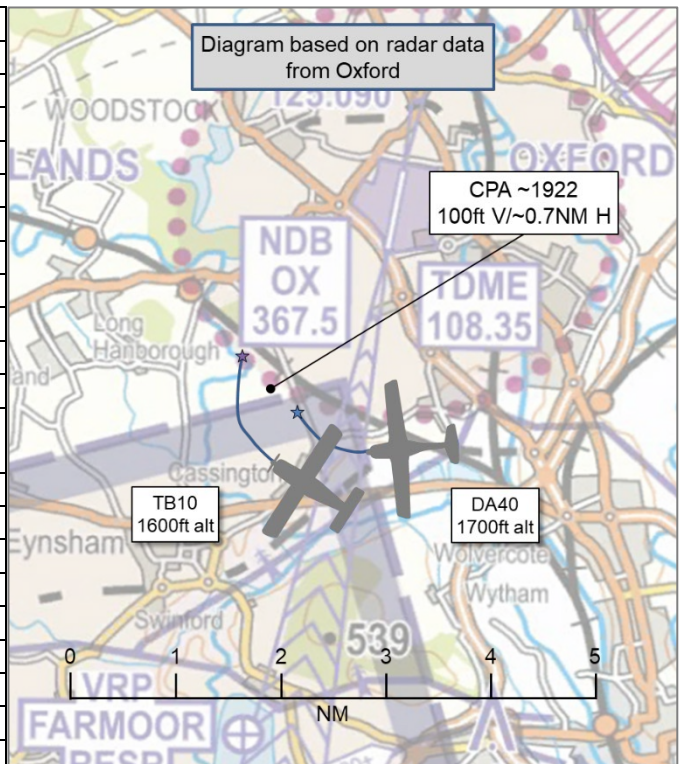


AIRPROX REPORT No 2022036

Date: 24 Mar 2022 Time: ~1922Z Position: 5149N 00121W Location: Oxford visual circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	TB10
Operator	Civ FW	Civ FW
Airspace	Brize CTR	Oxford ATZ
Class	D	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Oxford Tower	Oxford Tower
Altitude/FL	1700ft	1600ft
Transponder	A, C, S+	A, C
Reported		
Colours	White	NR
Lighting	Strobes, landing, nav	NR
Conditions	VMC (night)	NK
Visibility	>10km	NR
Altitude/FL	800ft	NR
Altimeter	QNH (1029hPa)	NK
Heading	170°	NR
Speed	NK	NR
ACAS/TAS	Not fitted	Unknown
Separation at CPA		
Reported	100ft V/0.25NM H	NR V/NR H
Recorded	100ft V/~0.7NM H	



THE DA40 PILOT reports that they were conducting a training flight doing night circuits at Oxford Airport. The flight was a dual-to-solo check for a student doing their first night circuit solo. There was another aircraft in the circuit with them, flying ahead in the circuit, also doing touch-and-go's. They took-off as part of the 3rd or 4th touch-and-go, with the other aircraft comfortably ahead and turning onto a left crosswind for RW19. They looked up and saw the other aircraft mid-point crosswind as they were climbing away from the RW. At this point, ATC came over the radio and instructed the other aircraft to do right-hand circuits to accommodate another aircraft which was joining the circuit from the east. [The TB10 pilot], seemingly confused, asked the controller to say again and they confirmed right-hand circuits. [The TB10] then turned through 180° in the circuit (by this point now about to turn downwind) and re-established for a right-hand circuit. The [TB10] was now heading directly towards them as they continued their climb on the upwind leg. Due to it being night, they didn't want to reduce their rate of climb to allow the aircraft to pass overhead, so instead had to turn left into the circuit to avoid the other aircraft. As they did this, they were also instructed by ATC to carry out a right-hand circuit. The DA40 pilot informed air traffic control that there was another aircraft directly ahead and they confirmed right-hand circuits. They took action by extending their upwind leg (into the Brize CTR) in order to maintain separation before turning right, back into the circuit. Once back in the circuit, they requested an orbit to again increase separation between themselves and the other aircraft. They wish to stress that they don't feel that the other aircraft was in any way at fault, more the poor judgement of ATC to prioritise a joining aircraft over two aircraft already in the circuit by asking [the pilots of the aircraft in the circuit] to do an abnormal right-hand circuit. Furthermore, ATC should have seen that the other aircraft was already on left crosswind and not asked them to turn about and fly the wrong way towards the DA40.

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

THE TB10 PILOT did not wish to submit a report but provided a narrative:

The TB10 pilot believes that the situation being referred to was when they were just starting some night circuits and on climb-out from RW19 at Oxford. On climb-out, the ATC controller asked them to turn right and do a right-hand circuit (normal pattern is left-hand). They did this, and the DA40 which was behind them in the circuit simply seemed to take exception to that for some reason. At no time were they in direct conflict. They were both directly under ATC control and within the circuit pattern. The airport operates full radar facilities which were in live use, so there would be no misunderstanding of their positioning. They do not understand how the DA40 pilot/instructor interpreted that situation as an Airprox. The TB10 pilot had to think really hard to associate the email informing them of the Airprox with anything that actually happened. They flew several circuits that evening and had calm instruction from ATC the whole time, with the occasional orbit for spacing, so they can't think of any other events which an Airprox report may refer to. They were asked at short notice to perform a right-hand circuit while climbing-out, which they did.

The pilot did not make an assessment of the risk of collision.

THE OXFORD CONTROLLER reports that they were the ADI/APP ATCO. RW19 was in use. [The TB10] departed at 1919 for a solo circuit flight. [The DA40] completed a touch-and-go at 1920 and was following [the TB10] upwind. [The TB10 pilot] was asked to turn in to the right-hand visual circuit due to faster traffic [a PA46] inbound from the east which was requesting a visual approach via left-base. [The TB10 pilot] delayed in making this turn and entered the Brize CTR. As [the TB10 pilot] made the right turn crosswind, [the DA40 pilot] queried the intentions of the aircraft ahead. [The DA40 pilot] was told that the aircraft was turning in to the right-hand circuit and to follow it crosswind right. [The PA28 pilot] requested an orbit for spacing, which was approved. Both aircraft then orbited downwind ([the TB10] late downwind, [the DA40] early downwind) to position behind [the PA46] which was number one.

Factual Background

The weather at Brize Norton was recorded as follows:

METAR EGTK 241920Z 33004KT CAVOK 12/00 Q1029=

Analysis and Investigation

Oxford ATC Unit Investigation

Oxford was operating with a single controller, the Tower and Approach task combined on frequency 125.090MHz. The fixed-wing circuit was active left-hand on RW19 together with several VFR aircraft operating in the local area in receipt of a Basic Service from Oxford. At time 1920:00, [the pilot of] an IFR inbound ([PA46]) first made contact with Oxford Approach and requested a visual approach inbound from the east. To accommodate the most expeditious routing for this aircraft, the Oxford controller communicated the following with [the TB10 pilot] (who had just been cleared for take-off into the fixed-wing circuit – standard circuit direction being left-hand off RW19) and [the DA40 pilot] (also operating in the fixed-wing circuit):

1920:13: OXF TWR/APP: “[TB10 c/s], can you make this a right-hand circuit?” (at this time the radar replay shows the aircraft to be climbing-out, Mode C indicating 600ft)

19:20: [TB10 c/s]: “Say again?”

19:20: OXF TWR/APP: “[TB10 c/s], can you make this a right-hand circuit please?”

19:20: [TB10 c/s]: “Er wilco, [TB10 c/s]”

19:20: OXF TWR/APP: “Thanks”

Following this, the controller continued to clear [the PA46 pilot] for a visual approach via a left-base join for RW19 (clearance to cross D129 was also issued).

1921:00 [DA40 c/s]: “[DA40 c/s] I’ve got the aircraft in front of me doing a one-eighty on left crosswind, is that correct?”

19:21: OXF TWR/APP: “[DA40 c/s] he’s gonna go right into the circuit so if you erm if you just follow him into the right-hand circuit please.”

19:21: [DA40 c/s]: “Wilco, [DA40 c/s]”

1921: [The TB10] infringed Brize Norton CTR

1922: [The DA40] infringed Brize Norton CTR

19:22: [DA40 c/s]: “[DA40 c/s], request one orbit for spacing please”

19:23: OXF TWR/APP: “[DA40 c/s], affirm if you just continue a little further out to the west and then er make a right-hand orbit to keep out of the Brize CTR”

19:23: [DA40 c/s]: “Roger, [DA40 c/s]”

19:24: [TB10 c/s]: “[TB10 c/s], downwind, runway 19”

19:24: OXF TWR/APP: “[TB10 c/s], at the end of the downwind leg orbit left until advised, you’ll be number two, number one is a Malibu that’s joining on left-base from the east”

19:24: [TB10 c/s]: “Orbit left, end of the downwind, and be number two, [TB10 c/s]”

19:25: OXF TWR/APP: “[TB10 c/s], if you make a left-hand orbit current position”

19:25: [TB10 c/s]: “Enter left-hand orbit, [TB10 c/s]”

19:25: [DA40 c/s]: “[DA40 c/s], right-hand downwind, one-nine”

19:25: OXF TWR/APP: “[DA40 c/s], just make one more right-hand orbit then continue downwind”

19:25: [DA40 c/s]: “Wilco, [DA40 c/s]”

19:26: OXF TWR/APP: “[TB10 c/s], if you position to at least a two mile for runway one-nine, number one just turning onto a one mile final now”

19:26: [TB10 c/s]: “Two mile final for runway one-nine, [TB10 c/s]”

19:26: OXF TWR/APP: “[DA40 c/s], continue downwind now, you’re number three, number two is late downwind just positioning for a two mile final”

19:26: [DA40 c/s]: “Wilco, [DA40 c/s], and you might want to call Brize, we just infringed trying to keep out the way of that aircraft”

The Oxford task was being conducted by a single controller operating Tower and Approach combined (as is standard for this time of day whereby traffic levels are deemed to be low). Traffic loading was light and weather conditions CAVOK. The Oxford TWR/APP controller was handling a mix of VFR flights and a single IFR flight that had just made contact with Oxford from the airways system. The Oxford controller was pro-active in attempting to accommodate a visual approach which had been requested by the IFR inbound ([a PA46]) from the east. As RW19 was in use, the controller attempted to clear the left-hand circuit in order for the faster moving IFR inbound to join visually from the east without having to ‘fit in’ with the slower moving circuit traffic.

An instruction for [the TB10 pilot] to join the right-hand circuit was given whilst the aircraft was passing 600ft on Mode C (note: circuit aircraft fly on the QNH at Oxford and aerodrome elevation is 263ft). This request from the controller came as soon as the inbound [PA46 pilot] requested the visual approach and so was as timely as could be reasonably expected. The controller was required to repeat the instruction but it was acknowledged by the pilot of [the TB10] with “Wilco”. [The TB10 pilot] was known to be a student pilot so, with the benefit of hindsight, this arguably could be considered to have been a difficult manoeuvre for the student to execute and one with which they may have been unfamiliar. That said, it was also noted that the pilot did not use the prefix ‘student’ at any point and, as per CAP413, this should have been specified on first contact and likewise when given the instruction to enter the right-hand circuit this again would have been useful in accordance with CAP413 which states the prefix may be used when “they feel they are being instructed to do something with which they are unfamiliar” (CAP413, Ch11).

[The DA40 pilot] was established in the circuit and cleared for a touch-and-go at time 1920, Traffic Information on the departing [TB10] was not relayed to [the DA40 pilot] but, given the similar speeds and excellent weather conditions, it’s understandable why this may have been considered irrelevant Traffic Information by the controller at the time. [The DA40 pilot] stated while climbing-out from the touch-and-go that, “I’ve got the aircraft in front of me doing a one-eighty on left crosswind, is that correct?” so was clearly continuously visual with this aircraft during this phase of flight. The controller

passed information on the aircraft's routing ("*he's gonna go right into the circuit*") and instructions for [the DA40 pilot] to "*just follow him into the right-hand circuit please*", this was acknowledged by the pilot with "*wilco*". This is in accordance with CAP493, Sec2, Ch1 which states, "*Aerodrome Control shall issue information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic with the objective of: (1) Preventing collisions between: (a) aircraft flying in, and in the vicinity of, the ATZ; (b) aircraft taking-off and landing*". This argument is further supported whereby the CAP493 specifies, "*Traffic information and instructions shall be passed to aircraft on any occasion that a controller considers it necessary in the interests of safety, or when requested by a pilot. In particular, Aerodrome Control shall provide: (1) generic traffic information to enable VFR pilots to safely integrate their flight with other aircraft; (2) specific traffic information appropriate to the stage of flight and risk of collision; (3) timely instructions as necessary to prevent collisions and to enable safe, orderly and expeditious flight within and in the vicinity of the ATZ*".

[The TB10] was, however, seen to continue the upwind leg of the circuit further than would be usually be expected. Likewise the aircraft was seen to drift slightly to the left prior to commencing the right turn onto crosswind. Owing to the close proximity of the Brize Norton CTR from the climb-out of RW19, [the TB10] infringed the Brize Norton CTR at time 1921 prior to turning right crosswind. As the pilot of [the DA40] was instructed to follow [the TB10] they also infringed the Brize Norton CTR at time 1922 in order to ensure they complied with the controller's instruction to follow the [TB10] ahead. Nonetheless, the following DA40 flew a shorter upwind leg before commencing the right turn into the circuit and thus reduced the spacing between themselves and the [TB10] ahead.

Due to the reduced spacing, the pilot of [the DA40] requested, "*one orbit for spacing please*", the controller approving this as follows, "*[DA40 c/s], affirm if you just continue a little further out to the west and then er make a right-hand orbit to keep out of the Brize CTR*".

The radar replay shows the CPA as approximately half a mile (see Figure 1). The pilot of the following DA40 seemingly had the [TB10] in sight at all times and therefore the risk of collision was deemed to be none. It's clear that the pilot of the DA40 was very concerned with the proximity of the Brize Norton CTR and was aware that, by complying with the controller's instructions, they would need to infringe this CTR; this was reported to the controller when downwind as, "*you might want to call Brize, we just infringed trying to keep out the way of that aircraft*".

Conclusion

At time 1921 on Thursday 24th March, an Airprox occurred between a DA40 and a [TB10] who were both operating in the visual fixed-wing circuit at Oxford. The DA40 was following a [TB10] who unexpectedly extended upwind and infringed the Brize Norton CTR, as the DA40 was following this aircraft, they too infringed the Brize Norton CTR and turned earlier crosswind to minimise the infringement and therefore reduced the spacing between the two aircraft.



Figure 1 – CPA

UKAB Secretariat

An analysis of the NATS area radar replay was undertaken. The TB10 was detected during the early stages of the encounter, but the track was intermittent; the DA40 first appeared on the NATS radar replay at 1922:29, in a position that correlates with the radar screenshot provided from the Oxford investigation. Because the Oxford radar screenshot provides a track history, this has been used to measure CPA at 100ft V and ~0.7NM H. The NATS area radar replay showed the lateral separation between the 2 aircraft increasing from this point onwards.

The DA40 and TB10 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 DA40 and a TB10 flew into proximity in the Oxford visual circuit at approximately 1922Z on Thursday 24th March 2022. Both pilots were operating at night under VFR in VMC and both pilots were in receipt of an ACS from Oxford Tower/APP.

¹ (UK) SERA.3205 Proximity.

² (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, reports from the air traffic controllers 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 DA40 pilot and noted that the DA40 pilot had perceived that, on receipt of the instruction from the Oxford controller to change to a right-hand circuit, the TB10 pilot had turned around and flown towards their aircraft, but radar data and the report from the TB10 pilot showed that this had not been the case. Members observed that it is extremely difficult to assess horizontal distance and relative flightpaths at night and so understood why the DA40 pilot had misidentified the actions of the TB10 pilot. The Board noted that the DA40 pilot had been instructed to follow the TB10 into the right-hand circuit and that the DA40 pilot had been concerned by the possibility of flying into the Brize Norton CTR in executing that instruction. Some members wondered if the DA40 pilot could have slowed down to increase their separation from the TB10 but also acknowledged that this may not have been an option as the speed of the DA40 at the time of the Airprox was not known. Although the recorded separation showed that the 2 aircraft had been approximately 0.7NM apart at their closest point, given the difficulties in judging distance at night, the Board agreed that the DA40 pilot had been concerned by the proximity of the TB10 (**CF3**).

The Board then considered the actions of the TB10 pilot and noted that the Oxford ATC investigation identified this pilot as a 'student'. However, it was the Board's understanding that the TB10 pilot was, in fact, a qualified PPL holder who was being trained in night flying. Therefore, there is no requirement in CAP413³ (para 2.33) for the TB10 pilot to have utilised the prefix 'STUDENT' with their callsign. A pilot member with experience of operating at Oxford highlighted that the fixed-wing circuits flown at that aerodrome are often quite wide which, the Board agreed, gave little room for error when considering the adjacent Brize Norton CTR. Members noted that the TB10 pilot had been instructed to change to a right-hand circuit whilst late upwind but, crucially, before they had commenced their turn onto a left-hand crosswind. However, and because the TB10 had drifted left of the RW19 centreline on climb-out, this turn onto right-hand crosswind had taken longer than expected and had allowed the TB10 to drift into the Brize Norton CTR. Members considered that the TB10 pilot could have flown a slightly tighter circuit which would have assisted the DA40 pilot to follow more easily and avoid the Brize Norton CTR. The Board agreed that the TB10 pilot flying a wide circuit had been contributory to the Airprox (**CF2**).

Turning to the actions of the Oxford controller, the Board heard from a controller member that the plan to move the TB10 and DA40 into the right-hand circuit to enable a faster aircraft to join the left-hand circuit from the east had been sound. However, due to the timing of the arrival and the position of the TB10 and DA40 in the climb-out, the instructions issued to the TB10 and DA40 pilots to switch to the right-hand circuit had been slightly late, which had contributed to the 2 aircraft coming into proximity as they turned onto right-hand downwind (**CF1**). The Board heard from a military controller member that there is a Letter of Agreement between Oxford and Brize Norton regarding the interaction of Brize Norton and Oxford traffic; however, the only reference to visual circuit traffic utilising Oxford RW19 is as follows:

Oxford Departures

RW19. The standard noise abatement departure from RW19 is to climb straight ahead until 1000ft or 1DME (whichever is sooner) before turning as directed.

Additionally:

- a. Jet Engine, twin turbo-prop aircraft and non-Oxford based single turboprop aircraft. The performance characteristics of jet and turbo-prop aircraft are such that upon departure from RW19 they will inevitably penetrate the BZN CTR as they turn to the NW/NE.

³ <https://publicapps.caa.co.uk/docs/33/CAP413%20MAY16.2.pdf>

b. Twin piston and single engine aircraft. The performance characteristics of single and twin-engine aircraft, together with Oxford based single engine turboprop aircraft allow the aircraft to depart and remain outside the BZN CTR.

Therefore, the Board considered that the Oxford controller could have called Brize Norton to ensure that the TB10 and DA40 were cleared into the Brize CTR and then informed the TB10 and DA40 pilots accordingly, which would have alleviated some of the concerns reported by the DA40 pilot.

Finally, the Board considered the risk involved in this event. Members discussed the difficulties in judging distance at night and noted that, while the DA40 pilot had been concerned by the proximity of the TB10 because of where they perceived the aircraft to have been in relation to their own, there had in fact been approximately 0.7NM between the aircraft at their closest point. The Board agreed, however, that changing the circuit direction at relatively short notice, at night, had led to safety being degraded but had not introduced a risk of collision. Accordingly, the Board assigned a Risk Category C to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2022036				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Human Factors	• Traffic Management Information Provision	An event involving traffic management information provision	The ANS instructions contributed to the Airprox
Flight Elements				
• Tactical Planning and Execution				
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
• Situational Awareness of the Conflicting Aircraft and Action				
3	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C

Safety Barrier Assessment⁴

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 controller's instruction to the TB10 pilot to change to a right-hand circuit when they were late upwind contributed to the Airprox.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the DA40 pilot was justifiably concerned about the possibility of infringing the Brize CTR when instructed to follow the TB10 by the Oxford controller, and therefore flew a shorter ground track than that of the TB10.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the DA40 pilot was concerned by their perceived proximity to the TB10.

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: 2022036		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:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✔	⚠	✘	⊘	○			
Application	✔	⚠	✘	⊘	○			
Effectiveness								