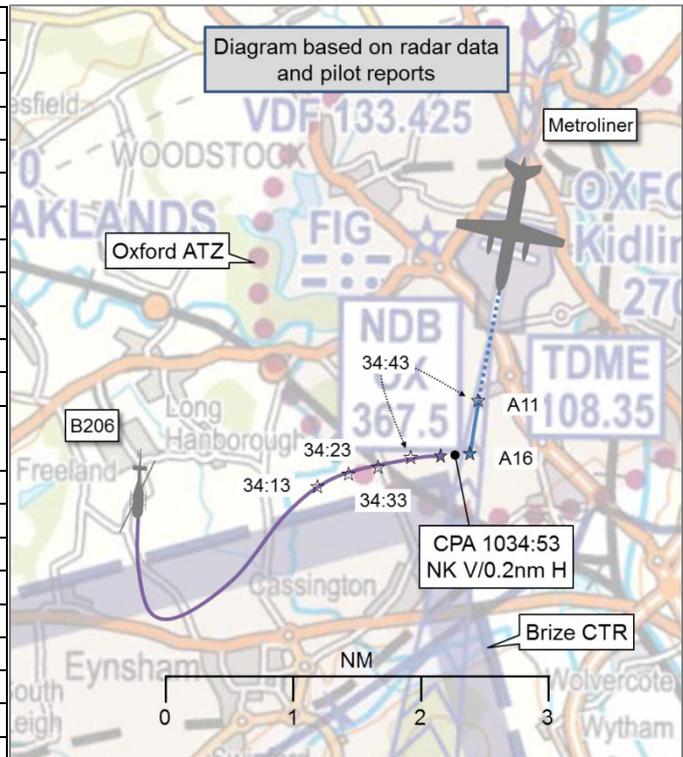


AIRPROX REPORT No 2016004

Date: 16 Jan 2016 Time: 1035Z Position: 5149N 00120W Location: 1.5nm south Oxford airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Metroliner	B206
Operator	CAT	Civ Pte
Airspace	Oxford ATZ	Oxford ATZ
Class	G	G
Rules	IFR	VFR
Service	Aerodrome	None
Provider	Oxford	N/A
Altitude/FL	1500ft	NK
Transponder	A, C, S	A, NMC ¹
Reported		
Colours	White	Black
Lighting	Strobe, nav, recognition	Strobe, nav
Conditions	VMC	VMC
Visibility	10km	>10km
Altitude/FL	2000ft	1300ft
Altimeter	QNH (1029hPa)	NK (1030hPa)
Heading	192°	082°
Speed	140kt	85kt
ACAS/TAS	TCAS II	Not fitted
Alert	TA	N/A
Separation		
Reported	0ft V/300m H	200ft V/600m H
Recorded	NK V/0.2nm (370m) H	

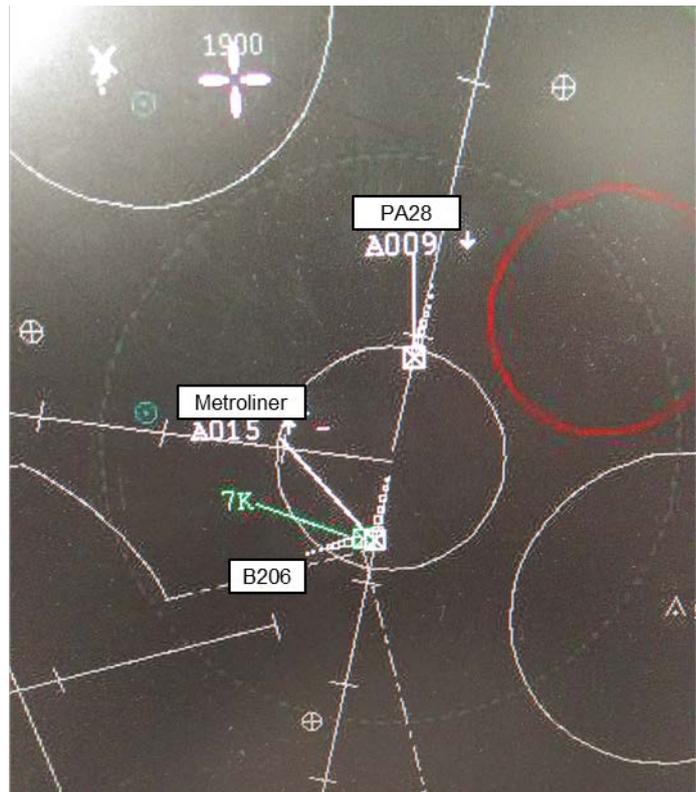


THE OXFORD DIRECTOR reports the position was manned and open iaw unit orders so as to mitigate bunching of aircraft movements. The Metroliner pilot had been passed the standard RW19 departure instructions of [right turn] heading 315° and climb to altitude 5000ft. The controller was also vectoring a PA28 for an ILS approach and had already vectored it around an aircraft squawking 7000 with no Mode Charlie, tracking south, east-abeam Enstone aerodrome. This aircraft subsequently tracked to the west of the Oxford ATZ and Traffic Information was passed to the Tower to see if they could establish some height information; Tower reported visual with it and identified it as a Squirrel helicopter at about 1500ft. The Director believed he may have passed Traffic Information to Brize on this aircraft but could not be sure. Director was monitoring the Tower frequency and, when the Metroliner pilot reported ready at the hold, it was released; Director knew from a recent study that it took 2mins from the hold to back-track and get airborne and the 7000 squawk was 4nm to the south west, tracking south. He anticipated that the turn of the departing Metroliner to the northwest would keep it clear of the helicopter and, by the time the Metroliner was airborne, the helicopter would be well to the southwest. Nevertheless, the release instruction included Traffic Information on the helicopter. The 7000 squawk entered Brize Norton CTR and, after a mile, rapidly reversed track through 180°. As the helicopter left Brize CAS, Director made blind calls on the current and previous Oxford ICF's; he heard Tower do the same. The 7000 squawk had now turned into conflict with the departure track of the Metroliner so he instructed Tower, with whom he was already on the landline, to instruct the Metroliner to climb straight ahead, to enter Brize CAS and thus remain clear of the helicopter. He was anticipating that the helicopter, now tracking north, would remain clear of the ATZ and pass west-abeam. The Metroliner pilot had already commenced his take-off roll when the helicopter made a sharp turn to the east, tracked along the northern edge of Brize CAS and entered the Oxford ATZ into direct conflict with the just-airborne Metroliner. Director was very concerned

¹ The B206 pilot reported that his transponder was selected to standby, with Mode C selected off.

with safety at this point and was about to 'hot-line' to Tower to tell the Metroliner pilot to "stay low, stay low" when he heard Tower pass further Traffic Information to the Metroliner pilot. Tower informed Director that the Metroliner 'was slightly ahead'. The radar returns overlapped.

Director commented that Oxford are quite used to aircraft passing west-abeam the Oxford ATZ without being in RTF contact and calling Brize for a CTR transit. Likewise, they were used to seeing 7000 squawks change to Brize squawks at or around the CTR boundary. He was completely perplexed as to why the helicopter pilot chose the routing he did after his reversal of track to enter the ATZ without clearance; Oxford aerodrome would have been clearly visible in his 11o'clock. Director stated that Tower estimated the point of conflict at altitude 1400ft with the Metroliner passing 100ft and 100m away, and straight in front of the helicopter. Almost immediately after the conflict, the helicopter pilot turned onto exactly the same track as the Metroliner and vacated the ATZ to the south.



Screenshot of Oxford radar picture at CPA

THE OXFORD TOWER CONTROLLER reports that, owing to an expected increase in IFR traffic during the weekend shift, the Radar position was manned using the Director Frequency to facilitate IFR departing and arriving traffic, and also potentially reduce ADC/APP workload. RW19 was in use. The Metroliner pilot had been given standard departure instructions whilst taxiing; after departure, turn right heading 315° and climb to altitude 5000ft. A squawk was allocated for London Control with the Director frequency passed, to be contacted when advised. At about this time, the Tower controller was asked by Director to visually identify unknown traffic to the west of the aerodrome tracking south. The Tower controller saw the aircraft approximately 2.5 miles to the west and heading south; it appeared to be a helicopter, possibly a Squirrel. He reported the sighting to the Director and estimated the altitude of the helicopter to be approximately 1500ft. When he requested release from Director, the helicopter was southwest of the aerodrome and still tracking south into the Brize CTR and outside the Oxford ATZ. The Metroliner pilot was released with Traffic Information on the helicopter, including the Mode A 7000 squawk passed by Director, to facilitate the pilot's TCAS picture. The Metroliner pilot was cleared for take-off whilst backtracking from Holding Point Charlie. The Tower controller then noticed on the ATM that the helicopter had reversed track but was still southwest of the aerodrome, outside the ATZ but inside the Brize CTR. At about this time the Director had also noticed the reverse track and instructed Tower to climb the Metroliner straight ahead on departure. Tower decided to leave this instruction until the aircraft was airborne because the pilot was then about to roll. Tower made a blind broadcast on the Oxford Radar and Tower frequencies to the unknown helicopter pilot, advising the imminent departure of the Metroliner. At this point Tower anticipated that the helicopter would continue on its northerly track and stay outside the ATZ to the west, with the Metroliner tracking outbound on the safer southerly heading given by Director. After the Metroliner pilot had started his take-off roll, but too late to stop it, Tower noticed the helicopter was now pointing towards the ATZ and slightly behind the anticipated track of the Metroliner. Tower passed the Director's instruction to climb straight ahead, however, he rephrased it to 'climb on runway track' to prevent any turn further west which would have worsened the situation. During this very quick sequence of events, he passed further Traffic Information to the Metroliner pilot and estimated that the Metroliner passed about 0.25 miles ahead of the helicopter, at about the same altitude of 1500ft. The helicopter then turned south behind the Metroliner and left the ATZ in the area of the RWY19 climb-out lane, on the edge of the Brize CTR.

THE BRIZE NORTON LARS CONTROLLER reports operating under medium intensity traffic levels with Tutor aircraft from RAF Benson requiring Traffic Service. At 1029, a brief transmission was heard on the frequency, which consisted of a carrier wave only with no speech, triggering a DF trace to the northeast of Brize Norton. Two minutes later, a radar return with a Squawk of 7000 but with no Mode C, was observed approximately 3nm west of Oxford Airport, tracking south. As the transmission had been made on the LARS frequency, it was deemed reasonable to assume that the aircraft would be above the Brize Norton CTR. Nevertheless, the LARS controller made a broadcast on the frequency asking if an aircraft in that vicinity was on the frequency; no reply was received. At 1032 a further two carrier wave transmissions were received and the controller replied to that effect, stating that the CTR was active up to an altitude of 3500ft. After a further carrier wave transmission (with DF), the controller made a further transmission warning the pilot (if he was able to receive) to remain outside Controlled Airspace, which it was assumed they would do by climbing or remaining above as the weather conditions were suitable. However, 'at the last moment' the aircraft made a sharp turn to the east, along the northern edge of the CTR which took it quickly towards Oxford airport just as an aircraft was observed departing from RW19. The radar returns passed within 1nm of each other. Oxford ATC rang shortly afterwards to say that they had seen a helicopter at approximately 1500ft within their ATZ and were going to file an Airprox. The Brize controller explained the circumstances, that there had been no two-way communication with the helicopter pilot and no indication of the helicopter's altitude. The LARS controller stated that it was not possible to positively identify the helicopter, ascertain its altitude or provide an Air Traffic Service.

THE METROLINER PILOT reports being advised before take-off of an unidentified aircraft and having a 'positive ACAS contact at take-off'. After take-off he saw a brown or burgundy helicopter to the right at the same level and assessed that avoiding action was not required.

He assessed the risk of collision as 'Medium'.

THE B206 PILOT reports seeing a white and yellow, medium size, 2-engine passenger jet, 1 mile away, taking off and passing 600ft agl. He slowed down and held course in order 'not to turn into the jet'.

He assessed the risk of collision as 'None'.

Factual Background

The weather at Oxford was recorded as follows:

```
METAR EGTK 160950Z 31005KT CAVOK 01/M01 Q1029=
METAR EGTK 161020Z 31005KT CAVOK 02/M01 Q1029=
METAR EGTK 161050Z 32006KT CAVOK 03/M00 Q1029=
```

Analysis and Investigation

CAA ATSI

The area radar recordings were obtained but because this event happened at low-level, they only showed the Metroliner after CPA had occurred although the B206 is recorded throughout. The Oxford screenshots obtained from their own radar are reproduced here to show the evolution of the event.

A clearance to join controlled airspace had been obtained by Oxford radar for a departing Metroliner, which was operating on a commercial IFR flight. The Radar controller had passed this clearance to the Tower controller and released the Metroliner for departure. As the Radar controller was monitoring the tower frequency he was aware of the likely time the Metroliner would be getting airborne. During this period an unknown aircraft was observed on Radar tracking southbound adjacent to, but away from the western side of the Oxford ATZ (Figure 1).

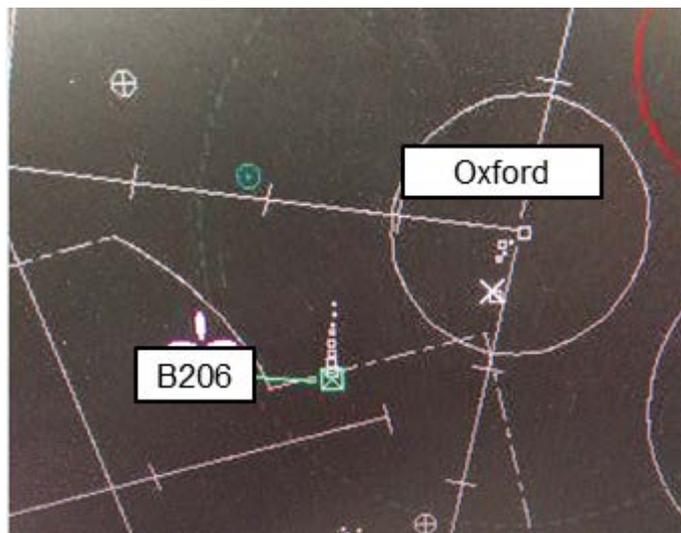


Figure 1

The Radar controller asked the Tower controller to see if he could see this traffic at 1030:04. After a few moments the Tower controller spotted the traffic and reported that it was a helicopter at about 1500ft. At 1032:02, whilst the Metroliner was backtracking for departure, the Tower controller passed Traffic Information about the unknown helicopter. The planned departure for the Metroliner was to turn right heading 315° after departure. The Metroliner was cleared for take-off at 1032:48. At 1033:41, the Radar controller phoned the Tower controller as the B206 had turned onto an easterly heading back towards the projected flight path of the Metroliner (Figure 2).

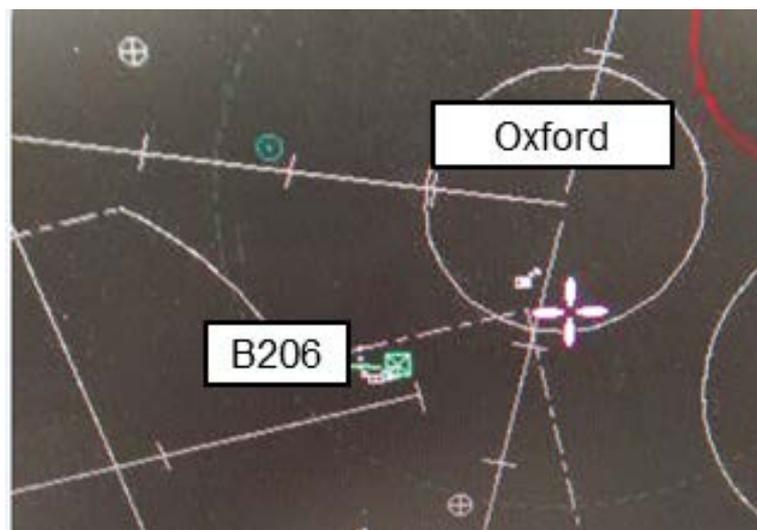


Figure 2

Mindful of the potential conflict, the Radar controller advised the Tower controller to keep the Metroliner departing on the runway track; the Metroliner was just getting airborne at this time. At 1033:55, the Tower controller started to make blind calls to the helicopter and pass Traffic Information about the Metroliner. The Radar controller was making similar calls on the radar frequency.

At 1034:24, approximately the time of Figure 3, as the B206 continued to track towards the Metroliner, the Tower controller passed further Traffic Information. The Metroliner was transferred to the Radar controller at 1034:40.



Figure 3

The Metroliner first called the Radar controller at 1035:32. The Radar controller advised that the Metroliner was now clear of the traffic and issued an instruction to turn to the right. Figure 4 shows the Metroliner and B206 at approximately CPA, as the B206 appears to be tracking just behind the Metroliner. It was not possible to measure CPA on the Oxford radar screenshots.



Figure 4

The Oxford controllers both provided Traffic Information and took appropriate tactical actions as the situation developed. The pilot of the Metroliner reported sighting the B206 to the right. There was no requirement for ATC to provide separation as the entire event occurred in class G airspace.

UKAB Secretariat

The Metroliner and B206 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. If an aerodrome has an Air Traffic Control Unit an aircraft must not fly, take off or land within the Aerodrome Traffic Zone of the aerodrome unless the commander of the aircraft has obtained the permission of that unit to enable the flight to be conducted safely within the Aerodrome Traffic Zone⁴. UKAB were able to obtain an area radar picture of the Airprox encounter albeit only from shortly before CPA, when the Metroliner first appeared on radar.

² SERA.3205 Proximity.

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

⁴ The Rules of the Air Regulations 2016, Rule 11 (Flight within aerodrome traffic zones).

Summary

An Airprox was reported when a Metroliner and a B206 flew into proximity within the Oxford ATZ at 1035 on Saturday 16th January 2016. Both pilots were operating in VMC, the Metroliner pilot under IFR in receipt of an Aerodrome Control Service from Oxford Tower and the B206 pilot under VFR, not in receipt of a Service or in communication with Oxford.

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 ATC authority.

The Board first considered the pilots' actions and quickly agreed that the B206 pilot appeared to have been operating in a busy area apparently whilst experiencing RT difficulties. Some members wondered whether this may have caused the B206 pilot to reach capacity and consequently neglect his navigational responsibilities. Other members pointed out that he must have had some idea of his position because he had successfully followed a flight path around the Brize CTR after his initial turn away, albeit through the Oxford ATZ. Whatever the cause, members unanimously agreed that he had not obtained clearance to enter the Oxford ATZ. The Board noted that the B206 pilot had reported that he subsequently saw the Metroliner and took action to increase separation, although members were concerned that his narrative did not provide enough information to gain an accurate understanding of his circumstances. The UKAB Secretariat informed the Board that the B206 pilot had been contacted several weeks previously and had been asked to provide a more complete narrative of events. The pilot had agreed to do so but, as of the date of the Board meeting, no additional information had been received. For his part, members noted that the Metroliner pilot had observed the B206 on TCAS, had seen the helicopter after take-off, and had assessed that avoiding action was not required.

Turning to ATC involvement, members agreed that the Oxford ATC team were presented with an unenviable situation. The Director had seen the B206 radar contact transiting southwards, to the west of Oxford and had reasonably assumed that the aircraft would transit the Brize Norton CTR. The situation rapidly deteriorated as the B206 pilot reversed course, presumably on realising he was in the Brize CTR without clearance. With the benefit of hindsight, ATC members pointed out that the B206 pilot had in fact not turned through 180° but had taken up a course directly towards the Oxford ATZ and they wondered whether this might have been apparent to the Director at an earlier stage. Notwithstanding, members commended the Director and Tower controllers for their liaison, which resulted in significant SA on the B206 altitude and the determination that it would be a factor for the Metroliner departure track. Rather than issue revised departure clearance (to continue straight ahead) some members felt that a better course of action might have been to cancel the Metroliner pilot's departure clearance as soon as it became apparent that the B206 was tracking towards Oxford. Others felt that a revised clearance to turn left after take-off might have provided better mitigation, but all agreed that Oxford had had little time to affect the situation and that the Metroliner pilot also had had a hand in the decision to take-off knowing that the helicopter was in the vicinity and present on his TCAS display.

In considering the cause and risk, members unanimously agreed that the B206 pilot had entered the Oxford ATZ without clearance and had flown into conflict with the Metroliner. Some members thought that safety had been much reduced, but the majority were persuaded that the B206 pilot was visual with the Metroliner and so effective and timely action had been taken to avoid collision, including the Metroliner pilot's assessment that avoiding action was not necessary.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Bell 206 pilot flew into the Oxford ATZ without clearance and into conflict with the Metroliner.

Degree of Risk: C.