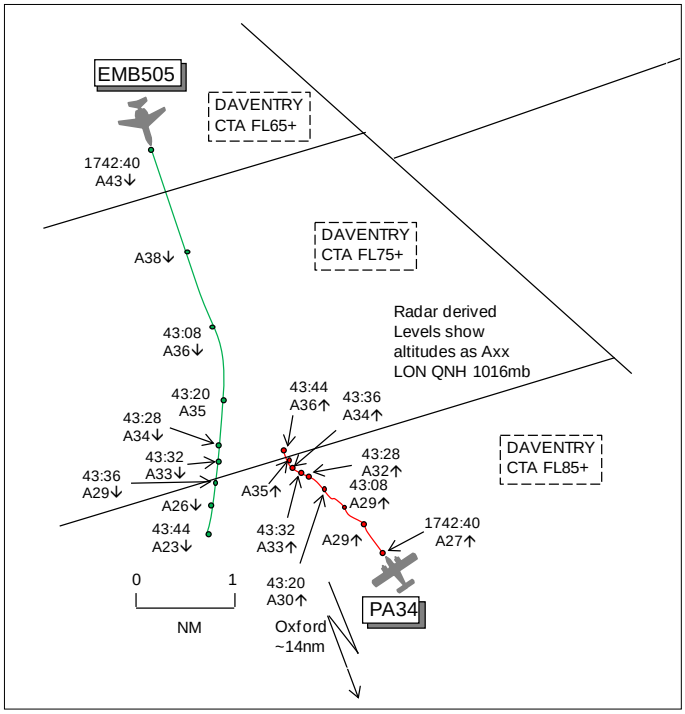
AIRPROX REPORT No 2011133

Date/Time:	3 Oct 2011 1744Z	
Position:	5203N 00129W (14·5nm NW Oxford)	
Airspace:	LFIR	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	EMB505 Phenom 300	PA34
Operator:	Civ Comm	Civ Trg
Alt/FL:	↓3500ft QNH (1015mb)	~3000ft↑ QNH
Weather:	VMC CAVOK	VMC NR
Visibility:	10km	NR
Reported Separation:	Nil V/<0·5nm H	Not seen
Recorded Separation:	Nil V/0·9nm H Or 500ft V/0·8nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB505 PILOT reports inbound to Oxford, IFR and in receipt of a RCS from London and then a BS from Oxford on 125·325MHZ, squawking 5015 with Modes S and C. The visibility was 10km in CAVOK VMC and the ac was coloured white/grey/black; ac lighting was not reported. A request for a HON direct arrival had been pre-noted to Oxford via RT and to London Control prior to descent. Late and insufficient descent clearance was given by London to comply fully with the procedure and they were kept on radar headings until almost out of CAS. Heading 180° at 200kt descending to 3500ft QNH just prior to changing frequency to Oxford, London warned them of "traffic 2800ft unverified" which was seen on ACAS 5-10nm ahead so they turned R to avoid. During the frequency change a TCAS RA 'descend' was generated and complied with but the high ROD resulted in a GPWS 'sink rate' and 'pull up' warning. The crew were visual with the ground but at no point did they see the other ac which passed <0·5nm away on ACAS at the same level. They repositioned onto a 10nm final for RW19. He assessed the risk as high.

THE PA34 PILOT reports flying a local dual training sortie from Oxford, VFR and in receipt of a BS from Oxford on 125·325MHz, squawking 7000 with Modes S and C. The Wx was VMC and the ac was coloured blue/white with strobe and nav lights switched on. At the time of the Airprox they were carrying out GH at about 3000ft 15nm SW of DTY heading NW at 100kt and were aware of an EMB505 inbound to Oxford but they did not see it.

ATSI reports that the Airprox occurred at 1743:34 UTC, in Class G airspace, 14·3nm to the NW of Oxford Airport.

The EMB505 (Phenom 300) was an IFR flight, inbound to Oxford from Leeds-Bradford Airport and the PA34 was operating VFR on a local training flight from Oxford Airport.

The LTC (Welin W) controller was providing a BS to the EMB505 after the ac had left CAS in the descent and was in the process of transferring the flight to Oxford Approach.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Swanwick TC (Midlands) and Oxford Approach, together with written reports from the two pilots and the Oxford Approach controller. The Eurocontrol Automatic Safety Monitoring Tool (ASMT) recorded 2 resolution advisories via the Mode-S downlink. Both messages originated from the EMB505. The PA34 was not TCAS-II equipped.

METAR: EGVN 031650Z 22006KT CAVOK 23/13 Q1015 BECMG SCT020=
METAR: EGBB 031720Z 24017G27KT 7000 BKN040 21/15 Q1014=
METAR: EGBB 031750Z 26019KT 9999 BKN025 20/14 Q1015=
METAR: EGVN 031750Z 26012KT 9999 FEW045 BKN250 20/16 Q1016 NOSIG=

[UKAB Note (1): Sunset was 1742Z.]

At 1728:10, the EMB505 pilot contacted Oxford whilst still working Scottish Control, requesting the latest Wx and RW in use. The Oxford Approach controller advised, "RW19, surface wind 230/10-15KT, CAVOK, QNH 1015, QFE 1005, 21/13". The pilot acknowledged the Wx and reported overhead Manchester estimating the the Oxford NDB OX at 1744 and looking for a straight in arrival from HON. The Oxford controller advised that this, "...shouldn't be a problem" and the EMB505 pilot returned to the Scottish Control frequency. The EMB505 was pre-noted to Oxford Approach by London FDS MIDS, with an estimate for HON of 1733 together with the request for a direct arrival via HON R151, for RW19. This was approved by Oxford Approach with an acceptance level of 3500ft on QNH 1015.

At 1735:42, the EMB505 was transferred by Scottish Control to LTC (Welin W). The LTC controller approved a direct routeing HON direct Oxford. At 1737:21 the LTC controller instructed the EMB505 flight, *"...descend flight level one five zero continue present heading."* This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505's position as 12·5nm NNW of HON.

At 1738:02, the PA34 pilot operating VFR on the Oxford Approach frequency reported, *"Just between you and Moreton now just giving you an idea for that Phenom [EMB505] is he er on his way in now."* The Oxford controller replied, *"er yeah he called me over Manchester he's gonna be coming towards the Oscar Xray coming from Honiley."* The radar recording shows the PA34 positioned, 10·5nm NNW of Oxford Airport, indicating an altitude of 2900ft.

At 1738:41 the radar recording shows the EMB505 passing FL154 with 4·1nm to run to HON. The pilot requested further descent and the LTC controller gave the EMB505 further descent to FL100.

At 1739:11, the Oxford Approach controller updated the PA34 pilot, *"(PA34 c/s) just been ca- er just coordinated the (EMB505 company) inbound he will be doing the Honiley arrival."* This was acknowledged by the PA34 pilot.

At 1739:41, the EMB505 pilot requested further descent and the LTC controller gave descent to FL090.

At 1741:02, the EMB505 pilot again requested further descent. The LTC controller responded, *"(EMB505 c/s) you're cleared to leaving* [sic] *controlled airspace by descent Oxford will accept you at altitude three thousand five hundred feet QNH one zero one five millibars."* This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505 on the HON 163 radial, indicating FL090, with the PA34 indicating an altitude of 2200ft, in the EMB505's 1130 position at a range of 13nm. It was noted that the previous instruction to continue on present heading had not been changed by the LTC controller. It was not clear if the EMB505 was still on a radar heading or following the HON151 radial for the direct arrival.

At 1742:32 STCA activated low severity alert (white).

At 1742:42, the LTC controller advised, *"(EMB505 c/s) just leaving controlled airspace it's now a Basic Service and for information about three miles ahead of your current position I've got an unverified aircraft showing altitude two thousand eight hundred feet."* The EMB505 pilot responded, *"Er we're gonna have to turn right to avoid him I think (EMB505 c/s) are we clear to do that."* The LTC controller replied, *"(EMB505 c/s) er yeah at your own discretion.*" The radar recording shows the EMB505 indicating an altitude of 4300ft with the PA34 in the EMB505's 11 o'clock at a range of 5·1nm, indicating an altitude of 2700ft and opposite direction.

At 1743:03 STCA changed to high severity alert (red).

At 1743:10, the LTC controller passed a further warning, *"(EMB505 c/s) just left of your eleven o'clock now two an half miles opposite direction three thousand feet."* The EMB505 pilot responded, *"Looking.*" The radar recording shows the 2 ac converging at a range of 2·5nm, with the EMB505 indicating an altitude of 3600ft and the PA34 indicating an altitude of 2900ft.

At 1743:19, the radar recording shows the EMB505 turning R onto a S'ly track to avoid the PA34.

At 1743:27, the EMB505 received a TCAS RA (ASMT) 'descend, crossing descend' and almost immediately at 1743:34 a TCAS RA 'descend descend' (ASMT).

The Eurocontrol ASMT reports the CPA at 1743:34, with horizontal separation of 0·86nm and vertical separation as 376ft.

[UKAB Note (2): The radar recording at 1743:28 shows the EMB505 heading 190° descending through altitude 3400ft with the PA34 1nm to its ESE at 3200ft climbing. The next sweep (1743:32) shows the lateral separation as 0·9nm with the EMB505 and the PA34 both level at 3300ft. The CPA, 0·8nm, is shown on the next radar sweep at 1743:36, the EMB505 descending through altitude 2900ft with the PA34 now in its 8 o'clock climbing through 3400ft, 500ft above.]

At 1743:42, as the separation between the ac increased, the LTC controller transferred the EMB505 flight to Oxford Approach.

The radar recording shows that the EMB505, in complying with the TCAS RA descended to an altitude of 2300ft [spot elevation in the area is shown as 784ft]. The pilot subsequently reported a GPWS "terrain warning" which was believed to have occurred at about this time. [The MSA to the NW is 2300ft].

At 1744:01, the EMB505 contacted Oxford Approach, *"Oxford Approach (EMB505 c/s) er turning left to self establish one nine climbing back to three thousand five hundred feet following an R A."* The Oxford controller responded, *"(EMB505 c/s) your cleared for the Honiley arrival Runway one nine report localiser established and you're number one traffic for Runway one nine."* The pilot replied, *"Clear to self establish on the one nine approach (EMB505 c/s)."* The Oxford controller advised the pilot about the PA34, *"(EMB505 c/s) there is one Seneca* [PA34] *that I am aware of to the north-northwest of the airfield that traffic is VFR height and position unknown."* This was acknowledged by the EMB505 pilot.

At 1745:02 the EMB505 pilot asked the Oxford controller what indications the Seneca (PA34) had received on TCAS. The PA34 pilot responded, *"...sorry we're not fitted with TCAS."* The Oxford controller added, *"(EMB505 c/s) the er Seneca's not fitted with TCAS and wasn't - he was aware you were approaching from the Honiley area but didn't see you.*"

The EMB505 continued with the approach without further incident and after landing at 1752:17, reported, *"....we're gonna have to save tapes for that one because it was a TCAS that er led to the er terrain warning as well."* This was acknowledged by the Oxford controller.

The Airprox occurred whilst the EMB505 was in receipt of a BS from the LTC controller. As the EMB505 departed CAS, the LTC controller changed the service to a Basic Service and observed traffic ahead and passed a warning, with TI. The EMB505 pilot asked if they were clear to make a R turn to avoid. This request was most likely due to the EMB505 pilot having been instructed to "continue present heading".

After receiving an updated warning and a TCAS TA, the EMB505 pilot commenced a R turn to avoid the unknown traffic. The EMB505 pilot then received a TCAS RA 'Crossing Descend' and immediately a TCAS RA 'Descend Descend'. This resulted in the pilot descending and then receiving a GPWS - terrain warning, 'pull up'.

The PA34 pilot was operating VFR to the N of Oxford and the pilot was aware of the inbound EMB505. The Oxford Approach controller updated the PA34 pilot on the intention of the EMB505 to carry out the "Honiley arrival". No level information was provided by the PA34 pilot or requested by the Oxford controller. It was not clear if the PA34 pilot was aware that the EMB505 was descending to an altitude of 3500ft. The PA34 was indicating an altitude of 3400ft as the 2 ac passed abeam. The PA34 pilot did not acquire a visual sighting of the EMB505.

The LTC controller (using surveillance equipment) had retained the EMB505 until the 2 ac had passed abeam. When the EMB505 called Oxford Approach, the Oxford controller was unaware that an Airprox had occurred and was not in a position to pass timely TI on the PA34 (VFR) to the EMB505 (IFR).

The EMB505 was in receipt of a BS from the LTC controller and the PA34 was in receipt of a Basic Service from the Oxford controller. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, states:

> 'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'
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> 'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller 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 considers that a definite risk of collision exists, a warning may be issued to the pilot.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members questioned whether the EMB505 was under the appropriate service after leaving CAS by descent. The NATS Advisor reminded Members that a DS or TS was not available on any London Control frequency below FL070 [UK AIP ENR 1-6-1-1]. The LTC WELIN controller informed the EMB505 crew that they were leaving CAS; however, best practice would have been to inform the flight in advance where and/or when this would occur to give the crew a 'heads-up' and the opportunity to negotiate a revised service and/or a change of frequency to be effective on leaving

CAS. There also appeared to be some confusion whether the EMB505 was still on a radar heading; although the RT transcript showed the assigned heading was not cancelled, the service was changed to a BS. The flight should have been released onto its own navigation when the assigned heading was no longer pertinent but this could have been inferred when the service was downgraded as the flight left CAS. One Member suggested that the EMB505 flight could have called Brize Norton for a radar service. Although this was possible in theory, in practice the small track distance involved after leaving CAS and establishing on the RW19 ILS from the HON procedure would have precluded a timely call to Oxford approach to establish a PS. Had the EMB505 been released earlier by LTC WELIN, Oxford APP could have provided the EMB505 with TI on the PA34 but this would have been generic. In the event, the LTC WELIN controller alerted the EMB505 crew to the PA34's presence at 2800ft when he gave a traffic warning to the flight shortly after STCA activated. Under a BS controllers are not obliged to pass TI; however, a controller with access to surveillance derived information may pass a warning to pilots if that controller considers a definite risk of collision exists and Members commended his actions in doing so. The EMB505 crew saw the PA34 on TCAS and, believing that they were still on a radar heading, asked if a R turn to avoid was approved. This request was approved and WELIN updated the warning, informing the crew that the PA34 was indicating 3000ft. At this point the radar recording shows the EMB505 turning R onto a S'ly track which resolved the conflict. Members also wondered why the EMB505 crew had continued their descent to the acceptance level of 3500ft and did not stop off their descent at a higher level. In not doing so, their descent and the PA34's climb had breached the TCAS RA 'bubble' which then commanded a descent through the PA34's level. The PA34 pilot was aware of the EMB505's impending arrival both from listening to the RT exchanges with Approach and from the TI passed. One Member thought the PA34 pilot could have been more helpful by manoeuvring his ac away from the area where he knew the EMB505 would be flying, having knowledge of its arrival at least 15min before the CPA. However, the EMB505 was off the direct arrival HON procedure, having been put on a radar heading by LTC which routed the ac about 5nm W of the HON 151° arrival track, so the PA34 pilot may have believed his ac was clear of the inbound EMB505. The EMB505 crew appeared to have taken robust action in response to the TCAS RA and their high ROD (>3000fpm) had generated a GPWS terrain warning. Members agreed that pilots should ensure that they follow the TCAS guidance closely as it was thought the RA would have 'softened' quickly, after the ac's levels had crossed, well before the GPWS parameters were breached.

In the end, the PA34 pilot flying VFR did not see the descending EMB505 crossing 1nm ahead. The EMB505 was initially approaching head-on, from above and descending. This would have presented a small target aspect to the PA34 pilot which, when combined with the nose high attitude of the climbing ac would have made visual acquisition more difficult. The EMB505 crew flying IFR only saw the PA34 on TCAS and reacted to the TI given, passing 0·8nm W of and 500ft below the PA34 whilst complying with the RA. Members discussed whether the cause of the Airprox was the failure of both pilots to see the other ac in Class G airspace. However, Members agreed that both crews had discharged their responsibilities appropriately in the circumstances and the sequence of events had led to a conflict. Although the EMB505 passed unsighted to the PA34 pilot, the EMB505 crew had reacted well to the information presented and turned their ac R which had resolved the conflicting flightpaths. The subsequent TCAS RA had increased the vertical separation at the CPA. These elements were enough to persuade the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace between IFR and VFR traffic.

Degree of Risk: C.