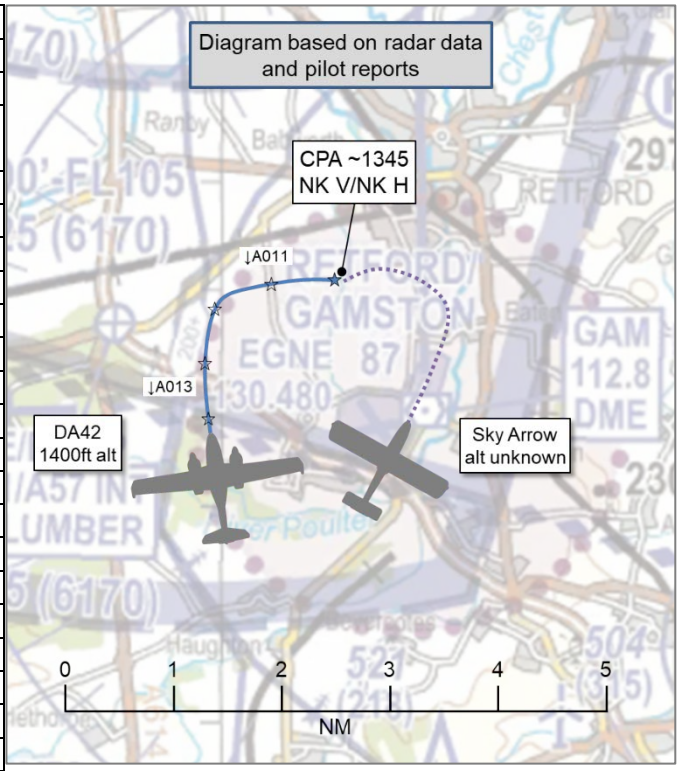
AIRPROX REPORT No 2021065

Date: 26 May 2021 Time: 1345Z Position: 5318N 00058W Location: Retford/Gamston circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	Sky Arrow 650T
Operator	Civ Comm	Civ FW
Airspace	Retford/Gamston ATZ	Retford/Gamston ATZ
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Gamston Radio	Gamston Radio
Altitude/FL	A011	NK
Transponder	A, C, S	None
Reported		
Colours	White	White, red
Lighting	Strobes, nav lights	Strobes, nav lights
Conditions	VMC	VMC
Visibility	5-10km	>10km
Altitude/FL	1100ft	900ft
Altimeter	QNH	QFE
Heading	NK	210°
Speed	100kt	80kt
ACAS/TAS	Garmin G1000	TrafficScope[1]
Alert	None	Off
Separation		
Reported	20ft V/100m H	200ft V/400ft H
Recorded	NK V/NK H	



THE DA42 PILOT reports arriving at Gamston from the west/south-west at 1400ft QNH just below the cloud cover and in medium light conditions (comparable to near-dusk). They made a radio call 5min to the airfield to request landing information and traffic presence and position in the pattern. Gamston Radio reported RW03 in use, left-hand circuit with one aircraft downwind and one crosswind. They changed their course more to the north with the intention of joining downwind behind the traffic that they thought was at the end of the dead-side leg passing overhead the threshold of RW21 and that would join the downwind leg in less than a minute. The decision was made to not fly overhead the field to re-join on the dead-side because it would have put them in very close vertical proximity (300ft) to the other traffic in the pattern.

Around 3 minutes later they had the airfield in sight and heard an aircraft reporting on downwind and saw an aircraft in the late downwind position which was concurrent with the alert they had on their Garmin G1000 'traffic position advisory' system, but no other traffic was showing on their screen; they assumed that it was the traffic previously on crosswind that was now on downwind. They descended to the circuit altitude of 1100ft and initiated a turn to the right a few moments later to join the downwind leg while announcing their actions on the frequency. When the nose of their aircraft was pointing at 90° to the RW, they saw a white aircraft passing in front of them from left-to-right at the same altitude as them and at a distance of roughly 100m. They took evasive action by rolling out to the left then, after becoming clear of the traffic, they re-joined the downwind leg and reported on the Gamston Radio frequency that had had a "close traffic and near-miss at the beginning of downwind".

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

[1] TrafficScope detects transponder responses to Mode C interrogations from a ground-based radar, Mode S transmissions and TCAS interrogations.

THE SKY ARROW PILOT reports that they were conducting difference training on a new type of aircraft. They took off from RW03 and turned left at 500ft on to a heading of 210°. They climbed to 900ft when the event occurred; there was no time to take any avoiding action. They then landed on RW03 after the DA42 had landed and cleared the active. They saw the other pilot afterwards to discuss the event. They had not connected their TrafficScope device as the only connection port available was being used for their navigation equipment.

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

THE RETFORD/GAMSTON AIR GROUND OPERATOR reports that their watch log for that day does not specify any unusual or reported concerns from either of the two aircraft involved. The AGO does not recall having had any conversations with either pilot.

Factual Background

The weather at Doncaster Sheffield Airport was recorded as follows:

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METAR EGCN 261350Z 33011KT 9999 FEW014 SCT019 BKN025 13/10 Q1015=
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Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken, which showed the DA42 approaching Gamston from the south-west and another aircraft (a C150) in the Gamston circuit. Unfortunately, the Sky Arrow remained undetected by the NATS radars for the whole event.

At 1343:19 the DA42 pilot took up a northerly heading as the C150 pilot turned onto the downwind leg. The DA42 was 2.1NM from the airfield at this point (see Figure 1). The DA42 pilot continued on a northerly heading at approximately 2NM from the airfield and passed 0.7NM abeam and 700ft above the C150 at 1343:47 (see Figure 2).

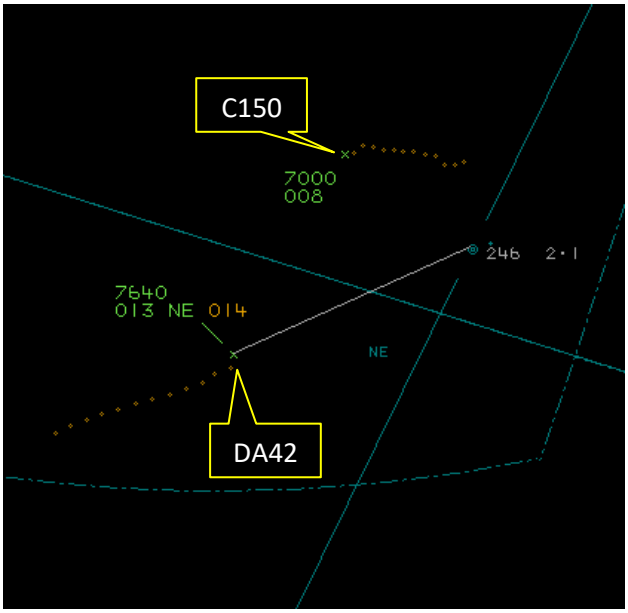


Figure 1 – 1343:19

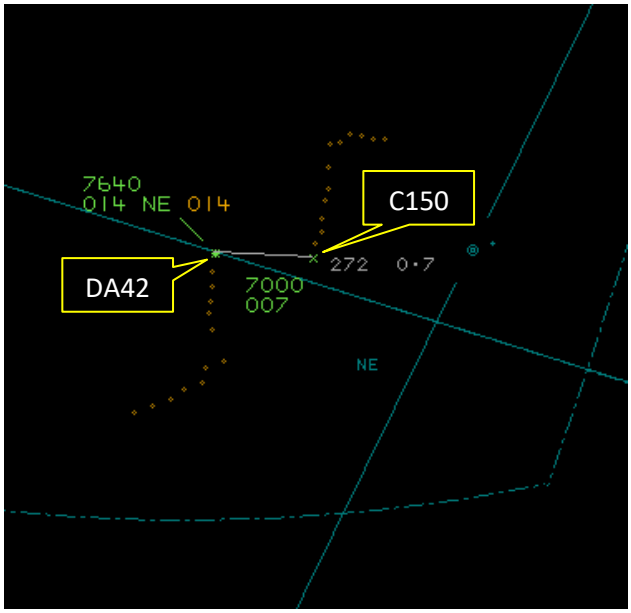


Figure 2 – 1343:47

The DA42 pilot then continued northbound and descended to an altitude of 1200ft before turning right to establish downwind for RW03LH at 1344:30. It is assessed that CPA occurred approximately 20sec after this turn, as the DA42 pilot reached an altitude of 1100ft and was approximately 90° off the RW heading (see Figure 3).

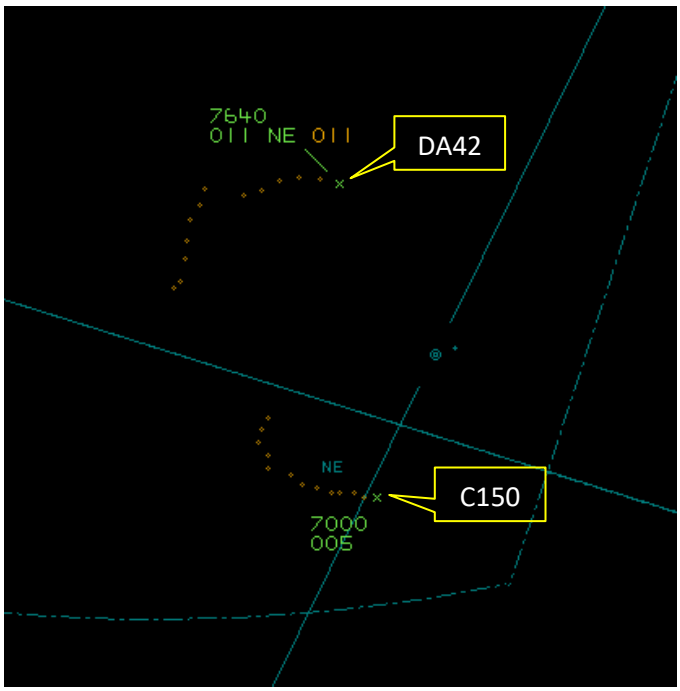


Figure 3 – 1344:51 – estimated CPA

The DA42 and Sky Arrow 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 DA42 and a Sky Arrow 650T flew into proximity in the Retford/Gamston circuit at approximately 1345Z on Wednesday 26th May 2021. Both pilots were operating under VFR in VMC; both pilots were in receipt of an Air Ground Communications Service from Gamston Radio.

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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first considered the actions of the DA42 pilot and heard from a GA pilot member that, given the prevailing weather at the time of the DA42 pilot's recovery, the plan to remain to the west of the airfield had not been unreasonable. However, the Board considered that their non-standard join procedure had required additional communication to ensure that other users had been aware that their aircraft had been in a position in which others might not have expected it to have been. Members felt that the DA42 pilot had probably intended to remain outside the ATZ whilst tracking north but that the low light levels had necessitated them remaining within the ATZ in order to remain visual with the airfield (**CF2**). This had, in turn, led to the DA42 pilot not complying with (UK) SERA.3225(c) in that they had placed themselves in a position where they had had to make right turns instead of left (**CF1**). Furthermore, the DA42 pilot had received information from the Gamston Air Ground Operator that there

[2] (UK) SERA.3205 Proximity.
[3] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

had been 2 in the circuit, and their positions had been passed when the DA42 pilot had made their joining call. The Board considered that the DA42 pilot had received generic situational awareness of circuit traffic (**CF4**), but this had not been sufficient for them to then assimilate the locations of the other 2 aircraft as only the C150 had been transponding and therefore displayed on the DA42's G1000 (**CF5**). Members felt that the DA42 pilot had been relying on their lookout, in poor light conditions, to detect the Sky Arrow and that they had not seen the aircraft until immediately prior to CPA (**CF6**). This had led to them being unable to integrate safely with the Sky Arrow already established in the circuit (**CF3**).

The Board then considered the actions of the Sky Arrow pilot. Some members wondered why the pilot had prioritised their navigation application over the TrafficScope when they had been remaining within the visual circuit. The Board considered that a tool to detect other traffic may have been more useful in this instance, but acknowledged that this view was with the benefit of hindsight. That said, with only generic situational awareness of the DA42 joining and no supplementary information being forthcoming from the DA42 pilot regarding their intention to join in a non-standard manner (**CF4**), the Board quickly agreed that there was little that the Sky Arrow pilot could have done to prevent the Airprox as they would not have been expecting an aircraft to be joining the downwind leg from the west. The Board agreed that the Sky Arrow pilot had been relying entirely on their lookout in the visual circuit, and that they had not seen the joining DA42 until it had been too late to materially affect the separation (**CF7**).

Turning to the risk involved in this event, the Board's understanding of the geometry was limited by the fact that the Sky Arrow was not detected by the NATS radars and there was no GPS log file available. Members noted that the estimated separation of the 2 pilots differed greatly, but also noted that the DA42 pilot had had the time to take action to increase separation after having sighted the Sky Arrow, whereas the Sky Arrow pilot had not. The Board also took into account both pilots assessed risk of collision as 'medium'. After some discussion, the Board agreed that safety had not been assured and that there had been a risk of collision (**CF8**) – the last-minute avoiding action on the part of the DA42 pilot having generated at least some separation – and assigned a Risk Category B to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021065			
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	• 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			
4	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
5	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
6	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
7	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

	• Outcome Events			
8	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[4]

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 Retford/Gamston Air/Ground Operator was not required to monitor the relative positions of the 2 aircraft.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the DA42 pilot, once within the Retford/Gamston ATZ, did not *'….make all turns to the left, when approaching for a landing and after taking off, unless otherwise indicated, or instructed by ATC*.'[5]

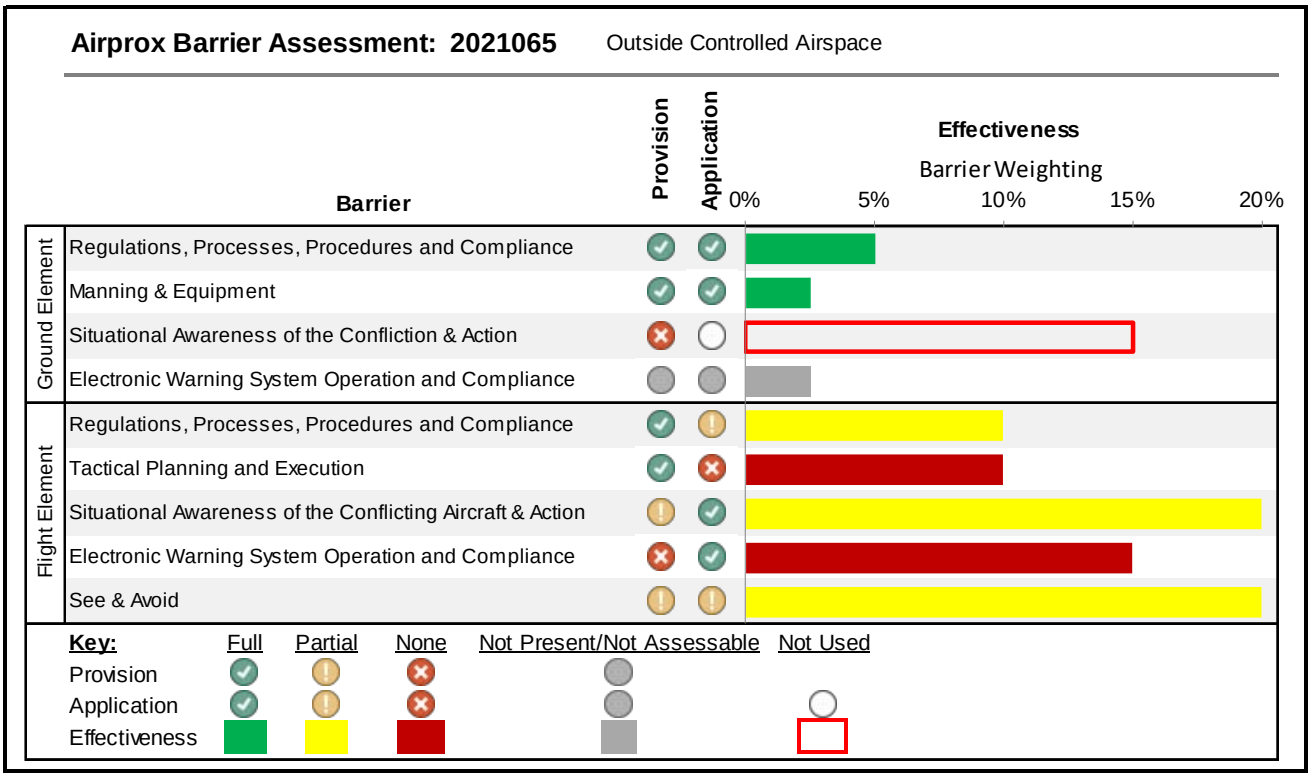
Tactical Planning and Execution was assessed as **ineffective** because the DA42 pilot did not correctly integrate with other aircraft already established in the Retford/Gamston circuit pattern.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because neither pilot had any specific situational awareness of the presence and position of the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the Garmin G1000 equipment on the DA42 could not detect the presence of the non-transponding Sky Arrow.

See and Avoid were assessed as **partially effective** because the DA42 pilot sighted the Sky Arrow at a late stage and had to take last-minute avoiding action, and the Sky Arrow pilot did not see the DA42 until it was too late to take any avoiding action.

[4] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.
[5] (UK) SERA.3225(c) Operation on and in the Vicinity of an Aerodrome.


Airprox Barrier Assessment: 2021065
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