

AIRPROX REPORT No 2013095

Date/Time: 23 Jul 2013 1217Z

Position: 5126N 00001E
(4.7nm SSW London/City Airport)

Airspace: London/City CTA (Class: D/G)
Lon FIR

Reporting Ac Reported Ac

Type: Avro RJ1H Robin DR400

Operator: CAT Civ Pte

Alt/FL: 2000ft 1500ft
QNH (NK hPa) QNH (NK hPa)

Weather: VMC CAVOK VMC CLNC

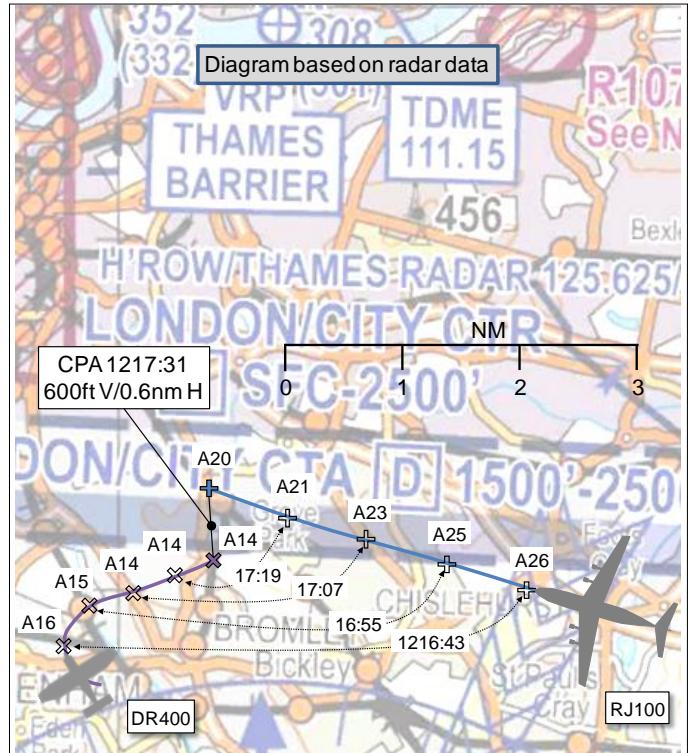
Visibility: NK >10km

Reported Separation:

100ft V/0.5nm H NK

Recorded Separation:

600ft V/0.6nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE RJ1H PILOT reports conducting an approach to London/City airport (LCY). The white and red aircraft had SSR transponder selected on with Modes A, C and S; the aircraft was fitted with TCAS II. The pilot was operating under IFR in VMC with a Radar Control Service from Thames RAD. Whilst downwind for RW09 ILS, 7-8nm south of LCY, heading 280°, at 190kt, and just levelling off at altitude 2000ft, he received a TCAS TA from 'a small VFR traffic about 700ft below and 0.5nm away' in his 10 o'clock position. He saw the traffic and identified it as a 'PA28 type', low-wing, single-engine light-aircraft. Shortly after, a TCAS RA 'Monitor Vertical Speed' was triggered, indicating a ROD of not more than 0fpm. The aircraft autopilot was already levelling off, 'ALT Captured' at 2000ft, with a ROD of 300ft decreasing to zero. After the Intruder passed their 9 o'clock position the TCAS advised 'Clear of Conflict'. He informed Thames RAD of the RA and continued the approach into LCY. A second TCAS TA occurred on final for RW09 at about 7nm caused by traffic about 500ft below. He stated that the TCAS RA had occurred at a busy point in the flight as they were preparing to configure the aircraft for landing.

He assessed the risk of collision as 'Medium'.

THE DR400 PILOT reports transiting through the LCY 'zone'. The red and white aircraft had strobes selected on, as was the SSR transponder with Modes A, C and S. The aircraft was fitted with a Traffic Advisory System (TAS). The pilot was operating under VFR in VMC and reported being in receipt of a 'Radar Service' from Heathrow RAD¹. He was tracking around the Heathrow CTR, planning to transit to the north-north-east. He obtained a crossing clearance from Heathrow and, after being instructed to descend from 2000ft to 1500ft in a right-hand orbit, was given clearance by the radar controller to transit the 'City zone', initially taking up a heading of 060° at 120kt. He neither saw nor heard a conflict, he was not advised of a conflict by the controller, and his TAS did not generate a warning. He was unaware of an Airprox until advised by the Radar Analysis Cell.

He assessed the risk of collision as 'None'.

¹ He was in receipt of a Basic Service at the time of the Airprox.

THE THAMES RAD CONTROLLER did not file a report. A transcript of the RTF is reproduced below; RT which was not relevant to the incident has not been included:

From	To	Transcribed Speech	Time
RJ1H	RAD	Thames good day [RJ1H C/S] R J one hotel, information Xray, er we're out of six thousand descending four thousand on course to Detling	1208:10
RAD	RJ1H	[RJ1H C/S] Thames roger fly heading three zero five vectors runway zero nine	
RJ1H	RAD	flying heading three zero five for vectors runway zero nine [RJ1H C/S]	
RAD	RJ1H	[RJ1H C/S] reduce speed to two ten knots	1209:20
RJ1H	RAD	reducing two ten [RJ1H C/S]	
RAD	RJ1H	[RJ1H C/S] reduce to one niner zero knots	1210:00
RJ1H	RAD	one ninety [RJ1H C/S]	
RJ1H	RAD	and [RJ1H C/S] request one ninety five to Detling	
RAD	RJ1H	roger that's all approved	
RJ1H	RAD	-kay	
RAD	RJ1H	[RJ1H C/S] descend altitude three thousand feet, Q N H one zero one four at City airport	
RJ1H	RAD	descend three thousand feet Q N H one zero one four [RJ1H C/S]	
RAD	RJ1H	[RJ1H C/S] delaying action, turn right heading three six zero degrees	
RJ1H	RAD	right heading three six zero [RJ1H C/S]	1211:00
RAD	RJ1H	[RJ1H C/S] turn left heading two six zero degrees	
RJ1H	RAD	left heading two six zero [RJ1H C/S]	1212:00
RAD	RJ1H	[RJ1H C/S] turn left left heading one eight zero degrees	
RJ1H	RAD	left heading one eight zero [RJ1H C/S]	1213:00
RAD	RJ1H	[RJ1H C/S] turn right heading two eight five	
RJ1H	RAD	right heading two eight five [RJ1H C/S]	1214:00
RAD	RJ1H	[RJ1H C/S] turn right heading two nine zero degrees	
RJ1H	RAD	heading two nine zero [RJ1H C/S]	
RAD	RJ1H	[RJ1H C/S] descend altitude two thousand feet	1216:00
RJ1H	RAD	[unreadable] two thousand feet [RJ1H C/S]	
RAD	RJ1H	[RJ1H C/S] helicopter traffic left nine o'clock range of one mile will pass behind at fourteen hundred feet	1217:20
RJ1H	RAD	roger	
RAD	RJ1H	[RJ1H C/S] reduce speed to one six zero knots until five D M E, turn left heading two eight zero degrees	
RJ1H	RAD	reducing to one sixty, left heading two eight zero degrees and we had er traffic R A [RJ1H C/S]	
RAD	RJ1H	roger	
RJ1H	RAD	and [RJ1H C/S] confirm heading two eight zero	1218:00

From	To	Transcribed Speech	Time
RAD	RJ1H	two eight zero degrees sir affirm speed one sixty knots	
RJ1H	RAD	okay	

THE HEATHROW RAD CONTROLLER did not file a report. A transcript of the RTF is reproduced below; RT which was not relevant to the incident has not been included:

From	To	Transcribed Speech	Time
DR400	RAD	Heathrow radar good morning good afternoon indeed er [DR400 C/S]	1213:00
RAD	DR400	[DR400 C/S] Heathrow radar squawk seven zero three four, pass your message	
DR400	RAD	seven zero three four standby	
DR400	RAD	er [DR400 C/S] a robin D R four hundred [departure aerodrome] to a private strip [north-east of Stansted], we're just at er just passed Mitcham on the eastern edge of your zone, two thousand feet one zero one three, we would like transit through the er city zone if approved at this height please and er we're happy with a er basic service	
RAD	DR400	[DR400 C/S] roger it's a basic service outside controlled airspace, the Q N H one zero one three, I'll call you back	1214:00
DR400	RAD	one zero one three and a basic outside controlled airspace, standing by [DR400 C/S]	
RAD	DR400	[DR400 C/S] I'll be unable to er approve a direct transit at that altitude, would you be able to descend	
DR400	RAD	affirm [DR400 C/S]	
RAD	DR400	[DR400 C/S] the traffic you may see just in your left eleven o'clock is inbound to London City at the same level but he's inside controlled airspace ²	1215:00
DR400	RAD	yep we're visual with him er what height would you like me to descend to	
RAD	DR400	i- i- the clearance will be not above fifteen hundred feet V F R, if you could just make an orbit there until you're level please I won't be able to clear you in until you're level due the London City downwind traffic	
DR400	RAD	orbiting er right in order to descend to fifteen hundred feet [DR400 C/S]	
RAD	DR400	[DR400 C/S] when you've completed that orbit you're cleared to enter the London City control zone V F R towards the southern tip of the isle of dogs and then it'll be a transit up the lee valley when cleared on, are you familiar with that routeing	1216:00
DR400	RAD	erm not entirely but er I am er good V F R	
RAD	DR400	[DR400 C/S] roger what was gonna be your ideal transit track then	
DR400	RAD	erm erm er abeam er lima charlie yankee would be nice	
RAD	DR400	okay er [DR400 C/S] roger then then you'll clearance will be V F R not above fifteen hundred feet, your clearance limit will be the Thames Barrier on the south side of London City	
DR400	RAD	roger er understand er not further in than the Thames Barrier but in fact we will further to the east of that er, orbit completed and er clear to enter I understand	

² The subject RJ1H was in the DR400 pilot's right 1.30 at 11nm at this time.

From	To	Transcribed Speech	Time
RAD	DR400	affirm traffic though just as you roll out of that orbit will be in around about your twelve o'clock two miles descending to two thousand feet inbound to London City	1217:00
DR400	RAD	visual with that aircraft [DR400 C/S]	
RAD	DR400	[DR400 C/S] roger your clearance limit is the Thames Barrier so no further north than the Thames Barrier until cleared	
DR400	RAD	that's copied [DR400 C/S] thank you	1217:20
		[no further transmissions until after CPA]	

Factual Background

The LCY weather was recorded as follows:

METAR EGLC 231150Z 08009KT 9999 -SHRA FEW022 24/19 Q1014 RERA
 METAR EGLC 231220Z 08010KT 9999 FEW024 25/18 Q1014

Analysis and Investigation

CAA ATSI

The RJ1H pilot was operating under IFR to London City, and was in receipt of a Radar Control Service from Thames RAD. The DR400 pilot was operating under VFR from Fairoaks to a private site to the north-east of Stansted and was in receipt of a Basic Service from Heathrow TC SVFR (Heathrow RAD).

CAA ATSI had access to written reports from both pilots, area radar recordings, RTF recordings and transcripts of the Thames RAD and Heathrow RAD frequencies.

At 1213:40, the DR400 pilot contacted Heathrow RAD at 2000ft, requesting a transit through the City Zone and a Basic Service. A Basic Service was agreed. The DR400 pilot was informed that a direct transit at that level was not available and the pilot was asked if he could descend. He replied that he could and was instructed to descend to 1500ft, remaining outside CAS. The Heathrow RAD co-ordinated the DR400 with Thames RAD and a clearance to transit VFR not above 1500ft towards the Thames Barrier VRP was subsequently issued to the DR400 pilot.

At 1216:51, low level Short Term Conflict Alert (STCA) activated. At 1217:00, the DR400 pilot was passed traffic information on the RJ1H, in his 12 o'clock at 2nm, descending to 2000ft inbound to London City (see Figure 1). The DR400 pilot reported visual with the RJ1H and STCA deactivated at 1217:03.



Figure 1: DR400 squawk 7034, RJ1H squawk 5722

The Thames RAD gave a closing heading for the ILS to another aircraft. During this interchange, low level STCA activated again and immediately afterwards, at 1217:29, the Thames RAD passed traffic information on the DR400 to the RJ1H pilot, stating that the traffic was “helicopter traffic left nine o’clock range of one mile will pass behind at fourteen hundred feet” (see Figure 2).

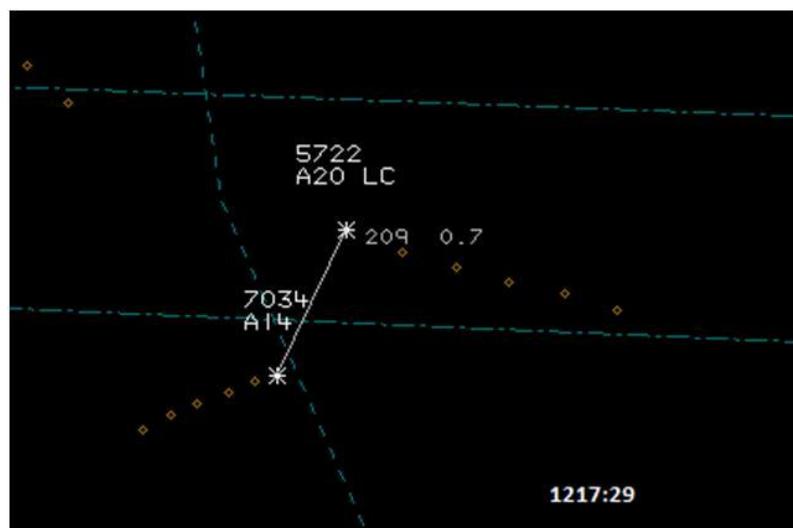


Figure 2: DR400 squawk 7034, RJ1H squawk 5722

When the incident occurred, the RJ1H was at 2000ft in class D airspace while the DR400 was outside CAS, with a clearance to enter not above 1500ft. No separation minima are prescribed between IFR and VFR traffic in Class D airspace, however, traffic information must be passed on VFR traffic to IFR traffic and traffic avoidance given if requested. The RJ1H pilot was passed traffic information on the DR400 who had reported the RJ1H in sight. Traffic information was also passed on the DR400 to the RJ1H pilot prior to the DR400 entering the Class D airspace. Earlier traffic information may have improved the RJ1H crew’s situational awareness, however, it is likely that the Thames RAD’s workload precluded this.

Summary

An Avro RJ1H and Robin DR400 flew into proximity on the edge of the LCY CTA at 1217 on 23rd July 2013. Traffic information on each aircraft was passed to both pilots; the RJ1H pilot subsequently received a TCAS RA ‘Monitor Vertical Speed’.

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 and a report from the appropriate ATC authority.

Members first considered the pilots' actions. The RJ1H pilot was operating under IFR in Class D airspace within the London/City CTA; the DR400 pilot was operating under VFR in Class G airspace below the London/City CTA. Both were operating in compliance with their respective clearances, were in 2-way RT contact with different controllers and each was passed Traffic Information on the other aircraft. The RJ1H pilot stated that he saw the DR400 indicate on TCAS and then saw it visually, presumably after he was cued by the TCAS display. The DR400 pilot was visual with the subject RJ1H (as noted from the Heathrow RAD transcript) and commented in his narrative about not seeing any conflicting aircraft. Members noted that the RJ1H pilot had received a TCAS RA 'Monitor Vertical Speed' as he was levelling off at his cleared altitude of 2000ft, which required him not to descend.

Turning to the controllers, the 2 aircraft had been coordinated with 500ft separation and the required clearances had been issued. The controllers were required to give traffic information between IFR and VFR traffic, which they did.

The Board then discussed in detail the issue of TCAS RAs in mixed IFR/SVFR/VFR circumstances, including at the boundaries of controlled and uncontrolled airspace. The discussion also considered the assumption by some that an RA was, by definition, an Airprox. Some members were of the opinion that an RA should be considered contextually, especially as TCAS is not optimised for the CTR environment. Broadly speaking, RAs could be considered in 2 classes, those that caused the aircraft to deviate from its planned flight path, either through manual or automatic intervention (manoeuvre RAs), and those that did not (monitor RAs). In the former case, e.g. 'Climb Climb', it could reasonably be assumed that the system was changing aircraft flight paths in order to prevent collision or, at the very least, close proximity. In the latter, it could be argued that the aircraft were always going to pass well clear of each other and that the system was simply advising the pilot to remain on the selected flight path in order to maintain already safe separation. It was noted that TCAS II Version 7.1 defines the 'Monitor Vertical Speed' RA as a 'Preventive RA', i.e. the RA is preventing collision by maintaining an already safe separation. The Board recognised that there were many facets to TCAS design, that their broad definition could not cover all cases, and that the pilot's primary and only concern was to follow the instructions generated by the RA, whatever they were. However, the generation of an RA did not necessarily imply that an Airprox had occurred; it was felt that the considerations above could usefully be used by pilots when subsequently considering the level of risk in their event, and whether an Airprox report was justified.

Considering the cause and risk for this Airprox, the Board felt that normal procedures, safety standards and parameters had pertained. However, notwithstanding the Board's discussion and findings, it was also felt that it was highly undesirable for pilots of TCAS equipped aircraft to receive TCAS RAs of any kind, and that their occurrence should never be considered normal. Considering the circumstances of this and similar occurrences covered in other Airprox reports³, the Board agreed to recommend that the CAA review VFR/SVFR traffic procedures within CAS with respect to interaction with TCAS equipped aircraft and, specifically, RA occurrences.

³ e.g. 2013099 and 2013121.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: TCAS sighting report.

Degree of Risk: E.

ERC Score⁴: 1.

Recommendation: The CAA reviews VFR/SVFR traffic procedures within CAS with respect to RA occurrences in TCAS equipped aircraft.

⁴ 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.