

## **AIRPROX REPORT No 2010082**

Date/Time: 2 Jul 2010 (Friday) 1506Z

Position: 5316N 00250W  
(S Liverpool Airport - elev  
81ft)

Airspace: Liverpool CTR (Class: D)

Reporting Ac Reported Ac

Type: A319 PA38

Operator: CAT Civ Trg

Alt/FL: 2000ft 1500ft  
(QNH 1010mb) (QNH 1010mb)

Weather: VMC CLOC VMC CLBC

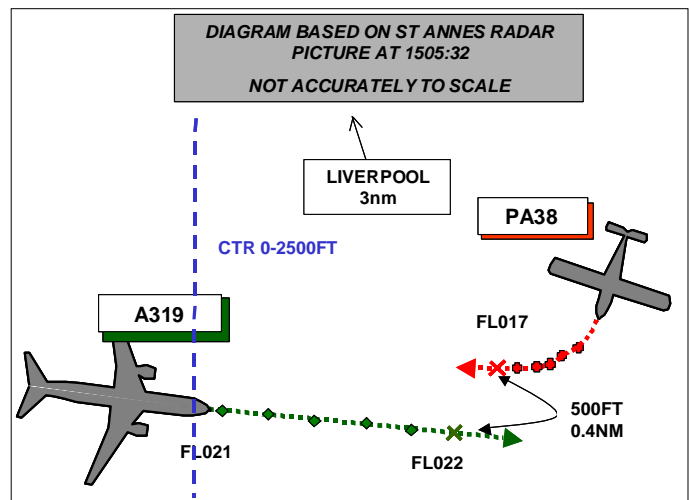
Visibility: 10km 10km

Reported Separation:

300ft V/0m H NR

Recorded Separation:

500ft V/0.4nm H



### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE A319 PILOT** reports flying a scheduled passenger flight inbound to Liverpool under IFR, squawking 7216 with Modes C and S, while in receipt of a RCS from them. Heading 090° at 220kt they were cleared from 2500ft (QNH 1010mb) down to 2000ft and Liverpool ATC informed of an ac below, VFR not above 1500ft, which they identified on TCAS. The ac did not maintain 1500ft; he thought it had climbed above its cleared altitude and passed 300ft under them as they were reacting to a TCAS RA. They reported the RA to Liverpool APR using standard phraseology, but it was not acknowledged [he thought]. He assessed the risk as being medium and reported the incident to ATC by telephone after landing to ensure that they were aware of it.

**THE PA38 PILOT** reports that he was informed of the Airprox about 2 weeks after the event so his recollection of events might not be complete. He was the instructor on a VFR CPL training flight returning to Liverpool squawking with Mode C. They entered Liverpool CTR at Tarvin under an ATC clearance of VFR not above 1500ft on the QNH of 1010mb, and his recollection was that ATC routed them to Helsby, which is the aerodrome clearance limit for GA traffic for RW27. After reporting the field in sight he believed that they had been transferred from Liverpool APR to Liverpool TWR. Normally, if the airport is busy, ATC hold GA ac at Helsby while large ac position overhead at 2500ft for LH downwind for RW27; this traffic passes over Helsby Hill, or to the S of it, on the downwind leg. He does not believe that they climbed above their 1500ft clearance at any time.

UKAB Note (1): The Liverpool METAR for 1450 was:

EGGP 021450Z 24012KT 9999 FEW035 22/12 Q1010

UKAB Note (2): The recording of the St Annes radar shows the incident clearly. At the start of the recording at 1505:00 the A319 approaches the CPA from the W tracking 095° level at FL021 (alt 2010ft) with the PA38, squawking 0260 with Mode C in its 11 o'clock Level at FL017 (alt 1610ft), in a wide right-hand orbit. The ac continue to converge with their alts unchanged and at the CPA the A319 has just commenced the TCAS RA response and is climbing through FL022 (alt 2110ft). It passes 0.4nm to the S of the PA38's orbit, on a directly opposing track, the latter still level at FL017 (alt 1610ft).

**ATSI** reports that the Airprox occurred at 1505:36, 4nm SE of Liverpool Airport, within the Liverpool CTR, which is Class D airspace extending from surface to 2500ft amsl. RW27 was the RW in use. ATSI assessed the controller's workload as moderate.

The PA38 was a locally based ac on a VFR flight from Sleaford Airfield to Liverpool Airport. The PA38 was instructed to enter the Liverpool CTR from the S, routing via Tarvin and Helsby for RW27.

The UK AIP entry AD 2-EGGP-1-11 (8 Apr 10) paragraph 6(g) states:

'In order to integrate VFR flights to/from Liverpool Airport with the IFR traffic flow, standard routes are established along which VFR clearance will be issued subject to the conditions specified above. The routes provide a uni-directional traffic flow, dependant upon the runway in use at Liverpool Airport. The routes are detailed in paragraph 7 below and shown on the chart at AD-2-EGGP-4-1. Non-standard routes may be requested but ATC approval will only be granted if the traffic situation allows. Pilots are reminded of the requirements to remain in VMC at all times and to comply with the relevant parts of the Low Flying Rules, and must advise ATC if at any time they are unable to comply with instructions.'

Paragraph 7 – Standard VFR entry route from the South:

'Enter CTR via Oulton Park, route to the western edge of HELSBY then as directed by ATC – Max Altitude 1500ft.'

The Liverpool MATS Pt 2 (24/01/10), Section 1, Chapter 18, Page 1, Paragraph 2.3, states:

'Mode A code 0260 should be allocated to all locally based VFR flights, except training circuit flights, and other flights as required. This code is used for conspicuity and need not be verified. It is notified as such in the AIP.'

Paragraph 6.3, states:

'Approach Radar Controllers may utilise the SSR filter system on the GUI if necessary to reduce the amount of SSR codes visible around the ATZ.'

The A319 was on an IFR flight to Liverpool Airport and was being vectored downwind left hand for RW27. The Liverpool MATS P2 (24/01/10), Section 4, Chapter 4, page 8, paragraph 8.5, states:

'For vectoring Runway 27 (when Manchester using Runway 23)  
.....aircraft can be turned LEFT hand downwind on reaching altitude 3500 ft descending and will comply with altitude profile areas C-E.  
AREA E MUST BE ENTERED AT 2000 FEET or BELOW.'

(Note: left base for RW27 lies within area E.)

ATSI had access to the RTF transcript, radar recordings provided by NATS Swanwick, written reports from the pilots and controller. Liverpool ATSU was not immediately aware of an Airprox and reported a TCAS RA event. A time discrepancy of 1min and 15sec was noted between the RTF recording and the Radar recording (certified as correct). An appropriate correction was made to RTF recording and the ATSU has been asked to investigate the discrepancy.

At 1455:35, Radar cleared the PA38 to join controlled airspace VFR at Tarvin, not above 1500ft QNH1010, and the pilot acknowledged correctly. (Tarvin is situated 8.5nm to the SSE of Liverpool airport). At 1458:45 the A319 called Radar, "passing FL100 descending FL080 direct KEGUN and speed reducing to 250kt".

At 1459:05 the PA38 was instructed to squawk 0260 and the pilot reported approaching Tarvin. A change of controller then took place and, at 1559:35, Radar transmitted to the PA38, *“(PA38)c/s route to Helsby report field in sight and it’s a Radar Control service”*, and the pilot replied, *“Route to Helsby report field in sight (PA38) c/s”*. (Helsby is situated 5nm SSE of Liverpool airport). The PA38 pilot reported field in sight and was transferred to the TWR frequency. At this point the radar recording showed both ac in the vicinity of Tarvin. The PA38 was indicating FL016 (alt 1510ft) and the A319 was tracking W at FL091. At 1459:42 the A319 was given descent to alt 5000ft QNH 1010 and advised of a left hand pattern, and the pilot acknowledged correctly.

At 1501:52 the A319 was given a right turn heading 360° with descent to an alt of 3500ft QNH 1010 and shortly afterwards a further instruction to turn right heading 090° downwind. At 1500:53, the radar recording showed the PA38 entering the CTR indicating FL017 (alt 1610ft). At 1501:58 the PA38 called the TWR and reported 3nm S of Helsby and they instructed, *“...join left base for runway two seven report crossing the motorway”* and this was acknowledged correctly.

At 1503:58 the PA38 reported crossing the motorway and Tower instructed, *“...on reaching erm left base er for runway two seven take up a right hand orbit.”* (This was to allow an A320 on final to land). At the same time Radar instructed the A319, *“(A319)c/s turn right heading one zero zero degrees descend to altitude two thousand feet.”* The A319 replied, *“Right turn heading one zero zero degrees descend altitude two thousand feet (A319)c/s.”* At 1504:47 Radar advised the A319 about the PA38, *“(A319)c/s traffic in your twelve o’clock a range of four miles in the right hand orbit it’s a V F R Cherokee not above fifteen hundred feet”* and the pilot responded, *“Roger..”*. (It was noted that the Radar controller incorrectly passed the type as a Cherokee).

At this point, radar recording showed the PA38, 3.5nm SE of Liverpool Airport, in a right hand orbit descending to FL014 (alt 1310 ft). At 1504:41 the distance between the ac was 4.2nm and the radar recording showed the PA38 rolling out of the orbit, tracking SW towards the A319. The Mode C then indicated a climb to FL017 (converts to 1610ft QNH 1010); at 1505:16 the A319 was indicating FL021 and the distance between the two ac was 1.6nm on almost reciprocal tracks. At 1505:37 the A319 pilot advised: *“(A319)c/s TA, RA”* and Radar replied, *“(A319) c/s Roger and it’s that previously mentioned Cherokee not above fifteen hundred feet.”* It was noted that the pilot did not use the phrase TCAS but advised, *“ TA”* followed immediately by, *“RA”*. The Radar controller correctly acknowledged the TCAS RA with *“Roger”* and then passed TI on the PA38. MATS Part 1, Section 1, Chapter 9, Page 3, Paragraph 5.3, states:

‘The passing of traffic information by controllers to ac conducting, or affected by a TCAS RA, is not proscribed, but such information has, if provided inappropriately, the potential to be misheard or to distract flight crews during a period of very high workload. Consequently, controllers should not routinely pass traffic information to ac conducting RA manoeuvres, or other ac affected by such manoeuvres, nevertheless, there may be circumstances where the passing of traffic information is justified; consequently, controllers may provide traffic information under the following circumstances:

To ac conducting an RA manoeuvre if it is considered essential for flight safety.’

Radar recordings show the A319 reacting to the RA and climb through FL022 at the CPA [up to FL026] and passing 0.4nm S of the PA38, which was in a right turn away from it. At 1506:27 the A319 pilot advised, *“Radar c/s Clear of Conflict”* and Radar replied, *“(A319)c/s thanks.”* Both ac continued and landed without further incident.

The complexity of the airspace surrounding Liverpool and Manchester, requires that IFR inbounds, vectored left hand for RW27, are at alt 2000ft before entering Area E on base leg while VFR traffic is required to remain not above an alt of 1500ft using the entry/exit lanes.

Liverpool Radar transferred the PA38 to the TWR with an expectation that the ac would be not above alt 1500ft. The Radar controller is normally required to monitor the primary radar returns of VFR traffic and has the option to reduce the number of SSR codes visible around the ATZ using the SSR

filter system. The Radar controller's report indicated that the controller could not recall seeing the PA38 displaying Mode C.

The radar recording shows that when TI was passed to the A319 regarding the PA38 4nm ahead, the PA38 was in a right hand turn indicating FL014 (alt 1310ft) [for 2 sweeps]. Shortly afterwards the PA38 can be seen to track SW and climb to FL017 (alt 1610ft), at a point when the two ac are 1.7nm apart; this resulted in the A319's TCAS RA.

Liverpool ATSU indicated that, within the known Class D environment, IFR traffic at 2000ft is passed TI on VFR traffic operating not above alt 1500ft within the entry/exit lanes. Radar controllers use only the primary radar information on VFR traffic, as conspicuity codes are not validated or verified. The ATSU reported that, historically, [see UKAB post –meeting Note: (1)] there had been no similar incidents and added that controllers have the option to hold VFR traffic or to give tactical vectors to IFR inbounds when appropriate. MATS Pt 1, Section 3. Chapter 4, Page 1, Paragraph 3.4, states:

'Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routeing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.'

Although the PA38 was locally based, the pilot's report indicated that he believed the IFR traffic downwind would be at an alt of 2500ft. The radar recording showed that whilst the PA38 was holding in a right hand orbit, the ac appeared to lose altitude and then apparently climb 100ft above the level restriction of alt 1500ft when in close proximity to the A319.

## **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 photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members noted that the pilots of both ac had been complying with the respective IFR and VFR arrival procedures for Liverpool Airport. Although the altitude of the PA38 on the radar recording appeared about 100ft higher than that instructed by APR, it was within both prescribed Mode C and altimeter tolerances. Members noted that there had been minor altitude deviations during the PA38's orbit but considered these to be reasonable for a student pilot and they did not breach the ATC altitude restriction. That being the case, Members agreed that it had been the very small climb as the PA38 was pointing towards the A319 in the orbit that had triggered the TCAS RA in the A319; controller Members also agreed that in situations where 500ft separation is used, such RAs are not uncommon. A controller Member noted that the Airspace at Liverpool and the procedures are complex, but it was pointed out that this was necessarily so due to the proximity of Manchester and the associated CTA.

The Secretariat informed the Board that they could recall several similar incidents in the Liverpool CTR.

[UKAB Post-Meeting Note (1): A search of the Joint Airprox Reporting System Database showed that there had been 10 Airprox between VFR and IFR traffic in the period 1 Jan 2000 - 31 Dec 2009 in which a TCAS warning had been generated. (Airprox: 2002036, 2003192, 2005125, 2005139, 2005196, 2006142, 2007031, 2008037, 2009118 and 2009143)].

Members agreed however, that the procedures were sound but that TCAS RAs would inevitably result. That being the case, and since all involved had complied with the procedures, Members agreed that there had been no risk of collision.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Sighting report (TCAS).

Degree of Risk: C.