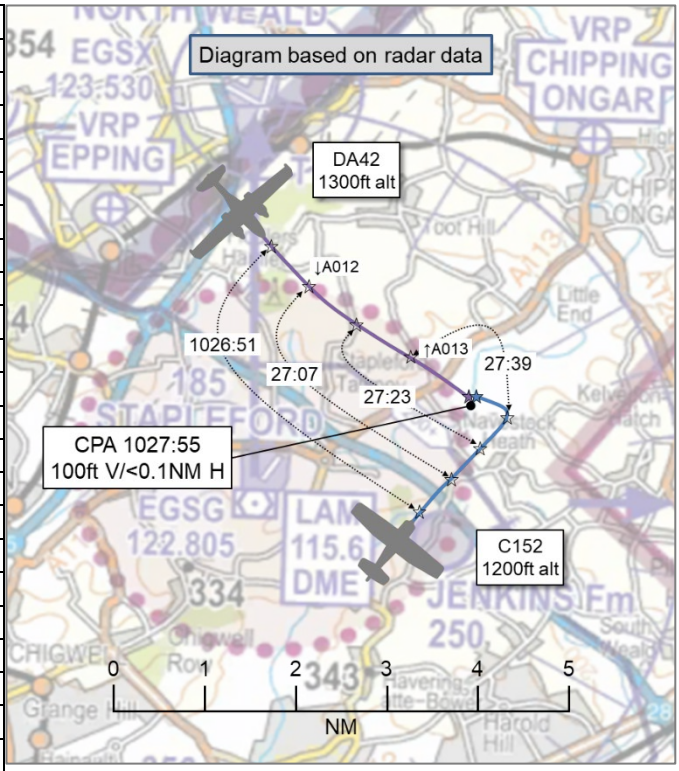
AIRPROX REPORT No 2021251

Date: 27 Oct 2021 Time: 1028Z Position: 5140N 00013E Location: 2.2NM ENE of Stapleford

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C152	DA42
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	AGCS	None[1]
Provider	Stapleford Radio	None
Altitude/FL	1200ft	1300ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White, red	White
Lighting	Beacon, landing	Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1200ft	1300ft
Altimeter	QNH (NR hPa)	NK
Heading	'Base leg of circuit'	100°
Speed	65-70kt	120kt
ACAS/TAS	Not fitted	TCAS I
Alert	N/A	None
Separation at CPA		
Reported	50ft V/150m H	100ft V/1NM H
Recorded	100ft V/<0.1NM H	



THE C152 PILOT reports that they were flying with another trainee instructor undertaking Ex12/Ex13 for the purposes of the instructor course and were flying circuits as published and briefed from the Pooley's plate and their instructor. There was a Tecnam ahead of them on final and a DA42 downwind behind them. They were PIC acting as the instructor and the other trainee instructor was handling the aircraft at the time of the incident. The PF turned the aircraft onto base-leg and a good lookout from both occupants was performed before this turn to be sure there were no conflicting aircraft as is standard practice. The PF, acting as student, started to set the aircraft up on base-leg to commence final descent. The PM then spotted the DA42 at a similar level, straight ahead, coming the wrong way along the base-leg. The PM then took control, alerted the PF who then also saw the aircraft, and started a descent. At the same time, the conflicting DA42 started a sharp right turn and a climb, which took it just over the path of the DA42 behind them. They heard no radio call from the conflicting DA42 and they and several other pilots in the circuit alerted each other of the collision risk on Stapleford's frequency. They then continued their approach and made a standard landing.

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

THE DA42 PILOT reports that they were on an airways flight from North Weald to [destination airfield] with instructions to contact Thames Radar to join controlled airspace. After departure from RW20 at North Weald, and following noise abatement, they turned left to avoid Stapleford ATZ and levelled off at 1300ft to avoid Stansted Class D airspace. They noticed a light high-wing aircraft on their right which appeared to be in the Stapleford circuit and took appropriate avoiding action by turning further left.

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

[1] The DA42 pilot was in the process of contacting Thames Radar to obtain their IFR clearance to join airways.

THE STAPLEFORD AIR GROUND OPERATOR reports that at approximately 1025 [the pilot of a Tecnam] reported that a DA42 had passed about 100ft above them on final for RW21L between them and another aircraft that had just turned final. The AGO has a screen linked to FlightRadar24 and they were able to identify the aircraft as [the DA42] and it appeared to have departed from North Weald. The pilot of the aircraft had not made any radio calls on the Stapleford frequency. For their awareness, they advised the pilots of the other aircraft in the circuit of the [unknown] aircraft, and that its pilot was not on the Stapleford frequency. They contacted North Weald ATC to confirm that [the DA42] had departed from there and they confirmed the pilot had switched frequency en-route immediately after take-off, IFR to [destination].

The Air Ground operator assessed the risk of collision as 'High'.

Factual Background

The weather at London City and Stansted Airports was recorded as follows:

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METAR EGLC 271020Z AUTO 23013KT 190V260 9999 BKN022 17/11 Q1019=
METAR EGSS 271020Z 22021KT 9999 BKN022 15/11 Q1019=
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Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The C152 was recorded by the NATS radars in the Stapleford circuit, established on crosswind in the circuit between a Tecnam on downwind and a DA42 on climb-out behind the C152. The Airprox DA42 was first detected by the NATS radars at 1026:11 (see Figure 1). The DA42 climbed-out, turned left onto a track of approximately 135°, established at an altitude of 1200ft and then passed the Tecnam, which was on base-leg in the Stapleford circuit (albeit outside the ATZ) at 1027:23 (see Figure 2).

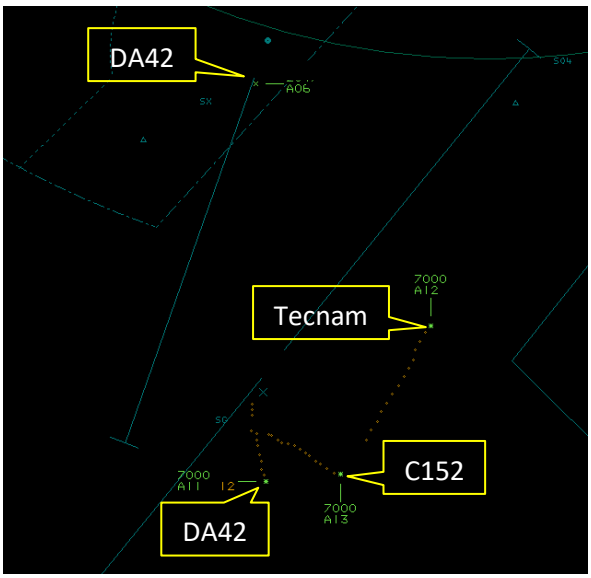


Figure 1 – 1026:11

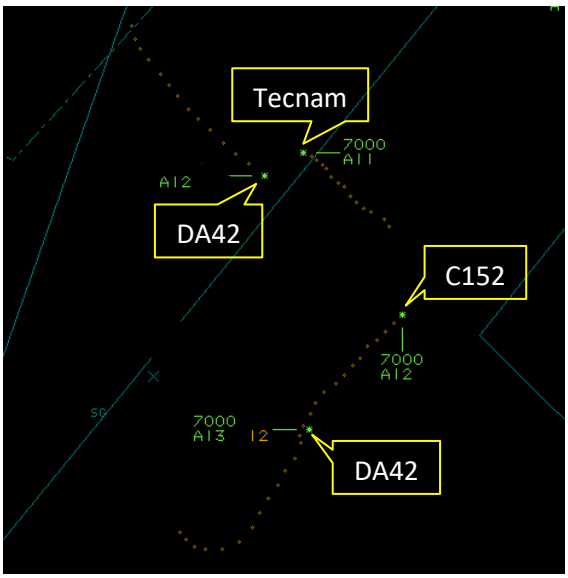


Figure 2 – 1027:23

The DA42 continued on track and then encountered the C152 shortly after it had turned onto base-leg, following a similar ground track to the Tecnam ahead of it in the circuit. CPA was recorded at 1027:55 with a vertical separation of 100ft and a horizontal separation of <0.1NM (see Figure 3).

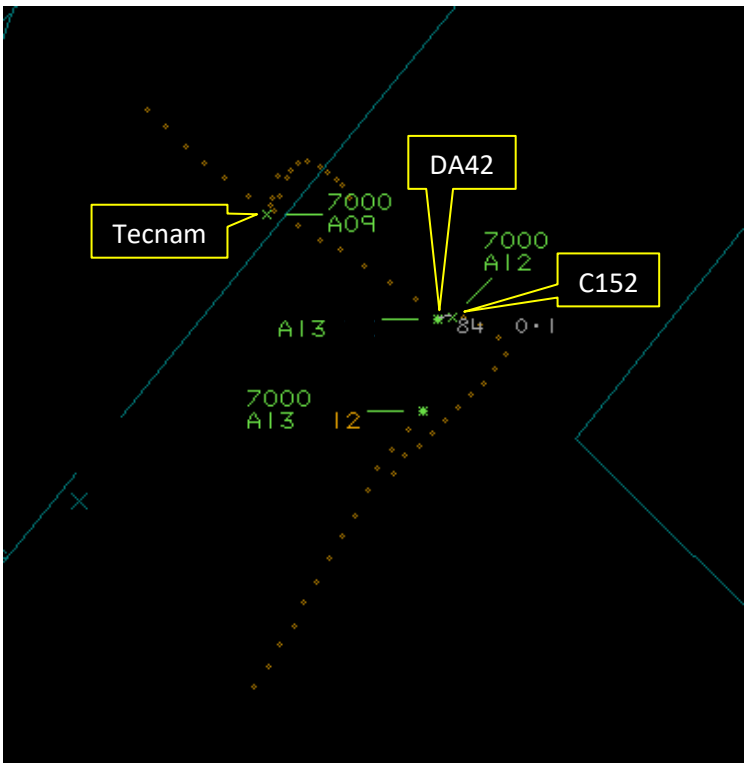


Figure 3 – 1027:55 - CPA

The C152 and DA42 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[2] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[3]

Summary

An Airprox was reported when a C152 and a DA42 flew into proximity 2.2NM ENE of Stapleford at 1028Z on Wednesday 27th October 2021. Both pilots were operating under VFR in VMC, the C152 pilot in receipt of an AGCS from Stapleford Radio and the DA42 pilot in in the process of switching frequencies from North Weald Radio to Thames Radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the air ground operator involved. 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 considered the actions of the C152 pilot and heard from a GA pilot member that the Stapleford circuit noise abatement procedures require large circuits to be flown, which can often extend outside the ATZ (see Figure 4). Members noted that the C152 had not been carrying any electronic conspicuity equipment and, although it could not be guaranteed that this would have had any influence on the outcome of this Airprox, the Board wished to highlight to pilots that additional 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] The Board noted that the Stapleford Air Ground operator had highlighted the presence of the DA42 to all pilots on the Stapleford frequency, but it seemed likely to the Board that the C152 pilot had not heard this transmission. Therefore, members agreed that the C152 pilot had not had any situational awareness of the presence of the DA42 (**CF7**)

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.
[4] https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/

and had been relying on their lookout for the detection of other aircraft. Given that the DA42 had unexpectedly been flying against the flow of traffic on the Stapleford circuit base-leg, the Board considered that the C152 pilot had done well to sight the traffic, albeit late (**CF9**), and then take action to ensure separation.

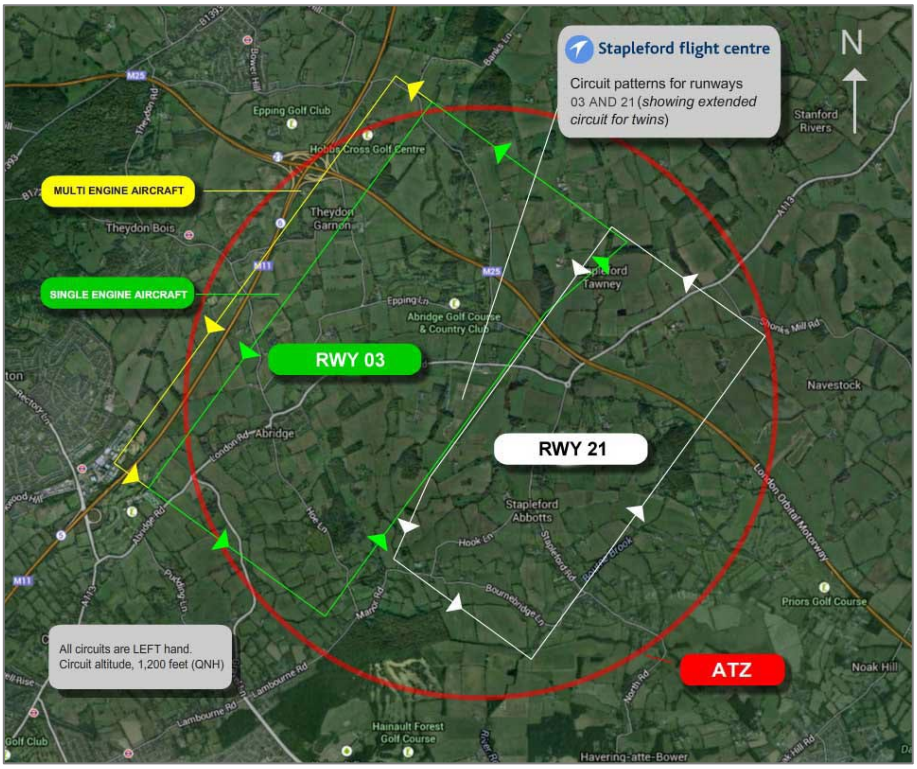


Figure 4 – Stapleford Circuit Diagram[5]

Turning to the actions of the DA42 pilot, the Board noted that they had never intended to fly so close to the Stapleford traffic pattern and wondered why they had not taken up a more easterly track on their departure to provide more separation. Members quickly agreed that, in the event, the DA42 pilot had inadvertently flown into the Stapleford ATZ and, in the process, neither conformed with nor avoided the Stapleford traffic pattern, which had been contributory to the Airprox (**CF1**, **CF2**, **CF3**, **CF6**). Members noted that the DA42 pilot's departure had been a busy period, with them changing frequency to gain an IFR clearance as soon as possible. However, the Board felt that the DA42 pilot may have been better served by planning to contact Stapleford on departure to inform them of their intended track and flight profile, given that their departure airfield is situated so close to the Stapleford ATZ and that both airfields were operating on their south-westerly runways. Members discussed that this communication could even have taken place on the ground before departure – to enable the DA42 pilot to avoid switching to too many frequencies in a short period of time – and considered that the fact that there had been no prior communication with Stapleford had also been contributory to the Airprox (**CF4**). Members then discussed the role of the DA42's electronic conspicuity equipment and could not explain why that equipment had neither detected nor alerted the DA42 pilot to the presence of the C152 (**CF8**). Some members wondered whether the equipment had provided a warning but the DA42 pilot had not noticed this during a very busy portion of the flight, but the Board considered that there was insufficient data available to support this hypothesis and so agreed that the DA42 pilot had not had any situational awareness of the presence of the C152 (**CF7**) and had therefore been relying on their lookout for the detection of the C152. Members noted that the DA42 pilot had reported sighting the C152 and turning left to avoid the aircraft, though their estimate of horizontal separation was not coherent with that reported by the C152 pilot and the data recorded by the NATS radars at CPA. Therefore, the Board considered that the DA42 pilot had sighted the C152 at a range of 1NM but had then lost sight of it, reacquiring the aircraft at a late stage (**CF9**), but had not then taken sufficient action to generate adequate separation (**CF5**).

[5] Source: https://flysfc.com/airfield-circuit-information-stapleford-flight-centre.php

The Board then briefly considered the actions of the Stapleford Air Ground Operator (AGO) and quickly agreed that they had done all that they could have done to alert the pilots in the circuit to the presence of an unknown aircraft in the vicinity of the circuit.

Finally, the Board considered the risk involved in this Airprox. Members noted that there was a significant difference in both pilots' estimations of horizontal separation, but that the NATS radar data clearly showed that there had been very little lateral distance between the aircraft at CPA. Members also noted that both pilots had reported sighting the other aircraft and taking action to ensure separation. Notwithstanding the actions of the 2 pilots, the Board agreed that there had been very little separation between the aircraft at CPA – as evidenced by the recorded data – and, therefore, safety had not been assured and a risk of collision had existed (**CF10**). Accordingly, the Board assigned a Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021251			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
	• Tactical Planning and Execution			
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
3	Human Factors	• Airspace Infringement	An event involving an infringement / unauthorized penetration of a controlled or restricted airspace.	E.g. ATZ or Controlled Airspace
4	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
5	Human Factors	• Insufficient Decision/ Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
6	Human Factors	• Monitoring of Environment	Events involving flight crew not to appropriately monitoring the environment	Did not avoid/conform with the pattern of traffic already formed
	• Situational Awareness of the Conflicting Aircraft and Action			
7	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			
8	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
9	Human Factors	• Identification/ Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
	• Outcome Events			
10	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B

Safety Barrier Assessment[6]

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 **not used** because the C152 pilot was operating with an Air Ground Communications Service and, although the Air Ground Operator did attempt to pass information to pilots about the DA42, this was not in time for the C152 pilot take account of the information.

Flight Elements:

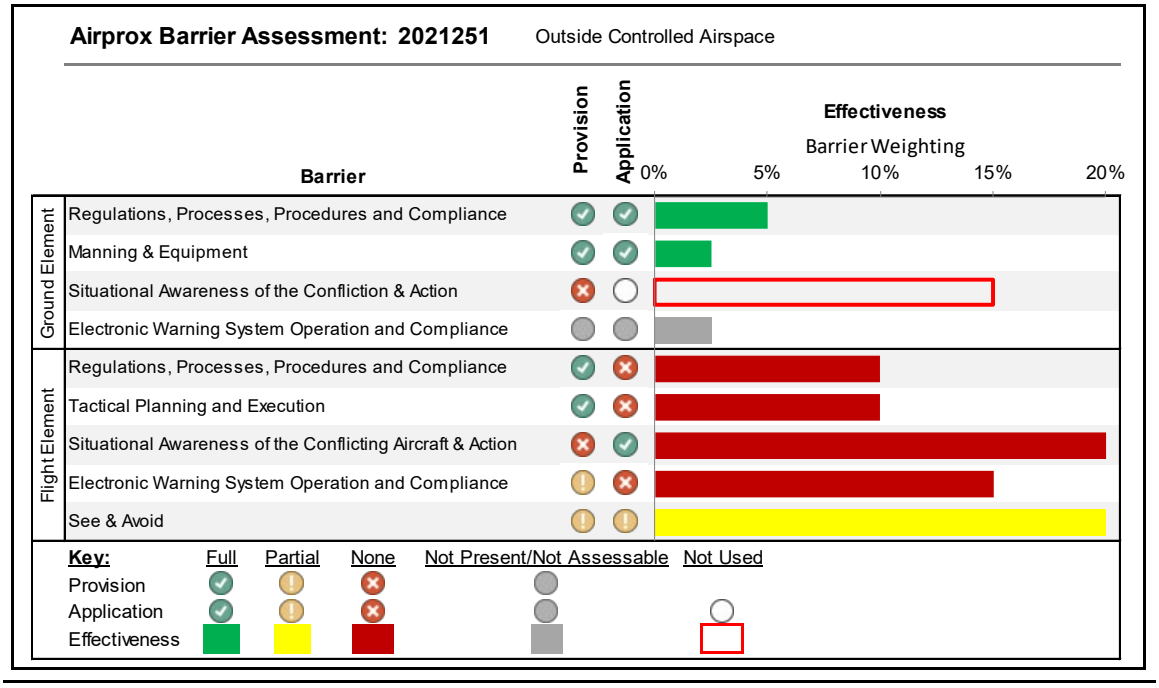
Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the DA42 pilot entered the Stapleford ATZ without contacting the Stapleford Air Ground Operator, which is not in accordance with Rule 11 of The Rules of the Air Regulations 2015.

Tactical Planning and Execution was assessed as **ineffective** because, on departure from North Weald, the DA42 pilot did not plan to avoid the Stapleford ATZ by a greater margin and also did not take sufficient action to avoid the C152 when they first sighted it at a distance of 1NM.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had any situational awareness of the presence of the other aircraft until they saw it.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the electronic conspicuity equipment on the DA42 would have been expected to alert the DA42 pilot to the presence of the C152, but no alert was received.

See and Avoid were assessed as **partially effective** because the DA42 pilot initially sighted the C152 at a range of 1NM but subsequently lost sight of it prior to CPA, and the C152 pilot only saw the DA42 once they had turned on to base-leg and had to take immediate action to increase separation.



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