

## AIRPROX REPORT No 2019210

Date: 28 Jul 2019 Time: 1001Z Position: 5153N 00205W Location: Gloucestershire Airport

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA34	C206
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Basic
Provider	Gloster App	Gloster
Altitude/FL	FL031	FL030
Transponder	A, C, S	A, C, S
Reported		
Colours	White, Blue	White, Red
Lighting	Strobes, Nav	Beacon, Strobes
Conditions	VMC	VMC
Visibility	>10km	10km
Altitude/FL	2800ft	2000-3000ft
Altimeter	QNH (1006hPa)	QNH (1009hPa)
Heading	090°	125°
Speed	120kt	110kt
ACAS/TAS	TAS	TAS
Alert	TA	None
Separation		
Reported	150ft V/0m H	Not Seen
Recorded	100ft V/0.1nm H	



**THE PA34 PILOT** reports that he was conducting an examination (and using an Exam callsign) at Gloucester. After completing an RNAV approach for RW27 they were cleared to climb on runway heading to altitude 3000ft. On reaching, they were then cleared direct the GST for the NDB ILS procedure. When outbound, they were again cleared for the NDB ILS procedure, to report localiser established. The procedure instructs the pilot to descend to 2300ft when outbound, therefore the candidate commenced his descent. At approximately 2800ft the Garmin 1000 indicated an aircraft less than 1nm away 200ft below; the Examiner looked but was not visual due to the low-wing so he took control and stopped the decent. At this point a C206 passed beneath their aircraft at what seemed to be 150-200ft separation. He informed ATC of a high-wing aircraft in close proximity and was informed there was no aircraft of such description on their frequency, he was then informed that it could be a C206 which shouldn't have been in that area. So as to not further distract the candidate, nothing else was said but ATC asked for him to give them a call on landing. When he called, the supervisor confirmed they were on a Procedural Service and that, normally, ATC can see aircraft on their radar screen, but on this day there was no radar controlling. For the period of time where they had the proximity issue, the radar was not working and had not been for at least ten minutes.

The pilot assessed the risk of collision as 'High'.

**THE C206 PILOT** reports that he heard the pilot of the other aircraft talking to Gloucester approach indicating they had seen him. He had not seen them. He had nothing significant on the TAS, which he generally monitors closely as well as maintaining a reasonable look out. The other aircraft traffic report sounded routine and he did not think anything further of it until he received the Airprox report from the UKAB. He noted that he would be interested to understand if radar traces or other information showed what actually happened and how close this was as a potential incident. Given that they were both on Gloucester Approach it seemed to be something everyone needed to learn from.

**THE GLOSTER CONTROLLER** reports that traffic conditions were light and so the ADC and App positions were band-boxed with an ATCO who was ADC qualified undertaking App training. The radar went unserviceable at 0945hrs and so no ATM information was available. The PA34 was conducting an ILS for RW27 at 3000ft under a Procedural Service, and reported the GST outbound at 1000hrs. The C206 departed RW27 VFR to route to the south-east at 0958hrs. At approximately 1002hrs, the PA34 pilot reported he had seen a C206 in close proximity to the east of the aerodrome, about 200ft below him. He did not mention an Airprox on the RT. The App OJTI requested the position of the C206, who reported 5nm ESE of the airfield and said that he had the other traffic on TCAS. Once the PA34 landed, the examiner contacted ATC and advised that he wished to report the incident as an Airprox.

**Factual Background**

The weather at Gloucestershire was recorded as follows:

METAR EGBJ 0950Z 30012KT 9999 FEW028 19/12 Q1006

The Gloucestershire RW27 Instrument approach Chart is reproduced alongside.

**Analysis and Investigation**

**CAA ATSI**

The controller was providing combined Aerodrome and Approach services at the time of the event. The R/T was reasonably busy with fixed-wing and rotary traffic in the circuit (and moving around on the airfield), departures, and the instrument traffic.

At 09:52.53, the C206 pilot requested taxi instructions for a flight to Blackbushe and instructions were issued. At 09:53.50, the PA34 pilot reported going around from a previous approach. The controller advised the pilot that it was a Procedural Service and instructed the pilot to report reaching altitude 3000ft and to advise when ready to turn back to the Golf Sierra Tango. The pilot asked the controller to say again and the controller repeated the instructions. The pilot readback of the level sounded like 2000ft and the controller clarified that the cleared level was 3000ft. At 09:56.00, the C206 pilot reported ready for departure, was instructed to line up and wait RW27 and was passed Traffic Information on an unrelated helicopter.

At 09:57.15, the PA34 pilot reported reaching altitude 3000ft, was cleared to the Golf Sierra Tango at 3000ft and was asked if they were ready to go straight outbound. The pilot readback the clearance and advised that they were ready to go outbound for the ILS. The pilot was cleared for the ILS approach and instructed to report at the Golf Sierra Tango outbound. At 09:57.25, the C206 pilot was cleared for take-off, instructed to turn after noise abatement, and passed an update on the previous unrelated helicopter (Figure 1).

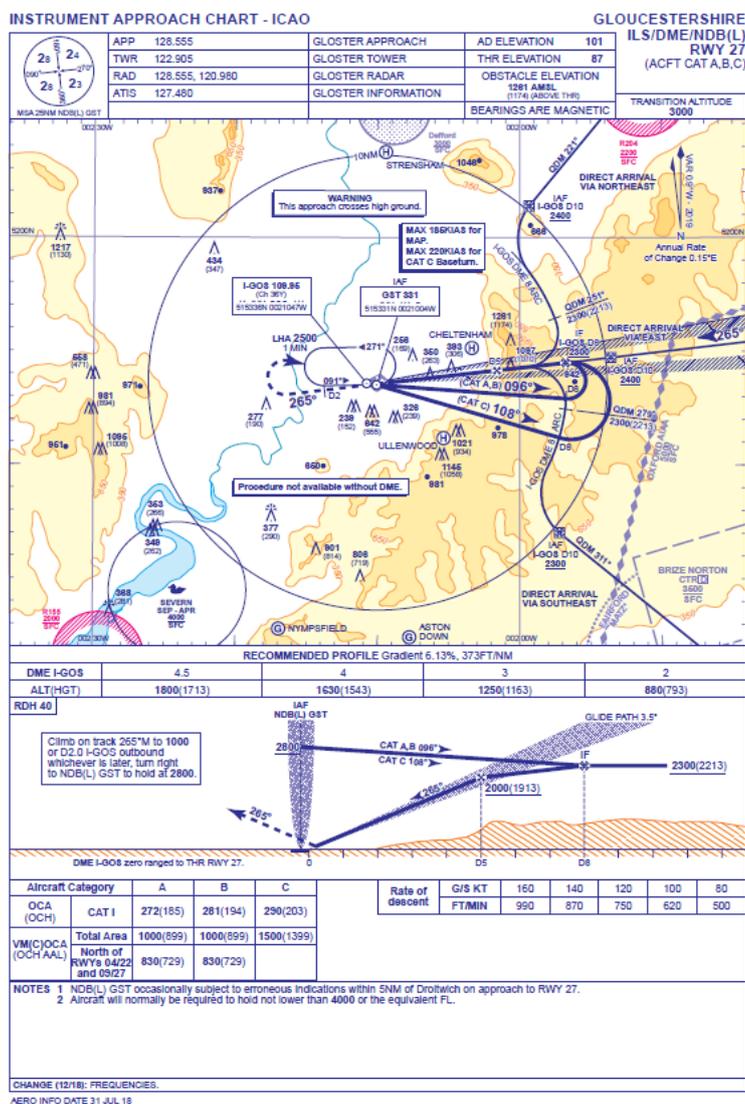




Figure 1 - 09:57.25 PA34 Squawking 6356

At 09:59.48, the C206 could be seen on the radar having made a right turn-out after take-off and was passing to the north of the airfield (Figure 2).

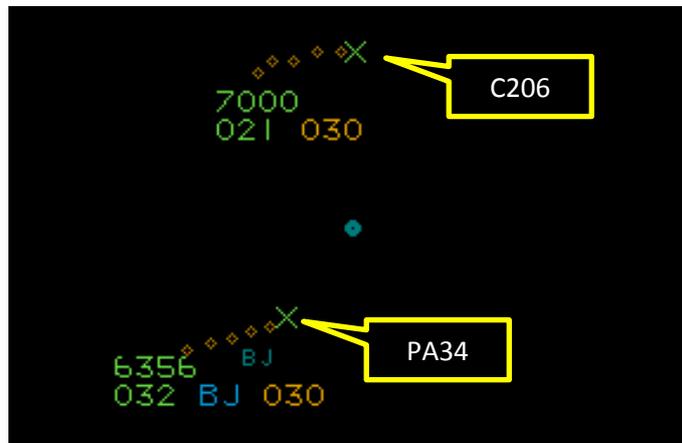


Figure 2 - 09:59.48 (C206 squawking 7000)

At 10:00.25, the PA34 pilot reported beacon (GST) outbound and was instructed to report established on the localiser (Figure 3).

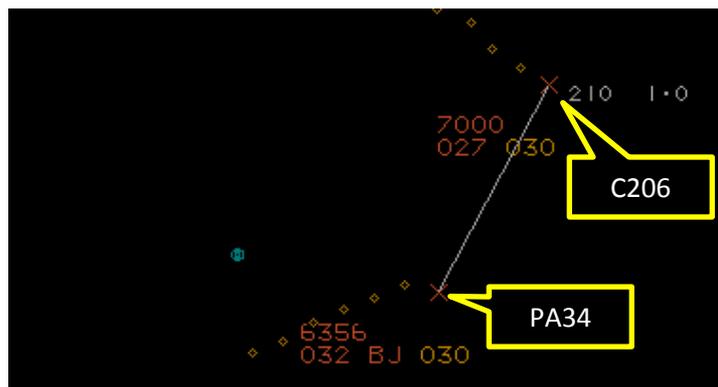


Figure 3 - 10:00.25

CPA occurred at 10:01.11 (Figure 4), with 0.1nm lateral and 100ft vertical separation.

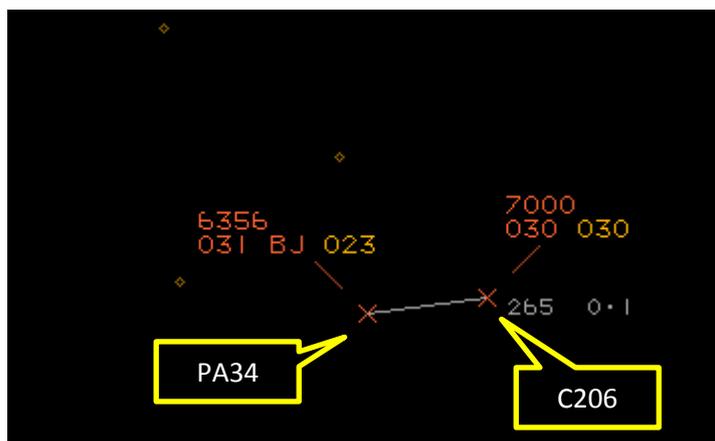


Figure 4 - 10:01.11 (CPA)

At 10:01.45, the PA34 pilot asked the controller if they were in communication with a Cessna that had come very close to them outbound, at approximately 2800 ft. The controller responded that they were not working a Cessna but that it might be a 206 that they were working. The controller then asked the C206 pilot for a position report and they responded that they were 5 miles to the southeast and had the PA34 on TCAS.

### Relevant Background Information

The UK AIP published noise abatement procedures for departures from RW27 at Gloucester are:

*All departing aircraft are to execute a 10° right turn when passing the upwind end of the runway. Tracking 280 MAG, climb through 600ft QFE before turning left. Avoid overflight of the village and church on the right. Jet aircraft are to climb through 1400 ft QNH before executing any turn. Aircraft unable to comply with 10° turn after take-off should advise ATC and climb straight ahead through 1400 ft QNH.*

The direct track from Gloucester to Blackbushe would probably lead the controller to believe that the C206 pilot would be making a left turn-out after departure. There was no ATM available to verify the direction of turn taken due to the radar being out of service.

### **UKAB Secretariat**

The PA34 and C206 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. If the incident geometry is considered as converging then the C206 pilot was required to give way to the PA34<sup>2</sup>.

### **Comments**

#### **PA34 Operating Authority**

The PA34 was operating under IFR, in Class G airspace, conducting an instrument approach. No Traffic Information was passed which might have indicated the other aircraft's proximity as apparently the other traffic had not routed as expected. The PA34 is fitted with a Traffic Advisory System (TAS) which should detect any Mode A, C or S active transponder and which gave an alert indicating conflicting traffic less than 1nm away and 200ft below. Reacting to this alert, the descent was stopped. Neither the instructor nor the front-seat student (who was wearing an instrument hood) sighted the other aircraft until it passed beneath them at what was reported as 150-200ft separation. It was reported to ATC at this point. Considering the barriers which remained between this Airprox and a mid-air collision, it appears that it was only the TAS system that averted a serious possibility of a mid-air collision. A significant barrier would have been radar but unfortunately this was unavailable at the time. The final barrier was the sighting of the PA34 by the other pilot.

<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3210 Right-of-way (c)(2) Converging.

## Summary

An Airprox was reported when a PA34 and a C206 flew into proximity at 1001hrs in the vicinity of Gloucestershire airport on Sunday 28th July 2019. The PA34 pilots was operating under IFR in VMC, and in receipt of a Procedural Service from Gloucester ATC. The C206 pilot was operating under VFR in VMC and in receipt of a Basic Service from Gloster App.

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

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first looked at the actions of the C206 pilot. After his departure he turned right, apparently taking the controller by surprise. The Board noted from the RT that he hadn't appeared to have asked for a right-hand departure and certainly the controller did not seem to be expecting it. Members noted that SERA stated that all departure turns should be left unless otherwise cleared by ATC but a number of members also pointed out that because RW27 at Gloucestershire was a right-hand circuit they wondered whether the pilot had assumed that departures would also be to the right. In this respect, the Gloucester AIP entry was thought to be ambiguous in that it didn't expressly state what turn directions were permissible, just that, for noise abatement, pilots should climb through 600ft before turning left. Members felt that this could be equally interpreted as there being no restriction on height before turning right if desired. They discussed at great length what the procedure should be and, on balance, decided that the pilot should have requested his direction of turn from ATC during his departure call (**CF8, CF9**) and, by not doing so, had not complied with procedures (**CF7**). Some members thought that with both pilots on the same frequency, the C206 pilot should have assimilated that the PA34 would be a factor in the instrument procedural pattern and should have avoided that part of the airspace. However, without specific Traffic Information from ATC, he did not have specific situational awareness prior to the Airprox and his TAS did not alert as expected (**CF10, CF12**). A few members wondered whether, knowing that RW27 was in use, it was wise for him to route across the approach lane at 2800ft as he transited to the east of the airfield even if the PA34 had not been there. Ultimately, the Board agreed that he had not seen the PA34 at all, and that his non-sighting meant that he did not take any avoiding action (**CF13**).

The PA34 pilot was conducting an examination and members noted that the examiner was maintaining a good look-out. However, because he also didn't receive any Traffic Information from ATC, he was not aware that the C206 was intending to route through the instrument pattern. It was his TAS alert (**CF11**) that gave him some situational awareness that there was traffic in the vicinity and, having seen the alert, the pilot looked for, but couldn't see, the traffic so took control to stop the descent. The Board felt that this had undoubtedly ensured the separation between the two aircraft because he didn't actually see the C206 until it passed beneath him (**CF13**).

Turning to the role that the controller had to play, it was noted that without any radar (and therefore without ATM as well), the controller did not know the position of the C206 and did not have situational awareness that it was in proximity to the PA34 (**CF2, CF4**). Nevertheless, controlling members thought that, at the very least, even if he didn't expect the C206 to turn right, he should have provided Traffic Information to the C206 pilot on departure about the PA34 which he knew was going to turn back through the overhead for the NDB procedure (**CF1, CF6**). Some members went further and thought that, especially given that traffic conditions were described as light by the controller, he should have observed the C206 as it departed, would therefore have seen it turn right, and then perhaps could have foreseen the eventual confliction to the east of the airfield (**CF5**). Noting that the controller was under-

going training and that there was an OJTI<sup>3</sup> sitting with him, and that neither controller identified the possibility of a conflict, the Board also thought that mentoring had been sub-optimal (**CF3**).

In assessing the risk of the Airprox the Board debated the separation between the two aircraft and the fact that neither pilot had seen the other until CPA. In the end, it was agreed that the action taken by the PA34 pilot in stopping his descent after receiving his TAS alert had been timely and effective in ensuring separation. They therefore agreed that although safety had been degraded, the risk of collision had been averted by the PA34 pilot; risk Category C.

Finally, following the debate on the ambiguity on the departure procedures with regard to a left or right turn after departure, the Board resolved to make a recommendation that Gloucestershire Airport reviews and clarifies its AIP entry.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

	2019210		
CF	Factor	Description	Amplification
<b>Ground Elements</b>			
<b>• Regulations, Processes, Procedures and Compliance</b>			
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not complied with
<b>• Manning and Equipment</b>			
2	Technical	• Aerodrome and ATM Equipment	Non-Functional equipment
3	Human Factors	• Mentoring	Sub-Optimal
<b>• Situational Awareness and Action</b>			
4	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
5	Human Factors	• Conflict Detection - Not Detected	
6	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
<b>Flight Elements</b>			
<b>• Regulations, Processes, Procedures and Compliance</b>			
7	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
<b>• Tactical Planning and Execution</b>			
8	Human Factors	• No Decision/Plan	Inadequate planning
9	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>			
10	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
<b>• Electronic Warning System Operation and Compliance</b>			
11	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
12	Technical	• ACAS/TCAS System Failure	CWS did not alert as expected
<b>• See and Avoid</b>			
13	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

<sup>3</sup> On the job training instructor

Recommendation: Gloucestershire Airport to clarify their AIP entry regarding departure procedures.

### Safety Barrier Assessment<sup>4</sup>

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

#### **Ground Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **partially effective** because the controller did not give Traffic information to either pilot.

**Manning and Equipment** were assessed as **ineffective** because the Gloucestershire radar was not serviceable and so the controller could not monitor the two aircraft.

**Situational Awareness of the Confliction and Action** were assessed as **ineffective** because without a radar the controller did not know that the C206 had turned right and would conflict with the PA34.

#### **Flight Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the C206 pilot departed right instead of left without informing the Gloucester controller.

**Tactical Planning and Execution** was assessed as **partially effective** because, in electing to turn right outbound, the C206 pilot should have realised he would have to cross the approach lane and may conflict with instrument traffic.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **partially effective** because the PA34 pilot only received a TAS alert on the C206 when it was 1nm away.

**See and Avoid** were assessed as **ineffective** because neither pilot saw the other in time to take timely avoiding action.

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<sup>4</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

<b>Airprox Barrier Assessment: 2019210</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b> Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	⚠					
	Manning & Equipment	✗	✓					
	Situational Awareness of the Conflicition & Action	⚠	✗					
	Electronic Warning System Operation and Compliance	⊖	⊖					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗					
	Tactical Planning and Execution	✓	⚠					
	Situational Awareness of the Conflicting Aircraft & Action	⚠	✓					
	Electronic Warning System Operation and Compliance	✓	✓					
	See & Avoid	✗	✗					
<b>Key:</b>		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	⚠	✗	⊖				
Application	✓	⚠	✗	⊖				
Effectiveness	■	■	■	■	□			