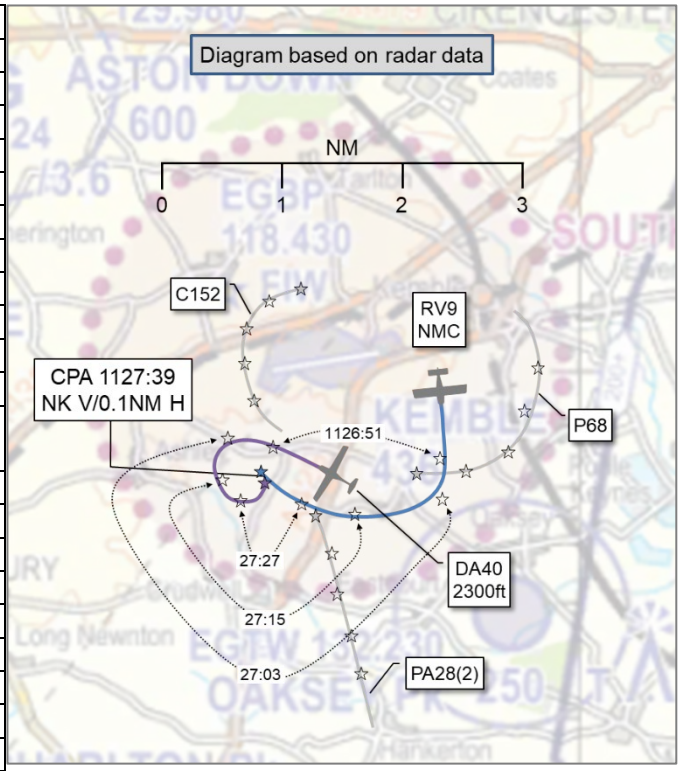
AIRPROX REPORT No 2022152

Date: 29 Jul 2022 Time: 1128Z Position: 5139N 00204W Location: Kemble Aerodrome

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	RV9	DA40
Operator	Civ FW	Civ FW
Airspace	Kemble ATZ	Kemble ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Kemble Info	Kemble Info
Altitude/FL	NK	2300ft
Transponder	A, S[1]	A, C, S+
Reported		
Colours	Grey	White, blue
Lighting	Strobes	Land, taxi, nav, strobes
Conditions	VMC	VMC
Visibility	>10km	NR
Altitude/FL	2000ft	2000ft
Altimeter	QFE (1004hPa)	NK (NK hPa)
Heading	360°	NR
Speed	120kt	NR
ACAS/TAS	SkyEcho	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	200ft V/200m H	150ft V/50m H
Recorded	NK V/0.1NM (185m) H	



THE RV9 PILOT reports flying to Kemble. When within sight of the airfield, they set the QFE and were told that RW08 was in use with a right-hand circuit. As they approached from the north-northwest, they flew east abeam the upwind end of RW08 and then proceeded to make a gentle right-hand turn, positioning behind another aircraft also joining. A further aircraft was visible, approaching from the south although still a good way off. They followed the aircraft in front, maintaining a safe distance behind, but were also aware of another aircraft that called descending deadside. When they were west abeam the airfield at 2000ft agl, and preparing to descend on the deadside, they were suddenly aware of an aircraft in the 9 o'clock position, at the same height and with an estimated heading of 080°. They dived, narrowly missing it. On the deadside call to 'Air Traffic' they stated that they had an 'Airmiss' to report. On landing they proceeded straight to the Tower to explain.

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

THE DA40 STUDENT PILOT reports that this was their second solo general handling flight, into which they decided to incorporate some circuits. After speaking to their operations department, there were no circuits available at [home airfield] so they were offered some at Kemble instead. The circuits were booked with Kemble who were made aware of the details of the flight. The DA40 student pilot had been to Kemble on three separate occasions prior to the flight and had completed their first solo there a couple of weeks prior. They were happy with the procedures at Kemble and the circuit pattern which was briefed with the instructor before being signed off to go solo. The route to Kemble was uneventful; they switched from Oxford Radar to Kemble Information just before Swindon with about 15NM to run to the airfield to request airfield information for circuits. The runway in use was RW08 with a right-hand circuit and they were told to report overhead. As they continued inbound to the airfield, multiple other aircraft came on frequency to also request joining information and they could hear others already in the

[1] Reported as Modes A and C but only Modes A and S observed.

circuit. At 2000ft on the QFE, and heading towards the overhead, they became visual with traffic ahead and traffic on the left. At this point the frequency was extremely crowded and ascertaining who was positioned where was extremely difficult; they were concentrating on traffic ahead, with which they were visual. The traffic directly ahead was much slower moving and they were closing in on them quite quickly. Instinctively, they made a decision to conduct one left-hand orbit, something which at the time felt like the correct decision, having flown their last 4 sessions of solo circuits at [home airfield], where they are frequently instructed to conduct orbits to maintain safe separation. Whilst conducting the orbit they witnessed a low-wing single-engine aircraft pass underneath and to the left side. They were unable to identify the aircraft or make an accurate estimation of its level. It appeared to be quite close. They were unaware of the position of the traffic prior to conducting the orbit as they were only visual with the traffic ahead. After completing the orbit they were still visual with the traffic ahead and happy with separation. After reporting overhead and descending on the dead side, the circuit felt overwhelmingly busy. The radio was in constant use by all aircraft. They recalled the 'controller' in the Tower changing and the new 'controller' trying to make sense of everyone's position. It appeared that they were finding it hard with all the aircraft on frequency and it was even harder for the DA40 student pilot, in the air, to work out where everyone was. At one point they remembered the 'controller' saying that there were 7 aircraft in the circuit. Their overall feeling was that it was quite a dangerous situation. Of the three circuit patterns they completed, the runway was occupied twice forcing them to make two go-arounds. On one of the go-arounds an aircraft was climbing out very slowly, way to the left of the runway centreline. It was difficult to predict and understand people's intentions and their positions, the frequency was oversaturated and there were far too many aircraft in the circuit. After making one of the two go-arounds and one touch-and-go, on the second go-around they decided to leave the circuit and depart towards the east. After making these intentions clear on the radio the 'controller' was thankful, probably due to the fact that there was one less aircraft to deal with.

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

THE KEMBLE TRAINEE AFISO reports that they were a student AFISO under supervision with an extremely busy visual circuit. Traffic built to 13 aircraft on frequency. A good steady flow of Traffic Information was maintained. Unusually, a P68 aircraft reported it was maintaining 2000ft in the overhead. There were multiple reports from the AFISO of joining traffic. Kemble utilises the standard overhead join. The pilot of the reporting aircraft reported visual with joining traffic. Further Traffic Information was transmitted stating that 5 aircraft were joining. The reporting pilot then made a transmission that they would report an 'Airmiss' on landing.

Factual Background

The weather at Gloucester and Brize Norton was recorded as follows:

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METAR EGBJ 291120Z 10003KT 9999 FEW049 23/11 Q1018
METAR EGVN 291120Z 09005KT CAVOK 24/09 Q1019 NOSIG RMK BLU BLU=
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Analysis and Investigation

CAA ATSI

Synopsis

The RV9 was on a VFR flight inbound to Kemble and the DA40 a VFR training flight from [home airfield] to complete some pre-booked circuits at Kemble.

At 1116:40 the pilot of the DA40 called Kemble for the airfield information, requesting to join the circuit. The Kemble AFISO, a trainee under supervision, passed the runway in use (RW08) advising that it was a right-hand circuit and instructing the pilot to report the overhead which the pilot acknowledged.

At this time the AFISO had two other aircraft in the circuit, a PA28 and another aircraft, the type of which ATSI was unable to identify and so is referred to within this report as U/I.

Between 1116:40 and 1122:00 the AFISO dealt with two departures, two transit aircraft being provided with a Basic Service, another aircraft starting and a further inbound aircraft (C152).

At 1122:00 the pilot of the RV9 called Kemble advising that they had copied that it was RW08 in use with a right-hand circuit. The AFISO confirmed the QFE and requested a call in the overhead advising *"we have two others joining"* which the RV9 pilot acknowledged, passing their position as *"nine miles to run from the north-northwest"* (Figure 1).

Note – area radar replay displaying aircraft levels as Flight Levels – add 160ft for altitude or deduct 240ft for height on the Kemble QFE.

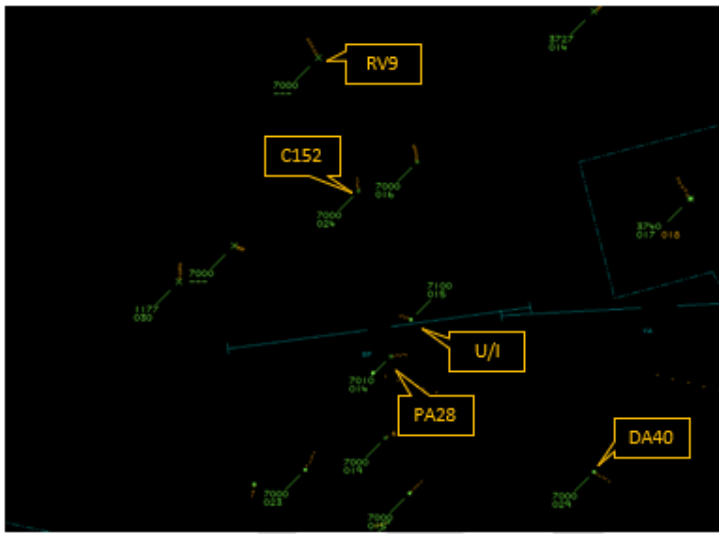


Figure 1 – 1122:00

At 1122:25 two pilots transmitted simultaneously. The first was the pilot of the PA28 in the circuit who reported downwind for a touch-and-go. The second transmission, the beginning of which was blocked by the PA28 pilot's transmission, was the pilot of a previously departing aircraft, a P68, advising *"…. 2000ft and will continue orbits at 2000ft over the airfield"*. The AFISO replied to the pilot of the PA28 instructing them to report final. The AFISO did not reply to the pilot of the P68 as immediately following their reply to the PA28 the pilot of the U/I aircraft also in the circuit reported downwind (Figure 2).

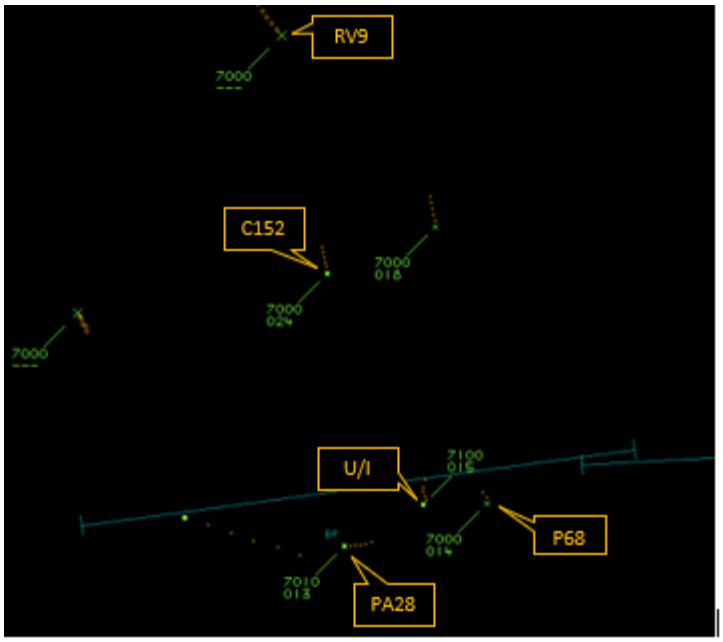


Figure 2 – 1122:25

Following this, the pilot of one of the two transit aircraft and the pilot of another previously departing aircraft both called leaving the frequency. Then a pilot of an aircraft on the ground called, but the AFISO called the pilot of the P68 instead, at 1123:40, asking *"confirm which direction you departing to?"* The P68 pilot replied: "*we are maintaining the overhead, 2000ft right-hand orbit, erm following the circuit pattern at 2000ft"*, The AFISO asked *"so you're remaining in the overhead at 2000ft?"* to which the P68 pilot confirmed. The AFSIO continued *"roger – just keep a good lookout, we have three joining to the overhead"*, which the P68 pilot acknowledged.

At 1124:00 there were again two simultaneous transmissions from pilots. The first was the pilot of the PA28 in the circuit reporting final, the second, a pilot of another PA28, (PA28(2)), calling for join from the south (Figure 3).

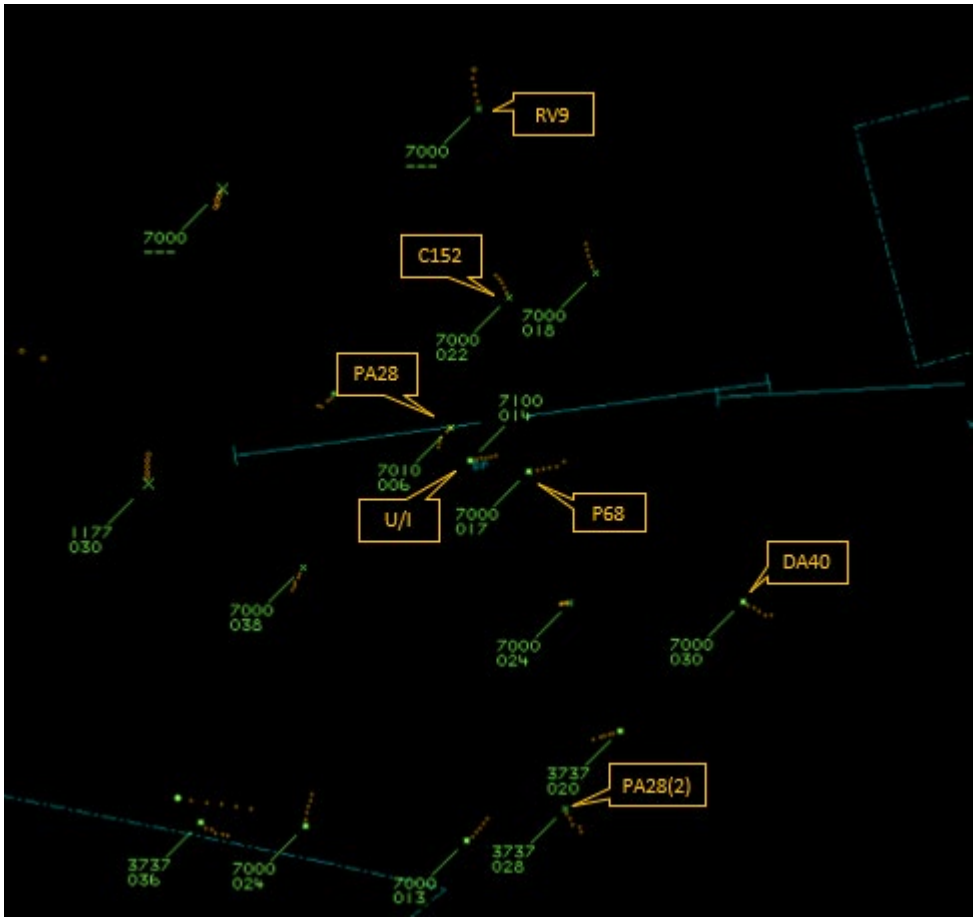


Figure 3 – 1124:00

The AFISO responded to the pilot of the PA28 in the circuit, giving them the runway for landing although the pilot subsequently advised that they would be going around from that approach. The AFISO then replied to the pilot of the PA28(2), passing the runway, circuit direction and QFE. They then instructed that pilot to report in the overhead advising that *"we have three joining and one in the overhead"*, which was acknowledged by the pilot.

At 1124:50 the pilot of the U/I aircraft reported on final for a landing and was given the runway by the AFISO (Figure 4).

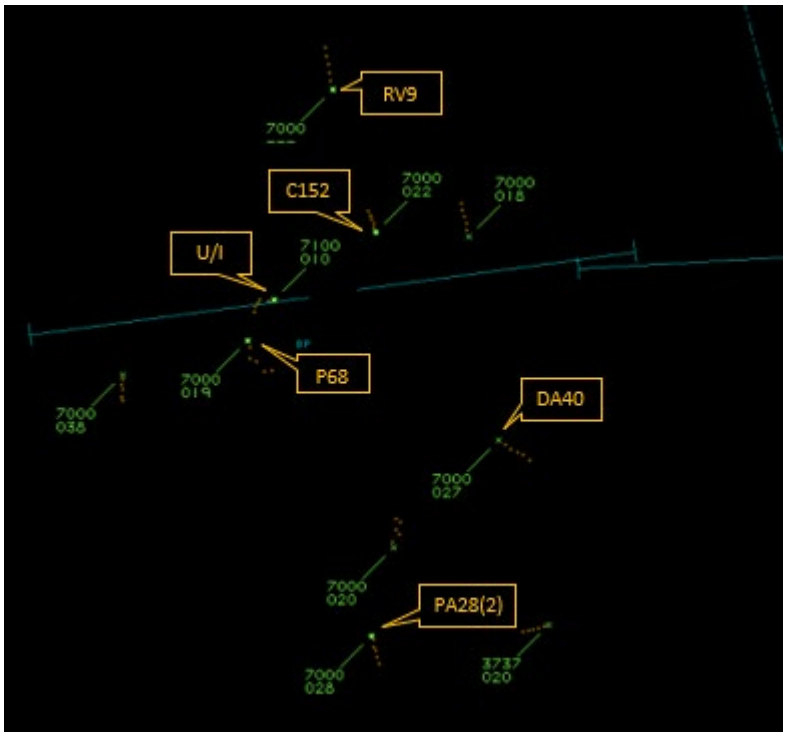


Figure 4 – 1124:50

At 1125:10 the pilot of an aircraft on the ground called again and was given taxi instructions by the AFISO.

At 1125:50 the pilot of the C152 reported in the overhead and was instructed to report crosswind (Figure 5).

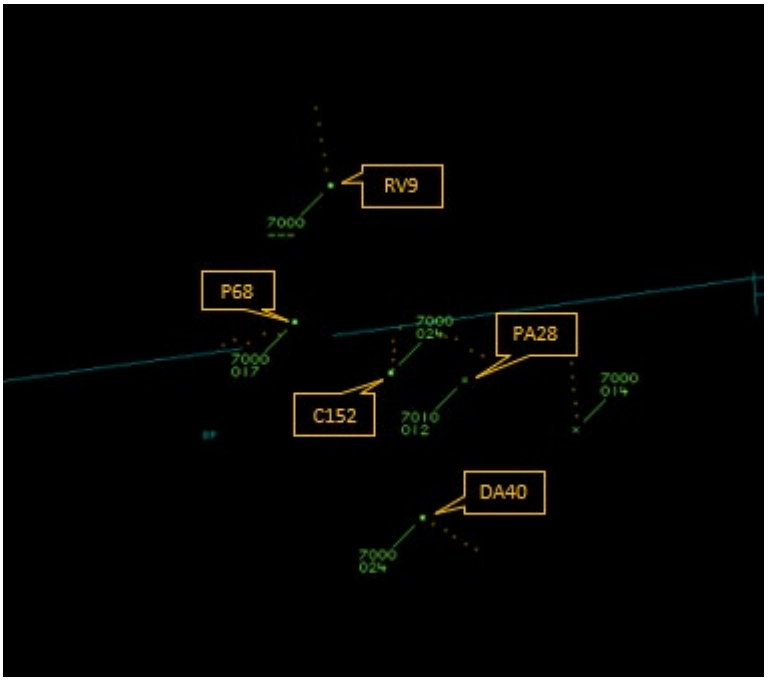


Figure 5 – 1125:50

Immediately following this, at 1126:00 the pilot of the RV9 reported *"just passing through the overhead and visual with one aircraft just to the south, similar level"*. The AFISO instructed them to

report crosswind advising *"believe there should be one ahead",* which was acknowledged by the RV9 pilot.

At 1126:15 the AFISO dealt with a previously landing aircraft.

At 1126:30 the pilot of an R44 helicopter called for re-join from the north and was passed joining instructions by the AFISO.

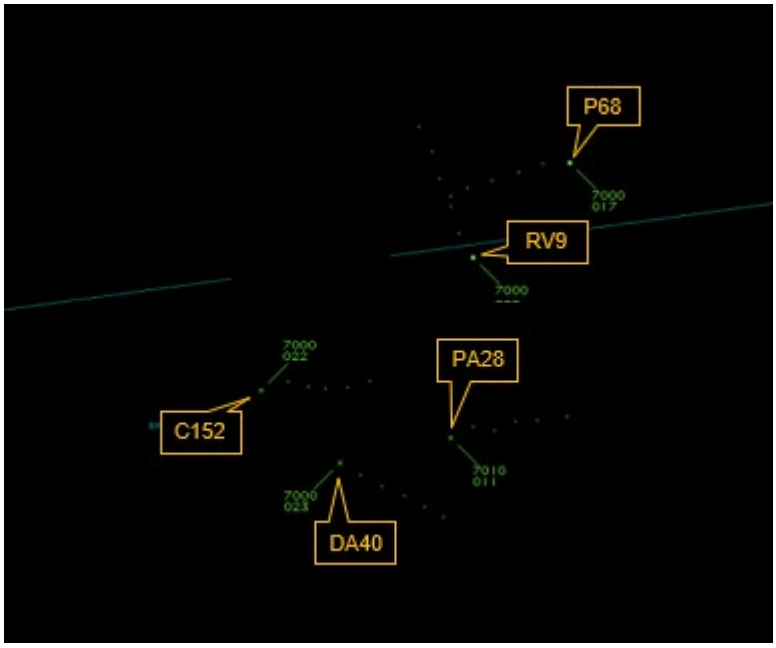


Figure 7 – 1126:30

At 1127:08 the pilot of the PA28 in the circuit reported late downwind for a touch-and-go and was instructed to report final. The AFISO then dealt with another aircraft on the ground.

At 1127:20 the pilot of a second aircraft on the ground called up. At this point on the radar replay, the DA40 was seen to have commenced a left-hand orbit (Figure 8).

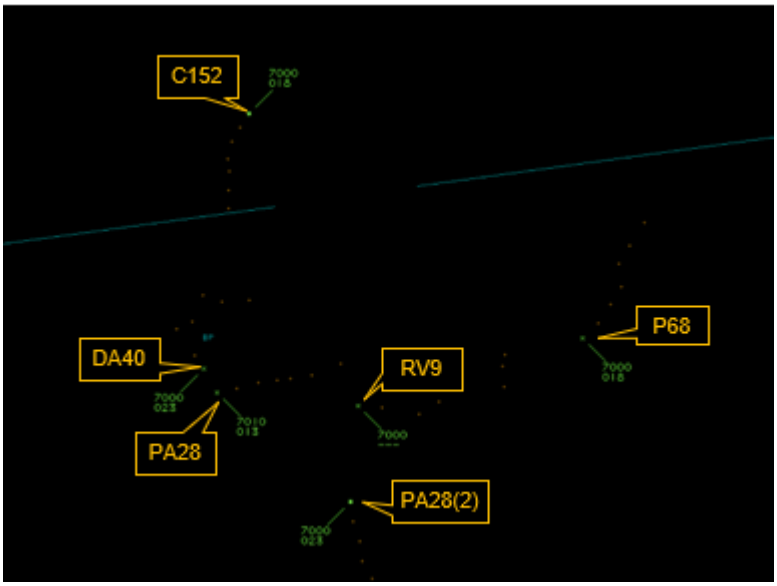


Figure 8 – 1127:20

CPA occurred at 1127:35 just as the AFISO was responding to another pilot, calling for re-join from the south (Figure 9).

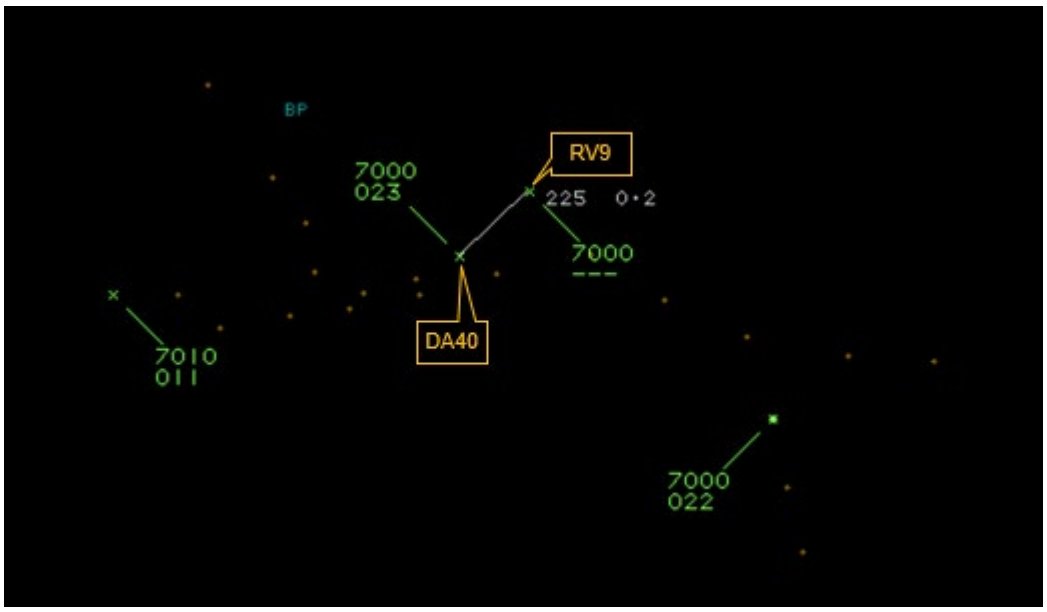


Figure 9 – 1127:35 - CPA

Analysis

ATSI reviewed reports from both pilots and the Kemble AFISO, together with the area radar replay and Kemble RTF. Kemble ATC did not complete an investigation report.

During this period and up to the end of the recording made available to ATSI (ended 1157), the transmissions on the Kemble frequency were near continuous. It was also noted that less than 10sec after CPA the AFISO advised a joining aircraft that there were *"five joining and one in the overhead"*. Then towards the end of this period the AFISO advised inbound aircraft that there were seven joining.

The pilot of the RV9 reported seeing an aircraft joining from the south "*though was still a good way off"*. It cannot be determined if this was the DA40, the PA28(2) or even the P68. They reported that they *"followed the aircraft in front of me"*, but again it cannot be determined if this was the DA40 from the south or the C152 which had also joined from the north, and which was well ahead of them by this stage.

The pilot of the DA40 reported that as they approached the overhead they *"became visual with traffic ahead and traffic on my left"*. It cannot be easily determined as to which aircraft they were referring to, but the traffic ahead was likely to be the C152 as the DA40 pilot reported that, because they were overhauling that aircraft, they elected to carry out a left-hand orbit. This was apparently based on their experience of circuits at [home airfield]. They reported that they had to carry out two go-arounds before eventually leaving the circuit believing the frequency *"saturated*" and *"far too many aircraft in the circuit".*

The AFISO was a trainee under supervision, and their manner was calm and controlled. Traffic Information however tended to be generic in manner i.e. *"we have three joining and one in the overhead".* Little or no other Traffic Information was passed to pilots as they reported in the overhead or at various other positions in the circuit regarding other aircraft ahead of them.

Section 1, Chapter 8 of the CAP797 Flight Information Service Officer Manual requires:

> *8.15 Whilst generic traffic information provided to a pilot may be useful to indicate how busy the aerodrome environment is, as the pilot gets closer to the aerodrome and is required to integrate with other traffic, specific traffic information is needed in order to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions.*

After having turned crosswind into the circuit at 1130:10 the pilot of the RV9 advised that they intended to report an *"Airmiss"* once they had landed. Shortly after this, there was a change of AFISO. It cannot be confirmed, due a lack of full reporting by Kemble, whether this was the trainer or another AFISO. However, it was apparent from the subsequent RTF that the new AFISO appeared to be unsure as to the exact positions of the aircraft in the circuit for a number of minutes following their having taken over the position, giving the impression that the handover/takeover was inadequate likely due to situational awareness having already been lost.

Aircraft joining at Kemble are required to route to the overhead. On this occasion the traffic situation was further complicated by the presence of the P68 flying above the circuit in the overhead at 2000ft, thereby always being factor traffic to joining aircraft. Other than increasing traffic numbers, the presence of the P68 did not appear to contribute to the Airprox event itself.

According to the Kemble Senior FISO the airport, which is PPR only for non-based aircraft, operates a slot-based system only for IAP arrivals. It is not used as a tool for controlling (VFR) circuit traffic numbers. There are no maximum numbers for circuit aircraft specified in the unit MAFIS.

Irrespective of the lack of specific Traffic Information, it was the non-standard, left-hand orbit completed by the DA40 pilot which appears to have brought them into confliction with the RV9. Their experience of orbiting in the circuit at [home airfield] where an air traffic control service is provided and where this can be utilised to better and more safely space traffic in the circuit by controllers, led the pilot to believe that it was a safe and appropriate manoeuvre to conduct at a unit where the service is Aerodrome Flight Information. An alternative manoeuvre may have been to remain in the overhead in a right-hand pattern and reassess the traffic situation before then attempting to integrate once more.

Conclusion

The pilot of the DA40 carried out a left-hand orbit whilst conducting an overhead join, bringing them into confliction with the RV9 joining in the overhead behind them.

Situational awareness of pilots and the AFISO team appeared to be very limited with no specific Traffic Information being passed by the AFISO.

Kemble ATC is reminded of its obligations under Regulation (EU) 2017/373 of 1 March 2017 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 ATM/ANS.OR.A.065 paragraphs (a) through (e), with regards to the initial submission of a mandatory occurrence report and any follow up reports within the specified timescales as defined within Regulations (EU) 996/2010 and 376/2014.

UKAB Secretariat

The RV9 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.[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 an RV9 and a DA40 flew into proximity in the Kemble overhead at 1128Z on Friday 29th July 2022. Both pilots were operating under VFR in VMC, both in receipt of an AFIS from Kemble Information.

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

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the AFISO 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 circuit occupancy at Kemble and remarked that it had been over-loaded. Furthermore, there did not appear to be a mechanism whereby the number of aircraft in and joining the circuit pattern could be limited to a sensible degree (**CF1**). The trainee AFISO was plainly faced with a daunting task in their effort to provide the required service, but the workload no doubt contributed in large part to their only providing generic Traffic Information (**CF2**, **CF4**) which in turn limited the pilots' situational awareness. The Board felt that the supervising AFISO could have prompted the trainee AFISO to provide more specific Traffic Information or, faced with particularly complex circuit pattern traffic, perhaps have taken-over if they detected that the trainee AFISO had been operating at the limit of their capacity (**CF3**). Additionally, the frequency congestion caused by the number of pilots in the ATZ (**CF5**) resulted in several dual-transmissions, further reducing situational awareness (**CF6**). Turning to the pilots, the Board felt that although the DA40 student pilot's orbit to the left as they approached the overhead had been ill-advised (**CF7**), it was pointed out that the student pilot had been used to operating in an ATC environment in the visual circuit where they could be instructed to orbit by the controller in order to achieve separation, including being instructed to orbit in the opposite direction to the circuit direction. Having been to Kemble on 3 prior occasions, and completed their first solo there, the Board wondered to what degree they had been briefed by the supervising instructor. Some members questioned how the supervising instructor could have achieved their supervision of the student pilot while they were not at the airfield at which the solo circuits were being flown. The RV9 pilot had joined from the north and had been visual with traffic to the south (probably PA28(2) the Board thought) but it was apparent that neither the RV9 nor DA40 pilots had had situational awareness on the other (**CF9**). This resulted in the RV9 pilot not assimilating that the DA40 had been ahead (**CF10**) and consequently not integrating with it (**CF8**). The Board discussed the direction of turn in the circuit and noted that, apart from the requirement to conduct circuits to the left or right as notified, there was no requirement in air law to turn in a particular direction when not 'in the circuit pattern'. It was noted that the CAA 'GA Safety Poster' titled 'The Standard "Overhead" Join'[4] states the following:

> If unable to ascertain runway in use continue circling around the overhead. When circuit direction is ascertained call "Overhead, joining for runway..." (All turns must then be in the circuit direction.)

Whilst this applied if the circuit direction was in doubt, the pilots in this case were all appraised of the circuit direction by the trainee AFISO. Hence, in theory, all turns should then have been in the circuit direction. However, the Board reiterated that this requirement was advice, contained on a 'poster' and not specified in air law, which states that pilots are simply required to 'conform with the pattern of traffic formed by other aircraft in operation'. In terms of predictability, and hence safety, members agreed that it was preferable to turn in the circuit direction whenever possible and that this should present no difficulties when joining via the overhead. In this case a better course of action for the DA40 student pilot would have been to continue a right turn, remain in the overhead until they had ascertained the other pilots' positions and intentions in the circuit and perhaps question whether the visual circuit was too busy for their level of experience. Members agreed that guidance on the specific issue of acceptable circuit complexity by the supervising instructor would have been of great assistance. Turning to risk, members agreed that it was unfortunate that the RV9 TAS did not alert (**CF11**), leaving see-and-avoid as the only remaining mitigation to mid-air collision. The DA40 student pilot did not see the RV9 until after CPA, effectively a non-sighting (**CF13**), and the RV9 pilot saw the DA40 at a late stage (**CF12**) when they were able to take emergency avoiding action. Although this had reduced the risk of collision, members agreed that separation at CPA was such that safety had been much reduced (**CF14**). In addition, the Board felt that the root of the problem lay in the level and complexity of traffic in and around the circuit and further discussed the means available to an AFISO to limit the traffic. It was agreed that, in the case of an AFIS, the only method for doing so was to enforce a provision required by the airfield

[4] https://publicapps.caa.co.uk/docs/33/ga_srgwebStandardOverheadJoinPosterJan09.pdf

operator, i.e. an appropriate entry in the UK AIP. To that end, the Board resolved to recommend that, 'Cotswold Airport reviews published procedures and considers creation of circuit occupancy limitations to ensure that traffic complexity levels are appropriate.'.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022152			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Organisational	• Aeronautical Information Services	An event involving the provision of Aeronautical Information	The Ground entity's regulations or procedures were inadequate
2	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Manning and Equipment			
3	Human Factors	• Recurrent/OJT Instruction or Training	Events involving on the job training of individuals/ personnel	
	• Situational Awareness and Action			
4	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
5	Contextual	• Frequency Congestion	An event involving frequency congestion that reduces the effectiveness of communications	
6	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Tactical Planning and Execution			
7	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
8	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			
9	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
10	Human Factors	• Understanding/ Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• Electronic Warning System Operation and Compliance			
11	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			
12	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
13	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			
14	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.

Recommendation: Cotswold Airport reviews published procedures and considers creation of circuit occupancy limitations to ensure that traffic complexity levels are appropriate.

Safety Barrier Assessment[5]

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Kemble airfield regulation made no provision for maximum circuit occupancy.

Manning and Equipment were assessed as **partially effective** because the AFISO supervisor did not direct that the trainee AFISO provide the required degree of Traffic Information.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the AFISO trainee and supervisor did not have situational awareness sufficient to be aware of the confliction.

Flight Elements:

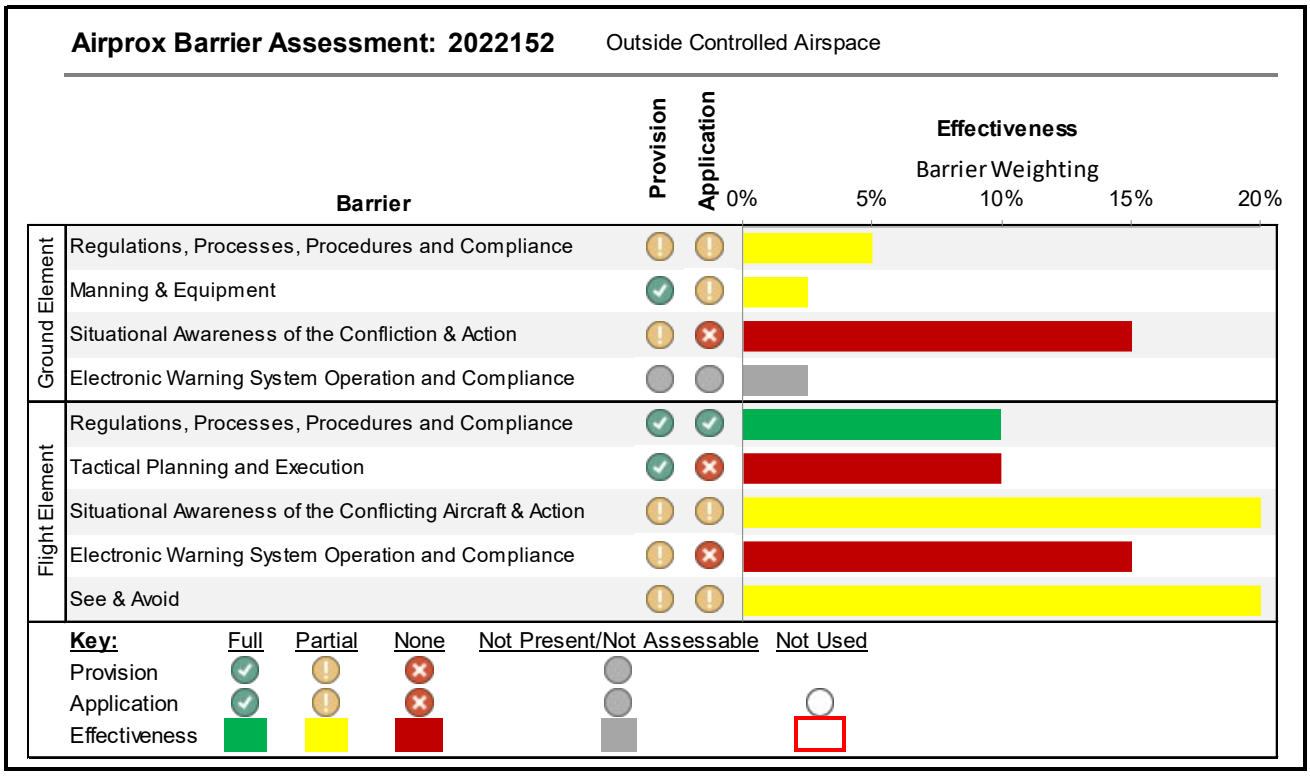
Tactical Planning and Execution was assessed as **ineffective** because the DA40 pilot orbited left without being aware of the RV9 behind them and the RV9 pilot was not able to integrate with the DA40, joining ahead.

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

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the RV9 TAS did not alert.

See and Avoid were assessed as **partially effective** because, although the DA40 pilot saw the RV9 after CPA, effectively a non-sighting, the RV9 pilot saw the DA40 at a late stage and took action.

[5] 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: 2022152
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