



she wrongly assumed that the A319, once airborne, would be through the level of the PA28 and too far away to be an issue. However, the A319 pilot was very slow to roll and the PA28 pilot rapidly approached downwind. At this time she passed Traffic Information to the pilot of the PA28 on the A319 but was 'unable' to speak to the pilot of the latter aircraft as he had commenced his take-off roll. At 600ft the A319 pilot commenced a left turn and reported that this was due to TCAS traffic. At this point there was more than 3nm horizontal separation, which reduced to 2.5nm. She was informed by the A319 pilot that he would be filing an Airprox report. The A319 pilot continued on track and was transferred to Scottish control. Scottish control subsequently confirmed that the A319 pilot had not received a TCAS RA but had been aware of the presence of the PA28 on his 'equipment'.

## Factual Background

The LPL weather was:

METAR EGGP 231250Z VRB01KT 9999 FEW020 BKN034 07/02 Q1027=  
 METAR EGGP 231320Z 33004KT 300V360 9999 FEW020 BKN034 07/01 Q1027=

CAP 493 the Manual of Air Traffic Services<sup>1</sup> states that:

'Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient traffic information and instructions to assist pilots to 'see and avoid' each other...'

TCAS II Implementation Inhibit Parameters<sup>2</sup> are as follows:

Inhibit	Parameters
'Increase Descent' RA	Inhibited below 1650 ft AGL while climbing and inhibited below 1450 ft AGL while descending.
'Descend' RA	Inhibited below 1200 ft AGL while climbing and inhibited below 1000 ft AGL while descending.
TA Voice Messages	Inhibited below 400 ft AGL while descending and inhibited below 600 ft AGL while climbing.
All RAs	Inhibited below 1100 ft AGL while climbing, and inhibited below 900 ft AGL while descending. <b>(TCAS automatically reverts to TA only).</b>
Self-Test	Can be inhibited when airborne
Advisory Priority	Automatically reverts to TA only when higher priority advisories (such as GPWS/TAWS and windshear) occur.
'Climb' RA	Can be inhibited, based upon aircraft performance capability
'Increase Climb' RA	Can be inhibited, based upon aircraft performance capability

## Analysis and Investigation

### CAA ATSI

ATSI had access to reports from both pilots, recorded area surveillance and transcription of the LPL Tower frequency. Additionally, ATSI interviewed the LPL Aerodrome controller. The A319 pilot was operating IFR on a flight from LPL and was in receipt of an Aerodrome Control Service from LPL Tower. The PA28 pilot was operating VFR on a local flight from Liverpool and was also in receipt of an Aerodrome Control Service from LPL Tower.

At 1254:40, the PA28 pilot contacted LPL Tower routeing to Garston Docks and was instructed to report approaching 'Jaguar's' [the Jaguar factory situated approximately 1nm N of the airport].

<sup>1</sup> Section 1, Chapter 5, Paragraph 5.3

<sup>2</sup> From Table 2 of Para 2-17 at p18 of FAA Advisory Circular AC 20-151A dated 25/9/2009: Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II) Versions 7.0 and 7.1 and Associated Mode S Transponders.

At 1255:51, the A319 pilot contacted LPL Tower, having been transferred from the Ground Movement controller, at holding point 'A1' ready for departure. The Aerodrome controller had pre-empted the call from the A319 pilot and had already obtained a release from Radar, at 1255:44, for the A319 pilot to depart on a REXAM 2T departure (which climbs straight ahead to 8D from I-LQ before a left turn). The A319 pilot was given take-off clearance from RW27. The Aerodrome controller reported, at interview, that she had checked the position of the PA28 when she asked for the radar release and considered that, given the expected rate of climb of the A319 and the position of the PA28, 7.8nm to the west-northwest of the airport, it was not relevant traffic to the A319's departure track (Figure 1).

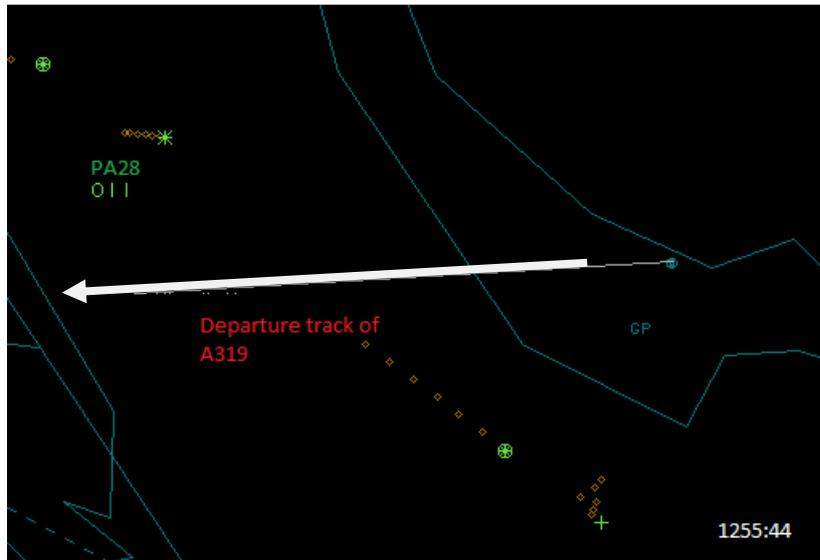


Figure 1.

As the A319 pilot commenced his take-off roll, the Aerodrome controller became aware that she had misjudged the relevance of the PA28 to the A319 and that it was necessary to pass Traffic Information. She was reluctant to transmit to the A319 pilot during his take-off roll, so instead she decided to pass Traffic Information on the A319 to the PA28 pilot in the hope that the A319 pilot would also hear and assimilate the Traffic Information. The Aerodrome controller could see both aircraft but was not able to pass Traffic Information to the A319 pilot before he reported that he was turning left due to TCAS traffic ahead on the right-hand side at 1257:53 (Figure 2).

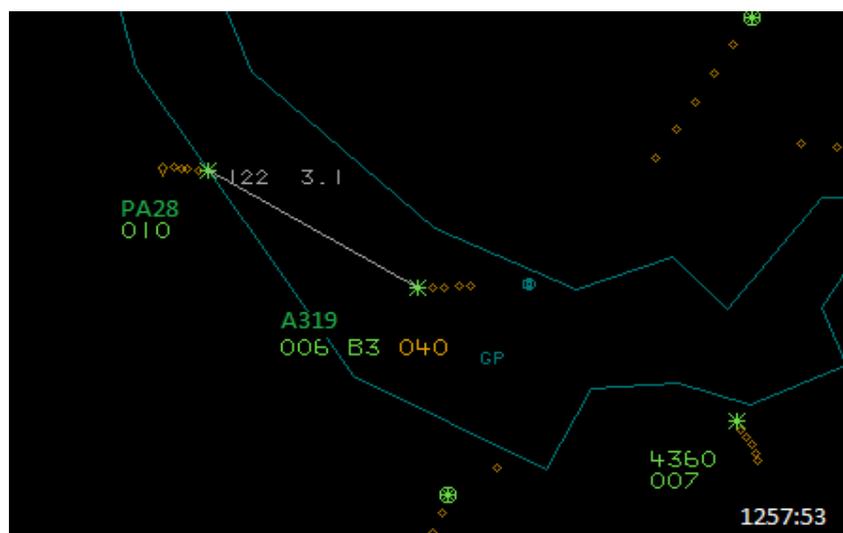


Figure 2

The Aerodrome controller acknowledged the transmission from the A319 pilot, informing him that the traffic was a PA28 inbound to the airport not above 1500ft and its pilot was visual with the

A319. The A319 pilot replied that he was not visual with the PA28 and thought that he was within 2nm of the traffic. Following this transmission, at 1258:12, the A319 pilot was in a left turn, 2.3nm from the PA28 (CPA- Figure 3).

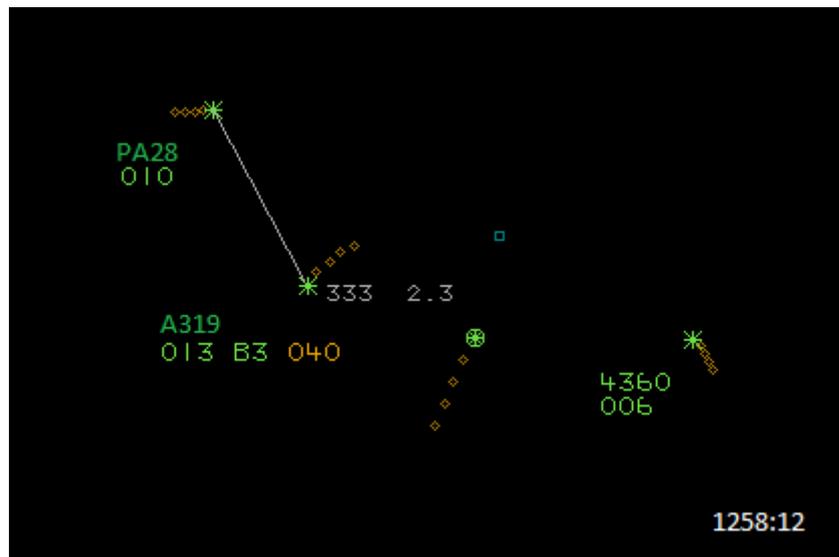


Figure 3

The track of the A319 was subsequently co-ordinated with Scottish Control and the A319 pilot was transferred to Scottish at 1259:30.

As a result of this Airprox and other similar incidents Liverpool ATC produced a Standards Bulletin reminding controllers of their responsibilities for providing Traffic Information.

## Summary

The Airprox was reported by the pilot of an A319 on climb-out from RW27 at LPL, when, based on a TCAS TA indication, he turned left to avoid a PA28 in Class D airspace. The pilot was not visual with the PA28 but was aware of its presence from his TCAS information. The Aerodrome controller had not advised the pilot of the A319 about the PA28, as required by CAP 493 procedures. The PA28 pilot was passed Traffic Information about the A319 as it was rolling. He reported sighting the A319 when it was on the runway as he started the downwind leg and he was able to maintain visual contact throughout the incident. The minimum separation was recorded as 200ft vertical and 2.3nm horizontal. There are no minimum separation standards prescribed between VFR and IFR traffic in Class D airspace.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

The Board first considered the actions of the A319 pilot. Although the A319 pilot's use of TCAS as an aid to SA building was commendable of itself, It was noted that he had manoeuvred laterally after receiving advisory information about traffic on his 'Nav' display. Civil Airline Pilot members and the CAA Flight Ops advisor unanimously agreed that, in accordance with TCAS operating procedures (where it is recognised that azimuth accuracy is variable), the pilot should not have taken this action based solely on TCAS advisory information. Even though on this occasion the turn resulted in his aircraft separating away from the PA28, members commented that, given the known potential inaccuracy of TCAS azimuth information, it was possible that the traffic indicated to his right might have been positioned to his left, and that the turn could therefore have exacerbated the situation. The Board also noted some apparent confusion in the A319 pilot's understanding of the TCAS

inhibitions applicable to his aircraft. In accordance with the TCAS Implementation Inhibit Parameters (see Page 2), TCAS RAs are inhibited below 1100ft AGL while climbing but TAs remain available, albeit TA voice messages are inhibited below 600ft when climbing.

The Board noted that the PA28 pilot was correctly carrying out the ATC instructions that were issued to him. He had the A319 in sight throughout, and the Board opined that he appeared to be 'happy' with the situation at all times.

The Board then turned their attention to the ATC aspects of the Airprox. It was agreed that Traffic Information should have been issued to the A319 pilot before he commenced rolling. This would have allowed the pilot to make the decision whether to commence, or delay, his take-off. This issue was considered to be a contributory factor. Civil Airline Pilot members agreed that the Aerodrome controller was correct in subsequently not passing Traffic Information to the A319 pilot after he had commenced his take-off roll, because this was a period of pilot high workload. It was considered that, in such circumstances, it would be appropriate to wait until an aircraft was passing about 400ft at least before Traffic Information was passed, although it should be recognised that the pilot may not be able to respond immediately to the message. The Board noted that the Aerodrome controller had hoped that the A319 pilot would hear the Traffic Information issued to the PA28 pilot about the A319. Board members believed that it was probable that the A319 pilot did not assimilate this information because the message was not addressed to him and due to his workload at the time. In any case no information about the position of the PA28 was broadcast.

The Board quickly decided that the cause of the Airprox was rooted in the concern felt by the A319 pilot about the presence of the PA28, about which he had not been informed by ATC. It was unanimously agreed that the Airprox met the criteria for reporting but, by analysis, it was determined that normal procedures, safety standards and parameters pertained and there was no risk of a collision. Consequently it was categorised as Risk E.

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

<u>Cause:</u>	The A319 pilot was concerned about the presence of the PA28, of which he had no Traffic Information.
<u>Degree of Risk:</u>	E.
<u>Contributory Factor:</u>	Liverpool TWR did not pass timely Traffic Information to the A319 pilot.
<u>ERC Score<sup>3</sup>:</u>	1

<sup>3</sup> 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.