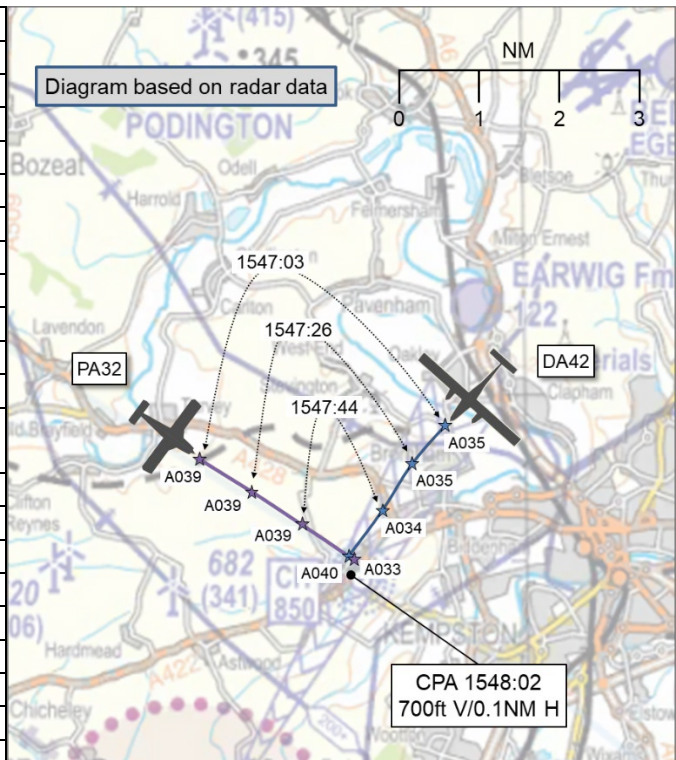


AIRPROX REPORT No 2022145

Date: 11 Jul 2022 Time: 1548Z Position: 5208N 00033W Location: 4NM NE Cranfield

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	PA32
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Procedural	Basic
Provider	Cranfield	London Info
Altitude/FL	3300ft	4000ft
Transponder	A, C, S	A, C, S+
Reported		
Colours	White	White, blue
Lighting	'IFR standard'	Landing, taxi, anti-cols, HISL, strobes
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	3500ft	4277ft
Altimeter	QNH (1023hPa)	QNH (NR hPa)
Heading	211°	120°
Speed	120kt	143kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	200ft V/NK H	500ft V/500m H
Recorded	700ft V/0.1NM H	



THE DA42 PILOT reports that their cleared level was 3500ft and they were in the CIT hold performing multiple procedures. An aircraft appeared from the northwest clearly using CIT as a waypoint and routing southeast. [The DA42 pilot understands that] this other aircraft was at 3700ft and descending, and they descended under it. They described their avoiding action as “a descent and turn”.

The pilot assessed the risk of collision as ‘Medium’.

THE PA32 PILOT reports that they did not see [the DA42] as they were above them and opined that it would have been easier for the [DA42 pilot] to have seen them. When reviewing their flight, from what was shown on Flightradar24 and from their own GPS flight tracker report, [the PA32] was 500ft above them. Spotting an aircraft below can be very difficult and the DA42 was crossing their path from left-to-right. The PA32 pilot suggested that maybe the DA42 pilot was on an IFR training flight with goggles/screen which may have reduced their visibility.

The pilot assessed the risk of collision as ‘Low’.

THE CRANFIELD CONTROLLER reports that [the DA42 pilot] was conducting IFR training at Cranfield when they reported having to “break out” of the holding pattern at CIT to avoid traffic transiting at a similar level. [The DA42 pilot] was under a Basic Service [they recall], carrying out holds at the CIT, and maintaining 3500ft. The pilot of [the DA42] described the traffic as a Cherokee and passing at a similar level. The other aircraft on frequency at the time were either not Cherokees or had not reported to be in the vicinity of CIT at that level. When ready, [the DA42 pilot] resumed the hold and continued their flight detail.

The controller perceived the severity of the incident as ‘minor’.

THE LONDON INFORMATION FISO reports that they were subsequently advised that [the PA32] was receiving a Basic Service at the time of the Airprox but no report was made by the pilot of [the PA32] on frequency and they have no recollection of any further details.

Factual Background

The weather at Cranfield was recorded as follows:

METAR EGTC 111550Z 22006KT 140V280 CAVOK 29/11 Q1022

Analysis and Investigation

NATS Safety Investigations

NATS Safety Investigations received notification that an Airprox had occurred between [DA42 callsign] and [PA32 callsign] in Class G airspace near Cranfield aerodrome. [The PA32] was indicating 4000ft and receiving a Basic Service from the London FISO whilst [the DA42] was displaying the IFR conspicuity code 2000 and indicating 3500ft when the two aircraft passed on crossing tracks. The pilot of [the PA32] did not mention any encounter, or report an Airprox to the FISO following the event.

Information available to the investigation included: a report from the London FISO; the Airprox report filed by the pilot of [the DA42]; radar and RT recordings.

[The DA42] was operating in the vicinity of Cranfield and displaying the IFR conspicuity Mode A code 2000. The pilot reported that they were receiving a Procedural Service from Cranfield. At the time of the event, [the PA32] was north of Cranfield tracking southeast. The pilot was receiving a Basic Service from the London FISO and had selected Mode A code 1177 accordingly. The Mode C of [the PA32] indicated 4000ft. No transmissions were recorded between the pilot of [the PA32] and the FISO in the 20min prior to the Airprox. On reviewing the radar recordings covering the time of the Airprox, both aircraft were identified by Mode S to the northeast of Cranfield. The radar track of [the DA42] correlated with the aircraft following the Cranfield CIT holding pattern shown in Figure 1.

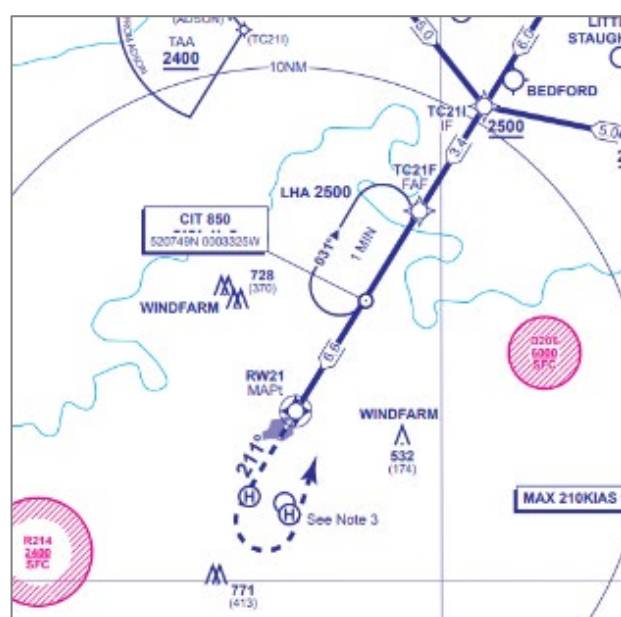


Figure 1 – excerpt from the Cranfield RNAV approach chart for RW21

The Cranfield Airport website provides information to General Aviation pilots as follows:

Cranfield Airport resides in Class G airspace, and is surrounded by an Aerodrome Traffic Zone (ATZ), 2NM in radius and 2000ft in height. Although a procedural service from Cranfield is available

it is important to remember that not all airspace users outside the ATZ will be talking to Cranfield and therefore the Cranfield Air Traffic Controllers may not know about all the traffic in the vicinity of the aerodrome.

The Airprox occurred approximately 4.6NM northeast of the airfield and was reported at 3500ft. This was outside the Cranfield ATZ both laterally and vertically. Figure 2 shows an annotated radar image of where the event took place and the relative positions of both aircraft prior to the Airprox.

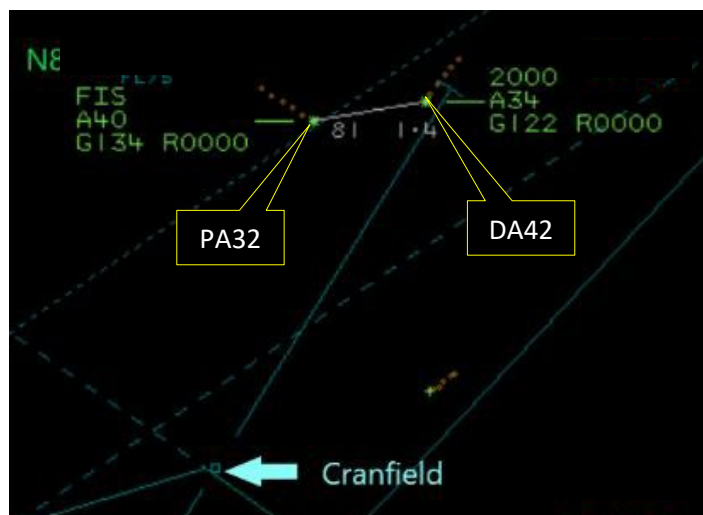


Figure 2 – 1547:34

Both aircraft continued along the same trajectories as above; the Mode C of [the PA32] displayed 4000ft throughout whilst that of [the DA42] varied between 3300ft and 3500ft. The [CPA] occurred at 1548:02 and was recorded as 700ft and 0.1NM (see Figure 3).



Figure 3 – CPA at 1548:02

The pilot of [the PA32] did not [report an Airprox] to the FISO following the event. The FISO on duty at the time was only aware of the event after notification of the Airprox was received, and subsequently had no recollection of the aircraft involved.

Conclusion: The Airprox occurred when the track of [the PA32] crossed that of [the DA42] which was in a holding pattern close to Cranfield airport. The CPA occurred at 1548:02 and was recorded on multi-track radar as 700ft and 0.1NM. The pilot of [the DA42] made a vertical manoeuvre in response to sighting [the PA32].

CAA ATSI

ATSI reviewed this event and has no additional comment or information to add.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft could be positively identified from Mode S data. The diagram was constructed and the CPA was calculated from the radar replay. Due to the periodicity of the radar sweeps, the CPA was assessed with the aircraft in their positions at 1548:02 (see Figure 3), albeit at a point momentarily after the aircraft tracks had crossed. The separation at the actual CPA may have been marginally closer.

The DA42 and PA32 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.¹ If the incident geometry is considered as converging then the DA42 pilot was required to give way to the PA32.² Pilots who intend to fly to or route adjacent to aerodromes with IAPs are strongly recommended when flying within 10NM of the aerodrome to contact the aerodrome ATSU.³

Summary

An Airprox was reported when a DA42 and a PA32 flew into proximity at 4NM northeast of Cranfield at 1548Z on Monday 11th July 2022. The DA42 pilot was operating under IFR in VMC and in receipt of a Procedural Service from Cranfield. The PA32 pilot was operating under VFR in VMC and in receipt of a Basic Service from London Information.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate 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 discussed this event and were satisfied that the vertical separation between the aircraft, and the actions taken by the DA42 pilot, had been sufficient to ensure that there had been no risk of collision. Members emphasised that it is strongly recommended, and would have been far more prudent, for the pilot of the PA32 to have obtained a service from Cranfield given that their route had taken them well within 10NM of Cranfield (having a published Instrument Approach Procedure and 'feathers' marked on CAA VFR aeronautical charts). The Board agreed that the use of electronic conspicuity equipment may have provided some additional information for the pilot of the PA32 to aid visual acquisition. It was for pilots to decide on their own requirements for additional equipment according to their needs and the Board wished to highlight to pilots that funding has been made available for electronic conspicuity devices through the CAA's Electronic Conspicuity Rebate Scheme, which has been extended until 31st March 2023.⁴

Members were satisfied that normal safety parameters had pertained and, as such, the Board assigned Risk Category E. Members agreed that the following factors (detailed in Part C) had contributed to this Airprox:

- CF1.** The London Information FISO had not been required to monitor the flight under the terms of a Basic Service.
- CF2.** The Cranfield controller had no situational awareness of the PA32.
- CF3.** The pilot of the PA32 had not contacted the Cranfield controller when routing within 10NM of Cranfield (which has an IAP).

¹ (UK) SERA.3205 Proximity.

² (UK) SERA.3210 Right-of-way (c)(2) Converging.

³ Notes included with CAA Aeronautical VFR charts.

⁴ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

- CF4.** The pilot of the DA42 had generic situational awareness of the PA32. The pilot of the PA32 had no situational awareness of the DA42.
- CF5.** The pilot of the DA42 received a TAS Traffic Alert to the presence of the PA32.
- CF6.** The pilot of the PA32 had not sighted the DA42.
- CF7.** The pilot of the DA42 had been concerned by the proximity of the PA32.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2022145				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
Flight Elements				
• Tactical Planning and Execution				
3	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
• Situational Awareness of the Conflicting Aircraft and Action				
4	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
5	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
• See and Avoid				
6	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
7	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: E

Safety Barrier Assessment⁵

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

⁵ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Cranfield controller had no knowledge of the PA32 and neither Traffic Information nor deconfliction advice could be passed to the DA42 pilot (under a Procedural Service) with respect to unknown traffic. The London Information FISO was not required to monitor the flight under the terms of a Basic Service.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the PA32 pilot had flown within 10NM of Cranfield (which has an IAP) and had not been in communication with the Cranfield controller.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the DA42 pilot had received a TAS Traffic Alert to the presence of the PA32. The PA32 pilot had no situational awareness of the DA42.

Airprox Barrier Assessment: 2022145		Outside Controlled Airspace						
Barrier	Provision	Application	Effectiveness					
			Barrier Weighting					
			0%	5%	10%	15%	20%	
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓					
	Manning & Equipment	✓	✓					
	Situational Awareness of the Confliction & 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	✓	✓					
Key:			Full	Partial	None	Not Present/Not Assessable	Not Used	
Provision	✓	⚠	✗	○				
Application	✓	⚠	✗	○		○		
Effectiveness								