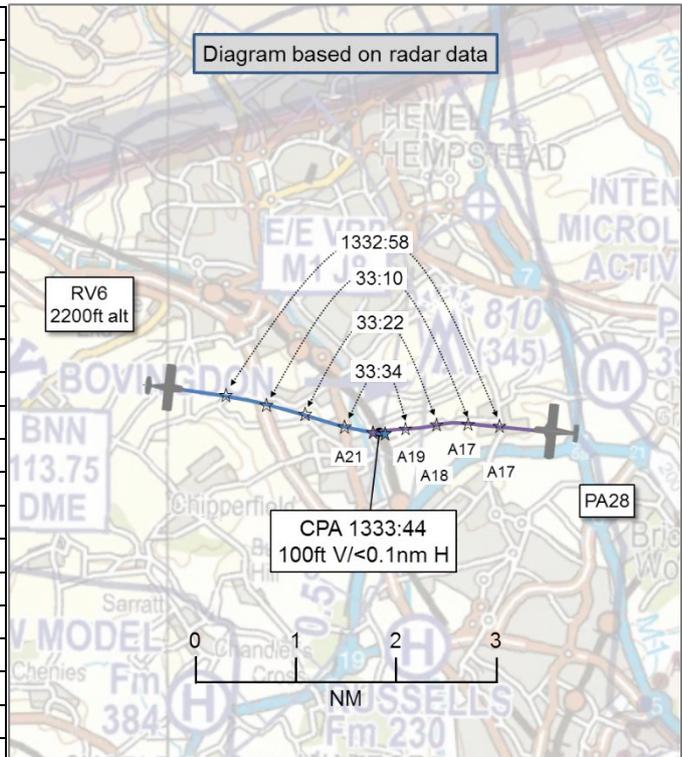


**AIRPROX REPORT No 2019097**

Date: 12 May 2019 Time: 1334Z Position: 5143N 00027W Location: 5.5nm NW Elstree

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	Van's RV6	PA28
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Listening Out	Basic
Provider	Elstree	Elstree
Altitude/FL	2100ft	2000ft
Transponder	A, C, S	A, C, S
Reported		
Colours	White, green	White, blue
Lighting	LED landing	Beacon, strobes
Conditions	VMC	VMC
Visibility	>40km	20km
Altitude/FL	2250ft	1900ft
Altimeter	QNH (1037hPa)	QNH (NK hPa)
Heading	102°	270°
Speed	135kt	90kt
ACAS/TAS	FLARM	Not fitted
Alert	None	N/A
Separation		
Reported	100ft V/0m H	200ft V/NK H
Recorded	100ft V/<0.1nm H	



**THE RV6 PILOT** reports that he was in straight-and-level cruise when he saw a white PA28 directly on the nose at a range of less than 200m, about 100ft below, on a reciprocal heading. He started avoiding action by pulling up but due to the late visual contact he estimated he only increased vertical separation by about 50ft. No avoiding action was observed from the other aircraft.

He assessed the risk of collision as ‘High’.

**THE PA28 INSTRUCTOR** reports conducting a navigation training flight. On setting course at a local landmark the student allowed the aircraft to descend to 1800ft and was gently climbing back up to the planned altitude of 2000ft. At this point the instructor saw an aircraft approximately 2nm ahead on a reciprocal course. The aircraft was approximately 200ft above them and to their right. He was not certain whether they had been seen because they were lower than the other (low-wing) aircraft and did not wish to manoeuvre such that they suddenly became aware of them and reacted unpredictably. He did not wish to turn right (which would be usual for aircraft approaching head on) because this would have reduced separation and, although passing would be close, because there was no risk of collision he elected to continue straight-and-level but to monitor the other aircraft until they had passed. At this point the other aircraft turned to its left, increasing the separation further.

He assessed the risk of collision as ‘Low’.

**Factual Background**

The weather at Heathrow was recorded as follows:

METAR COR EGLL 121350Z AUTO 09004KT 040V220 9999 NCD 16/01 Q1037 NOSIG=

## Analysis and Investigation

### UKAB Secretariat

The RV6 and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right<sup>2</sup>.

### Summary

An Airprox was reported when a Van's RV6 and a PA28 flew into proximity at 1334 on Sunday 12<sup>th</sup> May 2019, 5.5nm northwest of Elstree aerodrome. Both pilots were operating under VFR in VMC and both were listening out on Elstree Information.

### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from both pilots and radar photographs/video recordings. 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.

Members first discussed the pilots' actions and, given the PA28 instructor's somewhat sanguine account, wondered whether they had seen the RV6 or were reporting another encounter. After some discussion and review of radar information, it was agreed that the PA28 instructor was reporting the Airprox, and this led to a lively debate as to his actions thereon. The radar replay showed that the RV6 was in level flight and that the PA28 was in a shallow climb, presumably the shallow climb reported by the instructor. Members were informed that the radar sweep after CPA showed both aircraft to be at the same level so, in essence, despite first sighting the head-on and converging RV6 at a reported range of 2nm, it was apparent that the PA28 instructor had allowed the student to climb into a position such that a collision hazard had been created (**CF1**). Members wondered whether the navigation training element of the PA28 lesson had influenced the instructor's judgement to such a degree that it appeared he had allowed a dangerous situation to develop (**CF2**); it was universally agreed that the instructor would have been far better served by directing the student to turn right or descend on first sighting to create appropriate vertical separation, thereby teaching the student a valuable lesson in how to apply SERA.3210 in practice (**CF5**).

Neither pilot was in receipt of a surveillance based FIS and could therefore only have generic SA that other aircraft were probably also airborne in the area (**CF4**). In this respect, members felt that whilst the RV6 pilot could gain SA from listening out on the Elstree frequency, he could also have imparted SA to others by transmitting his intentions on that frequency (**CF3**). Some members wondered whether both pilots would have been better served by being in contact with Farnborough LARS in order to gain valuable SA from a surveillance-based ATS; that being said, they recognised that it was a fine balance between using the promulgated LARS and gaining information by contacting airfields as one flew past them.

Allied to the fact that the PA28 was not equipped with a TAS, sadly, the RV6's FLARM was not compatible with the PA28 and could not therefore provide a timely alarm (**CF6**). This left see-and-avoid as the remaining barrier to MAC. The PA28 instructor had seen the RV6 at range but the RV6 pilot did not see the PA28 until at a late stage (**CF7**) and, whilst the PA28 instructor appeared unconcerned by the 100ft vertical and practically nil horizontal separation, the RV6 pilot was not and made an emergency avoiding-action manoeuvre. The Board presumed that because the PA28 instructor could see the RV6 he would not have collided with it and would eventually have taken action to avoid doing so if necessary. However, the PA28 instructor could not know the intentions of the RV6 pilot, including a potential descent and turn into Elstree. As such the Board unanimously agreed that he had effectively flown into conflict with the RV6 (**CF8**) such that safety had been much reduced below the norm.

<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3210 Right-of-way (c)(1) Approaching head-on.

**PART C: ASSESSMENT OF CAUSE AND RISK****Contributory Factors:**

2019097			
CF	Factor	Description	Amplification
	<b>Flight Elements</b>		
	<b>• Regulations, Processes, Procedures and Compliance</b>		
1	Human Factors	• Flight Crew ATM Procedure Deviation	Regulations/procedures not complied with
	<b>• Tactical Planning and Execution</b>		
2	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
3	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate controlling authority
	<b>• Situational Awareness of the Conflicting Aircraft and Action</b>		
4	Contextual	• Situational Awareness and Sensory Events	Pilot had no, only generic, or late Situational Awareness
5	Human Factors	• Mentoring	Sub-Optimal
	<b>• Electronic Warning System Operation and Compliance</b>		
6	Technical	• ACAS/TCAS System Failure	Incompatible CWS equipment
	<b>• See and Avoid</b>		
7	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots
8	Human Factors	• Lack of Action	Pilot flew into conflict

**Degree of Risk:** B.

**Recommendation:** Nil.

**Safety Barrier Assessment<sup>3</sup>**

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 **ineffective** because the PA28 instructor flew into a position of collision hazard having seen the RV6 at a range of 2nm.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because despite seeing the RV6 at range, the PA28 instructor did not take effective action.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the RV6 TAS was incompatible with the PA28, and the PA28 did not have a TAS.

**See and Avoid** were assessed as **partially effective** because the RV6 pilot saw the PA28 at a late stage and took avoiding action.

<sup>3</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

<b>Airprox Barrier Assessment: 2019097</b>		Outside Controlled Airspace						
<b>Barrier</b>		<b>Provision</b>	<b>Application</b>	<b>Effectiveness</b>				
				<b>Barrier Weighting</b>				
				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							
<b>Key:</b>		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present</u>	<u>Not Used</u>		
Provision								
Application								
Effectiveness								