctly identified it. There may be a discussion as to whether technically the PA28 had been number 3, which might have highlighted that there were two ahead, one of which being the misidentified aircraft on short final. The unit itself is unable to determine if that aircraft had effectively completed its approach by this time meaning there would have been only 2 remaining in the circuit at the time of the incident. That being said, the PA28 pilot had been told that the one ahead was on left-base and not final.

UKAB Secretariat

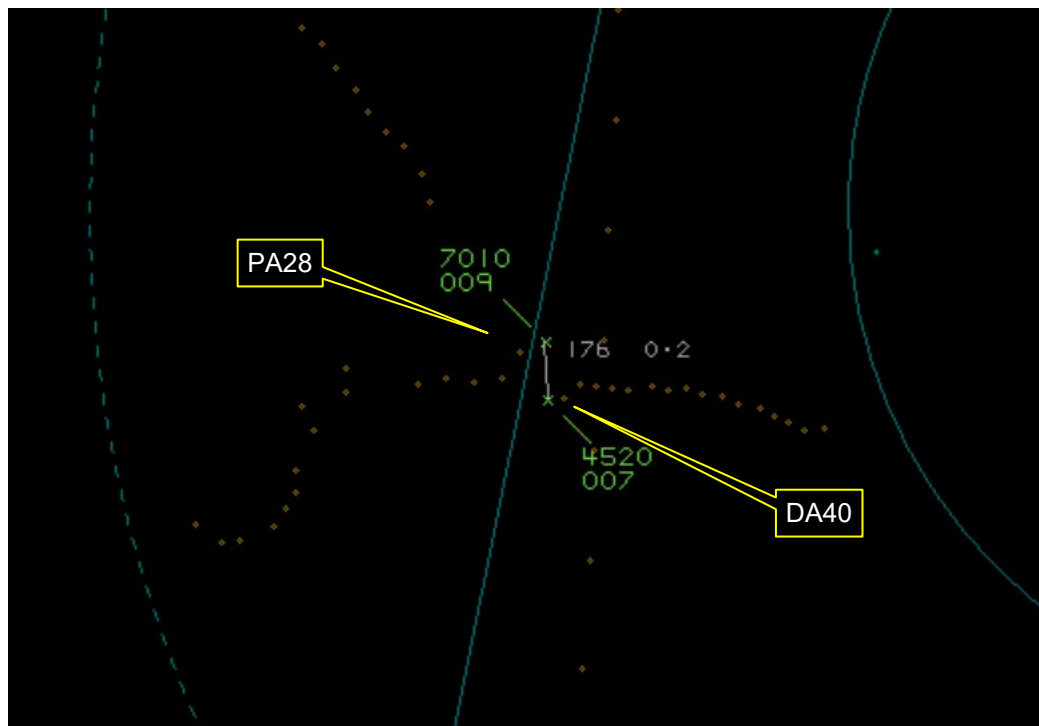


Figure 1: CPA 1421:50 200ft V/0.2NM H

The following is taken from the UK AIP entry for Oxford:

1 CIRCUITS

- a. The fixed wing circuit level is 1500 FT (QNH), 1200 FT (QFE).
- b. The helicopter circuit level is 1000 FT (QNH), 700 FT (QFE) by day and 1300 FT (QNH), 1000 FT (QFE) by night.
- c. Standard fixed wing circuit direction: Runway 01 - right hand, Runway 19 - left hand.
- d. Rotary circuits are opposite direction to fixed wing.
- e. Low-level circuits subject to ATC approval, not below 900 FT (QNH), 600 FT (QFE).

The PA28 and DA40 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 PA28 and a DA40 flew into proximity in the Oxford Kidlington visual circuit at 1422Z on Saturday 13th April 2024. Both pilots were operating under VFR in VMC, and both in receipt of an Aerodrome Control Service from Oxford.

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 controllers 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 discussed the actions of the Oxford controller, noting their decision to file an Airprox report after a period of reflection. Members opined that there had been an opportunity for confusion within the circuit due to the specific circumstances at the time. The PA28 had been on a right-hand circuit, orbiting on downwind whilst a DA40 had been on short final with a second DA40 joining through left-base; the controller had called and repeated the instruction to the PA28 pilot that they had been "number two behind the DA40 on left-base". The Board felt that although these calls had been clear, there had been a further opportunity to perhaps highlight that there had been a third aircraft on short final and add clarity for the PA28 pilot. However, members accepted that the controller had been explicit in their call and had recognised the confliction between the DA40 on left-base and the PA28 on right-base, becoming concerned by the proximity between the 2 aircraft, and had strongly intervened through their "break left" call to prevent a collision (**CF1, CF2**). The Board recognised that the controller had acted appropriately and mitigated the risk of collision within the circuit. Members recognised the value of opposing circuits to generate capacity but believed that this perhaps demands an increased rate of the passing of Traffic Information to enable comprehensive situational awareness for all.

Turning to the actions of the PA28 pilot, members noted the unusual circumstances of their flight, having been switched from a left-hand circuit to a right-hand circuit and then instructed to orbit, all whilst conducting a training sortie with a student. The Board acknowledged the opportunity for confusion within the PA28 cockpit due to the additional DA40 on short final but believed that the PA28 pilot had missed the clarification call from the controller and had believed the DA40 they had seen had been the one called on left-base and had therefore assumed they had had sufficient spacing to begin their base turn onto final. Members did note that the PA28 pilot could themselves have asked for clarification on the position of the number one in the circuit as they had initiated their final turn if they had been in any doubt. Ultimately, the PA28 pilot had incorrectly identified the aircraft ahead of them and had therefore not conformed with the pattern as established (**CF3, CF4**). Members recognised the role that student mentoring had had in their workload (**CF5**) and that that had contributed to missed and mis-interpreted

¹ (UK) SERA.3205 Proximity.

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

calls from the controller (CF6), generating an inaccurate situational awareness (CF7) having not visually acquired the correct number one (CF9) and had not therefore assimilated the impending conflict (CF8).

In considering the actions of the DA40 pilot, members recognised the 'solo student' status of the pilot and that they had remained unflustered by the calls to the PA28 pilot from the controller and had established visual contact with the PA28, initiating an early turn onto final from left-base to increase separation. The Board wished to express praise for their actions in this event.

The Board noted the lack of carriage and use of electronic conspicuity equipment, particularly so in 2 student training aircraft, and once again wished to highlight the positive contribution such equipment can make in such circumstances, even when within the circuit.

Finally the Board discussed the risk. In doing so, they considered the reports from the controller and both pilots. Members agreed that safety margins had been much reduced below the norm but that the actions of the controller, and of the DA40 pilot once they had visually acquired the PA28, had materially increased separation at the last minute. However, the Board considered that these action had not removed the risk of collision entirely (CF10) and, as such, assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| 2024054 | | | | |
|---|---------------|--|--|---|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Ground Elements | | | | |
| • Situational Awareness and Action | | | | |
| 1 | Human Factors | • Conflict Detection - Detected Late | An event involving the late detection of a conflict between aircraft | |
| 2 | Human Factors | • Expectation/ Assumption | Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality | Concerned by the proximity of the aircraft |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 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 | • Mentoring | Events involving the mentoring of an individual | |
| 6 | Human Factors | • Monitoring of Communications | Events involving flight crew that did not appropriately monitor communications | |
| 7 | 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 |
| 8 | Human Factors | • Understanding/ Comprehension | Events involving flight crew that did not understand or comprehend a situation or instruction | Pilot did not assimilate conflict information |
| • See and Avoid | | | | |
| 9 | 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 | | | | |
| 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 **partially effective** because the Oxford Tower Controller had detected the conflict late and had become concerned by the proximity of the PA28 and the DA40.

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the PA28 pilot had not integrated with the pattern of traffic as established by the DA40 who had been on finals from left-base.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the PA28 pilot had not assimilated the conflict information offered through radio calls and had developed inaccurate situational awareness of the sequencing of the circuit.

| Airprox Barrier Assessment: 2024054 | | 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 | | | | | | | | |

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