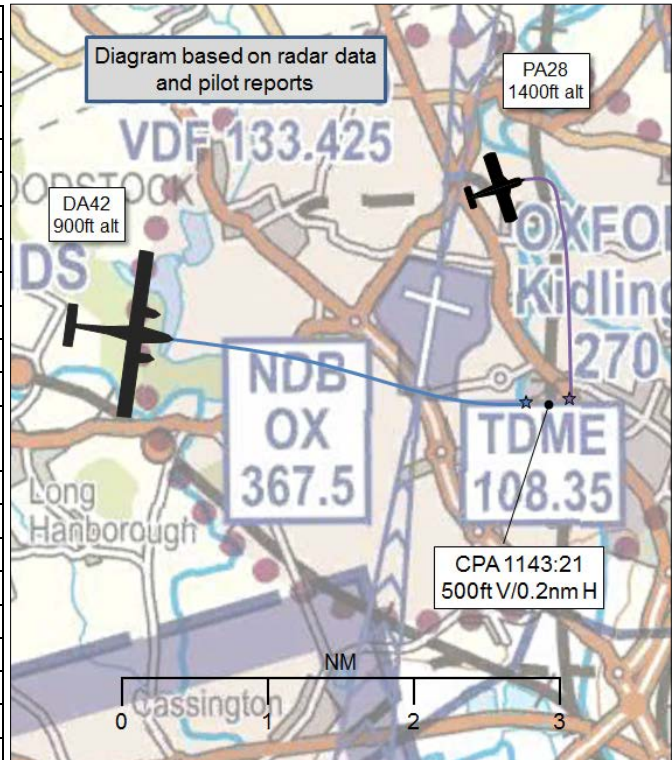


AIRPROX REPORT No 2016254

Date: 05 Dec 2016 Time: 1143Z Position: 5149N 00118W Location: Oxford ATZ

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	PA28
Operator	Civ Trg	Civ Pte
Airspace	Oxford ATZ	Oxford ATZ
Class	G	G
Rules	IFR	VFR
Service	Aerodrome	Aerodrome
Provider	Oxford	Oxford
Altitude/FL	900ft	1400ft
Transponder	A, C, S	A, C
Reported		
Colours	White	White, Blue
Lighting	Strobes	Strobes, Nav, Landing
Conditions	VMC	VMC
Visibility	>10km	
Altitude/FL	800ft	1500ft
Altimeter	QNH (1023hPa)	QNH
Heading	100°	180°
Speed	100kt	80kt
ACAS/TAS	TAS	Not fitted
Alert	U/S	N/A
Separation		
Reported	700ft V	100ft V/100m H
Recorded	500ft V/0.2nm H	



THE DA42 PILOT reports that he had just completed the NDB procedure for RW09 [UKAB note: there is no RW09, this is the NDB 099° procedure]. The missed approach instructions were to track back to the Compton VOR climbing to an altitude of 2500ft. On passing the MAP, he initiated the go-around and was informed about circuit traffic at 11 o'clock, less than 1nm away, that was continuing downwind for a visual circuit RW01. He decided to maintain MDA of 800ft until he had passed underneath the conflicting traffic. Had the missed approach been continued he believed he would have collided with the other aircraft.

He assessed the risk of collision as 'High'.

THE PA28 PILOT reports that he was given permission to take off on RW01 with a RH turn out onto a heading of 180°. At the time he was not aware that ATC had also cleared an aircraft to conduct an NDB approach to 'RW09'. He continued in accordance with his ATC clearance, climbing straight ahead to 1000ft before turning on course, he was established on the downwind leg when he saw the other aircraft behind him, to his left.

He assessed the risk of collision as 'Low'.

THE OXFORD ADC reports that he was an OJTI with a trainee. At 1141 the PA28 departed from RW01 with a right-hand turn-out, VFR to the south-east. Two minutes later the DA42 completed the NDB procedure and went around from overhead the airfield, IFR on the published MAP. They observed the PA28 leaving the circuit and it became obvious that there was a potential conflict between the two aircraft. Traffic Information was passed to the DA42 pilot, who reported the traffic in sight and said he would level off beneath it. Traffic Information was also passed to the PA28, who

acknowledged it, but didn't report visual. About an hour and half later, they heard that the DA42 pilot had decided to report an Airprox.

Factual Background

The weather at Oxford was recorded as follows:

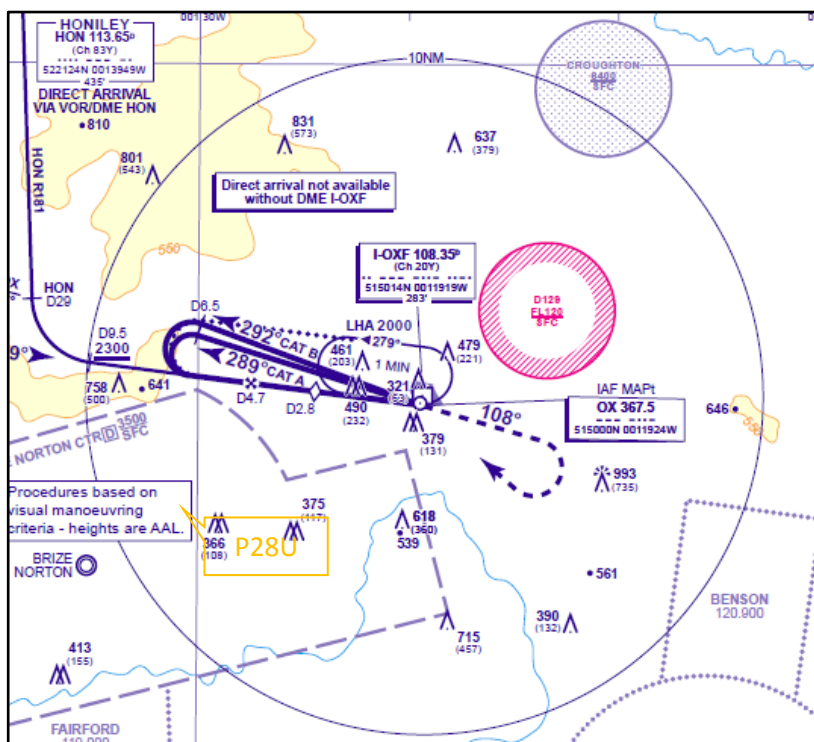
METAR EGTK 051120Z 04004KT 5000 BR NSC 03/02 Q1023=

Analysis and Investigation

CAA ATSI

ATSI had access to reports from the pilots of the DA42 and the PA28, the area radar recordings and R/T from Oxford Tower. Interviews, (in person and by telephone) were conducted with the trainee and OJTI, and the Deputy SATCO (DSATCO) of Oxford ATC. Screenshots in the report are taken from the area radar recording. Levels are altitudes and all times UTC.

The DA42 was completing the NDB/DME 099 approach at Oxford, and had been transferred from Oxford Radar to Oxford Tower. This approach (extract at Figure 1), is not an approach to a runway, but rather to the airfield, (RW09 does not exist).



The PA28 had taxied out for a departure from the runway in use (RW01), and at 1140:30 was given a clearance for take-off with a right turn-out by the Oxford Tower controller. The DA42, (transponder code 4235), was at 3.4nm on the NDB approach (Figure 2).

The controller then took calls from an inbound helicopter and another helicopter on the ground requiring repositioning prior to start. At 1141:36 the tower controller instructed the DA42, which was now at 1.6nm, to report going around from the approach which was acknowledged (Figure 3).

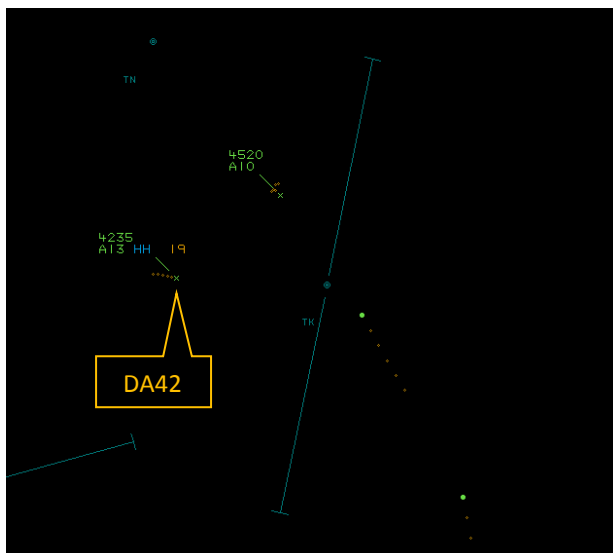


Figure 2 – 1140:30

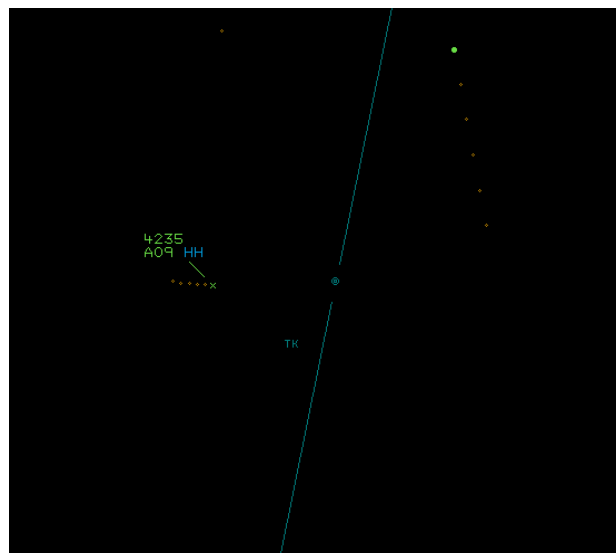


Figure 3 – 1141:36

At 1142:45 Traffic Information was passed by the controller to the DA42 pilot on the PA28 (transponder code 4520), reported as being midpoint downwind right-hand, which was acknowledged (Figure 4).

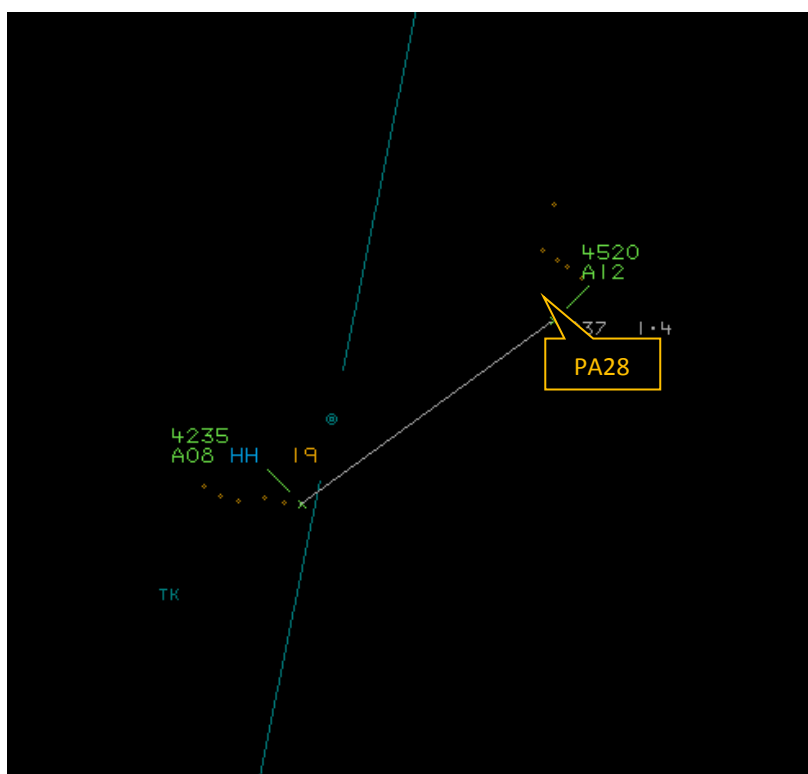


Figure 4 – 1142:45

The controller passed Traffic Information to the PA28 pilot on the DA42 at 1143:03, advising that the DA42 was overhead the airfield, eastbound, going-around from the 099 procedure.

At 1143:07 the DA42 pilot reported being visual with the PA28, adding that if they were to go around at that moment, then it would place them in conflict with the PA28. The DA42 pilot reported that they would therefore maintain their current level (Figure 5).

CPA took place at 1143:21 with the aircraft separated by 0.2nm laterally and 500ft vertically (Figure 6).

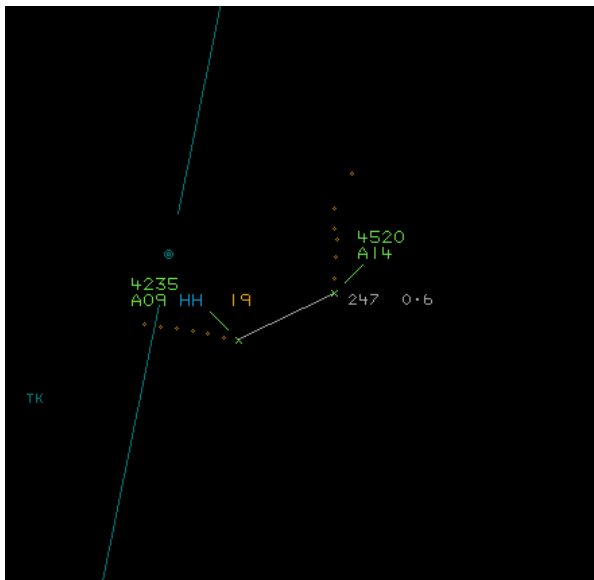


Figure 5 – 1143:07

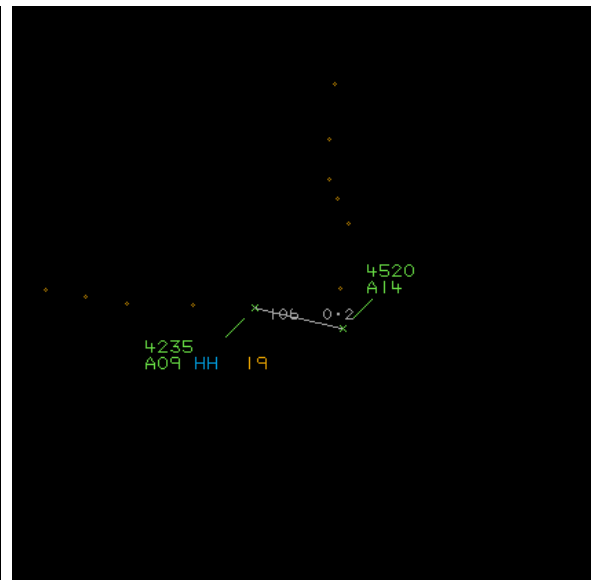


Figure 6 – 1143:21

The NDB/DME 099 procedure was described by the Oxford DSATCO as a 'legacy procedure'. Although it does not provide an approach to a runway, it was once the only instrument approach at Oxford, and has been retained in order to bring an IFR aircraft into the visual overhead from the west, to allow that aircraft to subsequently join downwind into the visual circuit for RW01. There is an NDB approach for RW01, but it extends into the adjacent RAF Brize Norton Control Zone, and therefore requires additional coordination. The Oxford NDB is located on the airfield, west of RW01/19, the approach is a direct line towards the control tower. An aircraft completing the NDB 099 procedure must therefore fly across RW01/19 whilst in the go-around.

The Oxford MATS Part 2 contains guidance to controllers on the integration of NDB/DME 099 traffic, including the passing of Traffic Information, but covers scenarios involving other aircraft *inbound* to RW01/19. No reference is made to departures from that runway, (other than with regards to providing adequate wake-turbulence separation for the 099 traffic), nor aircraft completing a missed-approach and departure from the NDB 099 procedure rather than completing a visual join to land. The low-level circuit on completion of the 099 NDB is provisionally separated from aircraft making an approach to go-around on RW01/19, with the requirement that the 01/19 traffic is to be not below 700ft altitude.

It was the stated intention of the trainee tower controller to pass Traffic Information to the DA42 on the PA28 when the DA42 reached 2nm on the approach, however, both the trainee and the OJTI became distracted by an issue with a helicopter requiring repositioning on the ground. Traffic Information was subsequently passed by the tower controller, but at the point at which the DA42 pilot was initiating the missed-approach procedure. The tower controller reported being visual with both aircraft until such time as the DA42 passed over the top of the control tower whilst in the go-around.

No discussion had taken place between trainee and OJTI about the potential confliction. The OJTI admitted to having been distracted by the protracted coordination and communications attached to the movement of the helicopter on the airfield. They were not visual with the DA42 nor PA28 because they had been standing behind the trainee. The OJTI confirmed that 'standard' procedure in these circumstances would have been to pass Traffic Information much earlier.

The DA42 pilot acquired visual contact with the PA28 shortly after receiving Traffic Information by ATC. The PA28 pilot reported not becoming visual with the DA42 until it was behind him and to his left, effectively after it had already passed.

The DA42 pilot was concerned about the proximity of the PA28, believing a very definite risk of collision existed if they had completed the standard missed-approach. They had maintained visual

contact with the PA28 shortly after receiving Traffic Information from the tower controller enabling them to maintain their own separation.

Traffic information from ATC was considered to have been passed very late, although it did facilitate the visual acquisition of the PA28 by the DA42 pilot. Of particular concern to ATSI was the fact that no prior-discussion about the potential for conflict had taken place between the trainee and the OJTI. With the tower controller unable to see the DA42 once it commenced its go around, they would not have been able to continue to:

'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; '1

The Oxford DSATCO advised that the NDB 099 is subject to 'regular SMS auditing over the years and is under constant review'. The next review would include this incident. The inference was that separation in these circumstances would be provided visually by the tower controller, but current guidance in the Oxford MATS Part 2 is considered to be inadequate for this particular scenario. Therefore ATSI recommend that Oxford ATC reconsiders its risk assessment of the NDB/DME 099 procedure. If it is their intention is to continue to retain the procedure, then it is recommended that a more pro-active and defensive approach is evidenced within the guidance issued to controllers for the integration of aircraft on this approach, with aircraft using RW01/19.

UKAB Secretariat

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 hazard². 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 operation³.

Comments

DA42 Operating Authority

There have been previous issues with mixing procedures on 'RW09' with visual traffic arriving or departing for RW01. Therefore it was surprising that an aircraft was allowed to proceed to downwind right on RW01, knowing that the DA42 had already been cleared to go around on the 'RW09' direction, which would take it through the right-hand downwind leg of RW01. Fortunately the instructor was alert to the situation that was unfolding as soon as he heard ATC call the other aircraft's position.

Summary

An Airprox was reported when a DA42 and a PA28 flew into proximity at 1143 on Monday 5th December 2016. The DA42 pilot was operating under IFR in VMC and in receipt of an Aerodrome Control Service on an NDB approach to Oxford. The PA28 pilot was VFR in VMC, and also in receipt of an Aerodrome Control Service from Oxford.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

¹ CAP493 Section 2: Chapter 1: Aerodrome Control

² SERA.3205 Proximity.

³ SERA.3225 Operation on and in the Vicinity of an Aerodrome.

The Board first looked at the actions of the DA42 pilot. He had been cleared for his NDB approach to the airfield and was understandably surprised when he realised he wouldn't be able to carry out his missed approach as he had intended. The Board considered that his actions in holding down his height to allow the PA28 to depart downwind, prevented the incident from being much worse, and they commended him for his situational awareness.

The PA28 pilot was given clearance to take-off and depart downwind by ATC. Some members wondered whether he could have heard the DA42 being cleared for the NDB099 procedure on the frequency; however, noting that there was one minute between being cleared for take-off and the ADC telling the DA42 to report going around, members agreed that he probably assumed that ATC had full situational awareness and would not have issued the clearance to him unless his path was clear. It wasn't until he was established downwind that he saw the DA42, who by this stage had already taken avoiding action.

Finally the Board looked at the actions of the controllers. There was a trainee with an OJTI behind, and the Board wondered whether this had any bearing on the incident; the report by CAA ATSI seemed to confirm that both the instructor and the trainee had been distracted by dealing with the helicopter, when in fact it needed the OJTI to be able to monitor the whole scenario and pull the trainee's attention back to the circuit traffic. Members wondered whether Oxford VCR had an Air Traffic Monitor (ATM), which would have allowed the controller to see the position of the NDB traffic as it approached the airfield and assess how the visual circuit traffic would fit in around it. They were told that there was an ATM, leading members to surmise that it hadn't been used to full effect on this occasion. Controlling Board members opined that had the NDB been to RW01, the PA28 would not have been allowed to take-off; and that the same rules should have been applied in this case. This led the Board to discuss the NDB 099 procedures. Noting that it was a 'legacy procedure' they were told that it was utilised by the flying school regularly to allow the practising of IFR approaches. The Board could understand why it would be useful not to need to liaise with RAF Brize Norton every time that someone wanted an IFR approach, but thought that if it was to remain in place, then Oxford should review the advice given to the controllers in the MATS Part 2; the Board resolved to make a recommendation to this effect.

Turning to the cause, the Board quickly agreed that Oxford ATC had not integrated the DA42 and PA28 in the visual circuit, but thought that there were contributory factors in that: the OJTI had not sufficiently mentored the trainee, or discussed the likely conflict scenario; and that the Oxford MATS Part 2 did not provide adequate guidance for integration of the NDB/DME 099 approach with visual circuit traffic. In assessing the risk, the Board agreed that the actions of the DA42 pilot were timely and effective such that there had been no risk of collision, Category C.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

<u>Cause:</u>	Oxford ATC did not integrate the DA42 and PA28.
<u>Contributory Factors:</u>	<ol style="list-style-type: none"> 1. The OJTI did not sufficiently mentor the trainee or discuss the likely conflict scenario. 2. The Oxford MATS Part 2 provides inadequate guidance for integration of the NDB/DME099 approach with visual circuit traffic.
<u>Degree of Risk:</u>	C.
<u>Recommendation:</u>	Oxford reviews the integration of traffic conducting instrument approaches and traffic in the visual circuit.

Safety Barrier Assessment⁴:

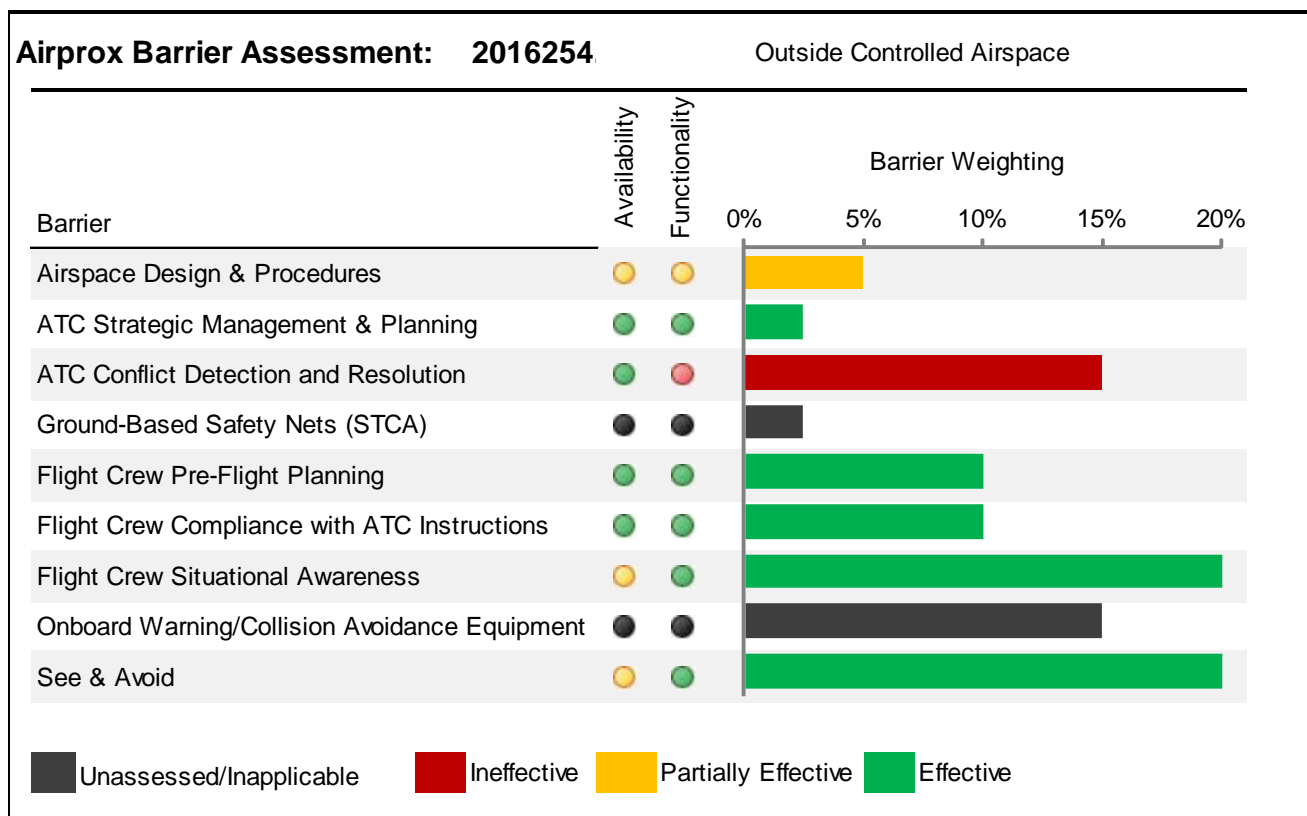
The Board decided that the following key safety barriers were contributory in this Airprox:

Airspace Design and Procedures was only **partially effective** because the Oxford MATS part 2 needed further clarification on procedures when using the NDB 099.

ATC Conflict Detection and Resolution was **ineffective** because Oxford ATC did not provide timely traffic information.

Onboard Warning/ Collision Avoidance Equipment was **inapplicable** because neither aircraft had a CWS.

See and Avoid was **effective** because the DA42 pilot took action to resolve the conflict.



⁴ Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace). The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, or Unassessable/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident. The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).