AIRPROX REPORT No 2021080

Date: 11 Jun 2021 Time: 1329Z Position: 5121N 00032W Location: Fairoaks

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28(1)	Robin R100
Operator	Civ FW	Civ FW
Airspace	Fairoaks ATZ	Fairoaks ATZ
Class	G	G
Rules	VFR	VFR
Service	AFIS	AFIS
Provider	Fairoaks	Fairoaks
Altitude/FL	400ft	600ft
Transponder	A, C	A, C, S
Reported		
Colours	White	White, Blue
Lighting	Strobe, Beacon, Landing	Beacon, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	500ft	700ft
Altimeter	QNH (1020hPa)	QNH
Heading	240°	240°
Speed	70kt	75kt
ACAS/TAS	SkyEcho	SkyEcho
Alert	None	Information
Separation		
Reported	50ft V/15-20m H	100ft V/40m H
Recorded	200ft V/0.1NM H	

THE PA28(1) PILOT reports that they were in the circuit and heard an aircraft (the R100) call to join and being told by the Tower that there was one in the circuit. PA28(2) joined and asked for traffic details and was told one late downwind (PA28(1)) and one joining crosswind from the north (the R100). The PA28(2) pilot said they would keep up their speed to join the circuit ahead of the R100. The PA28(1) pilot reported final and then recalled looking out of the left window and seeing the R100 very close and now turning right into them. It was closing on a perpendicular track and closing fast. The PA28(2) pilot then called that they could see two aircraft on top of each other on final. The pilot could see the R100 turning left to final, now very close and descending on top of them. The other pilot clearly didn't see their aircraft on final and continued to turn final to now be slightly above. Once the aircraft had turned they lost sight of it as it was now above them (they couldn't see above due to the PA28 window visibility) as it transited just above with roughly 15-20m separation. They decided the safest thing to do was to break off from the approach (to the right) and parallel the runway while maintaining altitude around 200-300ft agl. Once away from the runway centreline they could then see the R100 landing on RW24. They noted that they were a flight instructor with about 600 hours total time and this was uncomfortably close, and the closest to any aircraft they had ever been when airborne.

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

THE R100 PILOT reports that they were approaching Fairoaks from the North West, from Woodley NDB via a Heathrow VFR transit. They called up Fairoaks Information, and roughly as they entered Fairoaks zone agreed with Tower that they would join crosswind from the Heathrow direction for 24LH, behind a company PA28 that they could see had just completed take-off and could see turning onto crosswind. An additional PA28(2) called up to request to join downwind from the west, but Fairoaks Information advised them that there was (PA28(1) C/S) on downwind and (R100 C/S) about to complete a crosswind and would be ahead. PA28(2) said that they were quite fast, and would overtake the R100

to get ahead on downwind. The R100 pilot could see PA28(1) about 2/3 along their downwind leg as they joined crosswind in normal circuit position (not a shortened join over the runway), so assumed that they were no danger, and they started searching the sky for PA28(2) that was clearly going to be their main threat. Fairoaks told PA28(2) that they weren't that fast, and they stated on the radio that they would give way to the R100. The R100 pilot was on the downwind leg and had called "downwind to land," and then spotted PA28(2) flying parallel to them, about 150ft off their starboard wing, roughly at the same level, and they told Fairoaks Information that they could see an aircraft to the right of their wing on a parallel course. As PA28(2) had agreed to give way to them, they put on a bit more speed to increase separation from this "fast" aircraft, rather than having them right on their tail, or even overtaking and turning into the R100 if they flew the rest of the circuit at normal circuit speed as the other aircraft still seemed to be going quite fast. Turning onto base they lost sight of PA28(2) under their wings, and their attention was now towards the airfield for landing. As they turned onto final they called "final to land", at which point they thought they heard Fairoaks Information warning them that they could see two aircraft were on final. They started looking around, assuming that PA28(2) had got on top of them, but then saw an aircraft about a hundred feet under the nose, forward and to the right. PA28(1) pilot said on the radio that they had seen the R100 and performed an aborted approach, climbing away to the right. As PA28(1) had cleared to the right, and PA28(2) was probably along shortly, instead of joining the go-around so close to PA28(1) and adding to crowding in the circuit they stated their intention to continue to land, Fairoaks Information agreed, and they landed, and went straight to the Tower to discuss with the current radio operator, and then subsequently the instructor in PA28(1) to figure out what happened. The pilot noted the following conclusions: 1: It was their responsibility to keep track of PA28(1) and ensure that they didn't overtake it, as PA28(1) had right of way in the circuit and on finals. They must not allow other aircraft's aggressive circuit behaviour to nudge them into doing something that erodes safety margins, like flying fast in a circuit often full of student training aircraft. 2: Although they thought PA28(1) was a very safe distance ahead as they joined the circuit, the extra speed they put on to increase separation from PA28(2) allowed them to catch up much more than they'd have thought possible, and placed both aircraft at unnecessary risk. 3: They must be more aware that the difference in speed and ground covered can be significant between even a modest aircraft like the Robin at cruise versus training aircraft at normal circuit speed. 4: If the Tower hadn't alerted them, or they hadn't spotted each other on final, this could have been a far worse outcome.

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

THE FAIROAKS AFISO reports that two Fairoaks Information AFISOs were on duty on the day of the Airprox, with one on a planned break and not in the Tower at the time of the Airprox. The runway in use was RW24 with a left-hand circuit. PA28(1) was conducting a dual circuit training flight with an ab initio student pilot. The R100 called inbound from the northwest via the London CTR. PA28(1) had recently completed a touch and go and was safely established on the climb out for RW24. The R100 pilot stated the intention to join crosswind behind PA28(1). The AFISO observed the R100 joining crosswind at a standard position, altitude and speed. Additionally, they observed PA28(1) as being approximately mid to late downwind at this time. PA28(2) called inbound from the south and was provided with the standard runway, circuit direction, QNH and Traffic Information. The PA28(2) pilot stated they were faster than the other aircraft, intended to keep up their speed up and join between the downwind and crosswind traffic. The AFISO had stated the position of both the circuit and joining aircraft to PA28(2) as part of the joining information; however, they did not recall providing the aircraft types. They recommended caution to PA28(2) regarding the relative speed of the aircraft established downwind and crosswind. The R100 had established downwind when the AFISO first achieved visual reference with PA28(2), it was to the south of the R100 and appeared to be on a parallel track. The left base position on RW24 at Fairoaks airports is the furthest point in the circuit from the control tower. Maintaining visual reference on essentially white aircraft against a pale sky is a threat that they were conscious of and defend against. The proximity of PA28(1) and the R100 was not initially apparent until both aircraft's landing lights became visible on the final approach. Their airframes became visible shortly afterwards. When viewed from the Fairoaks tower, one aircraft appeared to be above and to the south of the other. The relative positions of the aircraft appeared to be as close as two to three wingspans. The Pilot's Operating Handbook of a similar Fairoaks based PA28 lists the aircraft's wingspan as 35ft. PA28(2) called on the radio, stating that they had observed two aircraft in close proximity on the final approach. The AFISO called PA28(1) and the R100 to confirm whether they were visual with each other's aircraft. PA28(1)

commenced a controlled right turn to provide lateral separation from the R100. PA28(1) then commenced a go-around and re-entered the circuit. The R100 continued the approach to a safe landing. PA28(2) landed safely shortly after the R100. The pilot of the R100 visited the tower after landing and also spoke to the PA28(1) pilot. The R100 pilot made several observations, including the following - The initial separation between their aircraft and PA28(1) ahead was safe when they joined crosswind. Their view was in line with the AFISO's observation from the tower. The perceived threat from a potentially fast-moving aircraft intending to position in front, which they were not yet visual with, had proven to be a significant distraction and focus of attention. PA28(1) was positioned below and to the right of them on the final approach. They elected to continue to land after safe separation had been achieved with PA28(1) on the basis that this would remove one aircraft from what had become a significantly congested piece of airspace. The AFISO spoke with the PA28(1) pilot separately after the incident. They confirmed that they were established on the final approach and seen the R100 to their left on the base leg. They had then lost sight of the R100 as the aircraft moved above them. This account was completed using their initial notes compiled after the Tower shift on Friday 11th June, they noted that in addition to being an AFISO they were also a Flight Instructor based at Fairoaks Airport with their time divided on a broadly 50/50 basis between the two roles.

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

Factual Background

The weather at Heathrow was recorded as follows:

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METAR COR EGLL 111320Z AUTO 26012KT 9999 SCT034 BKN041 23/14 Q1019 NOSIG=
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Analysis and Investigation

UKAB Secretariat

Although Fairoaks is not equipped with radar, the incident could be seen on the NATS radars. At Figure 1, the PA28(1) was late downwind, with the R100 approximately crosswind and the PA28(2) joining from the south-west.

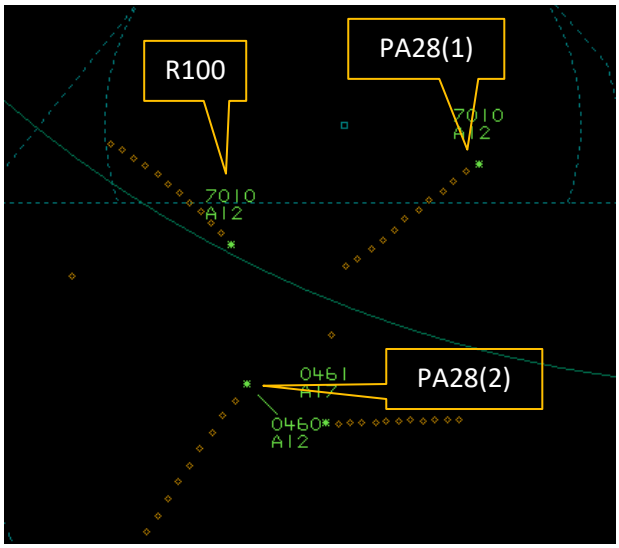

Figure 1:1327:40

At 1328:20 (Figure 2) the PA28(2) was joining alongside the R100 as described by the R100 pilot.

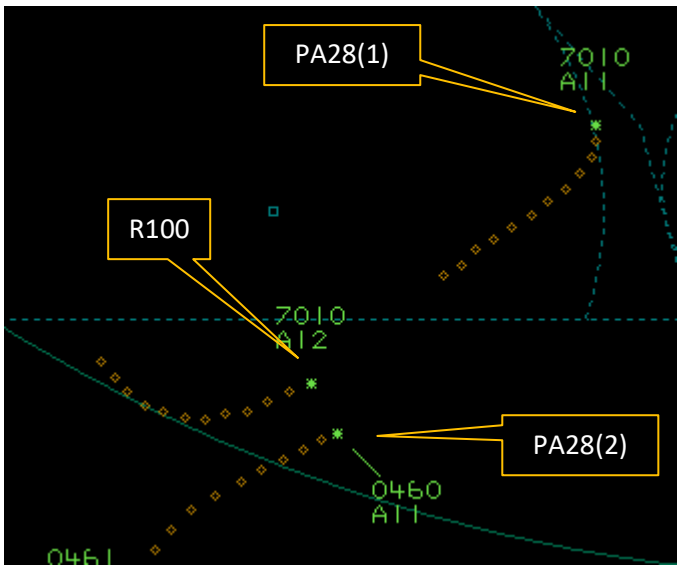

Figure 2:1328:20

By Figure 3, the PA28(2) had slowed down to fit in behind the R100, who had turned onto base-leg. PA28(1) had also turned onto final. The R100 then continued on base whilst the PA28(1) was on final, until at CPA, Figure 5 the two aircraft were 200ft and 0.1NM apart.

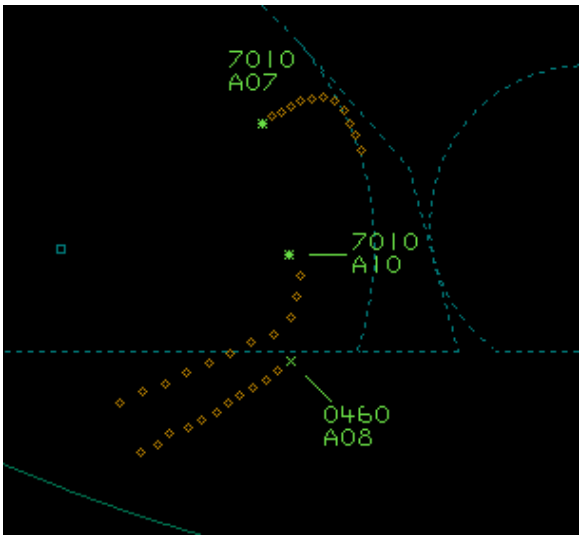

Figure 3:1329:09

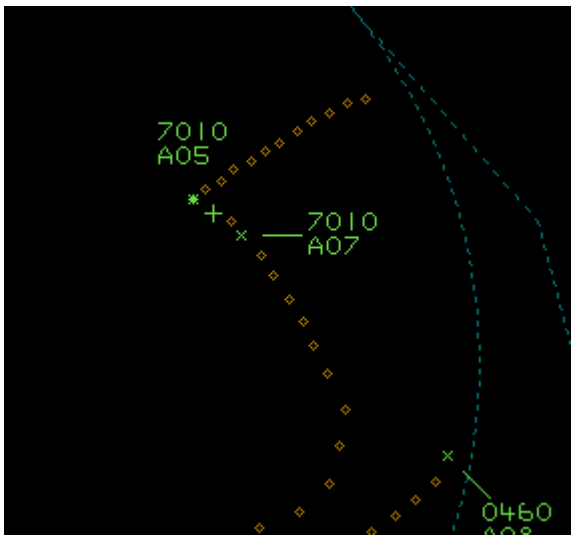

Figure 4:1329:32

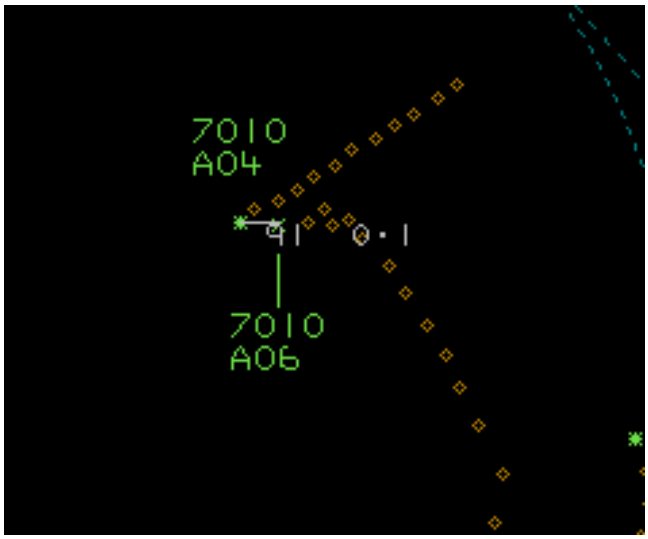

Figure 5: CPA 1329:44

The PA28 and R100 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] 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.[2]

Occurrence Investigation

Fairoaks Investigation

PA28(1) was conducting a circuit training detail. R100 joined the circuit crosswind from the north. The pilot of R100 had the PA28(1) in sight and there was adequate separation. PA28(2) called inbound from the south and was provided with standard runway, circuit direction, QNH and Traffic Information. PA28(2) stated they were faster than the other aircraft, intended to keep up their speed and join between the downwind and crosswind traffic. The pilot of R100 spotted PA28(2) flying parallel to them, one to two hundred feet off their starboard wing. The FISO informed PA28(2) that they weren't that fast, and PA28(2) agreed to give way to R100. The pilot of R100 increased speed to increase separation from PA28(2). The student on board PA28(1) made a "final" call and the FISO replied with a standard "touch-and-go at your discretion" call. The FISO called PA28(1) and R100 to confirm if they were visual with each other aircraft and shortly afterwards the instructor in PA28(1) became visual with the R100 turning left to final and now very close and descending on top of them. The PA28(1) was now below the R100 and decided that continuing the approach was now no longer safe and broke to the right of the centreline for separation, and did not climb until the R100 was clearly in sight.

Root Cause Analysis

The pilot of R100 lost situational awareness and turned base leg and then final without having the aircraft ahead (PA28(1) C/S) in sight.

There was no evidence to suggest that the FISO's actions, inadequate procedures or faulty equipment may have been a contributing factor since the FISO took the following actions:

a) Suitable Traffic Information was passed to the pilots of both joining aircraft.

b) When the pilot of PA28(2) indicated their intent to join between PA28(1) and the R100 the FISO passed further information regarding the relative speeds of the aircraft, as a result the pilot of PA28(2) decided to join behind the R100.

c) As soon as they became aware of the possible conflict between PA28(1) and R100 the FISO passed suitable warnings to both pilots.

The Safety Action Group agreed with the above Root Cause Analysis; however, it recommended that a slight change in phraseology used by the FISO could help to reinforce the UK-AIP entry which states 'Straight-in', 'downwind' and 'base' joins are strongly discouraged when the circuit is active.

Summary

An Airprox was reported when a PA28 and a R100 flew into proximity when on final at Fairoaks at 1329Z on Friday 11th June 2021. Both pilots were operating under VFR in VMC, both were in receipt of an AFIS from Fairoaks.

[1] (UK) SERA.3205 Proximity.
[2] (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 and a report from the AFISO 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 looked at the actions of the PA28(1) pilot. They were in the visual circuit, and although they knew that the R100 was behind them in the circuit, they would not have expected to see the R100 converging on final. They were first alerted to the positioning of the R100 by seeing it approaching from the left and turning into them, members thought that this was effectively a non-sighting (**CF6**), as although the PA28(1) pilot did then manage to turn away and go around, the separation was still at the bare minimum.

Turning to the R100 pilot, members thanked them for their honest report and noted that they were in agreement with the pilot on their analysis of their own actions. Members commented that they had sympathy for the situation in which the pilot found themselves, in that the pilot of PA28(2) was causing a distraction with their intimidating tactics in trying to join the circuit ahead of the R100 (**CF7**). Nevertheless, it was the responsibility of the R100 pilot not to allow themselves to be distracted (**CF5**) and to ensure that they maintained their own safety and separation in the circuit. The R100 pilot knew that the PA28(1) was ahead of them downwind, but in watching the PA28(2), who was flying parallel and to the south, they lost visual contact with it and turned onto base. Members cautioned that pilots should always check along the approach lane prior to turning onto base, to make sure that there was not another aircraft already on final, and had they done so, the R100 pilot would have seen PA28(1) (**CF1, CF2**). In turning where they did, the R100 flew a shorter circuit than PA28(1), so although they were flying slightly faster in the circuit than they normally would, it was the earlier turn that ensured they caught up with the PA28(1). In doing so, the R100 pilot did not conform with the visual circuit traffic ahead and did not integrate with PA28(1) (**CF3**, **CF4**). Finally, once in the turn, and still concerned by the positioning of PA28(2), the R100 pilot did not see PA28(1) until warned by a call on the RT, by which time PA28(1) was crossing directly ahead and it was too late to take any avoiding action (**CF6**).

The Board noted that both pilots had SkyEcho EWS fitted, and neither reported receiving an alert at the critical stages of the incident. Some members with experience of using SkyEcho in the circuit noted that when focussing in the visual arena, it could become difficult to keep a track of the SkyEcho alerts, which would include aircraft outside the visual circuit, and therefore it was often easier just to ignore all alerts. Therefore, it was not known whether the SkyEcho in either aircraft had not alerted, or had alerted but neither pilot was cognisant of it at the time. For this reason the Board decided that the EWS barrier was not used in this incident.

The Board briefly looked at the actions of the AFISO. AFISOs are not responsible for sequencing aircraft, nor should they issue instructions to airborne aircraft, and so as such the Fairoaks AFISO was not responsible for the separation of the two aircraft. Nevertheless, once the AFISO became aware that the two aircraft were in proximity on final, they provided Traffic Information to both pilots. Members also praised them for intervening earlier when the PA28(2) pilot was trying to join ahead of the R100. The Board also discussed the actions of PA28(2) pilot and agreed that, whilst the Airprox could not be directly attributed to them, their behaviour was such that it caused the R100 pilot concern and distracted them to the extent that they had become focused on PA28(2). This was to the detriment of other circuit traffic and as such their actions contributed to the incident (**CF7**). In trying to join ahead of the R100 on downwind, members thought that PA28(2) pilot had also not been conforming to the pattern of traffic (**CF3**).

Finally, the Board discussed the risk of collision. They considered the reports of both pilots, together with the radar replay and the report of the AFISO. Both pilots described a close encounter, the PA28(1) pilot had taken very late avoiding action, and the R100 pilot had not seen the other aircraft in time to take action at all; furthermore, the pilot in PA28(2) considered it close enough to give a warning on the RT. Therefore, the Board quickly agreed that there had been a serious risk of collision and separation had been reduced to the bare minimum; Risk Category A (**CF8**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021080			
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	• 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
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	Human Factors	• Incomplete Action	Events involving flight crew performing a task but then not fully completing that task or action that they were intending to carry out	Pilot did not sufficiently integrate with the other aircraft despite Situational Awareness
	• See and Avoid			
5	Human Factors	• Distraction - Job Related	Events where flight crew are distracted for job related reasons	
6	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
	• Any other events			
7		• Any other event	Any other event not listed elsewhere within the event types list.	Actions of PA28(2) intimidating R100 pilot
	• 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: A.

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:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the R100 pilot did not conform to the pattern of traffic formed by the PA28(1).

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

Tactical Planning and Execution was assessed as **partially effective** because neither the R100, nor the PA28(2) pilot conformed with the visual circuit traffic.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because although the R100 pilot knew the PA28(1) was ahead, they did not check its positioning prior to turning onto base.

See and Avoid were assessed as **ineffective** because the R100 was distracted by the PA28(2) and did not see the PA28(1) and it was an effective non-sighting by the PA28(1) pilot who did not see the R100 until very late in the encounter.