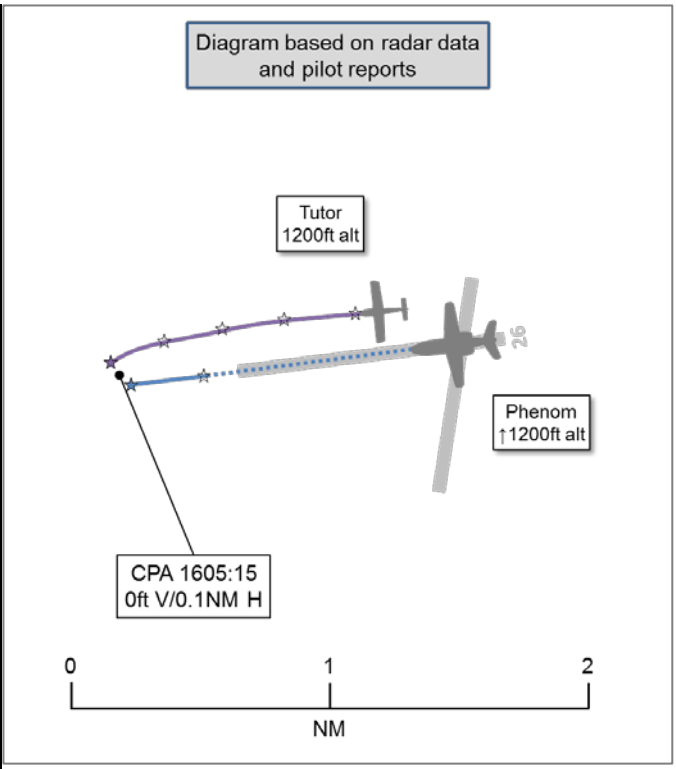
AIRPROX REPORT No 2020018

Date: 12 Feb 2020 Time: 1605Z Position: 5302N 00031W Location: RAF Cranwell circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Phenom	Tutor
Operator	HQ Air (Trg)	HQ Air (Trg)
Airspace	RAF Cranwell ATZ	RAF Cranwell ATZ
Class	G	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Cranwell Tower	Cranwell Tower
Altitude/FL	1200ft	1200ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Blue/White	White
Lighting	Nav, Strobes, Taxi light	HISLs, Nav lights
Conditions	VMC	VMC
Visibility	9.9km	10km
Altitude/FL	750ft	800ft
Altimeter	QFE (1004hPa)	QFE (1004hPa)
Heading	264°	264°
Speed	180kt	80kt
ACAS/TAS	TCAS II	TAS
Alert	None	Unknown
Separation		
Reported	50-100ft V/0m H	50-100ft V/0m H
Recorded	0ft V/0.1NM H	



THE PHENOM PILOT reports that he was the QFI operating as Pilot Monitoring in the right-hand seat. His student was an experienced Chinook pilot on a multi-engine crossover syllabus sortie, operating as the Pilot Flying (PF) in the left-hand seat. They had been cleared on a Standard Instrument Departure with onwards clearance to join controlled airspace. The student had briefed an IF take-off. They were instructed to line-up after a 20min hold due to traffic. The TCAS was set to TA/RA in accordance with the Runway Checklist. Take-off clearance was given once landing traffic had cleared the runway. He visually acquired a Tutor on the dead-side during the take-off roll and monitored it whilst the after take-off checks were completed. He transmitted on the Tower frequency "*Tutor on the dead-side do not turn*". Simultaneously, the Tutor pilot started his upwind turn. He directed the PF to "*level off*" and then "*descend*" in order to avoid a mid-air collision. He estimated that they passed 100ft below the Tutor. Before changing to the departure frequency, he informed the Tower controller that he intended to file an Airprox report.

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

THE TUTOR PILOT reports that he was on his second solo sortie and was trying his best to negotiate a busy circuit with a stream of additional instrument traffic. Following a go-around for approaching instrument traffic, he entered the dead-side and prioritised his flying of the aircraft (after take-off checks and R/T). It appears that, in attempting to assimilate the many factors facing him in the circuit at that time, he did not factor-in the much faster Phenom's departure adequately, not noticing its position until he began his turn at the nominal upwind point as it passed beneath him. He now considers that he should have checked more thoroughly for departing traffic and extended further upwind before safely commencing the turn. Prior to the sortie, he had been thoroughly solo-briefed by his QFI regarding various circuit permutations etc; however, it is hard to cater for eventualities such as this one. He has

learnt a huge amount from this sortie and will endeavour to incorporate this experience into his future circuit flying.

THE TUTOR PILOT'S SUPERVISOR reports that his solo student performed well during the dual element of the sortie detail. He had previously performed well on circuit sorties and is a pilot bursar with much potential. During his 30min solo sortie, and following a go-around, he commenced a turn at the normal upwind point from the dead-side without regard for a departing Phenom. The 2 aircraft came into close proximity and prompted the Phenom captain to submit an Airprox.

Prior to the sortie, solo briefs *et al* were conducted in accordance with 6FTS Orders. In addition, he had covered as many permutations as he could with respect to when and when not to turn/continue/go-around. It was an incredibly busy and complex visual and instrument circuit scenario involving all 3 station-based aircraft types as his student taxied to the hold. He could have chosen to step-in and prevent his going solo at this point. He did not, in an arguably 'archaic' belief that one can glean a great deal of experience from negotiating a busy circuit. The Tower controller was working hard at successfully dovetailing all the demands from 3 differing aircraft types. His student held at the holding point for circa 20-30min prior to getting airborne due to the aforementioned busy nature of the circuit. Again, he could have intervened, and started to do so on the basis that the student's mental state might not be optimal given the wait; however, an opportunity to get him airborne arose. After consultation through the Ground controller at the supervisor's behest, the student stated that he was fine and happy to continue. Again, he could have chosen to terminate the sortie regardless of the student's reply. In hindsight, he could – and perhaps should – have decided not to send him solo into a busy, complex circuit. He subsequently regretted not having instructed the student to terminate the sortie from the hold.

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

THE CRANWELL TOWER CONTROLLER reports that this was a busy tower session. The circuit had been full for some time and the Tutor had been waiting at the hold to launch into the circuit for approximately 20min. There were 2 Phenoms behind the Tutor waiting to depart. Once there was room in the circuit, the Tutor pilot was cleared for take-off and then there was a slight delay before the [Airprox] Phenom was released for departure due to radar traffic using the runway. The Tutor pilot was told to go-around for the instrument traffic and went-around dead-side. As the Phenom departed, the Tutor was dead-side and, as the Phenom climbed out, he was obviously concerned about the Tutor's positioning as he transmitted a warning "*Tutor dead-side, do not turn*". She heard the warning, looked to see where the Tutor was at that point and saw that he was already turning. The Tutor pilot either did not acknowledge or did not hear the warning and turned across the Phenom's departure path. The Phenom pilot descended to maintain separation from the Tutor. The Phenom pilot informed the Tower controller that he would be filing an Airprox before he changed frequency.

The controller perceived the severity of the incident as 'Medium'.

THE CRANWELL ATC SUPERVISOR reports that he was present in the VCR because the visual circuit was full and had been for much of the afternoon. There were several aircraft taxiing and, at the hold, was a Tutor which was waiting to depart into the circuit on the solo phase of a dual to solo consolidation sortie. Behind the Tutor were 2 Phenom aircraft to depart on SIDs. There were 2 further aircraft awaiting clearance to join, 2 requiring no visual circuits to land, and multiple aircraft on radar – some requesting to join, others for further radar or to depart. Having liaised with the Approach controller and the ADC, a plan was agreed to get the waiting aircraft airborne. The QFI supervisor asked that his student be asked if he was still content to continue his sortie; this was completed by the Ground controller and a positive response received.

The Tutor pilot was given take-off clearance with 2 Prefects in the visual circuit and radar traffic inbound to land. When the Tutor approached finals, the radar traffic was ahead and the pilot was cleared to 'continue'. Then, because as he hadn't initiated a go-around, the QFI asked the ADC to send the Tutor around with one ahead. This was carried out and, when the radar traffic landed, the [Airprox] Phenom was lined-up for departure. Once the radar traffic had vacated the RW, the [Airprox] Phenom pilot was

given take-off clearance. When the [Airprox] Phenom was airborne the 2nd Phenom at the hold was then given take-off clearance; as the Supervisor went to intervene, the ADC realised that IFR separation was required and amended the clearance to 'line-up and wait.' When the Supervisor looked back up, he saw the [Airprox] Phenom bunt down slightly before commencing the climb again outbound. Because the sun was quite low it was difficult to judge distance between the two aircraft. The Phenom pilot reported an Airprox and then changed frequency to departures.

Factual Background

The weather at RAF Cranwell was recorded as follows:

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METAR EGYD 121550Z 25016KT 9999 FEW045 SCT250 06/M01 Q1012 NOSIG RMK BLU BLU=
METAR EGYD 121620Z 25012KT 9999 FEW040 06/M01 Q1012 NOSIG RMK BLU BLU=
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Analysis and Investigation

Military ATM

The Cranwell Tower Controller reported that their workload was high-to-medium. The session was rated as complex due to the visual circuit being full with three different aircraft types (Tutor, Phenom and Prefect), radar integration and numerous aircraft being held off. Given this complexity, the ATC Supervisor was in the VCR as well as the Duty Aircrew Officer and the Tutor QFI.

After a hold of 20-30min the Tutor was cleared to depart and joined the visual circuit with a Prefect at 2½NM final on an instrument approach and 2 other aircraft in the circuit. Once on final to touch-and-go, the Tutor was placed on a 'continue' due to the Prefect traffic on radar being ahead of them to land. At 1602:58, when it became apparent to the Tower controller that the Tutor pilot would not get their approach in, they were sent around. The Phenom pilot was instructed to line-up and wait at 1603:17 and was subsequently cleared for take-off at 1604:11 once the Prefect had vacated the RW. Shortly after departure, the Phenom QFI noted the Tutor was approaching the standard point for a crosswind turn and broadcast on the Tower frequency "*Tutor dead-side don't turn"* at 1604:59. The Phenom QFI noted in their report that almost immediately the Tutor pilot began their crosswind turn and so the QFI instructed their student to level-off and then descend to avoid a collision. The Phenom QFI estimated that the Tutor overflew them by approximately 100ft.

For the majority of the incident, the Phenom was below radar cover. The Phenom was cleared for take-off with the Tutor established on the dead-side. At 1604:59 the Phenom QFI made a broadcast on the Tower frequency telling the Tutor pilot not to turn. This occurred below radar coverage. CPA occurred 16secs later at 1605:15 and was measured at 0.1NM with no vertical separation.

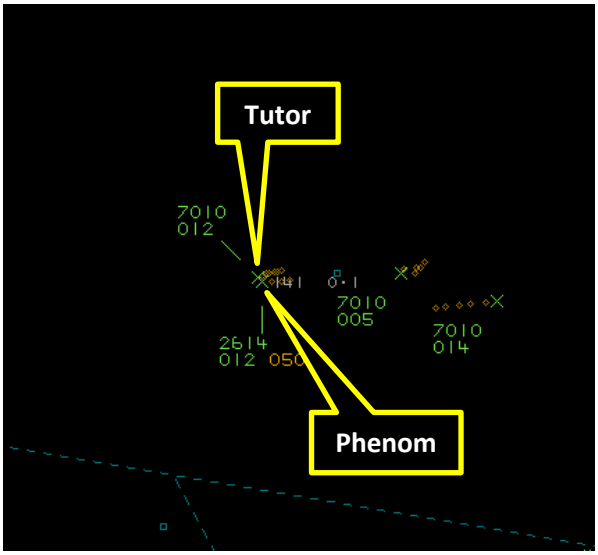


Figure 1 - CPA

It appears that the complexity of the circuit environment affected all of the parties involved except the Phenom QFI. The unit investigation found that, whilst there were 5 people in the VCR, all were engaged on legitimate tasks in the run-up to this Airprox which prevented them from appreciating the potential confliction. For their part, the Tutor pilot noted that they had underestimated the departure speed of the Phenom and this influenced their decision to turn crosswind when they did.

UKAB Secretariat

Although the CPA is measured at 0ft V and 0.1NM H, it should be noted that this particular radar sweep was while the Phenom pilot was in the process of arresting his climb and descending – one sweep of the radar (4sec) later, the separation is recorded as 400ft V and <0.1NM H.

The Phenom and Tutor 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

Following a period of poor weather (previous 2 days) this was the first day of flying (of the week) for all aircraft types. It was a dynamic circuit environment coupled with a busy local area and multiple aircraft recovering to the airfield simultaneously. The Tower controller had been in position for 1hr, the visual circuit had been full for a period of approximately 30min and the weather was good. Additionally, the ATC Supervisor recalls a setting sun which was causing problems with locating aircraft in the circuit; this may have also been a distraction for aircrew.

There were numerous profiles being flown as well as a plan for dual-solo flights for both a Tutor and a Prefect. In addition, multiple aircraft were being held-off due to the circuit state. Immediately prior to the reported Airprox, 2 Phenoms (requiring to join airways) had been holding on the ground for approximately 20min, together with a solo student in a Tutor. The Tutor QFI responsible for the solo student was in the tower, along with the Duty Aircrew Officer (DAO) and ATC Supervisor. At the time, the supervisory structure was working hard to support the busy Tower controller, book Prefect diversions and monitor the progress of the solo student. As the Tutor was about to get airborne, his supervising QFI queried whether he was still happy to proceed, knowing that the lengthy wait at the hold could have served as a significant distraction. The student elected to continue with his solo sortie and, at 1559:33, he was given a take-off clearance, leaving the RW clear for the 2 waiting Phenoms to also depart.

The Tower controller was working 2 aircraft in the visual circuit and 1 aircraft on an instrument approach. One of the visual circuit aircraft elected to proceed to the initial point in order to deconflict with the instrument traffic; however, this introduced more work for the Tower team in ensuring that this aircraft was visual with the IFR traffic and that the IFR traffic received reciprocal information. Subsequently, the Tutor pilot completed a circuit and called finals for his clearance. Again, this was potentially conflicting with instrument traffic and the student was eventually instructed to go-around. The fact that the go-around was not self-instigated could be a reflection of the relative inexperience of the student, however, the Tutor QFI provided an appropriate level of support to the Tower controller.

At 1604:44 the Phenom pilot was given clearance to depart and, once clear of the RW, the second Phenom also called ready for departure. In haste, the tower controller gave the clearance for the second Phenom to get airborne in quick succession. The ATC Supervisor immediately intervened to delay the second Phenom in order to allow for adequate IFR separation between the 2 similar tracks. At this time no-one was monitoring the position of the Tutor which was, at this stage, late dead-side and approaching the point of turning crosswind and across the path of the departing Phenom getting airborne. At this point the Phenom QFI (positioned in the right-hand seat) spotted

[1] MAA RA 2307 paragraphs 1 and 2.
[2] MAA RA 2307 paragraph 15.

the Tutor's position and, at 1604:59, the Phenom pilot stated "*Tutor dead-side don't turn*" on the Tower frequency. This appeared not be to acted upon and, on seeing the Tutor dip its wing to turn, the Phenom pilot levelled off. A few seconds later 'elevator down' was commanded in the Phenom and the thrust lever angle was reduced. The Phenom levelled at 579ft before beginning descent and bottoming out at 477ft agl [UKAB note: Cranwell airfield elevation 222ft] in order to maintain separation from the Tutor, which then flew over the top of the departing Phenom (data based on aircraft radar altimeter data). At 1605:53 the Phenom pilot stated on the Tower frequency that he would be filing an Airprox.

Throughout the period of the incident the circuit environment was being appropriately supervised. Present in the ATC tower was the ATC Supervisor, the DAO and the Tutor QFI (monitoring the solo student). At the time of the incident the ATC Supervisor was 'heads-in' ensuring that the second Phenom was not cleared for take-off too early, the DAO was busy securing a diversion booking for a Prefect with the QFI monitoring the student following a normal circuit profile with a go-around. However, at the point of realisation that the aircrew of both the Phenom and the Tutor may have been lacking situational awareness (SA), the Phenom pilot had instigated his own deconfliction through lookout (the Tutor did not paint on TCAS); these activities were all deemed normal behaviour given the high-density air traffic environment. However the student Tutor pilot admitted that he underestimated the departure speed of the Phenom and could have had more awareness.

In summary, it appears that a combination of a lack of SA, high traffic density within the circuit together with distraction from delayed clearances and multiple recoveries to the airfield meant that a Phenom and a Tutor could have potentially flown into the same piece of airspace had avoiding action not been taken. The student of the Tutor should have had better awareness of the departing traffic and, if so, he may have elected to delay his turn or turn earlier in anticipation. However, it is fair to assume that an inexperienced student operating in such a busy environment would be working extremely hard, and all other personnel should be mindful that their SA and capacity will be low in comparison with more experienced aircrew. With respect to the supervision, an option may have been not to send the Tutor into the circuit given the distractions of such a busy environment exacerbated by a lengthy delay, however, the QFI supervisor was confident of the student's ability.

With respect to ATC and DAO performance, the team were operating correctly but also working hard and had been for some time. The Tower controller can only speak to and divide their time between a few speaking units whilst remaining safe and expeditious. In this instance it appears that there was an increase in the traffic density, probably as a result of the fact that the weather on the previous 2 days had not been fit for flying at Cranwell. Whilst ATC welcomes a busy traffic environment (for controller currency and training), it can be seen from previous reports that incidents have occurred following periods of bad weather or bank holidays and therefore account must be taken of this - particularly as all personnel involved may be under-aroused prior to the busy session.

Comments

HQ Air Command

Visual and instrument traffic is mixed at RAF Cranwell due to the nature of the flying training enterprise undertaken and to maximise training opportunities. A number of the existing mitigations present at Cranwell to prevent conflict between visual and instrument traffic (electronic conspicuity, supervision, SOPs) were less effective than expected on the day that this Airprox occurred.

This Airprox was the subject of an investigation which made four recommendations to reduce the likelihood of a re-occurrence. When this Airprox happened, the circuit was busier than normal, with various aircraft types present and various sortie profiles being undertaken. A review is being carried out at the airfield to ensure all squadrons better understand each other's intentions with regard to visual and instrument procedures. It also aims to co-ordinate flying activity more effectively and therefore minimise the potential for conflictions. Cranwell is also scoping moving Tutor solo circuits to Barkston Heath to further ease traffic in the Cranwell circuit.

A review of orders is underway so that supervisors are best able to reduce activity during busy periods when maintaining situational awareness is difficult. A review of ATC visual circuit priorities is also being undertaken. A process of education is taking place to ensure that all aircrew remain extra-vigilant during times of busy circuit activity, especially when these follow periods of inactivity.

Elements of inexperience, distraction, time pressure, high workload and environmental factors (setting sun) all conspired to set the circumstances for this incident. However, the Phenom QFI did well to maintain good situational awareness, anticipate the actions of the Tutor pilot and take timely and appropriate action to resolve the potential confliction. This Airprox serves to highlight the necessity to remain alert, especially in such a busy circuit environment, improve the SA of others if possible and ultimately act decisively should a loss of safe separation look probable.

Summary

An Airprox was reported when a Phenom and a Tutor flew into proximity in the RAF Cranwell visual circuit at 1605Z on Wednesday 12th February 2020. Both pilots were operating in VMC, the Tutor pilot under VFR and the Phenom pilot under IFR, and both were in receipt of an Aerodrome Control Service from Cranwell Tower.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and 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. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board first heard from a military member who stated this incident had occurred following a period of bad weather which had precluded any flying training activity at Cranwell. Consequently, there had been an element of pressure on all parties involved to achieve the flying task. The Board considered that there had been a lack of coordination in the scheduling of the flying activity (**CF1**) and was heartened to hear that this is being addressed through a recommendation made from the unit's own investigation.

Considering the actions of the Phenom pilot, the Board noted that he had monitored the Tutor's relative position throughout the take-off roll and initial climb and had attempted to direct its pilot to remain on the dead-side while the Phenom climbed to depart. However, the Tutor pilot had turned crosswind at an inopportune moment and the Phenom pilot had then been unable to integrate with it (**CF8**). Members were surprised that there had been no TCAS or TAS warning from either aircraft (**CF9**); nevertheless, the Board felt that the Phenom pilot had acted appropriately in descending to avoid the turning Tutor, albeit this avoiding action had been late (**CF10**) because of the timing of the Tutor pilot's turn.

Turning to the actions of the Tutor pilot, the Board considered that this had been an extremely complicated scenario for a student pilot with a low number of flying hours and that, although asked by his supervisor if he had been content to continue, he had probably lacked the experience to assimilate the complexity of the circuit environment at that time. Members considered that the supervisor could have taken the decision to cancel the solo element of the circuit detail when it had become apparent that the circuit was extremely busy (**CF2**). It was apparent to the Board that the Tutor pilot had not assimilated that the Phenom's departure speed and track would conflict with his go-around at circuit height and, therefore, the Tutor pilot had not modified the timing or position of his crosswind turn (**CF6**, **CF7**, **CF8**). Furthermore, the Tutor pilot had not seen the departing Phenom until he overflew it in his

crosswind turn (**CF12**). The Board was heartened to hear that another recommendation from the unit's investigation was a review of circuit priorities at Cranwell and to examine the possibility of exporting Tutor solo circuit flying to an adjacent airfield.

The Board then discussed the actions of the Cranwell Tower controller and quickly agreed that this had been a particularly complex session which had necessitated the ATC Supervisor's presence in the VCR. Members felt that the controller had been working at, or near, capacity and this had been exemplified by the issuing of a take-off clearance to the second Phenom without allowing for IFR separation, necessitating the intervention of the Supervisor. An ATC member noted that releasing IFR departures through an active visual circuit will always present some risk because, at some point, the circuit traffic will have to cross the climb-out lane. The Board agreed that the Tower controller had become momentarily distracted with the second IFR departure (**CF5**), and that this had led to them not noticing and, therefore, not resolving the developing confliction between the departing Phenom and the Tutor in the circuit (**CF3**) (**CF4**). The Board also felt that, due to the workload of the Tower controller, the ATC Supervisor had become involved in the tactical execution of controller tasks, rather than perhaps stepping-in and instructing aircraft to land or hold-off to relieve the pressure of the situation (**CF2**). On this latter point, the Board noted a further unit recommendation to re-educate ATC and flying supervisors with respect to their powers to intervene when situations develop to a point where safety may be compromised.

On considering the risk involved in this incident, there was much discussion over whether or not there had been any actual risk of collision. Some members felt that the Phenom QFI had been in control of the situation because he had been visual with the Tutor throughout his take-off roll and initial climb and, therefore, there was no risk of collision. Others felt that, notwithstanding, he could not have known the intentions of the Tutor pilot, who the Phenom QFI had instructed not to turn but who turned anyway, thus displaying the unpredictability of the situation. Opinions were evenly split between a risk category C and a risk category B so the Director put the matter to a vote. By a count of 8 votes to 7, the Board assigned a risk category B (safety much reduced – risk of collision) to this event (**CF11**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020018		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Regulations, Processes, Procedures and Compliance		
1		• Any other event	**Sub-optimal scheduling of unit activity**
	• Manning and Equipment		
2	Human Factors	• Leadership and Supervision	
	• Situational Awareness and Action		
3	Human Factors	• Conflict Detection - Not Detected	
4	Human Factors	• Conflict Resolution - Not provided	
5	Human Factors	• Distraction - Job Related	Controller engaged in other tasks
	Flight Elements		
	• Tactical Planning and Execution		
6	Human Factors	• Insufficient Decision/Plan	Inadequate plan adaption
	• Situational Awareness of the Conflicting Aircraft and Action		
7	Human Factors	• Understanding/Comprehension	Pilot did not assimilate conflict information
8	Human Factors	• Monitoring of Other Aircraft	Pilot did not sufficiently integrate with the other aircraft
	• Electronic Warning System Operation and Compliance		
9	Technical	• ACAS/TCAS System Failure	CWS did not alert as expected
	• See and Avoid		
10		• Any other event	**Late avoiding action**

11	Contextual	• Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle	Piloted air vehicle
12	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: B

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:

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the daily flying activity had not been coordinated across the unit and, as a result, the visual circuit environment was particularly busy.

Manning and Equipment were assessed as **partially effective** because neither the ATC Supervisor nor the Tutor pilot's supervisor took action to reduce the number of aircraft in and around the visual circuit.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Tower controller and ATC Supervisor were dealing with a revised clearance for the second Phenom departure and did not recognise the potential for confliction between the first Phenom departure and the Tutor.

Flight Elements:

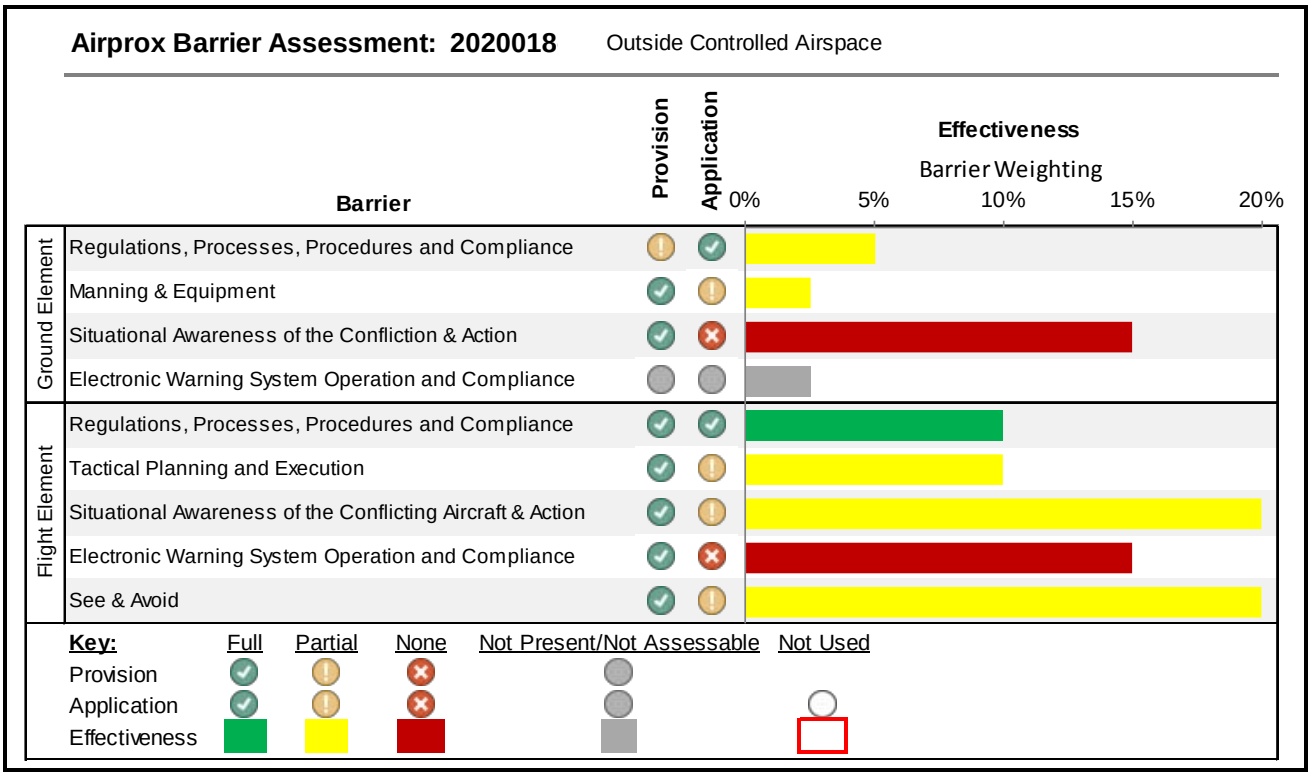
Tactical Planning and Execution was assessed as **partially effective** because the Tutor pilot's supervisor permitted the Tutor pilot's release into a busy and complex environment and, subsequently, the Tutor pilot did not make an allowance for the departing Phenom when turning crosswind.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Tutor pilot's intentions were unclear to the Phenom pilot and, therefore, the Phenom pilot could only take avoiding action at a late stage once the Tutor pilot had commenced his crosswind turn; neither pilot integrated with the other aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because neither aircraft's collision warning system issued a proximity alert.

See and Avoid were assessed as **partially effective** because the Phenom pilot, although having seen the Tutor early, could only take late avoiding action due to the uncertainty over the Tutor pilot's intentions.

[3] 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: 2020018
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