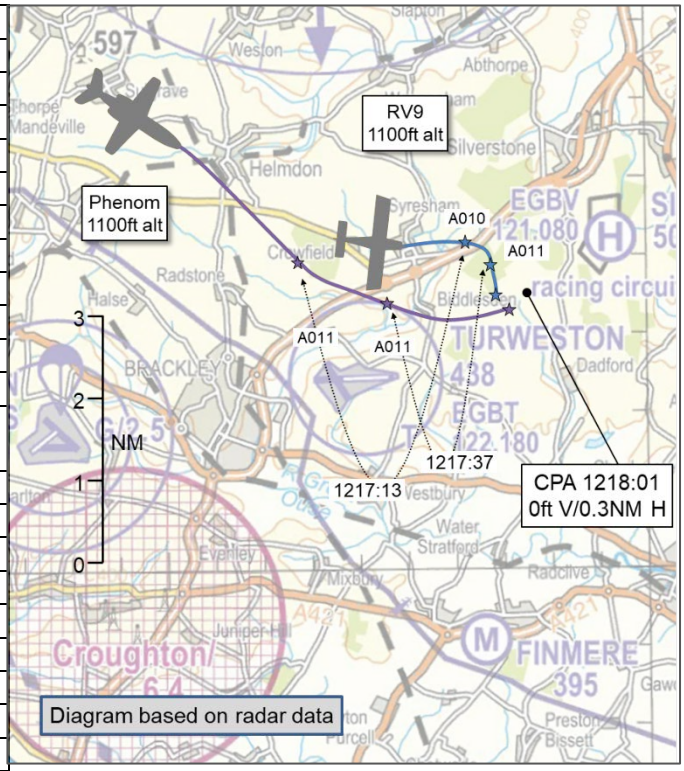
AIRPROX REPORT No 2020167

Date: 15 Dec 2020 Time: 1218Z Position: 5203N 00102W Location: Turweston

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	RV9	Phenom
Operator	Civ FW	HQ Air (Trg)
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	AGCS	None
Provider	Turweston	
Altitude/FL	1100ft	1100ft
Transponder	A, C	A, C, S
Reported		
Colours	Blue, White, Red	White, Blue
Lighting	Strobes	Nav, Landing, Strobes
Conditions	VMC	VMC
Visibility	30km	30km
Altitude/FL	1000ft	650ft
Altimeter	QFE (990hPa)	RPS (1007hPa)
Heading	190°	130°
Speed	80kt	210kt
ACAS/TAS	SkyEcho2	TCAS II
Alert	Unknown	TA
Separation		
Reported	100ft V/50m H	NR
Recorded	0ft V/0.3NM H	



THE RV9 PILOT reports that they were conducting a standard approach and received a warning about the other aircraft from the AGO. They first sighted the traffic from the west at around 500m, it was at circuit height and they estimated that they had a 10sec warning. They pulled up to avoid a collision and waggled their wings, but there was no response from the jet and no RT call on the frequency either.

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

THE PHENOM PILOT reports that following the submission of an Airprox in the vicinity of Turweston airfield filed by another party, the following is their recollection of events that occurred over 3 weeks before the time of reporting. The sortie was a student low-level consolidation event, flown Cranwell-to-Cranwell. The planned route in LFAs 6 and 5 took them south from Newark, south west to the north of Banbury, then south-east towards Turweston with a planned Turning-Point between Turweston and Silverstone. The route then took them approximately east passing just to the south of Silverstone. The route was flown at 210kts IAS and 500ft msd. As they headed south-east towards the Silverstone/Turweston area, they were aware of several contacts visually and on TCAS; 2 helicopters were observed ivo Silverstone (in the 10-11 o'clock) with another 2 or 3 aircraft just right of their 12 o'clock (probably Turweston traffic). The latter aircraft were observed to be safely above them (approximately 1000-1500ft agl) and were crossing from right to left. Although honouring their 500ft msd, the instructor recalled they were marginally higher than they needed to be and so they encouraged the student to descend to further increase the vertical clearance from these aircraft. They were unable to increase their lateral clearance to the right as they were almost abeam, and visible with, Turweston airfield. However, their greater airspeed helped overtake these aircraft (they effectively passed down the left-hand side) before they could then turn across them, still safely below, and east towards Silverstone. The entire sequence all occurred within about 45 seconds.

Post-flight, during the in-brief they were informed that Turweston had called Cranwell in order to track down the Phenom crew. They duly returned a call to a pilot from Turweston who had observed their flight passing to the east of Turweston. The other pilot was aware of the Phenom's progression towards their airfield before turning away and also aware that their circuit had traffic in. The other pilot made no mention of an Airprox, but simply wanted to ask if they had been aware of Turweston's location and to highlight that it can often be quite a busy circuit. The Instructor explained that their actual routing had been slightly affected by the observed traffic, but that they were visual with traffic in the Turweston circuit. At no stage was any mention made of an Airprox or a Loss of Safe Separation (LoSS). Given that they had not had a TCAS RA, and did not believe they had been involved in an Airprox nor infringed airspace, no further action was taken at the time.

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

THE TURWESTON AGO reports that on the day in question it was a good weather day and one of the last before the area went into tier 4 and flying basically stopped, so people were making the most of the day and the Turweston circuit and local area were very busy. He recalled about 3 or 4 aircraft established in the circuit with other traffic within the circuit vicinity joining or leaving the pattern. Turweston are lucky to be involved with the team at PilotAware and have worked with them to help develop the Air Traffic Overview & Management (ATOM) system. This was the game changer on the day as the AGO was able to observe the track of the military aircraft and it was obvious to them that it would fly through or close to the airfield circuit. So they took the decision on safety grounds to make a general broadcast to all traffic making them aware of the jet and its position/altitude and the fact that its track may have put it into conflict, or at least surprise, the Turweston circuit traffic. They were able to observe the aircraft approaching the airfield from their position in the VCR and watch it fly through the downwind leg and turn away to the east cutting through the base leg for RW27 and coming close to the RV9 before disappearing towards Silverstone.

They noted that Turweston is an unlicensed airfield, however it is a very active airfield, being the home of the LAA and several maintenance companies and a very busy flying school. The airfield has only become unlicensed in the last few years, when the rule change occurred to allow flying training at unlicensed fields. Unfortunately, due to the rules, this meant that they lost the ATZ and the protection it provided. In the following years they have had various flights through their active circuit, most of these have involved military aircraft, mostly helicopters but also the occasional fixed wing. As an airfield they have tried to fix this problem and have managed to get a training T applied to most aviation maps in use by military and civil pilots. When they first lost the ATZ they engaged in conversation with the military and it came to light that an unlicensed airfield was assumed to have low use and have no more than 6 movements a day, so therefore the military deemed it acceptable and safe to overfly these sites without notification. Since then progress has been made and the number of overflights has decreased and pilots will sometimes make RT contact when in the area. It was their opinion that an airfield with sufficient numbers of movements should be given an ATZ, whether licensed or not, to help pilots with flight planning when on the ground.

Factual Background

The weather at Oxford was recorded as follows:

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METAR EGTK 151150Z 19011KT 9999 FEW030 09/07 Q1004=
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Analysis and Investigation

UKAB Secretariat

Although Turweston is not equipped with radar, the incident could be seen on the NATS Clee Hill radar and screenshots taken from the radar are reproduced below. The Turweston AGO did not have access to the radar, but did report trialling a PilotAware system which gave them a warning on the approaching Phenom. Altitudes shown on the radar are based on the London QNH of 1006hPa. At 1216:09 (Figure 1), the Phenom was 5.5NM northwest of Turweston, indicating 1000ft. Two aircraft could be seen in the Turweston circuit, the RV9 was in the downwind position at 1200ft and

another aircraft behind indicating 1400ft. By 1217:13 (Figure 2), the Phenom was 2.1NM west of the RV9, which was now in the late downwind position. By Figure 3 the RV9 had turned onto a base leg and the Phenom was 0.9NM to the southwest of it. CPA was at 1218:01, Figure 4.

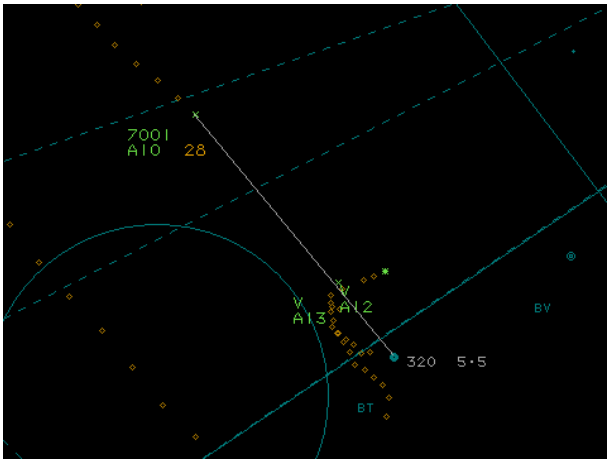


Figure 1:1216:09

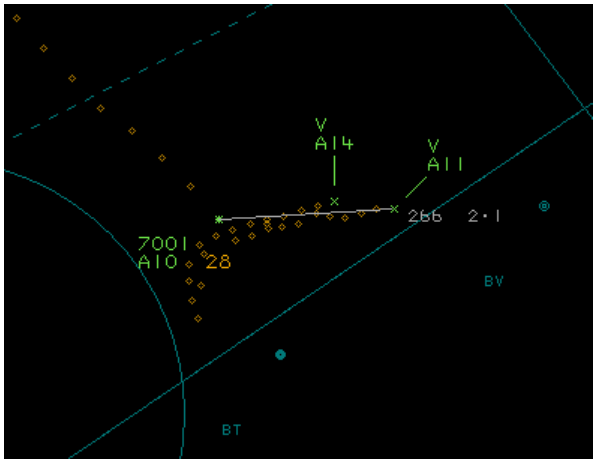


Figure 2:1217:13

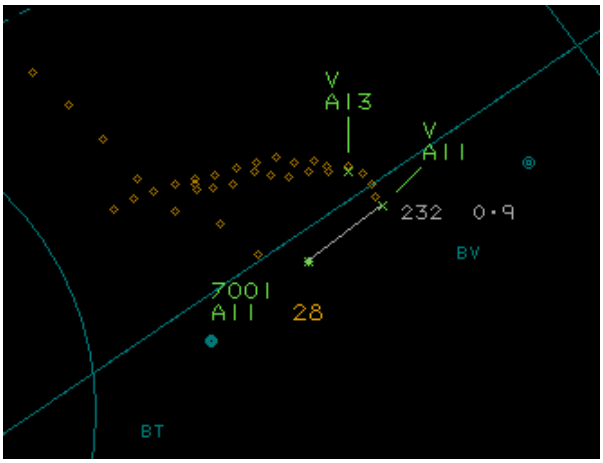


Figure 3: 1217:45

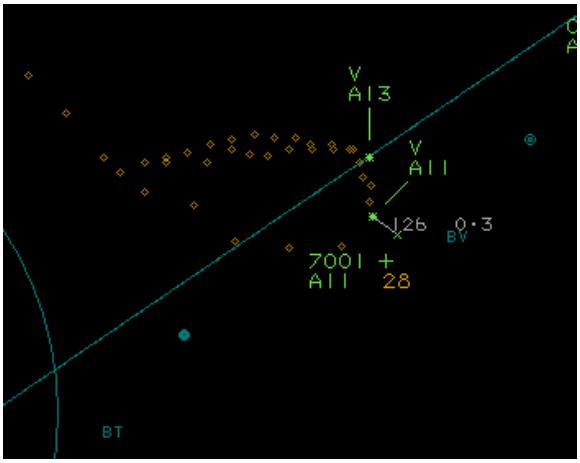


Figure 4:CPA 1218:01

The RV9 and Phenom 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] 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]

Occurrence Investigation

The RAF Cranwell investigation found that the crew employed all available barriers to LoSS; they were following a planned route and held situational awareness (both visual and via TCAS) on the traffic in the area. However manoeuvring to avoid RW traffic ivo Silverstone had positioned them closer to Turweston airfield than planned. The route planned for this Phenom low-level training sortie could be considered challenging (in terms of airspace) passing close to both Silverstone and Turweston airfields with little room to manoeuvre for the inevitable local traffic. However, given that there was no ATZ at Turweston it was considered a question of airmanship rather than an infringement. In order to avoid a similar situation occurring in the future, steps have been taken to

[1] SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.
[3] SERA.3225 Operation on and in the Vicinity of an Aerodrome. MAA RA 2307 paragraph 15.

ensure Cranwell crews avoid Turweston airfield and this has been implemented and promulgated to crews. In addition, OC Phenom Standards has distributed some prudent advice on route planning.

The Phenom crew, when planning their sortie, were unaware of the traffic levels at Turweston and as there was no ATZ (see and avoid rules applied) they chose not to switch to the Turweston frequency. With the benefit of hindsight, the crew acknowledged that pre-calling/switching to the frequency would have allowed them to state their intentions and receive traffic warnings, perhaps leading to a clearer air picture and avoiding the unfortunate situation that occurred.

Below 1500ft, TCAS will only provide traffic alerts rather than resolution advice. All Phenom aircrew are aware of this operating aspect and factor it into their avoidance of LoSS accordingly.

Comments

HQ Air Command

When planning their sortie, the Phenom crew were not cognisant of the potential traffic levels at Turweston. Subsequently, it was acknowledged by the crew that pre-calling Turweston would have probably led to a clearer air picture and avoided the situation which developed. In reacting to information on their Air Traffic Overview and Management system, the Turweston AGO is commended for making a general broadcast to inform Turweston traffic about the proximity of the Phenom.

The Phenom crew had situational awareness (both visual and via TCAS) on the traffic in the area. After identifying the helicopter traffic at Silverstone as the greatest threat, their manoeuvring to avoid this traffic positioned them closer to Turweston airfield than they had originally planned. The fact that Turweston does not have an ATZ possibly influenced their decision.

As the situation developed, Phenom crew found themselves effectively 'sandwiched' between traffic at Silverstone and Turweston and took action to ensure safe separation from each contact both laterally and vertically. Had the Phenom crew planned to give Turweston a wider berth then these circumstances would likely have been prevented from developing. In response to the local investigation, a 2NM avoid has been placed around Turweston for Phenom crews in an attempt to prevent a re-occurrence of such an incident.

It is noted that the Turweston AGO stated that they'd had a previous 'conversation with the military'. It has not been possible to determine the facts surrounding this conversation as no formal record has been found. It is important to add that nothing in Military Aviation Regulation deems it acceptable and safe to overfly a published Aerodrome without notification when an alternative course of action is available.

Summary

An Airprox was reported when an RV9 and a Phenom flew into proximity in the vicinity of Turweston at 1218Z on Tuesday 15th December 2020. Both pilots were operating under VFR in VMC, the RV9 pilot in receipt of a AGS from Turweston and the Phenom pilot was not in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. 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 looked at the actions of the AGO. In providing an AGS, they were not required to provide Traffic Information, other than to pass on known position reports from other pilots. Nevertheless, the PilotAware ATOM provided the AGO with information that the Phenom was approaching from the north, and the AGO broadcast this information to the circuit traffic. The Board commended the AGO for their actions; although some advisors to the Board cautioned against the reliance on, and usage of, unlicenced equipment and the lack of training thereof. Certainly, a CAA advisor was concerned that an enthusiastic, but unqualified, AGO could potentially pass inaccurate information that then distracted a pilot and that the lines between a controller using a calibrated radar and an enthusiast using a web-based program could become blurred; leading to potential confusion for pilots as to the type of service being provided. This view was echoed by an MAA advisor who noted that such web-based programmes could potentially have a lag of up to 7 minutes, meaning that it was not possible to know how accurate the information was at any given time. Nevertheless, on this occasion, the actions of the AGO had cued the RV9 pilot to look for, and see, the Phenom and the majority of members thought that it was a positive result. Turning to the AGO's report, military members thought that the conversation that Turweston had had with 'the military' was likely to be historical, as no record could be found and they were keen to point out that RAF pilots should be very aware of the meaning of the 'T' on charts and certainly did not deem it acceptable to overfly such airfields.

UKAB Secretariat Note: Subsequent engagement with PilotAware revealed that the ATOM installation at Turweston is not web based and as such should not suffer from significant time lag in the data it presents. It should also be noted that ATOM stations are provided on the strict understanding, and agreement by users, that they are currently not approved and should be used for situational awareness only and not be used for Air Traffic Control or Air Traffic Management.

Looking at the actions of the RV9 pilot, having heard the AGO give a warning about the approaching Phenom (**CF6**), they looked for, and became visual with it, at a range of around 500m (**CF8**) and took action to increase the separation by climbing. Members opined that the pilot would not have been expecting to see an aircraft between them and the airfield when on finals and there was little more they could have done in the circumstances.

When looking at the actions of the Phenom pilot, some members expressed disappointment that the pilot had planned to route so close to an airfield without calling on the frequency, particularly given that they were flying a relatively fast aircraft at low-level (**CF2**, **CF3**). They noted that the pilot reported being concerned by traffic low-level at Silverstone which may have been a factor in why the pilot routed through the Turweston visual circuit (**CF1**). Nevertheless, members wondered why, if the pilot was visual with the circuit traffic as they approached from the north, they did not either call Turweston (**CF5**) or take earlier action to remain clear of the traffic turning finals (**CF4**). The height of the Phenom meant that the pilot could only receive a TCAS TA (**CF7**), and although the pilot thought that the separation was adequate, the Board thought that routing between the traffic on finals and the runway could be considered poor airmanship (**CF9**). Members were heartened to hear that Cranwell had highlighted Turweston to pilots for planning purposes, with the intention that they remain clear, but noted that there were many other busy minor aerodromes and that it was a pilot's personal responsibility to ensure they were familiar with such aerodromes. Following on from previous Airprox where military aircraft had flown close to circuit traffic at minor airfields without an ATZ, HQ Air Command had undertaken to highlight the issue to military pilots and had published an article in its safety magazine Air Clues[4]. Members were disappointed that such knowledge appeared to have been forgotten.

There followed a prolonged discussion about the lack of an ATZ at Turweston. Like many airfields around the UK, when the requirement to be a licensed airfield was removed for training airfields, Turweston took that option, and by doing so the ATZ was removed. Members recalled that a number of Airprox had occurred at different airfields because without the ATZ, transiting traffic had routed close to the circuit. After one such Airprox (2018319) the Board had made a recommendation to the CAA to investigate options for a cost-effective means to afford additional protection to traffic at busy minor airfields, to which the CAA agreed to conduct a review. A CAA advisor noted that many of the requirements for an ATZ were dictated by law in SERA and that unlicensed aerodromes were able to

[4] Air Clues Issue 29 article available on the UKAB website here

apply for an ATZ, but that in such circumstances it was a requirement to provide FISO or ATC[5] services. Nevertheless, members felt strongly that there was more work to be done and resolved to make a recommendation that :

> The CAA conducts a review to establish the reasons behind why many training airfields chose not to maintain their ATZ when the requirement to hold an aerodrome licence to conduct training activity was removed. Where those reasons fall within the competency of the CAA – take appropriate action to mitigate against any increase in risk associated with the removal of the protection previously afforded to them (by an ATZ).

Finally, in determining the risk, the Board discussed the separation between the aircraft and the action taken by the pilots. Although the RV9 pilot had seen the Phenom late, the Phenom pilot had been visual for some time and so members quickly agreed that there had been no risk of collision, but assessed that safety had been degraded; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020167		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
x	**• Regulations, Processes, Procedures and Compliance**		
1	Human Factors	• Flight Operations Documentation and Publications	Regulations and/or procedures not fully complied with
x	**• Tactical Planning and Execution**		
2	Human Factors	• Pre-flight briefing and flight preparation	
3	Human Factors	• Flight Planning and Preparation	
4	Human Factors	• Monitoring of Other Aircraft	Did not avoid/conform with the pattern of traffic already formed
5	Human Factors	• Communications by Flight Crew with ANS	Pilot did not communicate with appropriate ATS provider
x	**• Situational Awareness of the Conflicting Aircraft and Action**		
6	Contextual	• Situational Awareness and Sensory Events	The pilot had generic, late or no Situational Awareness
x	**• Electronic Warning System Operation and Compliance**		
7	Contextual	• ACAS/TCAS TA	
x	**• See and Avoid**		
8	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots
9	Human Factors	• Lack of Individual Risk Perception	Pilot flew close enough to cause concern

Degree of Risk: C.

Recommendation: The CAA conducts a review to establish the reasons behind why many training airfields chose not to maintain their ATZ when the requirement to hold an aerodrome licence to conduct training activity was removed. Where those reasons fall within the competency of the CAA – take appropriate action to mitigate against any increase in risk associated with the removal of the protection previously afforded to them (by an ATZ).

[5] For further details see Policy Statement (caa.co.uk)

Safety Barrier Assessment[6]

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

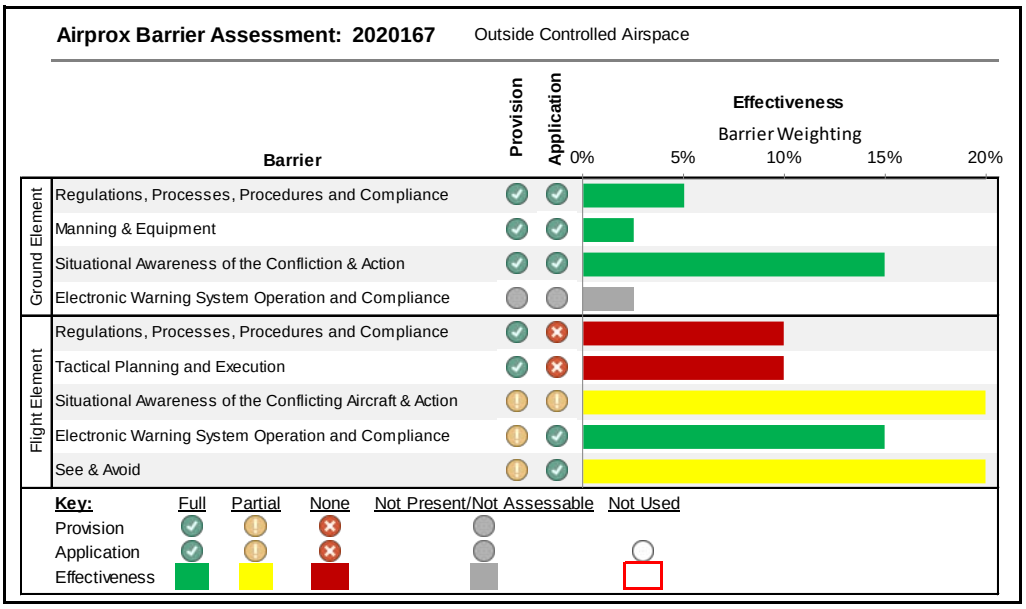
Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the Phenom pilot did not remain clear of the Turweston circuit.

Tactical Planning and Execution was assessed as **ineffective** because the route planned by the Phenom pilot did not take into account the Turweston circuit.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because both pilots only had generic information that the other was in the vicinity.

See and Avoid were assessed as **partially effective** because although the RV9 pilot saw the Phenom late, they managed to take avoiding action.



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