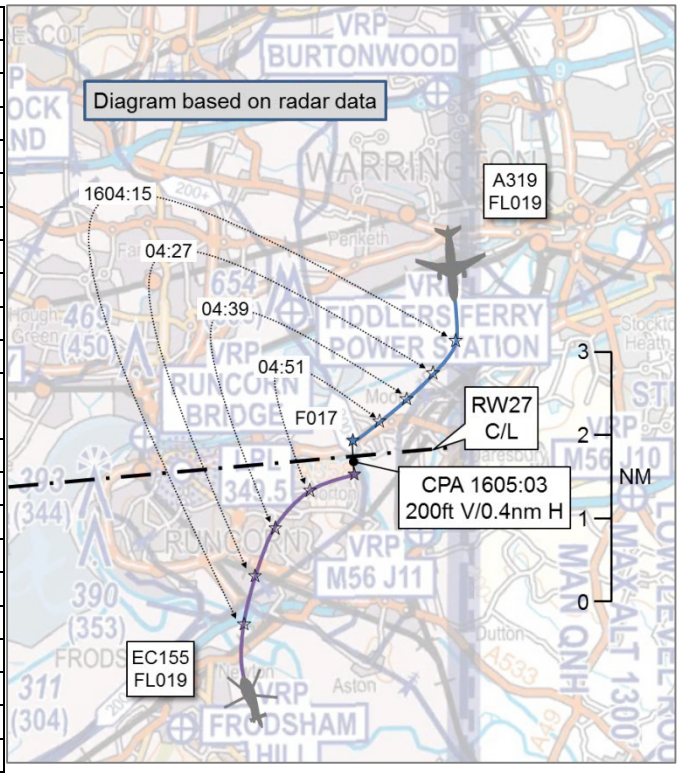
AIRPROX REPORT No 2015218

Date: 4 Dec 2015 Time: 1605Z Position: 5320N 00240W Location: 6.5nm E Liverpool Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A319	EC155
Operator	CAT	Civ Exec
Airspace	Liverpool CTR	Liverpool CTR
Class	D	D
Rules	IFR	VFR
Service	Radar Control	Radar Control
Provider	Liverpool	Liverpool
Altitude/FL	1700ft	1900ft
Transponder	A/C/S	A/C/S
Reported		
Colours	Company colours	Dark blue
Lighting	Beacon, strobes	Full lighting
Conditions	VMC	VMC
Visibility	NK	.10km
Altitude/FL	2000ft	2000ft
Altimeter	QNH	QNH (1018hPa)
Heading	240°	020°
Speed	200kt	150kt
ACAS/TAS	TCAS II	TCAS I
Alert	RA	TA
Separation		
Reported	300ft V/1nm H	50ft V/0.5nm H
Recorded	200ft V/0.4nm H	



THE A319 PILOT reports that in extremely windy conditions (winds from the south, 60kt at 2000ft), they were cleared for the ILS approach RW27 at Liverpool. On final intercept heading from the north, the helicopter which was supposed to be holding south of the M56, with them in sight, was tracking north-eastwards towards them. He stated that he was visual, seeing the helicopter at the point just before they received a TCAS RA. The command 'descend' was given.by TCAS He had clear visual contact with the traffic. A turn onto final kept them clear of the traffic and whilst he did respond fully to the initial call from TCAS, he was conscious that he was visual and becoming clear of the traffic, close to the ground. He considered that a high rate of descent may have brought them closer to the terrain/bridge [Runcorn] than necessary. Clear of conflict and with a strong headwind they re-configured and carried out a normal safe landing.

He assessed the risk of collision as 'High'.

THE EC155 PILOT reports that he was cleared through the Liverpool CTR at 2000ft QNH from south-to-north, routeing via the Runcorn Bridge VRP. ATC were happy for them to continue on current track and altitude but stated that they may have to hold for inbound traffic. At the time, they were flying with maximum continuous power which, coupled with a high downwind component was giving a groundspeed in excess of 170kt. He chose to maintain this airspeed as he wanted to reach his landing site in daylight[1]. ATC had also suggested that he may be able to get them through prior to the landing traffic. He was then instructed to take up a holding orbit with a clearance limit of "no further north than the M56 motorway" to allow the landing traffic through first. At this point they could see the landing lights of the A319 in their 1-2 o'clock position. They had seen the A319 on TCAS at 5nm, and visually at 3nm. After reacting to the call and turning the helicopter to the right, they passed

[1] Liverpool sunset time 1555.

over the M56 and heard the A319 pilot calling "TCAS RA descending". They continued their right turn and the aircraft passed each other left-side to left-side, approximately level and at an estimated distance of around 0.5nm. They maintained visual contact with the A319 throughout this phase and there was no risk of a collision. After a single orbit they were cleared to continue *en route*. In his opinion, the high groundspeed, downwind component, and the turn to the right, all contributed to his helicopter passing over the M56. Had he sufficiently reduced speed and used a far greater angle of bank then he may have avoided passing over the M56. He also thought that had he turned to the left, the A319's TCAS may not have reacted as it did, although he may still have passed over the M56.

He assessed the risk of collision as 'None'.

THE LIVERPOOL APPROACH RADAR CONTROLLER reports that the EC155 pilot was transiting from Oulton Park to Runcorn Bridge at 2000ft VFR. He was instructed to take up orbits at Frodsham and report when he had the A319 in sight on right base for RW27, also at 2000ft. 2 mins earlier, on entering CAS at Oulton Park, the EC155 pilot was told he may have to hold to pass behind the A319. The EC155 pilot reported taking up right-hand orbits and that he had the A319 in sight. He replied to the pilot to arrange his flight to pass behind that traffic, cautioned him about wake turbulence, with the recommended distance of 5nm. The EC155 pilot acknowledged the instruction to pass behind. The A319 pilot was then given a closing heading of 230° to close onto the ILS and was passed Traffic Information on the EC155, which was 4nm southwest at this point at the same height. The EC155 pilot's orbit took him very wide up to the RW27 final approach and into conflict with the A319 whose pilot reported a TCAS RA, descend, to which he replied "Roger". The EC155 pilot also acknowledged the TCAS conflict. The 3000ft wind was reported as 240°/45kt.

Factual Background

The weather at Liverpool was recorded as follows:

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METAR EGGP 041550Z 22026KT 9999 FEW038 12/08 Q1018=
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Analysis and Investigation

CAA ATSI

ATSI had access to reports from the pilots of both aircraft, the Liverpool Radar Controller, the area radar recordings and a recording of the Liverpool Radar frequency. Screenshots produced in the report are provided using the area radar recordings. Levels indicated are altitudes. All times UTC.

The A319 (code 6266) pilot was operating IFR on a flight into Liverpool John Lennon Airport. At the time of the Airprox the A319 pilot was about to intercept the localiser on the ILS approach for RW27. The pilot was in receipt of a Radar Control Service from Liverpool Radar. The EC155 (code 5054) pilot was operating VFR on a flight to a private landing site situated north of Liverpool Airport. The EC155 pilot was in receipt of a Radar Control Service from Liverpool Radar on the same frequency as the A319 pilot.

At 1551.47, the EC155 pilot called Liverpool Radar 3nm south of Uttoxeter. The EC155 pilot passed his intentions, which were to route via the non-source reporting point MOGTA (12.5nm south-east of Liverpool Airport), then transit the Liverpool CTR via the Runcorn Bridge Visual Reference Point (VRP), before routeing direct to his destination.

At 1558:27, the Liverpool Radar controller issued a clearance to the EC155 pilot to transit the Liverpool CTR (Figure 1) from south to north via the Oulton Park, Runcorn Bridge and Kirkby VRPs, VFR not above 2000ft.

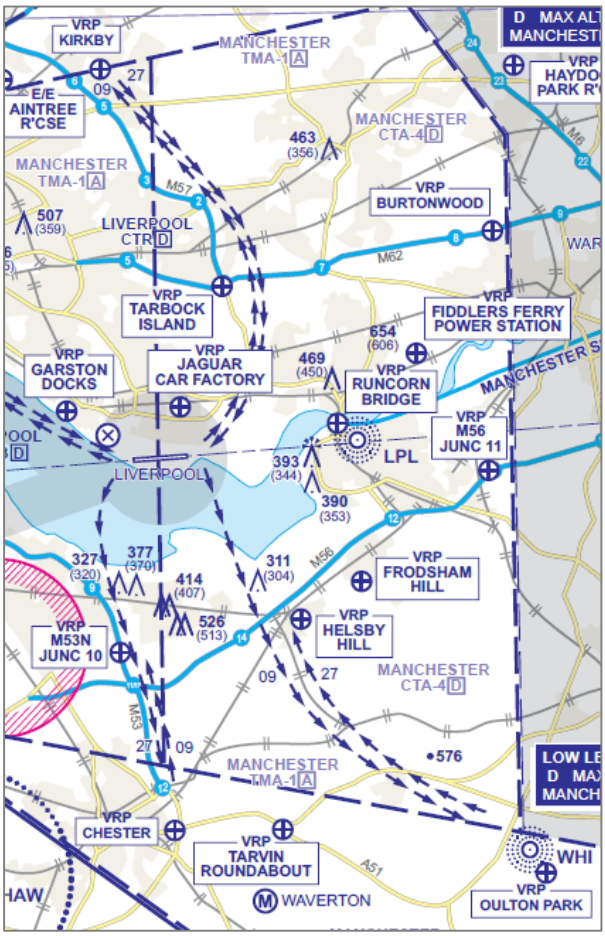

Figure 1 – Control Zone and Control Area Chart (UK AIP AD 2-EGGP-4-1).

At 1559:11, the A319 pilot called Liverpool Radar in the descent to 4000ft.

At 1559:23, the Liverpool Radar controller advised the pilot of the A319 that he would provide radar vectors for an ILS approach to RW27 and that he was number one for the approach with no ATC speed restriction.

At 1600:56, there was a change of the Liverpool Radar controller.

At 1601:28, as the A319 was downwind right-hand for the ILS and indicating 3100ft, the incoming Liverpool Radar controller asked the A319 pilot for a "*spot wind check*", the pilot of the A319 reported that the wind speed and direction aloft was 230° at 60kt.

At 1601:47 (Figure 2), the EC155 entered the Liverpool CTR and the Liverpool Radar controller placed the helicopter pilot under a Radar Control Service. He advised the pilot of the EC155 that an orbit to the south of the RW27 final approach might be required, in addition, he passed Traffic Information on the A319.

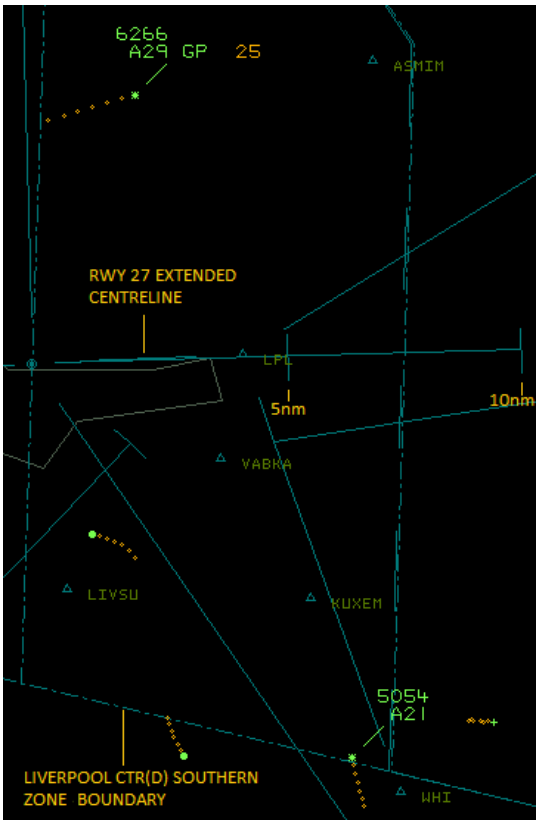

Figure 2 – Prestwick Centre MRT at 1601:47. A319 squawk 6266, EC155 squawk 5054.

At 1602:34 the Liverpool Radar controller turned the A319 pilot onto a base leg heading of 190° and issued descent to 2000ft.

At 1603:34 (Figure 3) the Liverpool Radar controller issued the following instruction to the EC155 pilot, *"(EC155 C/S) take up right-hand orbits just south of the M56, report when you have an (airline) Airbus in sight about to establish on a seven mile final".* Figure 4 shows the relative positions of the RW27 extended centreline (overlaid in green) and the M56 motorway (2.4nm to the south).

Figure 4

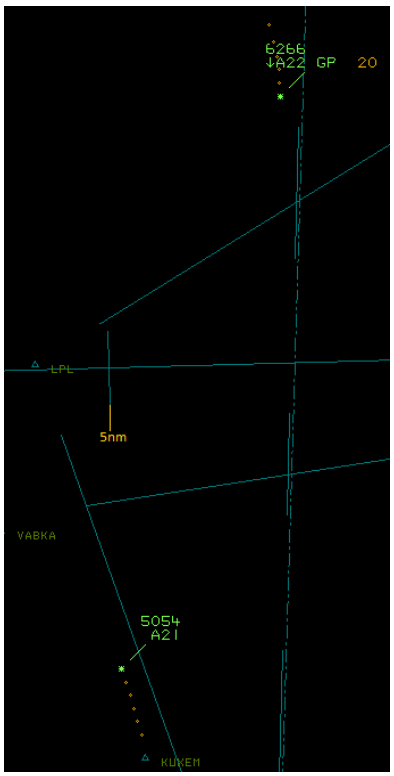

Figure 3
Prestwick Centre MRT at 1603:34.

At 1603:47, the pilot of the EC155 replied, *"roger taking up right hand orbits remaining south of the M56 and we do have the traffic in sight…"* At 1603:53, the Liverpool Radar controller instructed the EC155 pilot to *"…arrange your flight to pass behind that traffic caution wake turbulence recommended distance 5 miles".*

At 1604:00 (Figure 5), the Liverpool Radar controller turned the A319 pilot onto a closing heading of 230° and cleared him for the ILS approach.

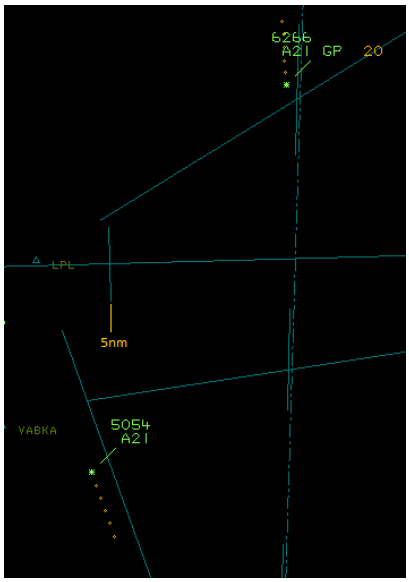

Figure 5
Prestwick Centre MRT at 1604:00.

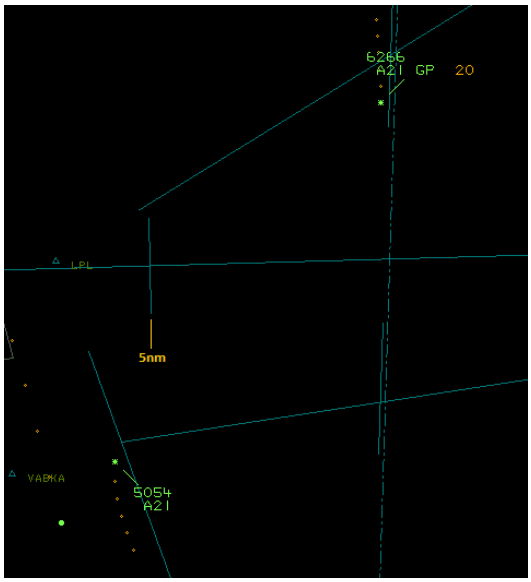

Figure 6
Prestwick Centre MRT at 1604:16.

At 1604:16 (Figure 6) the Liverpool Radar controller passed the following Traffic Information to the A319 pilot, *"…traffic south-west of you by four miles just taking up orbits to pass behind you its EC155 helicopter 2000ft VFR".*

At 1604:55 (Figure 7) the A319 pilot reported a TCAS descend RA.

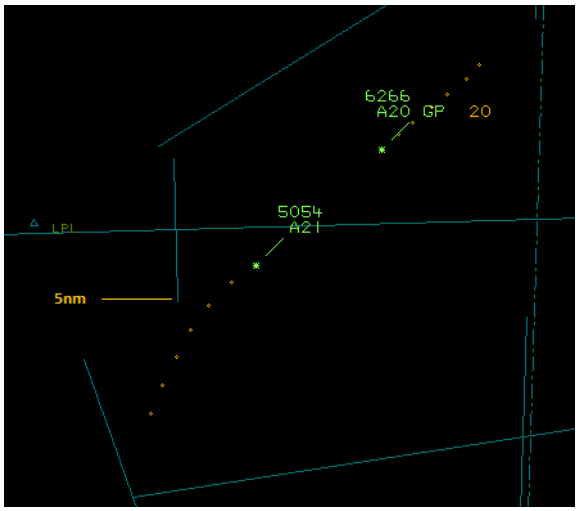

Figure 7
Prestwick Centre MRT at 1604:55.

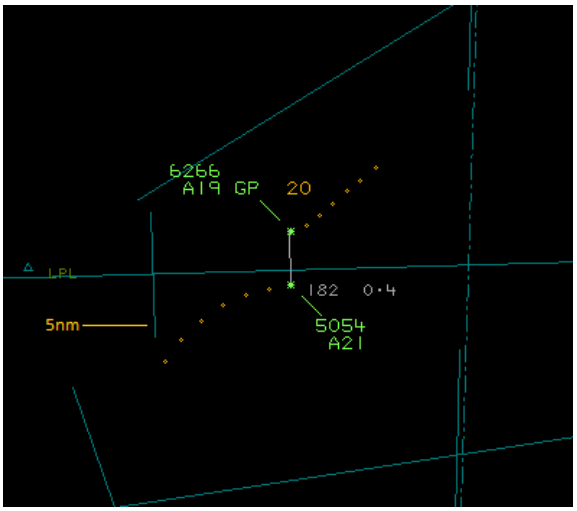

Figure 8
Prestwick Centre MRT at 1605:07 (CPA).

CPA occurred at 1605:07 (Figure 8) with a horizontal distance of 0.4nm and a vertical distance of 200ft.

At 1605:14 the A319 pilot reported clear of conflict and commented that, *"… the helicopter was well north of the M56".*

At 1606:21 the Liverpool Radar controller asked the pilot of the EC155 if it was the wind that had caused him to route so far north, to which the EC155 pilot replied, *"…affirm we didn't get the speed off in time apologies we ended up north of the M56".* The intention of the EC155 pilot was to transit the Liverpool CTR under VFR from south to north via the Runcorn Bridge VRP and from there to route direct to a private landing site north of the airport. This route necessitated crossing the final approach for RW27 at Liverpool Airport just inside a range of 4nm.

The outgoing Liverpool Radar controller issued a clearance to the EC155 pilot to transit the Liverpool CTR while he was still outside the CTR. The routeing issued was via the VRPs at Runcorn Bridge and Kirkby not above 2000ft. Because the EC155 pilot's destination was south of Kirkby the clearance was shortly afterwards revised with a clearance limit of Knowsley.

Prior to the Airprox and the EC155 pilot entering the Liverpool CTR, the outgoing Liverpool Radar controller discussed the transit altitude with the pilot of the EC155. He was advised that there were some Liverpool inbounds to affect his transit, that he should plan to transit the Liverpool CTR at 2000ft and that he would be updated as he got closer to Liverpool Airport.

There was a change of controller just prior to the Airprox. The recorded surveillance data indicated that there was a strong north-easterly drift as the A319 turned downwind. The incoming Liverpool Radar controller asked the pilot of the A319 for a spot wind check, this was probably because the drift was stronger than anticipated and the controller wanted to adjust the downwind heading. The Liverpool Radar controller alerted the pilot of the EC155 to the possibility that an orbit might be required to the south of the RW27 final approach prior to him turning the A319 pilot onto base leg. He also alerted the EC155 pilot that there was Airbus traffic shortly to turn onto final approach.

After the EC155 pilot was alerted to the possibility that an orbit might be required, and that there was inbound traffic to affect, the recorded surveillance data indicated that there was no appreciable reduction in the EC155's speed as the helicopter approached the RW27 extended centreline. The Liverpool Radar controller instructed the pilot of the EC155 to take up right-hand orbits to the south of the M56 Motorway approximately one minute and thirty-five seconds prior to CPA when the EC155 was 4nm to the south of the RW27 extended centreline. The M56 Motorway runs diagonally to the south-west from a point 2.4nm south of the RW27 extended centreline. The recorded surveillance data suggests that it was approximately thirty seconds before the EC155 pilot commenced the right turn. Once the EC155 pilot had commenced the right turn, it would appear that the relatively shallow turn brought the helicopter into proximity with the A319. The strong south-westerly wind may have contributed to this.

Although there is no requirement to separate IFR and the VFR aircraft in Class D airspace ATC:

> '… shall pass traffic information to IFR flights on VFR flights and give traffic avoidance when requested.'[2]

UKAB Secretariat

The A319 and EC155 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[3]. 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[4].

Comments

The EC155 Operating Company investigated the Airprox, supplying additional information to that provided by the pilot:

Maximum Continuous Power was set which, when coupled with a strong tailwind component, gave them a high ground speed. This was maintained in the hope of being cleared through ahead of the inbound traffic. ATC then instructed them to take up an orbit to allow the landing traffic through, giving a clearance limit of, "No further North than the M56 motorway". By this stage they were already close to the M56 and with their high groundspeed, a rapid reduction of speed and a turn would have been required to prevent crossing it. The PF did not react immediately to the ATC instruction, (he may not have heard, understood or fully appreciated the urgency with which they needed to alter the course of the aircraft). After a few seconds delay and some verbal instructions from the PM, the PM pushed the "HDG" button and turned the aircraft to the right which began to alter the course. The right turn placed the aircraft more directly downwind and with no speed reduction, the EC155 crossed the M56 and although turning, continued towards the landing traffic. It should be highlighted that the crew were visual with the landing traffic throughout. The landing traffic called "TCAS RA, descending" and also stated that "the helicopter was well North of the M56". The EC155 pilot continued the right turn, crossing back over the M56 where they were cleared to continue their flight to their destination, subsequently landing at 1615.

A significant factor to the late reaction of the EC155 pilot to the instruction from ATC to not cross the M56 was the nationality of the PF. The PF is a foreign pilot who is experienced on the EC155 but works for the Company based in Europe. He flies extensively round Western Europe but is not experienced in UK flying operations. In order to familiarise the PF with Company operations and flying in UK airspace, he was spending a two week period at the Company's base. His English Level is 05 but due to the rapidly developing situation, the PM is of the belief that initially, he had not grasped the urgency of the ATC request.

[2] CAP 493 Section 1 Ch 2: Flight Rules
[3] SERA.3205 Proximity.
[4] SERA.3225 Operation on and in the Vicinity of an Aerodrome.

The first thing to stress is that the crew readily accept that they got it wrong. However, it should also be pointed out that despite the triggering of the landing aircraft's TCAS, the crew were fully visual with the landing traffic throughout and situationally, knew exactly their relationship between themselves and the landing aircraft. The late call from ATC was based on an initial attempt by the controller to be helpful and try to get the aircraft across before the landing traffic. He then decided that that was not going to be possible and a relatively short notice instruction to hold became necessary. Whilst, (in company with the strong tailwind component) this would require prompt action on the part of the crew, it was an achievable request. Having received the instruction, the slower recognition of the PF to grasp the need for immediate action, lost them precious seconds. Had he done so, he could have rapidly reduced speed and made a turn, keeping the aircraft south of the M56. However, the PM, (also a Company Captain) on realising that the PF was not totally comprehending the instruction at this stage, should have taken control, slowed the aircraft and made a hand flown, steep turn, (probably to the left in order to counter the tailwind component). Had he done this promptly, the aircraft would have remained clear and no alert would have been sounded.

By electing to alter course to the right using the Heading Bug, the aircraft was committed to a rate one turn and a strong tailwind component pushing it in the direction of the landing aircraft and the wrong side of the M56. The right hand turn did mean that the crew remained in sight of the landing aircraft for longer but it also took them close enough to set off the TCAS. The company's pilots spend most of their time flying around with the upper modes of the autopilot selected and are encouraged to do so. However, it will be stressed at the next Pilot's Training Day and via a Chief Pilot's Memo, that pilots must understand just when it is sensible to take control and to physically manoeuvre the aircraft.

Summary

An Airprox was reported when an A319 and an EC155 flew into proximity at 1605 on Friday 4th December 2015. Both pilots were operating in VMC, the A319 pilot was operating under IFR and the EC155 pilot under VFR. They were in receipt of a Radar Control Service from the Liverpool Radar controller. The EC155 pilot was instructed to orbit prior to crossing the M56 motorway and then to cross the RW27 approach path behind the A319. His orbit took him beyond the motorway and into confliction with the A319. The EC155 had visual contact with the A319, whose pilot had received a TCAS RA just after gaining visual contact with the helicopter. The minimum separation was recorded as 200ft vertically and 0.4nm horizontally.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first discussed the actions of the EC155 pilot. Civil helicopter pilot members commented that, in their opinion, the pilot had not acted quickly enough when he had been advised to orbit before the M56. It was noted that, although he had been initially proceeding at high speed with the possibility of crossing ahead of the A319, it was considered that he still had time to slow down, even with the strong southerly tail-wind, when the controller had changed his plan and had instructed him to orbit and cross behind the A319. The Board commended the frank and honest report provided by the helicopter operating company which confirmed that, in their opinion, despite a relatively short notice instruction from the controller, if the EC155 pilot had acted quicker he would have been able to comply with his ATC clearance. The Board also noted that the report had commented that, in the circumstances, it would have been prudent for the pilot to have deselected the autopilot instead of using the Heading Bug, which had resulted in a rate 1 turn.

The Board also noted that the A319 pilot had received a TCAS RA descent when he was at 2000ft. A Civil airline pilot member commented that this put the pilot in an invidious position. Although he would always react to a TCAS RA by following its commands, ideally he would not have wanted to descend on an RA that close to the ground and outlying features. The Board noted that the GPWS

would have priority over a TCAS RA to descend and that, fortuitously, his routing soon took him away from, and clear of, the helicopter.

The Board then turned its attention to the cause of the Airprox. It was quickly decided that the EC155 pilot had not complied with his clearance and had flown into conflict with the A319. Turning to the risk, the Board opined that both pilots were visual with each other and that there was therefore no risk of collision. However, they agreed that it could not be considered that normal procedures had pertained because the EC155 pilot had not complied with his clearance. Therefore the Board assessed the risk as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The EC155 pilot did not comply with his clearance and flew into conflict with the A319.

Degree of Risk: C.