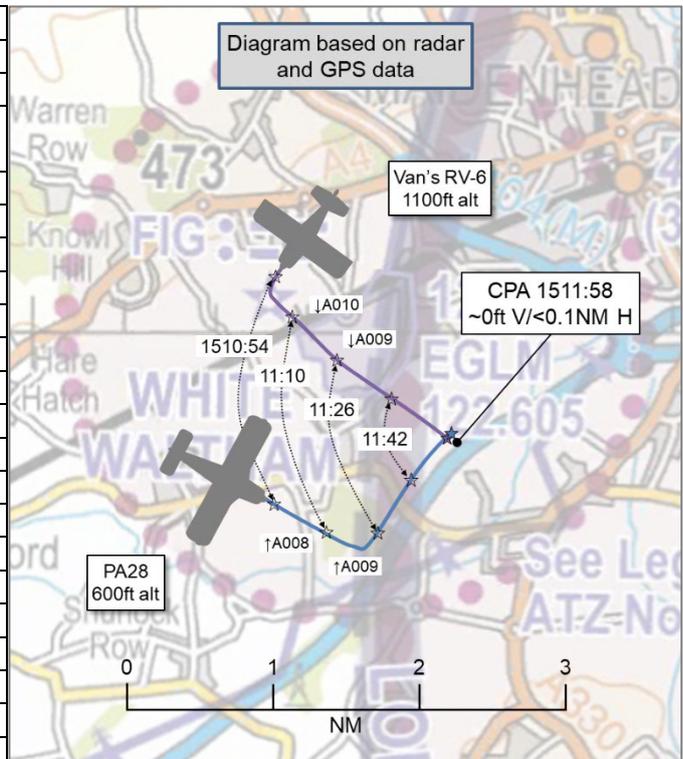


AIRPROX REPORT No 2021045

Date: 27 Apr 2021 Time: 1512Z Position: 5129N 00045W Location: White Waltham circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	Van's RV-6
Operator	Civ FW	Civ FW
Airspace	White Waltham ATZ	White Waltham ATZ
Class	G	G
Rules	VFR	VFR
Service	AGCS	AGCS
Provider	Waltham Radio	Waltham Radio
Altitude/FL	A009	900ft ¹
Transponder	A, C, S	A
Reported		
Colours	White/grey/red	Cream/blue
Lighting	Nav lights	Nil
Conditions	VMC	VMC
Visibility	>10km	15km
Altitude/FL	800ft	900ft
Altimeter	QFE	QFE (1003hPa)
Heading	030°	110°
Speed	95kt	90kt
ACAS/TAS	SkyEcho	SkyEcho 2
Alert	Information	None
Separation		
Reported	25ft V/0m H	100ft V/100m H
Recorded	~0ft V/<0.1NM H ²	



THE PA28 PILOT reports carrying out a post-lockdown currency check with a qualified PPL. After completing some general handling, they returned to White Waltham for some circuit practise on RW21 with a left-hand circuit in use. After completing a couple of circuits, and shortly after turning onto the downwind leg heading approximately 030°, they saw a yellow flash of an aircraft passing directly overhead them on a heading of approximately 160° - it disappeared from view in their 5 o'clock position. SkyEcho had given them an audio warning of "Traffic", 1NM, same level - but one expects to get lots of these in a busy training circuit and one tends to take more notice of radio calls to identify the position of possible threats. They do not recall hearing any radio call from [the Van's RV-6] to alert them of the threat. (After landing, they identified the aircraft as [the Van's RV-6]). When speaking to the pilot, they readily identified themselves and apologised for their error, stating that they never saw [the PA28] until they had passed overhead. Whilst speaking to them – they were strapped in and preparing to depart – they noticed that the pilot's seating position in [the Van's RV-6] was quite low and reclined and the PA28 pilot felt that this may have restricted the RV-6 pilot's visual range.

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

THE VAN'S RV-6 PILOT reports that, on arriving in the overhead of the field, they descended on the dead-side for RW21LH. On passing the 03 numbers at the end of RW21LH to fly crosswind there were 2 aircraft taking-off in close succession, both rising rapidly. Their track was such that they would pass directly above the second aircraft. As the circuit height is only 800ft at this airfield, and they were concerned at the rate at which this aircraft was rising and closing on their height, to provide clearance they decided to pass overhead the runway at approximately 900ft to give a little extra height separation.

¹ Derived from the GPS log file of the flight provided by the Van's RV-6 pilot.

² Vertical separation measured by comparing radar data for the PA28 with the GPS data of the Van's RV-6; horizontal separation measured from the NATS radar replay.

They could see no other aircraft already in the circuit and made a mental note that, should they be completing a circuit, they would reach the downwind leg before both these aircraft as they had the greater height and the shortest distance to travel.

The crosswind leg was normal, though possibly a little high, having entered the circuit at maybe 900ft. They did not pay too much attention to descending accurately to 800ft, as keeping height accurately was a little difficult due to normal minor pockets of air disturbance and scrutinising the area for potential other aircraft seemed of higher priority. This focussed lookout revealed no other aircraft visible and no signs of the two 'take-off' aircraft entering the downwind leg. There was no radio traffic to audibly alert them to any other traffic in the circuit. On completing their crosswind leg, and approaching the downwind, they carried out a very detailed scan, searching for other aircraft which may already be downwind, before commencing their left turn. While in this left banking turn, they suddenly spotted, to their horror, another aircraft to their left, slightly lower, and quite close by. They were shocked to see this aircraft in this position as they had felt that they were the only aircraft anywhere near this part of the circuit – it was totally unexpected. Despite a thorough scan while crosswind, and prior to commencing their turn, they had not seen this aircraft up until this point, nor heard any radio traffic from it. There had been no 'downwind' calls over the radio nor any warning from their conspicuity device. By the time they saw the other aircraft, any risk of collision had passed as the aircraft was, by then, flying away from them. Their tracks had passed at approximately 90° and the other aircraft was at a height slightly lower than them. They continued with their circuit in a normal manner, although they had to extend slightly and widen their circuit to provide separation and allow the other aircraft, which was slightly slower, space to complete their circuit and land ahead of them. A normal landing on RW21 followed.

Their observations and thoughts following this incident, when reflecting on it, were as follows:

- They had entered the circuit slightly high in order to give clearance to aircraft taking-off. This excess height was most probably maintained throughout the crosswind leg. As such, their scan for other aircraft was probably hampered by having to look for them at a slightly downward angle due to being slightly high (although this didn't occur to them at the time). The target aircraft would therefore have had to be viewed against the (camouflaging) background of the land beyond it. Searching for reasons why the other aircraft was not spotted and simply speculating here, their scan may also perhaps have been concentrating too much on looking for aircraft at the same height - as would be normal. Aircraft at the same level are easier to spot as they are more visible against the clear background of the sky.
- Because the 2 aircraft were approaching one another at right angles, nominally on a collision course, the other aircraft would have appeared stationary in their view. Combined with being against a confusing, camouflaging background, with no apparent movement, this could have contributed towards making the aircraft extremely difficult to spot.
- Once their turn had been commenced, there would have been no hope of seeing the other aircraft in the latter stages of the conflict as it would have then been underneath their wing or even underneath the fuselage as they banked to the left and unaware of any traffic close-by.
- There had been no indication or warning of the other aircraft from their Sky Echo 2 conspicuity device – either visually on their Sky Demon GPS or aurally, at any point in the circuit.
- To their knowledge, the pilot of the other aircraft also did not see them prior to reaching the potential conflict point and no avoiding action was taken by either aircraft.

They would conclude by saying that they feel there had been a real possibility of collision had the height and positions of both the aircraft been slightly different. Being slightly high in the circuit could have contributed to not seeing the other aircraft but, as it happened, could also have been what saved the day.

Their lack of visual detection of the other aircraft (together with the other pilot's lack of visual detection of them, they opined) was the cause of the potential conflict. A contribution to this may have been their inaccurate height control in the circuit during the crosswind leg which, in turn, contributed to making their lookout less effective than it may have been.

The lessons this has taught them is to be more accurate in their height control while in the circuit and, if it is necessary to cross the active runway at increased height, make sure this is adjusted as soon as possible. With regard to lookout, too low is preferable to being too high. Overall, be aware of this obvious choke-point – probably the most dangerous position in the circuit. Lookout thoroughly and check, double-check, and re-check for any hard-to-spot conflicting traffic, being especially aware that they may appear as stationary, before lifting the wing to commence the turn onto downwind. Also, when in the circuit on the downwind leg, be aware of the possibility – and keep a constant lookout for – any potential aircraft joining part-way along the leg, having just joined from the overhead.

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

THE WHITE WALTHAM AIR/GROUND OPERATOR did not provide a report. However, the CFI of a local club checked the airfield log for the day. There was no record of this event, and the provision of airfield joining information for arriving aircraft is not usually logged.

Factual Background

The weather at London Heathrow Airport was recorded as follows:

METAR COR EGLL 271520Z AUTO VRB03KT 9999 NCD 15/M00 Q1007 NOSIG=

Analysis and Investigation

UKAB Secretariat

Analysis of the NATS radar replay was undertaken, which showed both aircraft in the White Waltham circuit. The PA28 was displaying track and altitude data; the Van's RV-6 displayed only track data, initially as a primary-only contact but at around 1155 this became a stable primary and SSR track. The RV-6 pilot provided the UKAB Secretariat with a GPS log file of the flight, from which all altitude data for the RV-6 has been derived.

The PA28 had been conducting circuits and, at 1510:26, was reacquired on both primary and secondary radar on climb out; a primary contact appeared at the same time in a position coincident with the GPS log supplied by the RV-6 pilot (See Figure 1).



Figure 1 – 1510:26



Figure 2 – 1511:00

At 1511:00 (Figure 2) the PA28 was climbing and turning crosswind as the RV-6 was making a continuous turn and a shallow descent to 1100ft (note: this assessment was made with reference to the GPS data supplied by the RV-6 pilot – the primary radar track was too unstable at this time for an accurate assessment of aircraft track to be made). Shortly after this time the 2 aircraft were flying parallel crosswind tracks.

At 1511:26 (Figure 3) the PA28 pilot had completed their turn onto the downwind leg, placing the aircraft on a 90° intercept path. The PA28 was established at an altitude of 900ft (approximately 800ft aal), as was the RV-6 (altitude data from GPS). Both aircraft then remained at an altitude of 900ft, and approximately the same relative bearing, until CPA at 1511:58 (Figure 4). CPA was measured at ~0ft V (altitude from 2 different data sources) and <0.1NM H.



Figure 3 – 1511:26

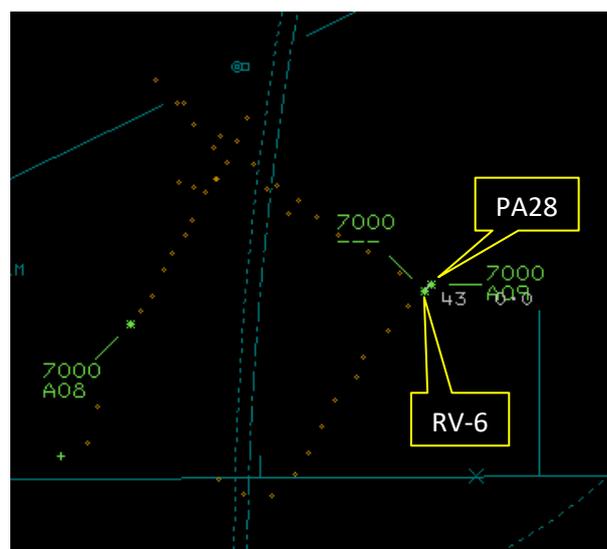


Figure 4 – 1511:58 – CPA

The PA28 and Van's RV-6 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.³ 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.⁴

Summary

An Airprox was reported when a PA28 and a Van's RV-6 flew into proximity in the White Waltham circuit at 1512Z on Tuesday 27th April 2021. Both pilots were operating under VFR in VMC and both pilots were in receipt of an Air Ground Communications Service from Waltham Radio.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and GPS data. 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 implications of the airspace surrounding White Waltham airfield and, in particular, the fact that the eastern half of the White Waltham ATZ lies within the London CTR. The Board heard from an ATC advisor that there is a defined 'Local Flying Area' (LFA) whereby traffic in the

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

White Waltham ATZ is limited to an altitude ceiling of 1500ft for the portion of the ATZ that lies within the London CTR. This means that pilots joining the White Waltham circuit through the overhead have to join at a lower altitude than at airfields without this altitude restriction and there is therefore a concomitant reduction in time available when descending downwind to assimilate the circuit traffic. To allow a 'buffer' between the ceiling of the LFA and the circuit joining altitude, the White Waltham procedures define the joining height as 1200ft aal (1327ft altitude) and the circuit height as 800ft aal, giving a descent of only 400ft between the overhead join and the circuit. The Board considered that this reduced assimilation time was contributory to the Airprox (**CF8**) and considered making a Safety Recommendation in this regard; members again heard from an ATC advisor that the issue of deconflicting White Waltham circuit traffic from London Heathrow inbound and outbound traffic is an issue that is well known and is managed daily. However, Director UKAB undertook to raise the discussion concerning the airspace surrounding White Waltham with the Mid Air Collision – Oversight and Assurance Steering Group (MAC-OASG). In addition, Director UKAB will liaise with the head of the Airspace Classification Team, who is charged with reviewing the classification of airspace in accordance with CAP 1991 (effective 1 Dec 2020) which is the procedure for the CAA to review the classification of airspace.

Turning to the actions of the pilots involved, the Board agreed that the PA28 pilot had been established in the circuit pattern and it had been for the RV-6 pilot to integrate with them. The Board wondered why the PA28 pilot had received a traffic warning from their SkyEcho device (**CF5**) but the RV-6 pilot, similarly equipped, had not (**CF6**). That said, the Board noted that the PA28 pilot had essentially discounted the warning as a typical occurrence in a busy circuit environment (**CF6**) and that the warning had not, therefore, contributed to their situational awareness in any way. Members noted that neither pilot had heard any transmissions from the other aircraft – an indication that both pilots were under a high workload – and agreed that neither pilot had had any situational awareness of the presence of the other aircraft (**CF4**). This had led to the RV-6 pilot being unable to integrate with the PA28 as they did not know that it was in the circuit (**CF1, CF2, CF3**). The Board heard from a GA pilot member that this incident highlights the importance of maintaining a disciplined and thorough lookout when in the visual circuit, and that it is vital to search for aircraft established on the downwind leg when flying crosswind after an overhead join. In the event, both pilots had been relying on their lookout to spot the presence of other aircraft that would be a factor to them and members agreed that neither pilot had, in fact, seen the other aircraft in time to take any form of avoiding action (**CF7**).

Finally, the Board considered the risk involved in this event. Members noted that both pilots had assessed the risk of collision as 'high' and that the NATS radar recording had shown very little lateral separation. The Board was grateful to the RV-6 pilot for providing the GPS data from their flight, as without it members would have had no recorded information regarding the altitude of the RV-6. Although the altitude measurements were from 2 different sources (SSR Mode C for the PA28 and GPS altitude for the RV-6), the Board felt that a measured height delta of 0ft, even allowing for slight differences in the recording medium, and almost no lateral separation represented a situation in which separation was reduced to the bare minimum and only stopped short of an actual collision because providence had played a major part in events (**CF9**). Accordingly, the Board assigned a Risk Category A to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

2021045				
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	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
6	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				
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
• Any other events				
8		• Any other event	Any other event not listed elsewhere within the event types list.	
• Outcome Events				
9	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 Assessment⁵

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 White Waltham Air/Ground Operator was not required to monitor the aircraft in the visual circuit.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the RV-6 pilot did not safely integrate into the pattern of traffic already formed.

⁵ 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 **ineffective** because the RV-6 pilot did not have sufficient information regarding circuit population before they committed onto the downwind leg, and thus they integrated in conflict with the PA28.

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

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the RV-6 pilot did not receive any indication from their SkyEcho of the presence of the PA28, and the PA28 pilot received an alert from their SkyEcho but disregarded the warning as something to be expected in the visual circuit.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft in time to materially affect the separation between the 2 aircraft.

