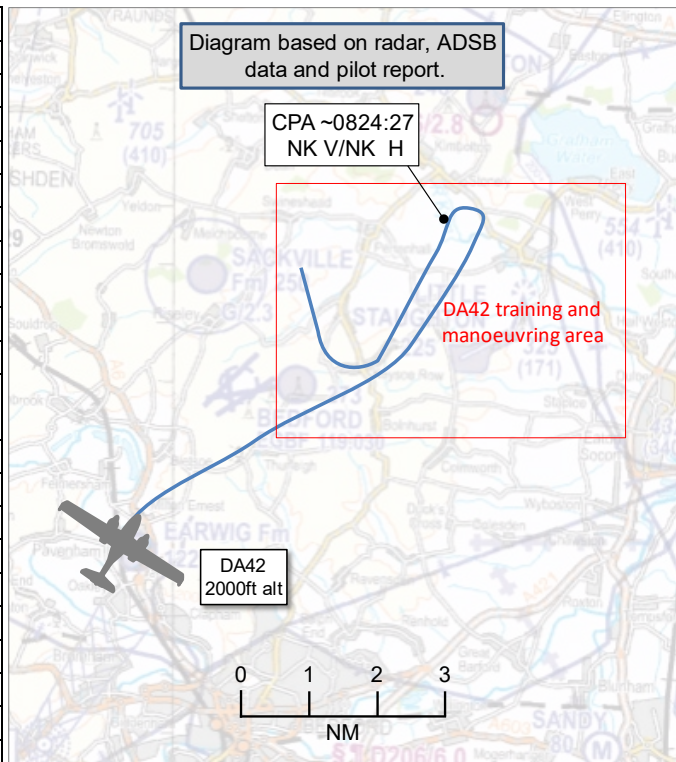


AIRPROX REPORT No 2023235

Date: 29 Sep 2023 Time: ~0824Z Position: 5217N 00022W Location: South of Grafham Water

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	Unknown aircraft
Operator	Civ FW	Unknown
Airspace	London FIR	NK
Class	G	NK
Rules	VFR	NK
Service	Basic	Unknown
Provider	Cranfield	NK
Altitude/FL	2000ft	NK
Transponder	A, C, S+	NK
Reported	2000ft	Not Reported
Colours	White with red markings	
Lighting	Full	
Conditions	VMC	
Visibility	>10km	
Altitude/FL	2000ft	
Altimeter	QNH (1014hPa)	
Heading	NK	
Speed	100kt	
ACAS/TAS	TAS	
Alert	TA	
Separation at CPA		
Reported	NK V/NK H	NR
Recorded	NK V/NK H	



THE DA42 PILOT reports they were [carrying out] a lesson in the region of Grafham Water, where they had informed Cranfield Approach they would be completing [a general handling exercise] and the altitudes [that they were operating] between, which [the Cranfield Approach controller] acknowledged. During straight and level flight, a Traffic Awareness System (TAS) annunciation was displayed, showing an amber circle as well as an audio tone "traffic, 0 miles, no reported altitude". This warning was sudden (no indication of traffic beforehand) and intermittent. They continued looking out, not climbing or descending, cautious that the traffic may be above or below. After confirming there was no traffic above or below through a lookout weave, they turned, completing an orbit and continued to search for traffic - nothing could be sighted. [On] talking to the Cranfield Approach controller after landing, they informed them that they would not be able to assist in whether an Airprox had occurred, due to the fact they are not equipped with radar. The fact that the aircraft had 'no reported altitude' caused uncertainty as to its location and if it was conflicting with their aircraft at all. Nothing was seen visually and this was a strong emphasis of the lesson. [The event was] reported and investigated through [their flight training provider's] internal safety reporting system. No other aircraft could be determined that would affect their flight or cause this alert.

The pilot had been unable to assess the risk collision as the other aircraft was unsighted.

THE UNKNOWN AIRCRAFT PILOT could not be traced as no other aircraft was found in the vicinity.

THE CRANFIELD SENIOR AIR TRAFFIC CONTROLLER reports [the DA42] departed Cranfield at 0810 and landed at 0900 (the reported time of 0900 [for the Airprox] appeared to be incorrect) and requested a Basic Service operating up to 2000ft. In the 20min prior to the time of the reported Airprox [estimated position], nothing was reported on frequency. [The DA42] disappeared from the Automatic Dependent Surveillance Broadcast (ADS-B) display and did not reappear until approximately 10min

prior to landing, so it could not be ascertained whether it was in proximity of other aircraft when operating in the vicinity of Grafham Water. The Flight Progress Strip (FPS) and ADS-B displays indicated no known aircraft in the vicinity of Grafham Water or on conflicting routing.

Factual Background

The weather at Cranfield was recorded as follows:

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METAR EGTC 290820Z 28010KT 9999 SCT010 14/12 Q1016
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Analysis and Investigation

Cranfield Investigation

The Cranfield investigation included review of FlightRadar24 playback analysis, and an investigation of the possibility of own aircraft equipment giving false indications. The replay did not reveal any aircraft in close proximity to the reporting aircraft, and the [ADS-B device] and TAS fitted to the same aircraft have been known to detect each other's position on very infrequent occasions and a false Traffic indication has been displayed on one or other of the systems. This can be ruled out in this case as the false Traffic would likely have shown for a longer period of the reporting aircraft's flight and would have given a "same altitude" alert, instead of "no reported altitude".

The Cranfield Safety Manager commented there is no evidence to support the possibility of a spurious alert, or that non-altitude reporting traffic had been detected by the TAS.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken for the period of the flight that the DA42 pilot had operated in the vicinity of Grafham Water. The unknown aircraft was not observed on radar at any point.



Figure 1 – Reported point at time 0824:27

Further analysis of ADS-B tracking displayed no other aircraft operating in the vicinity.

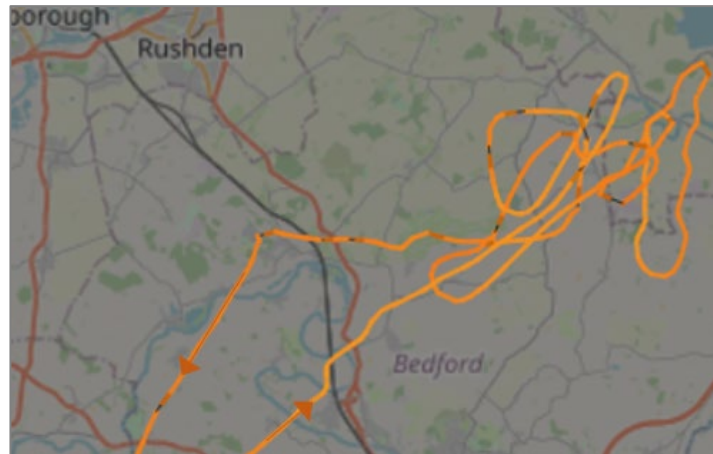


Figure 2 – DA42 training exercise ADS-B track.

The DA42 and unknown aircraft 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

Summary

An Airprox was reported when a DA42 and an unknown aircraft flew into proximity in the vicinity of Grafham Water at an estimated time of 0824Z on Friday 29th September 2023. The DA42 pilot was operating under VFR in VMC in receipt of a Basic Service from Cranfield, the unknown aircraft pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the DA42 pilot, radar photographs/video recordings, ADS-B tracks, a report from the air traffic controller involved and a report from the appropriate operating authority. 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 discussed the actions of the DA42 pilot and noted that they had opted to request a Basic Service from Cranfield Approach – which cannot offer a surveillance-based FIS – and were carrying a TAS to aid their situational awareness. The Board felt that the pilot had made a significant attempt to visually acquire a possible conflict that had alerted on their TAS.

Members then discussed the lack of information derived from the radar replay and ADS-B tracking and wondered whether there had been potential for the alert to have originated from a ground station, noting that there had been a farm strip and other privately operated airfield nearby. The Board also wondered what a potential TAS fault would look like, and that maybe it could not be discounted that the TAS had been faulty and not meeting defined expectations. However, it could not be determined that the TAS had given a spurious alert, therefore the Board did not assign a contributory factor to the performance of the electronic warning system(s).

Turing their attention to the Cranfield Approach controller, the Board agreed that it had not been possible for the controller to have provided Traffic Information and that they had not been required to do so under the terms of a Basic Service (unless a definite risk of collision had been detected). There had been no other aircraft operating on their frequency and so the controller could not have known of any aircraft to affect the flight of the DA42.

While members agreed that the pilot had been concerned about the proximity of an unsighted aircraft, they felt that the absence of any other aircraft on radar or ADS-B meant that the information available

¹ (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

to the Board was severely limited. Consequently, it was agreed that an assessment of the risk of collision had not been possible. As such, the Board assigned Risk Category D to this event but did assign the following contributory factors:

CF1. The Cranfield controller was providing the DA42 pilot with a Basic Service and was not required to monitor the flight.

CF2. The DA42 pilot had generic awareness of a potential conflict derived from their onboard alerting system.

CF3. The DA42 pilot was concerned by the proximity of an unsighted aircraft to which they had been alerted by the TAS.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2023235				
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
Flight Elements				
• Situational Awareness of the Conflicting Aircraft and Action				
2	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
3	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: D.

Safety Barrier Assessment²

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the controller was not required to monitor the flight of the DA42, the pilot of which was receiving a Basic Service.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the DA42 pilot had generic awareness of a conflict, derived from their TAS, which had caused them concern about the proximity of another aircraft on which they remained unsighted.

² The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Airprox Barrier Assessment: 2023235		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								