AIRPROX REPORT No 2021005

Date: 28 Jan 2021 Time: 1430Z Position: 5118N 00122W Location: 4NM NE Bourn Park

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42	DA40
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	IFR
Service	Traffic	Traffic
Provider	Boscombe Down	Boscombe Down
Altitude/FL	FL052	FL047
Transponder	A, C, S	A, C, S
Reported		
Colours	White	White
Lighting	Strobes, Nav	Strobes, Position
Conditions	IMC	VMC
Visibility	0km	NK
Altitude/FL	5000ft	4500ft
Altimeter	NK	RPS
Heading	030°	209°
Speed	150kt	120kt
ACAS/TAS	TAS	TAS
Alert	TA	Unknown
Separation		
Reported	400ft V	NR
Recorded	500ft V/0.1NM H	

THE DA42 PILOT reports that they were transiting IFR in IMC and in icing conditions at 5000ft, under a Traffic Service from Boscombe Down. Just north-east of Middle Wallop they were informed about traffic 12 o'clock, climbing 500ft below, a DA40. They upgraded to a Deconfliction Service and were instructed to turn immediately onto heading 090°and climb to FL060. During this manoeuvre they received a TAS alert warning and the DA40 continued climbing in IMC, even after being made aware of their position. After the manoeuvre, they become clear of conflict and entered VMC conditions. They downgraded to Traffic Service and were then given own navigation again. They estimated that the other aircraft came within 400ft.

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

THE DA40 PILOT reports they were operating a post-maintenance positioning flight under IFR with a planned route of WCO-CPT-BIA at 4000ft. They were operating as PIC from the right hand seat with a multi-engine instructor operating in the left hand seat for DA40 famil. Prior to departure their TEM discussion focussed on worsening weather as they approached Bournemouth with the potential to encounter icing conditions and other traffic on a busy route in Class G airspace. With this in mind their passenger, a cadet, was briefed to assist with the lookout and bring any traffic to the crews' attention. Once they were established in the cruise at 4000ft, as planned they contacted Boscombe Radar on 126.7 to request, and obtained, a Traffic Service. They were in VMC and noted that the cloud appeared thicker ahead with slightly higher tops, so elected to climb to 4500ft to remain in VMC. Prior to initiating a cruise climb they first made the Boscombe Radar controller aware of their intention. The pilot noted that they could not be sure of the exact sequence of events but did recall that they were passed Traffic Information on an opposite direction DA42 at 5000ft under a Traffic Service working the same controller and they heard that the DA42 had been passed reciprocal Traffic Information. On receipt of the Traffic Information they tried to visually acquire the other aircraft and also monitored their TAS. They continued the lookout but assessed the other traffic as low-risk as both aircraft were aware of each other under a

Traffic Service and, although there were no guarantees, there would likely be a minimum vertical distance of 500ft. The DA42 pilot requested an upgrade to a Deconfliction Service and was then given an avoidance turn, they then focussed their visual scan ahead and in the direction of that turn. They were subsequently advised by the Boscombe Radar controller that they were clear of the other aircraft. Although they did not recall visually acquiring the DA42, at no point did they feel safety may have been compromised.

The pilot assessed the risk of collision as 'None'.

THE BOSCOMBE ZONE CONTROLLER reports that they were controlling two aircraft under a Traffic Service heading in roughly opposite directions. Traffic Information was passed to the DA42 pilot at 6NM relating to traffic 12 o'clock indicating 500ft below. Traffic Information was then passed to the DA40 heading south, about [the DA42 C/S]. Following this neither pilot had called visual, so they updated the DA42 pilot about the previously called traffic to which an upgrade to Deconfliction Service was requested. Upon hearing this [DA42 C/S] was issued an avoiding action turn to the right immediately heading 090° and updated with the position of the traffic. After finishing the transmission, they took the turn. This was later followed up by a climb to FL60 to remain below CAS. [DA42 C/S] was then informed that they were clear of traffic and they downgraded to a Traffic Service before being handed over to Oxford.

The controller perceived the severity of the incident as 'Low'.

THE BOSCOMBE SUPERVISOR reports that the Zone controller had two aircraft on frequency, both in receipt of Traffic Service. The tracks were approximately 180° to each other. The LARS controller called traffic to both pilots and updated the information as they got closer. At a range of approximately 2NM one of the pilots requested upgrade to Deconfliction Service and avoiding action turn was issued. The pilot had slight delay in taking the turn (waiting for the whole transmission 'traffic was…etc'). Due to this, a right turn then took it towards to the conflicting aircraft. At this point they [the Supervisor] instructed the LARS controller to issue a climb. A climb to FL60 was given and Mode C indicating 500ft separation was observed. The pilot then requested downgrade to Traffic Service. The Airprox was not declared on frequency. The LARS controller was later debriefed.

Factual Background

The weather at Boscombe Down was recorded as follows:

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METAR EGDM 281420Z 24011KT 9999 SCT012 BKN018 12/11 Q1003 TEMPO 6000 -RA RMK GRN
TEMPO GRN=
SPECI EGDM 281429Z 24013KT 6000 -RADZ BKN010 BKN018 12/11 Q1003 TEMPO 9999 NSW
BKN018 RMK GRN TEMPO WHT=
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Analysis and Investigation

Military ATM

The Boscombe Zone controller was providing a Traffic Service to the DA40 pilot and a Traffic Service which was upgraded to a Deconfliction Service to the DA42 pilot. Traffic Information was passed twice to the DA42 pilot before the service was upgraded to a Deconfliction Service at the request of the pilot. An avoiding action turn was given to the DA42 immediately following the change in service along with updated Traffic Information. There was a delay in the DA42 pilot taking the avoiding action turn which resulted in intervention from the ATC Supervisor to direct the controller to provide a climb to increase the separation between the DA40 and the DA42. Traffic Information was also passed to the DA40 pilot about the DA42 which was updated as the situation progressed.

Figures 1-6 show the positions of the DA40 and the DA42 at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the NATS Radars, which are not utilised by Boscombe, therefore, may not be entirely representative of the picture available to the Boscombe controller.

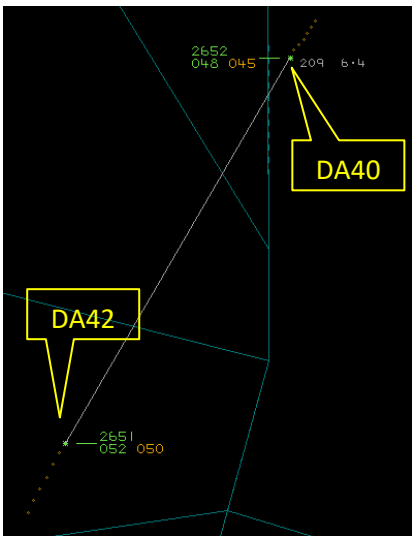


Figure 1: Traffic Information was passed for the second time to the DA42.

Twelve seconds prior to Figure 1, Traffic Information was passed to the DA42 pilot for the first time. Accurate Traffic Information was passed to the DA42 by the controller who was informed that the pilot was not visual with the DA40. Separation was measured at 6.4NM and 400ft.

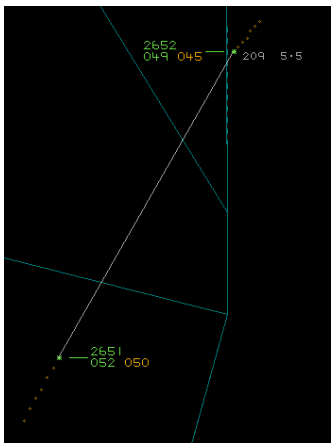


Figure 2: Traffic Information passed to the DA40.

Traffic Information was passed to the DA40 pilot about the DA42 which was acknowledged. Separation decreased to 5.5NM and 300ft (Figure 2).

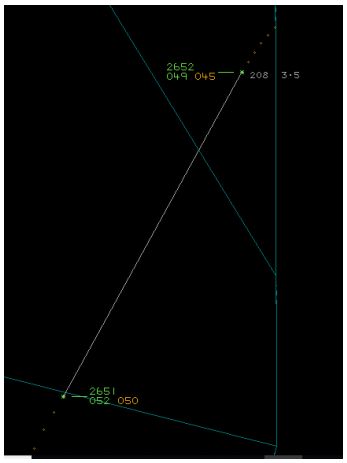


Figure 3:
Avoiding action turn given to DA42.

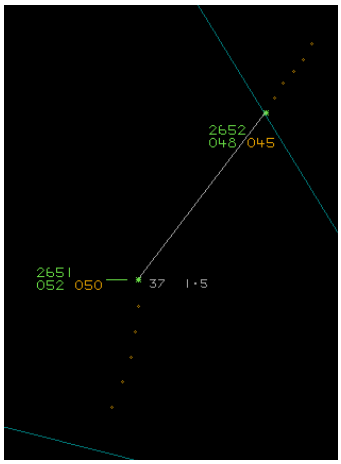


Figure 4:
DA42 appeared to turn left.

The controller gave the Deconfliction Service 5sec after it was requested by the DA42 pilot, along with an avoiding action turn to the right. After 27sec the DA42 appeared to turn left before initiating the given turn to the right. Separation was measured at 3.5NM and 300ft when the avoiding action turn was given (Figure 3). Separation then decreased to 1.5NM and 400ft when the DA42 appeared to turn left (Figure 4).

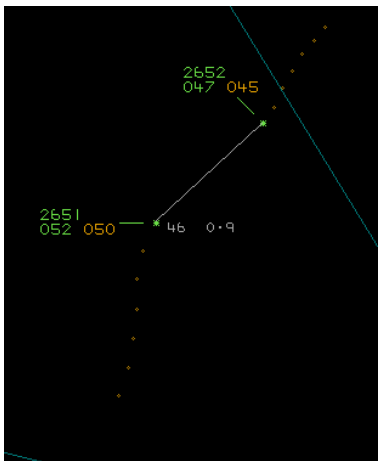


Figure 5:
DA42 begins to turn right as per the avoiding action.

Five seconds later the DA42 begins to turn right as per the avoiding action instruction. Separation was measured at 0.9NM and 500ft (Figure 5). CPA was measured at 0.1NM and 500ft (Figure 6).

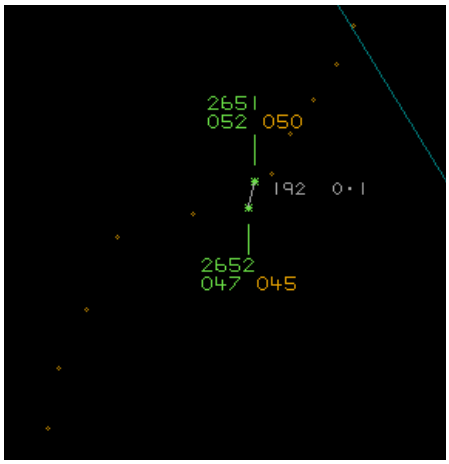


Figure 6: CPA.

The controller provided Traffic Information to both pilots at appropriate points and passed avoiding action immediately following the upgrade to Deconfliction Service for the DA42 pilot. The avoiding action turn was appropriate given the relative positions of both tracks when it was issued however, the controller could have issued a climb as part of the initial avoiding action to increase the separation. Intervention from the ATC Supervisor was required given the developing situation and the Supervisor should be commended for their timeliness. It is unknown as to why the DA42 turned slightly left prior to initiating the avoiding action turn which appeared to reduce the effectiveness of the avoiding action turn.

UKAB Secretariat

The DA42 and DA40 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 head-on or nearly so then both pilots were required to turn to the right.[2]

Summary

An Airprox was reported when a DA42 and a DA40 flew into proximity approximately 4NM north-east Bourn Park at 1427Z on Thursday 28th January 2021. The DA42 pilot was operating under IFR in IMC, and in receipt of a Deconfliction Service from Boscombe Zone and the DA40 pilot was operating under IFR in VMC and in receipt of a Traffic Service from Boscombe Zone.

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.

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 looked at the actions of the DA42 pilot. They were at first receiving a Traffic Service and after receiving Traffic Information from the controller upgraded this to a Deconfliction Service. Noting the reservations made in the Military ATM report about how long the pilot took before making the avoiding action turn, members thought it likely that in fact there was a discrepancy between the RT replay timing and the radar replay timing. The Boscombe controller did not mention a delay in the pilot taking the turn and GA members thought that no pilot would wait before taking an avoiding action turn in such circumstances. Nevertheless, members did think that the pilot could have requested a Deconfliction Service earlier than they did as they received Traffic Information at 6NM and heard the controller pass reciprocal information to the DA40 pilot. At this point members thought the pilot could have initiated a climb to increase the vertical separation (**CF1**) and by waiting until the second Traffic Information call before requesting the service upgrade, the pilot placed the controller in a very difficult position in trying to take action to resolve the conflict at that late stage (**CF2**). Although the pilot received further information from their TAS (**CF3**), they did not see the DA40 throughout the manoeuvre as they were in cloud (**CF4**, **CF5**).

Turning to the DA40 pilot, members offered a similar observation, in that, although they had made a TEM assessment and mitigated the worsening weather by requesting a Traffic Service, they too could have made an adjustment to their track or height when first told about the DA42 (**CF1**). Indeed, some members thought that the subsequent climb of 500ft, although made to remain VMC, only served to put the two aircraft in closer proximity (**CF2**) and opined that 500ft when one aircraft was IMC was less than ideal. Nevertheless, the DA40 pilot was VMC and therefore content that although they couldn't see the DA42, there was sufficient separation (**CF4**, **CF5**).

When assessing the part that ATC had to play, members thought that the controller had given timely and accurate Traffic Information to both pilots. They also thought that the controller had been placed in a difficult position when the DA42 pilot had asked to upgrade to a Deconfliction Service as they were then required to give immediate avoiding action with little ability to make much material difference to the separation. Members praised the Boscombe Supervisor for intervening by telling the controller to instruct the DA42 pilot to climb to FL060, noting that too often they see incidents where Supervisors

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on.

were not always fully aware of the actions of the controller and it was heartening to see an occasion where active supervision was displayed.

When determining the risk, members quickly agreed that there had not been a risk of collision. However, they thought that the circumstances, with neither pilot seeing the other aircraft, the late avoiding action and only 500ft separation when not visual, all contributed to a situation where safety had been degraded; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021005			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Late Decision/Plan	Events involving flight crew making a decision too late to meet the needs of the situation	
	• Situational Awareness of the Conflicting Aircraft and Action			
2	Human Factors	• Lack of Action	Events involving flight crew not taking any action at all when they should have done so	Pilot flew close enough to cause concern despite Situational Awareness
	• Electronic Warning System Operation and Compliance			
3	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
	• See and Avoid			
4	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
5	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

Degree of Risk: C.

Safety Barrier Assessment[3]

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

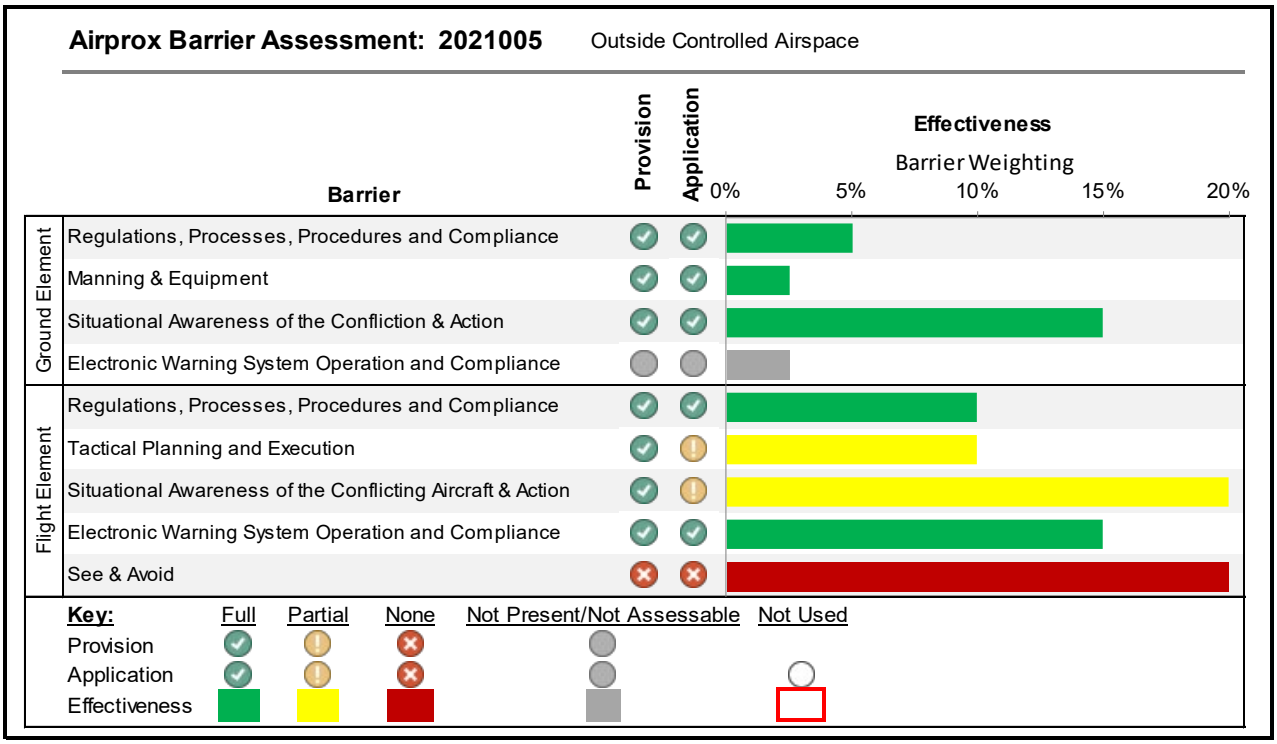
Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because both pilots could have made an earlier decision to act to avoid the other aircraft.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because having been told about the conflict, either pilot could have taken action to remain clear of the other.

See and Avoid were assessed as **ineffective** because neither pilot could see the other, due to the DA42 being in cloud.

[3] 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: 2021005
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