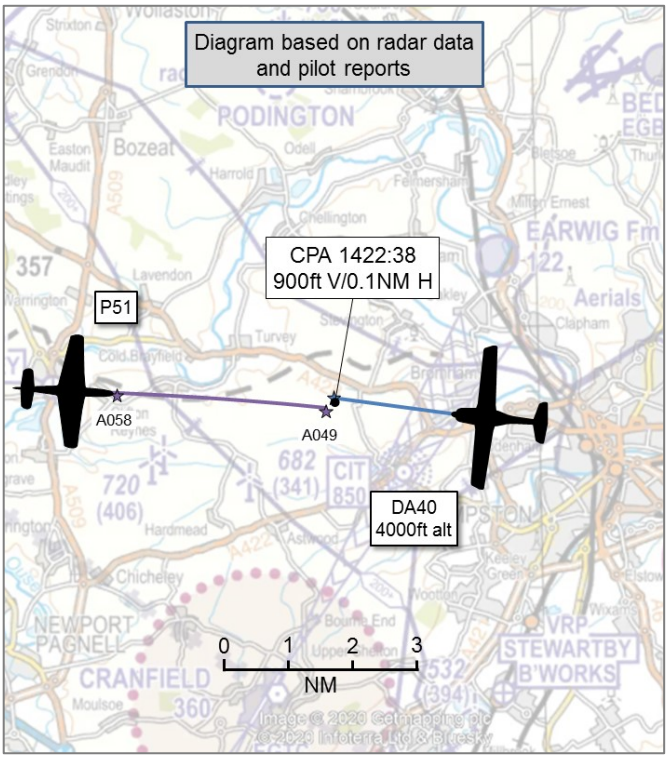
AIRPROX REPORT No 2020059

Date: 14 Jun 2020 Time: 1422Z Position: 5209N 00035W Location: 5NM NNE Cranfield

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	P51
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	None
Provider	Oxford	N/A
Altitude/FL	4000ft	4900ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White, Blue	Silver
Lighting	Strobe, Position, Landing, Taxi	Not reported
Conditions	VMC	VMC
Visibility	Not reported	Not reported
Altitude/FL	FL040	6300ft
Altimeter	QNH (1013hPa)	NK
Heading	240°	095°
Speed	120kt	230kt
ACAS/TAS	Not fitted	Unknown
Alert	N/A	Unknown
Separation		
Reported	500ft V/100m H	Not seen
Recorded	900ft V/0.1NM H	



THE DA40 PILOT reports that they were returning from a training flight, they contacted Oxford Radar for a Traffic Service. They were receiving vectors from Oxford for the ILS RW19. The Oxford controller advised them of traffic in their 12 o'clock converging at FL61, they were at 4000ft. A second call about the same aircraft reported the aircraft as still 12 o'clock converging but now climbing at FL069. Moments later they spotted the aircraft diving down through the clouds to their port side. After the aircraft passed Oxford Radar apologised for not giving further information as they were responding to another call and the aircraft dived and flew past so fast. After the event the instructor requested Oxford get the information on the aircraft, they informed the pilot to call them on the ground to get the details.

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

THE P51 PILOT reports that they were not aware of any incident. They are reporting in response to a request for their recollection. They were not aware of any other aircraft. Their track took them just below controlled airspace to avoid typical VFR traffic. They tend to weave from side to side and vary height to gain good lookout as forward and down is very restricted in warbird type aircraft such as the P51.

THE OXFORD TRAINEE CONTROLLER reports that the DA40 pilot requested a Traffic Service from a position north of Cranfield at 4000ft, routing towards DTY. Shortly after initiating the service, the controller noticed fast moving opposite direction traffic squawking 7000, above the DA40's level. They called the traffic to the DA40 pilot with more than 5NM distance between them. The conflicting aircraft's level was erratic but always above the DA40. The conflicting aircraft maintained its track and climbed almost to the base of CAS. They called the traffic again, when the conflicting aircraft was around 3NM ahead and 3000ft above and still climbing. At this point they considered the conflicting aircraft was low risk to the DA40 and turned their attention to other aircraft under their control. When they returned their attention to the DA40 the conflicting aircraft had already passed by 1NM but was 500ft below the DA40. The aircraft appeared to have increased speed and was still descending. They did not see the closest

point of approach. they called the traffic for a third time, this time retrospectively, and asked the DA40 pilot if they had seen the traffic, the DA40 pilot replied that they did. They checked the Mode S aircraft identification feature of the conflicting aircraft in case it was required for an incident report [C/S supplied]. The OJTI informed the trainee that they were watching the situation at the closest point of approach, the vertical distance between the aircraft on crossing was around 1000ft, therefore they did not consider this a reportable incident. The trainee followed the OJTI's guidance as their mentor and did not submit any report until requested.

THE OXFORD OJTI CONTROLLER reports that they were closely monitoring the traffic situation. Traffic Information was initially passed by the trainee in good time and subsequently updated as appropriate. The trainee was talking to another aircraft when the two aircraft passed there was 1000ft between them and they were continuing in opposite directions. The OJTI did not believe that there was any conflict and did not think any further actions were necessary.

The controller perceived the severity of the incident as 'None'.

Factual Background

The weather at Cranfield was recorded as follows:

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METAR EGTC 141350Z 18005KT 110V220 9999 BKN045 22/11 Q1014
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Analysis and Investigation

CAA ATSI

At 1419:58 the pilot of the DA40 called Oxford Radar requesting a Traffic Service (Figure 1).

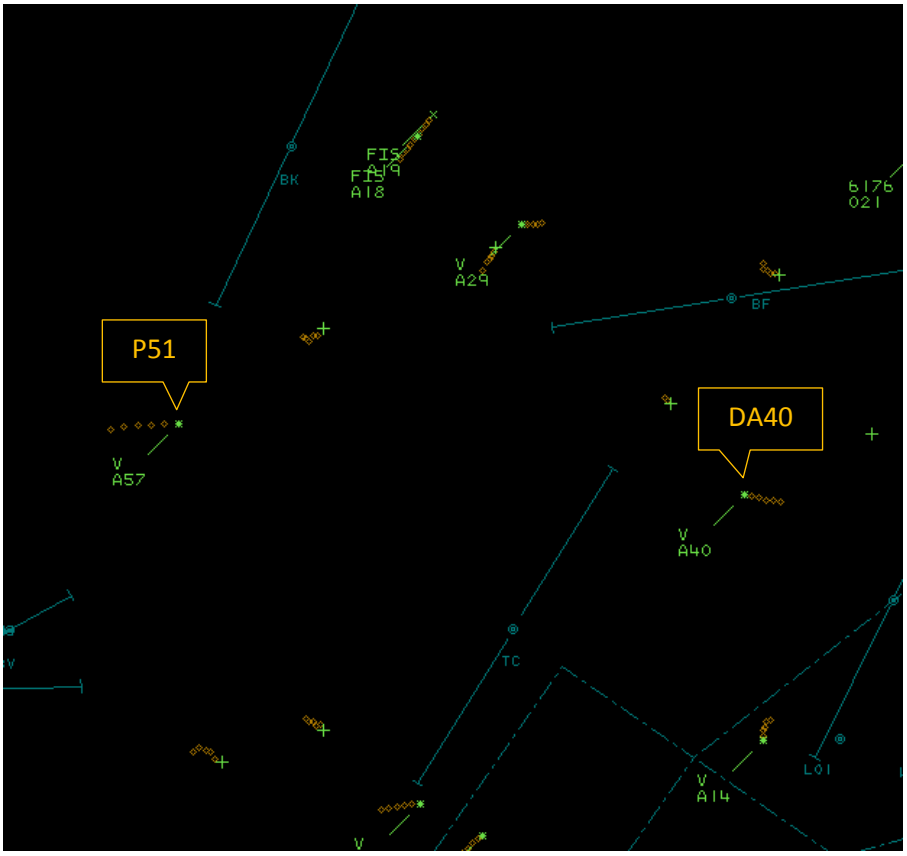


Figure 1: 1419:58 (a/c 16.5NM apart)

The trainee controller responded, asking the DA40 pilot to pass their details, and at 1420:32 issued a squawk and asked them to report their position. At 1420:45 the controller identified the

DA40 and confirmed the Traffic Service but advised that there would be reduced Traffic Information due to [their proximity to] the base of radar cover. (Figure 2).

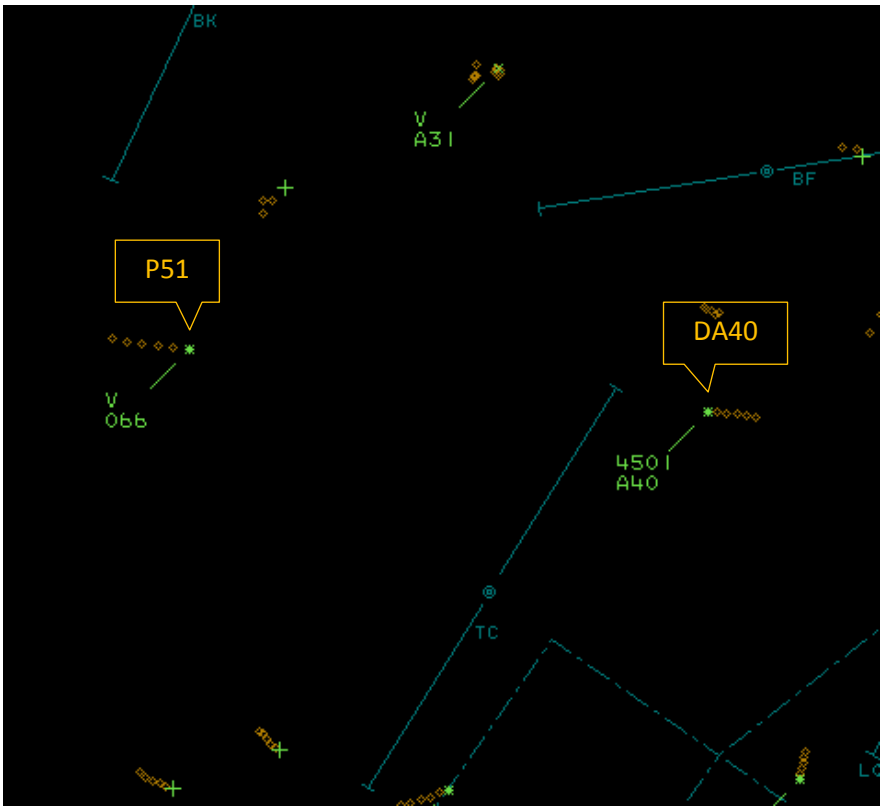


Figure 2: 1420:45 (a/c 11.8NM apart)

At 1421:02 the controller advised the DA40 pilot of "*traffic 12 o'clock 8 miles opposite direction, fast moving indicating altitude, correction, flight level 62 and descending*" which was acknowledged by the pilot (Figure 3).

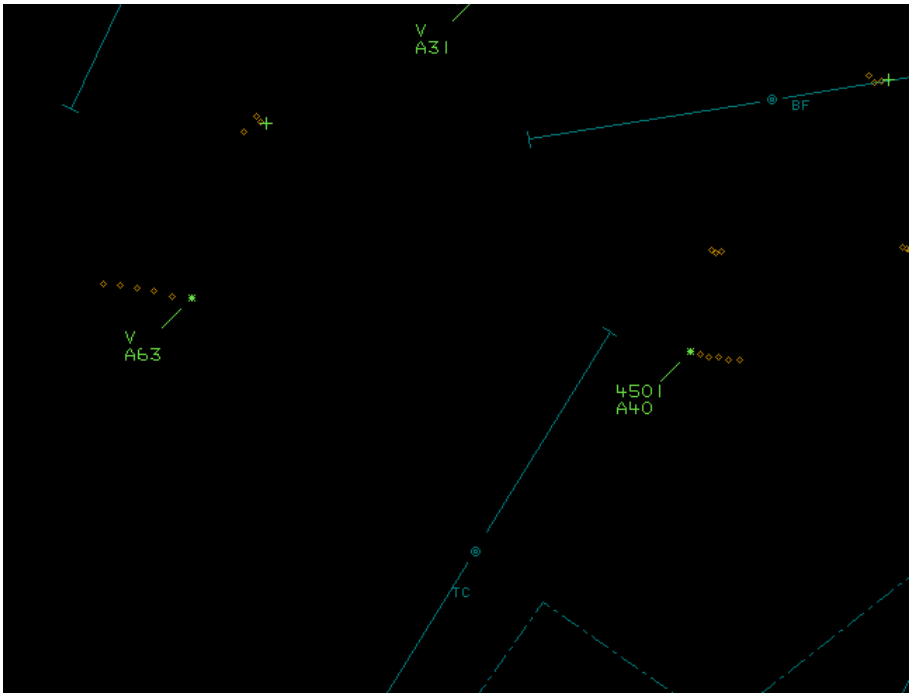


Figure 3: 1421:02 (a/c 10.7NM apart)

At 1421:50 the pilot of the DA40 requested an update on the traffic, and was given, at 1421:58, *"traffic now in your left half-past eleven opposite direction fast moving and flight level 69 climbing"* (Figure 4).

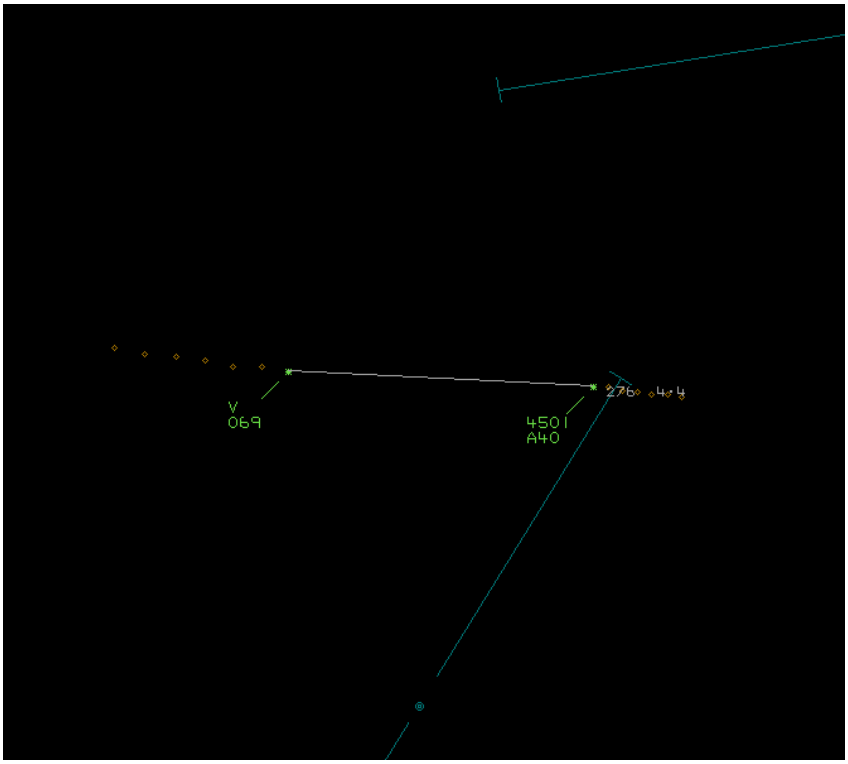


Figure 4: 1421:58

Between 1421:15 and 1422:40, the Oxford controller dealt with other aircraft calls. During this period, at 1422:15, the P51 was seen to commence a rapid descent with a subsequent significant increase in the aircraft's groundspeed from 1422:25 (Figure 5).

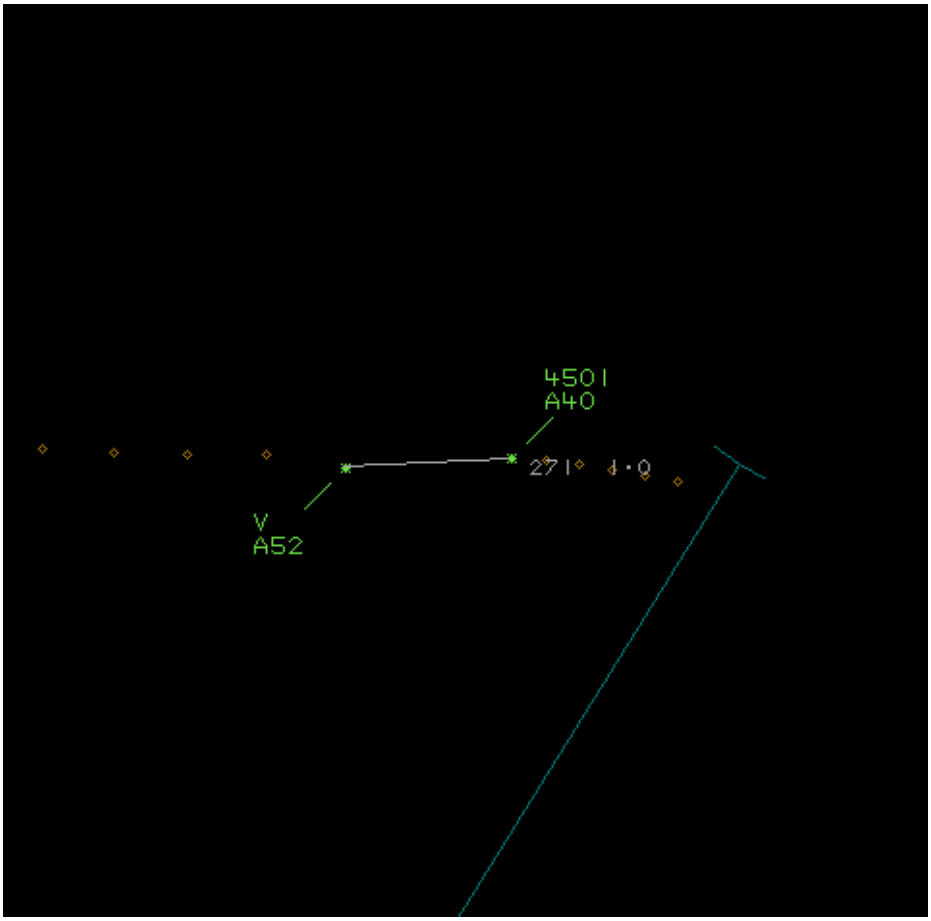


Figure 5: 1422:30 (P51 ground speed 283kts)

Due to the sweep rate of the area radar, CPA was estimated to have taken place between 1422:35 and 1422:41 (Figures 6 & 7).

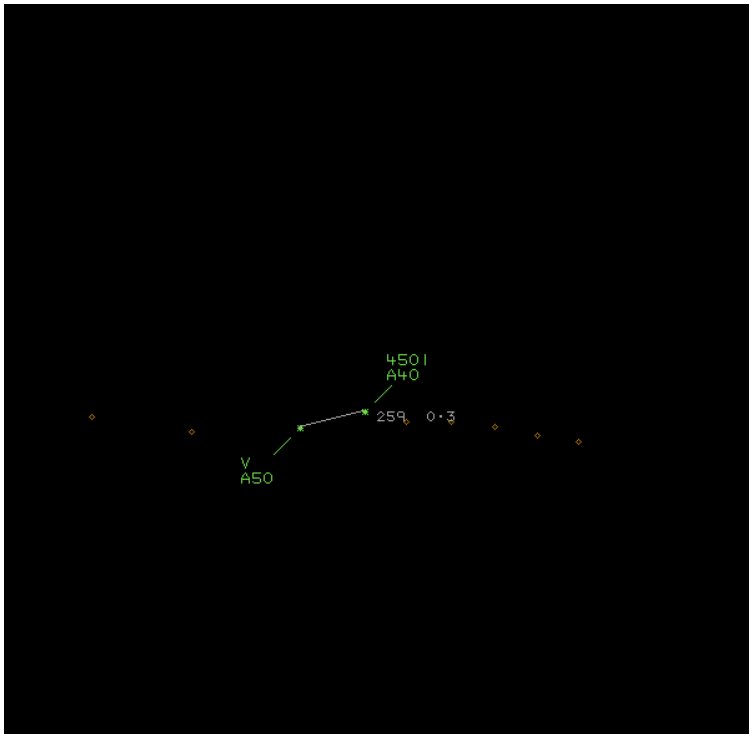


Figure 6: 1422:35 (P51 ground speed 283kts)

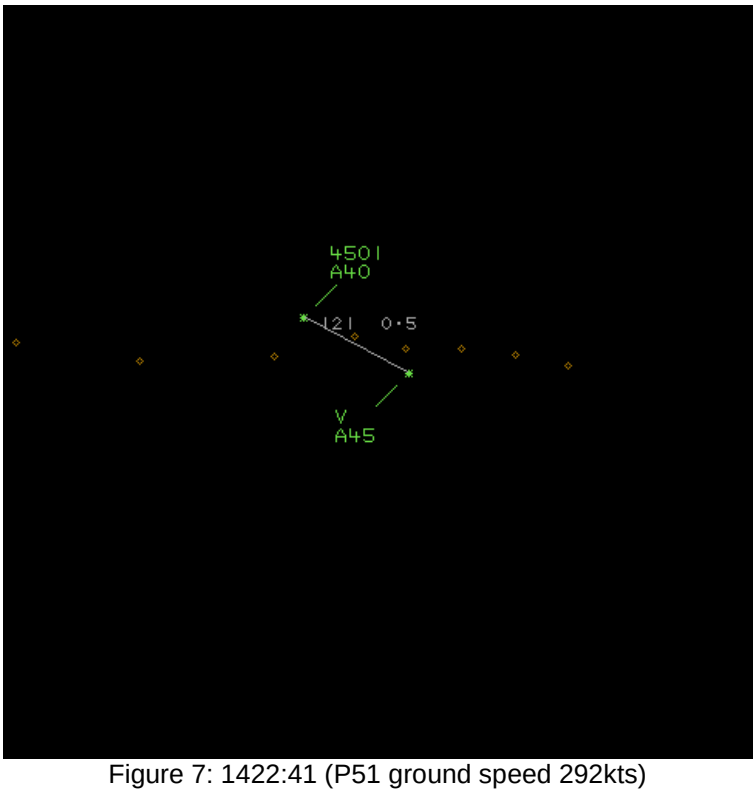


Figure 7: 1422:41 (P51 ground speed 292kts)

The Oxford controller continued to take other aircraft calls and did not return to the DA40 until 1423:38: "*Apologies. Not sure if you did see that opposite direction traffic, but it descended from FL70 and er straight through you level within seconds*." The DA40 pilot replied; "*yeah we saw him. It was down our left-hand side. Single turbo prop by the looks of it, but we couldn't identify it*." No official reference to an Airprox was made on the RTF. The DA40 was subsequently vectored for an approach to land at Oxford.

The pilot of the DA40 in their written report stated that 'a second call about the same aircraft came saying he was still 12 o'clock converging but now climbing and was at FL69. Moments later they spotted the aircraft diving down through the clouds to their port side and ATC didn't have time to advise them of this from how quick they descended and went past.' (sic).

The pilot of the P51 reported that they were unaware of the Airprox and did not recall seeing the DA40.

The Oxford trainee controller, who was being monitored by an OJTI, recalled passing Traffic Information on the P51 to the DA40 pilot, but due to their respective levels, did not consider there to be a conflict. The next time they turned their attention back to the DA40, the P51 had passed, 'by 1NM but 500ft below.' The trainee reported that their OJTI had been watching the situation, and at the time the aircraft crossed, there was still 1000ft between them.

The OJTI reported that they were 'closely monitoring the traffic situation' and that when the two aircraft passed, there was 1000ft between them, and didn't think that there was any conflict.

Traffic information on the P51 was passed to the DA40 pilot within seconds of the DA40 having been identified, and subsequently updated at the request of the pilot. Likely due to the original climb by the P51, the controller had clearly decided there was a minimal threat of confliction. At the time the P51 pilot then commenced a descent, the trainee controller was dealing with other aircraft calls, including one aircraft's request for a vectored approach at Oxford involving a change of air traffic service. Due to the rapid nature of the P51's descent, combined with an increase in the aircraft's speed, there would have been little opportunity for the controller to pass further timely traffic information had they been focussed on that part of the radar screen.

The Airprox took place in Class G airspace, where ultimately, regardless of the type of ATS being provided, both pilots are responsible for their own collision avoidance.

Oxford Investigation Report

There was a review of the RTF recordings and radar display. Both controllers were interviewed. The controllers were a trainee radar controller approaching the end of their training and a highly experienced OJTI. Traffic Information was passed to the DA40 pilot on the P51 twice whilst it was 2000ft above the level of the DA40. Both pieces of Traffic Information were timely and relevant. An aircraft called for service and its call blocked the RTF at the same time as the P51 started a rapid descent toward the DA40. There was no unused RTF time to pass an additional warning and the P51 passed south and slightly above the level of the DA40.

Findings and observations:

- Providence, in that the P51 started a rapid descent in conjunction with the RTF being blocked by an aircraft calling for service.
- Traffic Information had already been passed twice but for a level 2000ft above the DA40. The startle factor may have caused the DA40 pilot to believe the P51 was closer than it actually was.

ATS recommendations:

- None, routine encounter in Class G airspace with timely Traffic Information passed.

Contributory factor:

- Unexpected manoeuvres (high rate of descent) from the P51 pilot.

UKAB Secretariat

The DA40 and P51 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 DA40 and a P51 flew into proximity 5NM NNE of Cranfield airport at 1422Z on Sunday 14th June 2020. The DA40 pilot was operating under IFR in VMC and in receipt of a Traffic Service from Oxford Radar, the P51 pilot was operating under VFR in VMC and not in receipt of a service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and reports from the air traffic controller 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 began by looking at the actions of the P51 pilot. Members opined that the pilot could have provided better situational awareness to others if they had used the 7004 squawk to demonstrate that they would be carrying out non-standard manoeuvres and an unpredictable flight profile. The radar replay showed that the P51 had a ground speed of 290kts at CPA. With a slack wind this meant that the P51 pilot would have been flying above 250kts IAS below 10,000ft AMSL. With this being the case, the P51 pilot should have been in receipt of a surveillance-based Air Traffic Service to fulfil the regulations. Members wondered why they had not requested this type of service with an appropriate agency or ensured that the they kept the speed below 250kts IAS (**CF2 & 3**). As the P51 pilot was not in receipt of any type of Air Traffic Service they had no facility to increase their situational awareness regarding the DA40, neither did they see it at any point (**CF4 & 5**).

Turning to the actions of the DA40 pilot, they had received Traffic Information from the Oxford controller when the P51 was higher than them. Subsequently the P51 pilot carried out a rapid descent and appeared suddenly out of the cloud startling the DA40 crew. The unexpected appearance of the P51 did not allow time for the DA40 pilot to react (**CF6**). It was observed by members that, with a cloud base of about 4500ft, the P51 pilot would have descended through the cloud base (Broken at 4500 as reported by the DA40 pilot). The DA40 pilot did not receive updated Traffic Information from the Oxford controller because of the high speed and rapid change in altitude of the P51 (**CF4**).

The Board then looked at the actions of the Oxford controller, they had passed Traffic Information to the DA40 pilot when the P51 was above the DA40. The sudden change in altitude of the P51, coupled with another aircraft calling the controller and blocking the frequency (**CF1**), prevented the controller from passing updated Traffic Information to the DA40 pilot. The controller was under instruction and, although the controller's attention had been diverted by another aircraft, the OJTI had maintained oversight by continuously monitoring the separation of the DA40 and P51.

The Board then considered the risk. The Board agreed that the separation of 900ft vertically and 0.1NM laterally meant that the aircraft were separated with no risk of collision, but the actions of the P51 pilot had resulted in a situation that reduced the safety margins where safety was degraded, a risk Category C.

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

PART C: ASSESSMENT OF CONTRIBUTORY FACTOR(S) AND RISK

Contributory Factor(s):

	2020059		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Situational Awareness and Action		
1	Contextual	• Air/ Ground Radio Transmission Blocked/ Garbled	
	Flight Elements		
	• Regulations, Processes, Procedures and Compliance		
2	Human Factors	• Flight Operations Documentation and Publications	Regulations and/or procedures not fully complied with
	• Tactical Planning and Execution		
3	Human Factors	• Communications by Flight Crew with ANS	Appropriate ATS not requested by pilot
	• Situational Awareness of the Conflicting Aircraft and Action		
4	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
	• See and Avoid		
5	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
6	Human Factors	• Perception of Visual Information	Pilot was concerned by the proximity of the other aircraft

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:

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the controller could not pass updated Traffic Information due to another aircraft transmitting on the frequency.

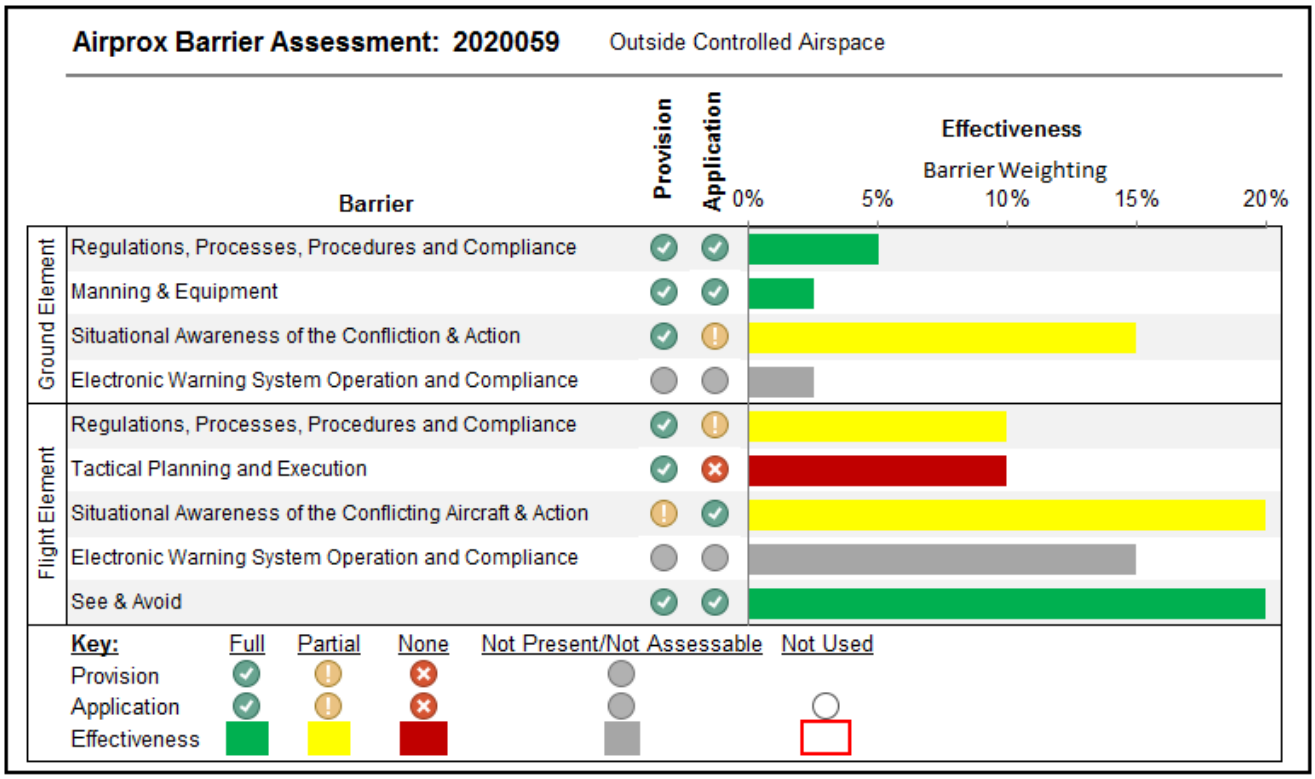
Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the P51 pilot was operating in Class G airspace above 250kts without an Air Traffic Service.

Tactical Planning and Execution was assessed as **ineffective** because the P51 pilot did not request an appropriate Air Traffic Service in accordance with his flight profile or squawk 7004 to indicate to local Air Traffic Control agencies their unpredictable flight profile.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the P51 pilot had no knowledge of the DA40, and the DA40 pilot did not receive updated Traffic Information when the P51 rapidly descended.

[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: 2020059
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