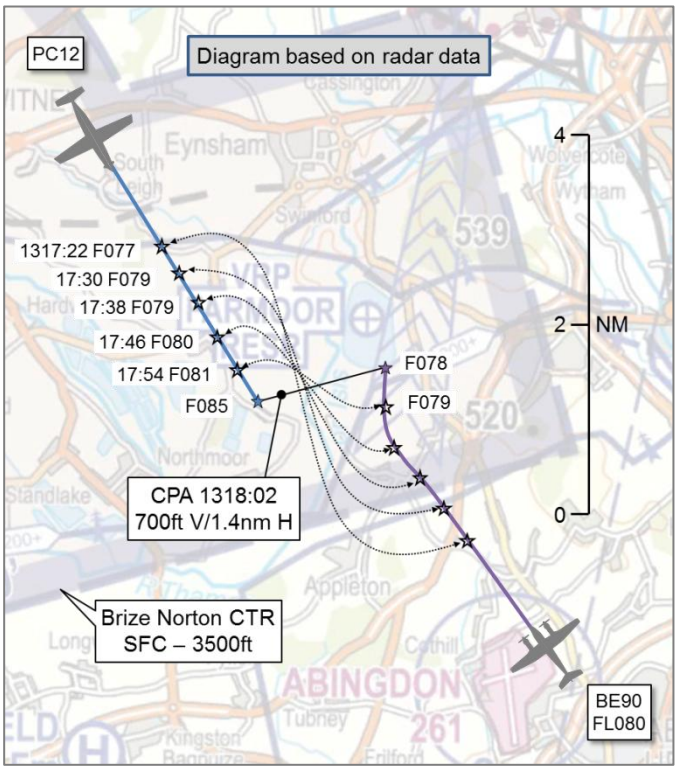
AIRPROX REPORT No 2014103

Date/Time: 1 Jul 2014 1318Z

Position: 5144N 00122W (17nm N Compton)

Airspace: London FIR (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	PC12	BE90 King Air
Operator:	Civ Exec	Civ Pte
Alt/FL:	FL80-100	FL80
Conditions:	IMC	VMC
Visibility:	Nil	NK
Reported Separation:	NK	NK
Recorded Separation:	700ft V/1.4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILATUS PC12 PILOT reports he was outbound from Oxford airport (OXF) under IFR/IMC. His aircraft was coloured mainly grey with black stripes. Strobes, navigation and anti-collision lights were illuminated, SSR Modes C and S were selected, and it was equipped with TCAS I. He was in communication with OXF Radar [in receipt of a Traffic Service] on a radar heading avoiding bad weather, initially cleared to FL80. He requested further climb and was cleared to FL100 followed by a frequency change. On contacting the next controller he was cleared to climb to FL130 he recollected. At the same time, he received a TCAS TA [TCAS I does not provide RAs]. He pre-set the Control Wheel Steering (CWS) and flew to the next cleared level to expedite the climb as much as possible to avoid the other aircraft and remain in control of his aircraft in IMC. He was not informed by ATC of any other traffic.

He assessed the risk of collision as 'Low-Medium'.

THE BEECH BE90 KING AIR PILOT reports operating a VFR flight under VMC. His aircraft was coloured white, black and red; strobes were illuminated, SSR Modes C and S were selected, and the aircraft was equipped with TCAS I. He did remember seeing conflicting traffic on TCAS at a similar altitude, which he turned to avoid. He recollected that it did not seem too close. He could not remember if he climbed as well. He did not sight the other traffic, and could not provide any further information.

THE OXFORD APPROACH RADAR CONTROLLER reports providing a Traffic Service to the departing PC12 pilot as he left OXF en-route to join airways at KENET. The aircraft was heading 180° and climbing to FL70 against traffic in the OX hold. When the aircraft was above holding aircraft, its pilot was released on his own navigation to KENET. A joining clearance from Swanwick TC SW had been obtained and the aircraft was cleared to climb to FL80 and enter Controlled Airspace (CAS) on track to KENET. The pilot reported that due to building cloud he would like to turn left 30° to avoid. Because the controller had no traffic to affect this manoeuvre, this was approved and the pilot was advised to report the weather avoiding action to London on frequency 134.125MhZ. A few seconds later the controller observed a 3710 squawk northwest of Benson MATZ tracking northwest in a slow climb passing 4800ft with no SSR Selected-Level showing. The PC12 pilot was already passing 6200ft in a positive rate of climb. The controller telephoned Brize Norton (BZN) ATC on the direct line when the contacts were approximately 8-10nm apart because of concern that the

3710 was opposite direction to the PC12 and was still climbing. It took a little while to gain two-way speech communication with BZN, at which point the controller requested Traffic Information on the 3710; the response was FL80 tracking northwest. Traffic Information was passed to BZN on the PC12 which was now observed level at FL80, 3nm northwest of the 3710 track; the response was 'roger'. At the point of ceasing the call with BZN, the two aircraft had passed and it was considered too late to call the LTC Southwest Sector to pass any relevant information. The controller did subsequently speak to the LTC Supervisor and also, it was believed, the Co-ordinator, to offer an explanation of the situation. At which point the Supervisor said that the pilot of the PC12 had been given a Basic Service from them on contact, together with Traffic Information. The controller also spoke to the BZN supervisor to pass details of the event and to inform them that they may receive a telephone call from the LTC Supervisor. The controller was surprised that BZN had continued to climb their aircraft towards the PC12 that was on a commonly used departure profile out of OXF to join CAS at KENET, without calling to co-ordinate or request Traffic Information. The controller had not sighted the 3710 squawk until it was northwest of Benson. The pilot of the PC12 was transferred to the London frequency early to assist with a possible expedited climb and weather avoidance re-routing.

THE LTC SOUTHWEST RADAR CONTROLLER reports that he was working the Southwest Sectors combined. It was a busy and complicated period around the Farnborough/Compton area with LTC Ockham/SW Deps traffic. The Group Supervisor (GS) had asked him 10 minutes earlier if he wished to split the sector but, because there was very little in the way of WILLO traffic, he declined. OXF had been given a clearance for the PC12 to join on-track KENET at FL80. The pilot called in the middle of the busy period and, apart from acknowledging his call, he was unable to do anything else with him. His Co-ordinator pointed out a 3710 squawk (BZN Radar) in the opposite direction at FL80, range of about 5nm. He did not know the intentions of this traffic; both aircraft were outside CAS. He gave the PC12 pilot a Basic Service and called the traffic to him. The PC12 pilot requested a climb, and he was able to give him FL100, to which he responded 'expediting FL100'. This made the LTC controller assume he was under IMC. He passed further Traffic Information and then observed the conflicting traffic turn hard right. His GS called OXF Radar, who informed her that the pilot had requested a heading to avoid weather and therefore they transferred it to them without a telephone call and not in accordance with the clearance. Had the PC12 routed to KENET, there would have been no conflict. The OXF controller then stated that BZN was called when the conflictor was seen, and they passed Traffic Information because their traffic was under a Traffic Service. This was when their traffic elected to turn hard right. Although separation was technically not lost because both aircraft were outside CAS, he considered that this situation was potentially very dangerous. The aircraft was not complying with the clearance passed (due to weather), yet was transferred without any notice of this. As he was trying to avoid weather it should have been fairly safe for the OXF controller to assume that the pilot may have been under IMC. The PC12 pilot was transferred to him without the traffic being called. If the information had been passed, the pilot's choice of heading may have been different.

THE BZN CONTROLLER reports that he was informed that OXF had received a report of an Airprox that involved the BE90 whilst it was on the BZN LARS frequency. Due to the time-frame since the incident he had no recollection of the event.

THE BZN SUPERVISOR reports that he received a telephone call from OXF reporting that an aircraft which had been in communication with BZN, the BE90, had been involved in an Airprox on 1st July 2014. As it was over one month since that date, he had no recollection of the controller, unit workload, or of any such incident being reported on the frequency. He arranged for a tape impound of the LARS frequency.

Factual Background

The Oxford weather was:

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EGTK 011250Z 07009KT 9999 FEW038 19/10 Q1020=
EGTK 011320Z 08008KT 9999 FEW037 20/10 Q1020=
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CAP 774 UK Flight Information Services[1] states:

'Pilots should not expect any form of traffic information from a controller/FISO, as there is no such obligation placed on the controller/FISO under a *Basic Service, and* the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance-derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller/ FISO considers that a definite risk of collision exists, a warning may be issued to the pilot.'

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance-derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.'

Analysis and Investigation

CAA ATSI

ATSI had access to reports from both pilots, the SW Deps controller and the OXF Radar controller together with area radar recordings and RTF and transcripts of the OXF Radar and the SW Deps frequencies. ATSI also had access to the LTC unit investigation report.

The PC12 was operating on an IFR flight from OXF and, at the time of the Airprox, was in receipt of a Basic Service from LTC Southwest (SW Deps) on frequency 134.125MHz. The SW Deps frequency was operating bandboxed with Ockham. The BE90 was on a VFR flight displaying SSR code 3710, allocated to BZN.

Prior to the PC12 departing OXF the LTC South Co-ordinator received a telephone call from OXF requesting departure approval for the PC12. At 1313:14 the PC12 pilot contacted OXF Radar passing 2000ft for 3000ft heading 315°. A Traffic Service was agreed and the PC12 pilot was instructed to climb to FL70.

At 1314:10 the PC12 pilot was instructed to turn left heading 180°.

At 1314:53 the OXF Radar controller initiated a telephone call to LTC South to advise that the PC12 was airborne and to request a joining clearance for CAS. The PC12 was cleared to join CAS on track to KENET at FL80.

At 1315:16 the PC12 pilot was instructed to climb to FL80. He read back the instruction and reported that there was "*some build up ahead*" and requested a left turn by 30°. The OXF Radar controller approved the weather avoidance.

At 1315:47 the OXF Radar controller confirmed to the PC12 pilot that he could operate on his own navigation and cleared the PC12 to enter CAS on track KENET maintaining FL80. This was read back by the PC12 pilot and he informed OXF that he was still heading 150°. The OXF Radar controller instructed the PC12 pilot to contact London Control on 134.125 and advised that there was no further known traffic to affect the PC12 (Figure 1 at 1316:10). The BE90 was 10.9nm southeast of the PC12.

[1] Chapter 2 and 3.

Figure 1.

At 1316:24 the PC12 pilot contacted SW Deps, passing FL65, climbing FL80, heading 150° to avoid weather. The SW Deps controller acknowledged the PC12 pilot and, at 1317:21, agreed a Basic Service outside CAS, advising him of opposite direction traffic at FL80 at about 4nm (Figure 2). The PC12 requested to continue his climb, and the SW Deps controller instructed the PC12 pilot to climb to FL100 and advised that the traffic was now 3nm away. The PC12 pilot reported that he was expediting his climb.

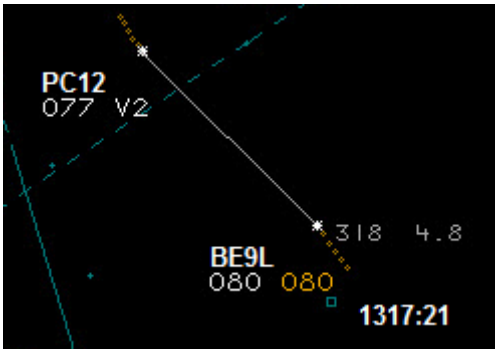

Figure 2.

As the SW Deps controller was agreeing the Basic Service with the PC12 pilot, the OXF Radar controller telephoned BZN to enquire about their 3710 squawk (the BE90), and advised BZN of the PC12 joining CAS at KENET at FL80. High-level Short Term Conflict Alert (STCA) activated on the LTC radar at 1317:32 (Figure 3).

Figure 3

The telephone conversation between OXF and BZN ended at 1317:40. At 1317:54 the track of the BE90 had turned to the right and CPA happened shortly afterwards at 1317:58 (Figure 4).

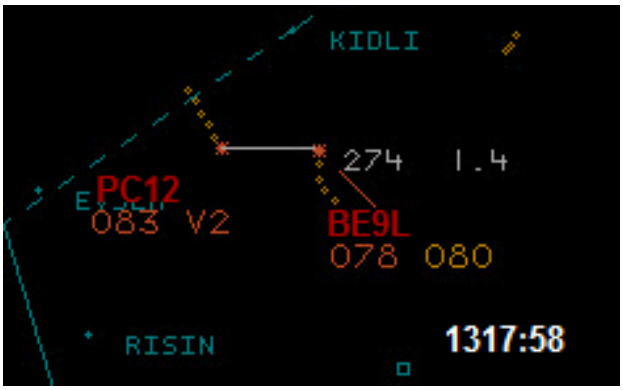

Figure 4

The Investigation report from LTC states that 'the agreed route for traffic departing Oxford and joining controlled airspace at KENET is BAMBO-DILAX, and that, historically, the route from Compton/KENET to Oxford has generated considerable safety reports in LTC and Oxford. The direct track from these two points in CAS to Oxford, routes through the Oxford Area of Intense Air Activity (AIAA). This airspace plays host to numerous general aviation aircraft, military aircraft operating to and from Brize Norton, and commercial flights flying to and from Oxford. A complicating factor for LTC is that Oxford is relatively far from the edge of Controlled Airspace. For these reasons after several years of negotiation, measures were put in place to improve the safety of aircraft operating between CAS and Oxford. These measures included the route of KENET, DILAX, BAMBO, and Oxford. The route was designed to minimise interactions in the AIAA and to allow better coordination with Brize Radar'.

The OXF Manual of Air Traffic Services (MATS) Part 2 states the procedures for aircraft joining CAS at KENET when radar is available:

> *'KENET departures will be notified to the airways sector by Oxford. Oxford will contact the SW co-ordinator and obtain the airways instructions (squawk, frequency and any expected delays).' After departure 'Turn onto radar heading 315° climb to altitude 5000'. On passing 4000', turn left on track, climb as instructed by (Oxford) radar. Oxford Radar will obtain and pass to the departures any airways instructions or clearances.'*

The UK AIP[2] states:

> *'IFR departures intending to enter controlled airspace should plan to enter at KENET, DTY, BADIM MALBY or WCO. During the promulgated hours of Oxford Radar, aircraft will depart on a radar heading as issued by Oxford Radar.*

Whilst on the heading instructed by OXF, the PC12 pilot requested a left turn to avoid weather, which was agreed. The OXF controller did not advise LTC that the PC12 was no longer on track to KENET in accordance with the clearance issued, and instructed the pilot of the PC12 to advise the SW Deps controller of that fact when he called on frequency. The OXF Radar controller did not notice the BE90 prior to transferring the PC12 pilot to SW Deps, and therefore did not pass him Traffic Information.

The TC SW Deps controller was busy when the PC12 pilot made his initial call on frequency. When the Co-ordinator noticed the BE90 and drew the SW Deps controller's attention to it, Traffic Information and climb was issued to the PC12 pilot to assist him in discharging his collision avoidance responsibility.

[2] EGTK AD 2.22, Paragraph 2 Arrivals/Departures.

Military ATM

Unfortunately, the Airprox was not declared on frequency and the controllers at BZN could not recall the event when they were notified over one month later. From the tape transcript and radar replay synopsis, it is evident that the King Air pilot was placed under a Traffic Service at 1316:31, climbing to FL80. During the next 14 minutes, BZN LARS passed nine sets of Traffic Information and reduced the information at 1319:12 due to the limits of surveillance coverage. The information prior to the CPA was:

1316:44: "[King Air C/S] traffic left 11 o'clock, 6 miles, opposite direction, indicating 700 ft below in the climb."
1316:56: "Roger, [King Air C/S]."
1317:46: "[King Air C/S] previously called traffic now left 11 o'clock, 2 miles, {*two or three unintelligible words*}, indicating similar altitude."
1317:56: "Roger, [King Air C/S]."

CPA occurred at 1318:03, with 800 ft vertical and 1.4nm horizontal separation.

From the transcript, it would appear that an abundance of Traffic Information was provided by the BZN LARS controller, with regular updates using CAP413 phraseology. From the limited information available to BM SPA it would appear that the barriers of Traffic Information, TCAS and pilot lookout combined to separate aircraft in Class G airspace.

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision[3]. If the geometry is considered to be 'head-on' then both pilots were required to alter course to the right[4].

Summary

The Airprox occurred in Class G airspace between a PC12, in receipt of a Basic Service from TC SW Deps and a BE90 in receipt of a Traffic Service from BZN. When a weather avoidance turn was agreed between the OXF controller and the PC12 pilot, it resulted in the PC12 turning towards the BE90. The OXF Radar controller did not notice the BE90 prior to transferring the PC12 pilot to SW Deps. The SW Deps controller passed Traffic Information to the PC12 pilot on the BE90. When the PC12 pilot requested further climb he was instructed to climb to FL100. BZN passed appropriate Traffic Information to the BE90 pilot. The radar recordings show the BE90 pilot made a right turn away from the PC12 and descended 200ft. These respective actions resulted in increasing the vertical and horizontal distance between the two aircraft. Because the Airprox occurred in Class G airspace, the pilots of each aircraft were ultimately responsible for their own collision avoidance irrespective of the service being provided. The minimum separation was recorded as 500ft vertically and 1.4nm horizontally.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots and the controllers concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

Starting off the debate, the HQ BM SPA advisor explained that Brize Norton had not been advised that an Airprox had been filed against an aircraft on their frequency until a month after it had occurred; consequently, the controllers involved could not recall the event. However, the RTF tape had revealed that the BE90 pilot had been in receipt of a Traffic Service from Brize, and appropriate Traffic Information had been issued to him, in accordance with CAP 774.

[3] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).
[4] Ibid., Rule 10 (Approaching head-on).

The Board then discussed the routing of the PC12 towards CAS and noted the Oxford radar procedures, outlined in the ATSI report, for traffic joining Controlled Airspace (CAS) at KENET which were stated in the Oxford Manual of Air Traffic Services (MATS) Part 2 and the UK AIP. It was apparent from the information available that the LTC MATS Part 2 stated that aircraft joining CAS at KENET were expected to be routed via the historically agreed route via BAMBO and DILAX. Since the Board meeting the UKAB Director has been informed by Oxford ATC that the routeing via BAMBO-DILAX-KENET is only used when Oxford Radar is not available. The ATSU stated that there is no memorandum of understanding or LOA with LTC to use this route when radar is available at Oxford. Consequently, as far as Oxford was concerned, the PC12 pilot was not taken off any published and agreed route when it was routed direct to KENET. It would appear that there was a disparity between Oxford and LTC in the expectation of an aircraft's routeing to join CAS at KENET which needs to be addressed. Nevertheless, the Board noted that the turn to avoid weather, which was agreed with the pilot of the PC12, was not coordinated with the LTC controller. It was clear that the Oxford controller was unaware of the potential confliction between the PC12 and the BE90 at the time of transfer, although there was no reason to believe that the BE90 would not have been displayed on the radar display before the PC12 pilot was transferred to the LTC controller.

Turning to the LTC SW controllers, the Board commended their actions in realising the potential confliction between the two aircraft not in their controlled airspace, in issuing appropriate Traffic Information to the PC12 pilot, and then giving expeditious further clearance to allow him to climb above the level of the BE90.

The Board quickly decided that it had been the actions of the Oxford Radar controller in not ensuring sufficient coordination of the PC12 that had led to the Airprox occurring. The LTC controller was faced not only with a confliction when the PC12 pilot contacted him, but also the fact that the aircraft was not routing direct to KENET as expected. After considerable discussion, the Board considered that the cause of the Airprox had been that the Oxford Radar controller had transferred the PC12 pilot to LTC SW whilst in conflict with the BE90. Additionally, it was agreed that a contributory factor was that Oxford Radar did not coordinate the PC12 pilot's revised routeing with LTC.

The Board then considered the degree of risk, and quickly agreed that the combination of Traffic Information to both pilots and their respective actioning of TCAS TAs had allowed timely and effective action to be taken to increase the separation between the aircraft: the PC12 pilot had climbed and the BE90 pilot had turned and descended his aircraft. The Board therefore categorised the Airprox as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Oxford Radar controller transferred the PC12 pilot to LTC SW whilst in conflict with the BE90.

Contributory Factor: Oxford Radar did not coordinate the PC12 pilot's revised routeing.

Degree of Risk: C.

ERC Score[5]: 10.

Recommendation: Oxford reviews their MATS Part 2 in light of their recent radar installation.

[5] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.