

AIRPROX REPORT No 2013163

Date/Time: 21 Nov 2013 1452Z

Position: 5220N 00132W
(Coventry ATZ)

Airspace: Lon FIR (Class: G)

Aircraft 1 **Aircraft 2**

Type: F406 DA42

Operator: Civ Comm Civ Trg

Alt/FL: 1100ft 1000ft
NK (1010hPa) QNH (1009hPa)

Conditions: VMC VMC

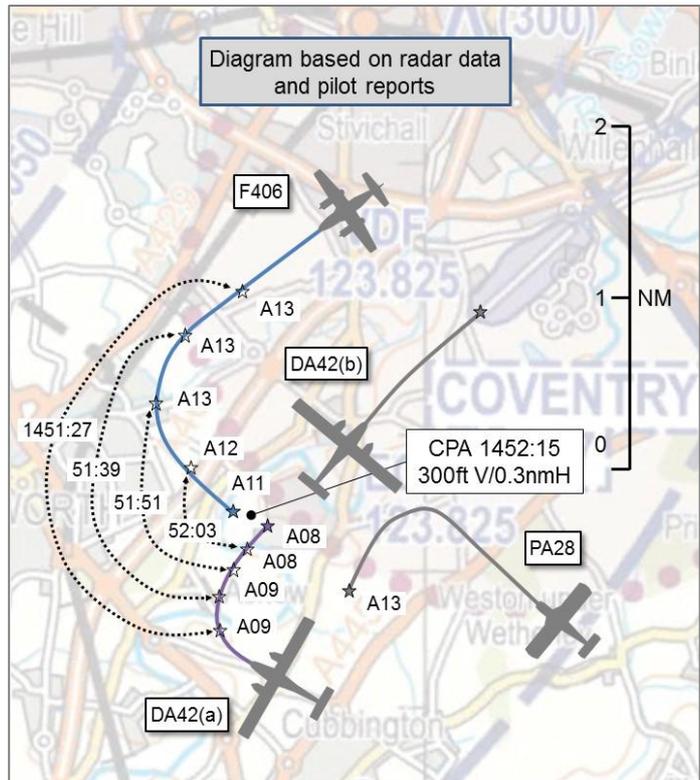
Visibility: >10km 10km

Reported Separation:

50ft V/<100m H 0ft V/300m H

Recorded Separation:

300ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE F406 PILOT reports joining the circuit at Coventry. The purple and white aircraft had taxi, landing, navigation and strobe lights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under VFR, in VMC below cloud and reported being in receipt of a Basic Service from Coventry TWR. He joined LH downwind for the RW05 circuit due to his arrival track and for spacing due to the relative slow speed of the other aircraft in the RH visual circuit. He went around from his first approach due to an aircraft backtracking on the runway, re-positioned into the LH visual circuit and was advised on RT to report when ready for left base. He was informed that he was number 2 to an aircraft on short final [DA42(b)], which he acquired visually. He was also aware of a PA28 orbiting at right base, and a DA42 'positioning as number 3 behind him'. He turned on to left base and was just about to turn final, heading 140° at 130kt and 1100ft with the aircraft configured for approach, when he caught sight of a DA42 in his 12 o'clock, passing from right to left, just below the horizon. At the same time, ATC transmitted '[F406 C/S] you've just been cut up by a DA42, take up left hand orbit, reposition to final, number two'. The F406 pilot considered that a RH orbit was safer as it 'took him further away' from the DA42. He completed the RH orbit, repositioned to final and landed normally.

The F406 pilot stated that he was aware he was conducting a visual approach and operating in Class G airspace, that the 'see and avoid' principle existed, and that as aircraft commander it was his responsibility to avoid collision. Nevertheless, he felt that the DA42 pilot demonstrated poor airmanship and situational awareness. He also noted that his workload was medium to low and that he perceived the controller's workload to be high.

He assessed the risk of collision as 'Medium' to 'Low'.

THE DA42(a) PILOT reports instructing a practice instrument rating test profile. The white aircraft had landing, navigation and strobe lights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The instructor was operating under VFR, in VMC below cloud, and in receipt of an Aerodrome Control Service from Coventry TWR. They were conducting a simulated visual bad-weather circuit at the conclusion of the practice instrument rating test with the student as the handling pilot; the IF screens had been removed. The instructor stated they were one of 3 aircraft in the RH visual circuit for RW05, the other 2 being a 'D140' and another DA42 [DA42(b)]. At some point in their previous instrument approach they heard the F406 pilot call

the tower and request a LH downwind join, which was approved. In order to achieve spacing behind an aircraft ahead, the student extended to about 3nm downwind. The instructor recalled that the F406 pilot was instructed to fly one RH orbit and was advised 'you are slotting in between the two DA42s'. The instructor did not recall any ATC advice or instruction on the base leg to final regarding the F406, and was expecting to see it ahead or to the left as they turned final at about 3nm. He prioritised his lookout on visually acquiring the F406 but neither the student, in the LH seat, nor he could see it. He took control, initiated a go-around heading 045° at 95kt, and raised the undercarriage. He was about to advise ATC of his actions when he was 'stunned' to see the F406 closing fast, level in the 9 o'clock position. The F406 pilot broke right and ATC simultaneously told him to carry out one RH orbit.

The DA42 instructor stated that he was at a loss to understand how the F406 pilot was ever going to 'slot in' from a non-standard 'left base join' without spacing instruction to the DA42 crew, given that they had already extended downwind, and why the F406 pilot did not visually acquire them much sooner, given their relative positions.

He assessed the risk of collision as 'High'.

THE TWR CONTROLLER reports that, following a pilot initiated go-around, the F406 pilot was instructed to make a left-hand circuit and report ready for base. The right-hand circuit already had a solo DA42 student on base [DA42(b)], a DA42 downwind [DA42(a)] and a PA28 outside the ATZ, joining right-base. The F406 pilot reported ready for base when on the crosswind leg and was told to 'follow a DA42 on a 2 mile final', which he later reported visual with. The downwind DA42 pilot was told he was number 3, following the F406 turning base. The joining PA28 pilot was instructed to orbit for spacing against the 3 aircraft ahead. The F406 was observed to turn base and appeared, from the VCR, to be heading towards the 'opposite direction DA42'. The controller queried whether the F406 pilot was visual with the DA42 in the right base position. The F406 pilot reported visual 'with the aircraft he was following (short final)' and a few seconds later reported visual with the other DA42. The controller believed the F406 to be 'dangerously positioned' and instructed the pilot to make a left orbit to reposition on to base. This would take him away from the other DA42, to then follow it. The pilot read-back was correct but, contrary to the controller's instruction, he turned to the right. In turning right, he got 'quite close' to the DA42, with an estimated separation of ½nm. The controller stated that he was of the opinion the F406 pilot was probably visual with the PA28 in its orbit outside the ATZ and not the DA42 in his 'forward right'. The controller stated that the following contributory factors were applicable:

1. The extremely early report of 'ready for base' from the F406 pilot on the crosswind leg.
2. The sighting of probably the wrong traffic by the F406 pilot and his direction of turn contrary to that issued by ATC.
3. The low angle of the winter sun, especially when using RW05 when sighting traffic, both from a pilot and a VCR point of view.
4. The simultaneous and crossed transmissions between aircraft during high workload and the generally poor standard of aviation English language from some student pilots.

Factual Background

The Coventry weather was recorded as follows:

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METAR EGBE 211420Z 03012KT 9999 FEW025 08/03 Q1009=
METAR EGBE 211450Z 01013KT 9999 FEW025 08/03 Q1010=
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Analysis and Investigation

CAA ATSI

An Airprox was reported in the vicinity of the Coventry ATZ by the pilot of a Reims Cessna F406 (F406) when it came into proximity with a Diamond Aircraft Industries Twin Star (DA42(a)) while

turning final for RW05 at Coventry Airport. Another DA42 (DA42(b)) had been operating in the right hand circuit, and a PA28 was joining right base for Coventry at the time of the incident. ATSI had access to area radar recordings, written reports from both pilots and the Coventry Tower controller together with RTF recording and transcript of the Coventry Tower frequency. ATSI also interviewed the Coventry Tower controller.

The F406 pilot was operating under VFR and was in receipt of an Aerodrome Control Service from Coventry TWR. The DA42(a) pilot was operating under VFR and was also in receipt of an Aerodrome Control Service from Coventry TWR. Prior to the incident, the Coventry TWR had a number of training aircraft on frequency. He reported his workload as high due to language problems. Just prior to the incident there were a number of crossed transmissions on the frequency. Figure 1 below shows an area radar recording screenshot displaying the traffic situation at 1450:30.



Figure 1

The F406 pilot had previously joined LH for RW05 but had gone around from that approach. Following the go-around the F406 pilot was instructed to report 'downwind left'. Three other aircraft were making an approach to Coventry from the south of the field. The DA42(b) pilot had been instructed to report final number one; the DA42(a) pilot had been instructed that he was number two to DA42(b) and had been given Traffic Information. The PA28 pilot was instructed to join right base number three following DA42(a) and was given traffic information. The F406 was instructed to report ready to turn left base.

At 1450:52, the F406 pilot called ready for left base (see Figure 2). DA42(a) had started the turn towards base and was 1.8nm behind DA42(b).



Figure 2

At interview the controller stated that the ATM was working; however, he was predominantly controlling by looking out of the window. His impression was that the F406 was substantially faster than the traffic in the right hand circuit. When the F406 pilot called ready for base he expected that the F406 would be well ahead of DA42(a). The controller informed the F406 pilot that he was following traffic (DA42(b)) 'on a two mile final'. The F406 pilot replied that he was visual and asked for confirmation that he was number two. This was confirmed by the controller. The F406 pilot asked what type the traffic was and was told that it was a Twinstar on a one mile final. The F406 pilot replied that he was looking [it's not clear whether the F406 pilot had the DA42(b) in sight and automatically replied "*looking*" or if the F406 pilot did not have the DA42(b) in sight]. The DA42(a) pilot was informed that there would be traffic to "*cut in front from the left-hand side it's a [Company C/S] four zero six turning base now, you're number three*". The DA42(a) pilot replied "*Roger*" and the PA28R pilot was instructed to make one left-hand orbit.

At 1451:39, the DA42(b) pilot reported on short final and was cleared to land. The DA42(a) pilot had started a right turn onto final, and the F406 pilot had not yet turned left base (see Figure 3).



Figure 3

At 1451:48, the Coventry TWR informed the F406 pilot, without any urgency or authority, that "*traffic's cut in front three mile final is a Twinstar report visual*" (see Figure 4).

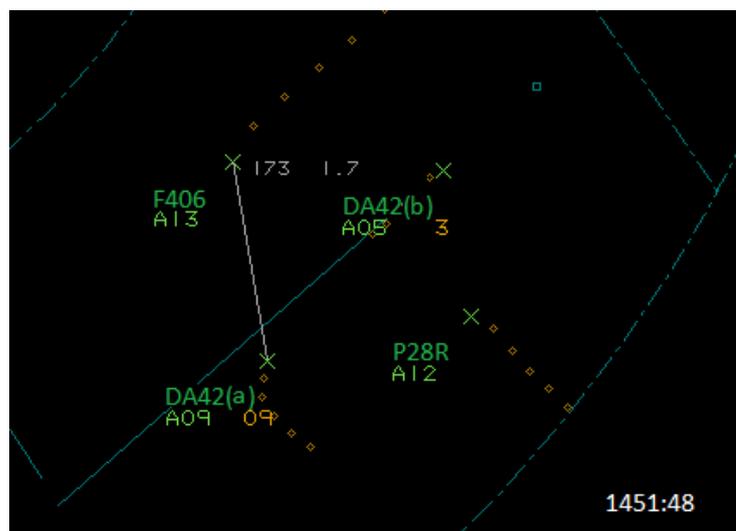


Figure 4

The F406 pilot replied that he was visual with a Twinstar that was on short final and then, at 1452:00, see Figure 5, "*oh yeah sorry it's in our twelve now*".

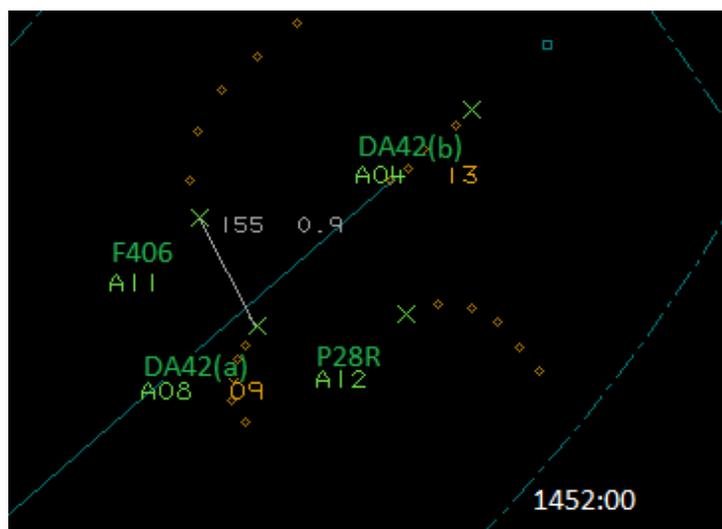


Figure 5

The two aircraft were 0.9nm apart when the controller instructed the F406 pilot to turn left to avoid the traffic and reposition onto a base leg. The F406 replied that he would do a right-hand orbit for spacing (see Figure 6).



Figure 6

The F406 pilot asked the TWR for confirmation that he was number two, stating that the DA42(a) had cut them up. The controller informed the F406 pilot that he would be number three “*still following that Twinstar*” and gave traffic information on the PA28R “*orbiting at the end of the downwind leg on the other side of the runway*”.

As the F406 pilot turned right, away from the DA42(a), the distance between the two aircraft reduced to 0.3nm (CPA). The F406 pilot repositioned onto final and landed safely.

The Coventry TWR stated that he was aware that DA42(a) was being operated on a training flight and he was counting on the instructor overcoming any potential misunderstandings. The controller did not remember seeing the DA42(a) when the F406 pilot called turning base. The controller stated that Coventry ATC had strategies in place for managing workload and that he felt comfortable refusing training traffic if necessary.

Safety Notice 2013/001 (now incorporated in CAP493) was compiled following assessment of MORs filed between 31st March 2000 and 23rd February 2011. It gives advice on the safe integration of aircraft and their order of approach; paragraph 3.5 states:

'...the importance for controllers to have **established a plan for the safe integration of aircraft before they converge towards final approach**, as well as the challenge that a controller is presented with when aircraft are established on directionally opposed base legs and/or when integration is required with an aircraft on an instrument approach. In such circumstances, **early integration actions are required as delaying such manoeuvres results in very limited options and significantly increased risk**. Controllers should therefore take these factors into account when establishing a plan and communicating an order in which aircraft are to approach an aerodrome for a landing, also bearing in mind that VFR aircraft may be unable to visually acquire IFR aircraft, e.g. when the IFR aircraft has not yet descended below cloud or is hidden by aircraft structure or glare.'

Safety Notice 2013/001 also states:

'Aerodrome ATC providers shall, in coordination with local airport users, review their Unit MATS Part 2 to ensure that adequate local procedures are in place to ensure that the task of integrating traffic in the vicinity of an aerodrome is suitably prescribed, to ensure safety, consistency and predictability, whilst allowing an appropriate level of flexibility. In particular, they shall ensure that local ATC procedures ensure that:

- (a) ATCOs provide accurate and timely generic and specific traffic information appropriate to the stage of flight and risk of conflict;
- (b) ATCOs provide ATC instructions in a timely fashion appropriate to the traffic scenario and stage of flight;
- (c) ATC procedures involving the transfer of inbound or transiting VFR traffic between Approach Control and Aerodrome Control allow for safe and timely integration of such traffic into or through the aerodrome circuit, including integration with aircraft conducting instrument approach procedures, and timely transfer of control;
- (d) ATCOs are aware of the potential for pilots to fail to assimilate traffic information or instructions and to take further action as necessary.'

Following an impact assessment of Safety Notice 2013/001, Coventry ATC discussed the following actions:

- That the MATS Part 2 be reviewed to establish whether existing procedures are fit for the task of safely integrating traffic in the vicinity of an aerodrome in particular ensuring that the local procedures cover the requirement in section a) to d) of Safety Notice 2013/001.
- That the Unit Training Officer review the training plan to ensure it includes adequate training for the task of safely integrating traffic in the vicinity of the aerodrome.
- That Unit Competency Examiners use continuous assessment and dedicated checks to ensure the task of safely integrating traffic in the vicinity of the aerodrome is being met by all ATCOs.

All the above actions were carried out. Coventry also discussed the content of Safety Notice 2013/001 and local procedures for integrating traffic in the vicinity of the aerodrome with local operators as part of a Flight/Airside Safety Committee Meeting on the 5th March 2013.

CAA ATSI noted that this work was undertaken prior to the Airprox and that the controller during this Airprox reported being aware of the contents of CAA Safety Notice 2013/001.

The original landing order, as planned by the Coventry TWR, was implemented in an orderly manner; the DA42 pilots and the PA28R pilot were informed of their position in the traffic pattern and given specific traffic information regarding the traffic they were following. When the controller changed the order and made the F406 number two to DA42(b), the gap between the two Twinstars was less than 2nm. For the F406 pilot to position safely between the Twinstars, clear, concise and authoritative instructions, together with specific, acknowledged traffic information was required to both the F406 and DA42(a) pilots to ensure that they were both aware of their new

order in traffic and could position themselves appropriately. The controller passed information on the position of DA42(b) to the F406 pilot, however, the F406 pilot had to ask the controller for his position in traffic and the type of aircraft he was following. Traffic Information to the F406 pilot on DA42(a) was not passed at all, nor were any instructions issued that might have ensured that the F406 pilot turned base sufficiently far ahead of DA42(a). The DA42(a) pilot was informed that he was number 3, but no specific position information on the F406 was passed, nor were instructions to delay DA42(a) issued by the controller.

When the DA42(a) pilot was informed that he was number 3 in traffic there was no requirement to read-back the instruction in full; however, given the risk of misunderstanding by a student pilot, it may have been prudent to ensure that the DA42(a) pilot fully understood the information being issued, especially given the close range of all aircraft to the airfield and the limited time available to integrate each aircraft into the approach pattern. The controller's reliance on the instructor in DA42(a) understanding his instructions did not provide an assurance that the DA42(a) student pilot would position appropriately behind the F406.

When the controller observed that DA42(a) was on final, ahead of the F406, he informed the F406 pilot that the DA42(a) had cut in front; there was no urgency in the tone of the information or instructions given to help resolve the situation. An instruction was then given to the F406 pilot to turn left to avoid the DA42(a); however, the pilot felt that it was more appropriate to turn right.

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance¹ and were required to approach to land in the order of priority communicated by ATC².

Comments

DA42 Operating Company CFI

The CFI commented that the company would be reviewing procedures regarding:

1. Whether they would 'request or accept' a join at Coventry to the north of the runway, against opposing traffic in the standard pattern.
2. How a solo cadet in the standard pattern would fair if placed in a similar situation.

He stated that the company would also discuss the situation with Coventry ATC.

Summary

An Airprox was reported when a Cessna F406 and a Diamond DA42 flew into proximity at 1452 on 21st November in the visual circuit at Coventry. Both pilots were operating under VFR in VMC in Class G airspace and both were in receipt of an Aerodrome Control Service from Coventry TWR. As a result of this Airprox, Coventry has produced a document for controllers giving guidance on dealing with the training environment that has developed at Coventry, including advice for managing traffic levels and drawing controllers' attention to the potential communication problems associated with student pilots for whom English is not their first language.

¹ Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions)

² *ibid.*, Rule 13 (Order of Landing)

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Board first considered the actions of the Coventry TWR. An ATC member suggested that TWR may have placed himself under a degree of self-induced pressure in attempting to expedite the F406 pilot's landing after the previous go-around. The decision to instruct the F406 pilot to report LH downwind was understandable and appropriate, but members noted that this then placed an onus on the TWR to create and execute an effective plan of action in order to integrate the substantially higher speed F406 with the other visual circuit traffic in the RH pattern. A military ATC member noted that it was not normal military ATC practice to deconflict circuit traffic using left and right hand circuits, but that height deconfliction was used instead.

Turning to the pilots involved, members opined that the DA42(a) pilot had been placed in an awkward situation by being renumbered from number 2 to 3 when on base leg but that he was nonetheless then required to sequence himself behind the F406. Pilot members opined that the DA42(a) Instructor could have managed the situation more proactively, especially given that he was aware of both the TWR's intent to 'slot the F406 in between the 2 DA42s' and that, although he was visual with the DA42(b) ahead, he was not visual with the F406, sequenced ahead of him.

Board members opined that, after DA42(a) pilot had turned onto the base leg, TWR was faced with 2 options, either to re-sequence the traffic again, feeding the F406 in behind DA42(a), or to take positive control of the traffic sequenced behind the F406. In the former case, TWR would have had to have recognised that there was a lack of separation between DA42(a) and DA42(b); in the latter, he would have had to be aware of the position of the F406 relative to the DA42(a). Members opined that this had been hindered by the F406 pilot advising TWR that he was 'ready for base' having just commenced the LH downwind leg. Whilst he was no doubt 'ready', the instruction was issued by TWR as an aid to sequencing and would only have served its purpose had the F406 pilot reported 'ready for base' at a position where he could realistically turn on to the base leg.

Members spent some time discussing whether the root cause of the Airprox was a lack of pilot visual sequencing, as required under Rule 13 (Order of landing), or a lack of positive air traffic control. It was agreed that in this case the pilots were operating under an Aerodrome Control Service and that it was primarily TWR's responsibility to provide positive control. However, members also emphasised that this did not absolve the DA42(a) pilot from his responsibility to sequence as directed, and that all the pilots shared an equal responsibility to avoid collision. Finally, members agreed that provision of more Traffic Information would have greatly assisted the pilots to achieve visual contact earlier and would have helped their sequencing task. In the event, the F406 pilot saw the DA42(a) at a reported range of just under 1nm and took effective and timely action to prevent aircraft collision.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	Coventry TWR allowed the F406 pilot to turn into conflict with the DA42(a).
<u>Contributory Factor(s):</u>	1. The DA42(a) pilot did not sequence behind the F406, as instructed by ATC. 2. Lack of Traffic Information to circuit traffic.
<u>Degree of Risk:</u>	C.
<u>ERC Score</u> ³ :	20

³ 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.