

AIRPROX REPORT No 2012077

Date/Time: 12 Jun 2012 0954Z

Position: 5320N 00253W (1.5nm
W of Liverpool Airport -
elev 81ft)

Airspace: Liverpool CTR/ATZ (Class: D)

Reporting Ac Reporting Ac

Type: PA31-350 Hawk T Mk2

Operator: Civ Comm HQ Air (Trg)

Alt/FL: 300ft↓ 400ft
QNH (1011hPa) QNH (1011hPa)

Weather: VMC CLBC VMC CLBC

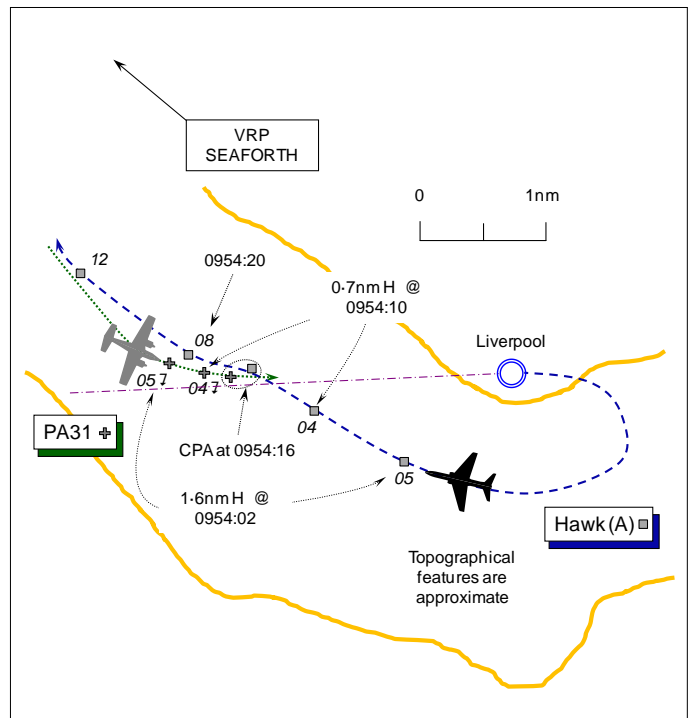
Visibility: >10km 15km

Reported Separation:

100ft V/100m H 100-150ft range

Recorded Separation:

Nil V @ <0.3nm H



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PIPER NAVAJO CHIEFTAIN PA31-350 PILOT (PA31) reports flying in to Liverpool Airport on an Air Ambulance flight from the Isle of Man in VMC. Inbound VFR, he was advised by Liverpool RADAR of two Hawks making a low approach and go-around down the Mersey at 500ft QNH. He was then transferred to Liverpool TOWER on 126.35MHz and instructed to join final, No2 to the Hawks. Whilst on L base for RW09 he saw a Hawk in front of him perform a low approach and go-around, but he lost sight of the ac – Hawk (A) - as it entered the downwind leg after the go-around. Upon being cleared to land by TOWER, he turned onto final and at 300ft QNH (1011hPa), heading 090° 1.5nm from touchdown at 120kt, a Hawk crossed the FAT climbing from R to L in front of him about 100m away and 50-100ft above with a 'high' Risk of collision. He had advised TOWER that he was visual with the Hawk and heard the controller instruct the pilot of Hawk (A) to extend downwind. However, he was not told that it would be cutting across in front of his ac on final. He reported the Airprox to Liverpool TOWER on the RT. The ac has a white/mauve livery and the HISLs were on. A squawk of A0260 was selected with Mode C and S on; TCAS is not fitted.

THE PILOT OF THE HAWK TMk2 [HAWK (A)], a QFI, reports he was inbound to Liverpool Airport in VMC for a training ILS approach on RW09 with the student PF. They were following another Hawk – Hawk (B) - in the pattern and in receipt of a TS (*sic*) from Liverpool RADAR on 119.85MHz. A squawk of A0262 was selected with Modes C and S on; TCAS is fitted.

RADAR had advised of a civilian twin – the PA31 - in the vicinity of the mouth of the Mersey that was 'left base over land'. The PA31 pilot had been told by RADAR to hold off joining because of the two Hawks on App, he thought. A departure clearance was negotiated with RADAR that would initially take them down the River Mersey, SVFR, not above 1500ft QNH and the controller would advise them whether it would be either a L or R turnout after climbing out from the low-approach. The controller then asked both Hawks to be at 'low-level' due to the PA31 holding at the mouth of the Mersey; they advised RADAR they would be below 500ft, which was accepted. Having watched the preceding Hawk (B) depart in the same manner, he thought, [UKAB Note (1): the radar recording shows Hawk (B) turned wider outbound and closer to the opposite bank] they listened to the RADAR controller inform the crew of Hawk (B) that the PA31 was inbound at 1000ft. Continuing their

approach, at short final for the low-approach they heard the PA31 pilot ask for joining instructions, which he was given together with the position of their Hawk (A). The twin pilot called that he was visual with both Hawks and changed to the TOWER frequency. After their go-around, upon rolling out pointing W down the River Mersey at about 500ft QNH, RADAR informed them that the PA31 was 'one and a half mile final to RW09, extend downwind until you pass behind please'; however, this extension downwind would have taken his jet over a built up area at 500ft and at the same time TCAS enunciated a TA. It took some time to digest all this information and try to get SA on the exact position of the PA31. The TCAS contact initially showed up R of the nose (as he would have expected from his own SA and the overland, left base radio call) but then the contact proceeded to move to L of the nose and this inaccuracy became a distraction that compounded his loss of SA on the PA31. The RADAR controller transmitted the PA31's position to them again and they informed him that they were below 500ft in accordance with his departure instructions. He believed the twin was altitude-deconflicted, from their departure instructions, his own SA [having heard the crew of Hawk (B) being told that the PA31 was inbound at 1000ft] and the TCAS contact out to the L, he believed the safest course of action would be to continue down the course of the River Mersey and not turn L to head downwind, as this would have turned them towards the TCAS contact. About 10sec after RADAR's position call, descending through 370ft down to 250ft ALT in a slight RH turn through 295°, the front seat student PF obtained visual contact with the PA31 slightly below, in their front L quarter 300ft away and initiated a RH pull up. They passed above and slightly in front of the twin ac at an estimated slant range of about 100-150ft with a 'medium' Risk of collision. Departing down the River Mersey, they exited the CTR and, having discussed the event with the student, continued the sortie. TCAS did not enunciate any RA.

THE LIVERPOOL AERODROME CONTROLLER (TOWER) reports that he was pre-noted by RADAR about two light-twin ac joining VFR from the N and, at a similar time, also notified about 2 Hawk ac making individual instrument approaches to RW09. During the discussion with the RADAR controller, it was agreed that the light-twins would be instructed to follow the E bank of the River Mersey towards the A/D to de-conflict with the Hawk ac, that would be routeing up (*sic*) the Mersey low-level on departure; he was informed by RADAR that TI had been passed to all ac concerned whilst they were on the same frequency. The first light twin made its approach after the Hawk (B) had gone around, that was uneventful. However, when the second twin - the PA31 - reported final and had been cleared to land, the pilot advised 'I'm visual with the Hawk that's just missed us'. He was surprised at this as he believed TI had been given on Hawk (A), it had just gone through the approach and the weather was good. Querying the PA31 pilot, 'I thought you'd been given traffic information on that ac?', the pilot replied that he had but 'didn't expect it to get that close'. The PA31 made an uneventful approach and landing, but did not indicate at the time that he would be filing an Airprox.

THE LIVERPOOL APPROACH RADAR CONTROLLER (RADAR) reports that Hawk (A) was on an ILS approach to RW09 and then departed low-level via the River Mersey to leave the CTR, with a R turn out. The PA31 was joining L base RW09, VFR, behind the Hawk. Both ac had been given TI on each other whilst inbound.

When Hawk (A) turned outbound from the low-approach it was observed making a very tight cct to the S, so he updated the crew on the position of the PA31 and requested they extend downwind and to pass behind. Hawk (A) was observed passing close to the PA31, but he gave no estimate on the relative positions.

There was no mention of an Airprox by the Hawk on the RT.

ATSI reports that the Airprox occurred in the Class D Liverpool ATZ comprising a circle radius 2.5nm centred on RW09/27 up to 2000ft aal and situated within the Liverpool CTR.

The PA31 was operating VFR from the Isle of Man to Liverpool and was in receipt of an Aerodrome Control Service from Liverpool TOWER on frequency 126.350MHz. Hawk (A) was operating VFR on a local flight from Valley, conducting an ILS approach at Liverpool for training and was in receipt of a

service from Liverpool Radar on 119.850MHz. Hawk (B) was also conducting ILS training with Liverpool Radar and was ahead of Hawk (A) in the approach sequence.

The Liverpool METARs were:

0950Z 07008KT 040V100 9999 FEW035 SCT045 13/06 Q1011=
1020Z 05009KT 9999 FEW035 BKN046 14/05 Q1011=

At 0942:00, the crew of Hawk (A) contacted Liverpool RADAR for a practice ILS approach and was instructed to squawk A0262. Hawk (A) was identified and given a clearance to enter CAS, heading 120° at 3000ft. At 0944:00, Liverpool RADAR issued a clearance to the PA31 pilot to enter the CTR via SEAFORTH, VFR, not above 2000ft for RW09. At 0944:10, the crew of Hawk (A) was instructed to turn R heading 150°. At 0946:50, Hawk (A) was instructed to turn L onto a heading of 120° to close the LLZ from the L and descend to 2500ft.

At 0947:20, Hawk (B) was on final approach for RW09 and the crew was given clearance for a low approach and go-around with a RH turn out. At 0948:20, the crew of Hawk (A) reported LLZ established and was instructed to descend with the glidepath. The Liverpool RADAR controller informed the crew of Hawk (A) that there was a company Hawk (B) on short final that would be turning R up the Mersey. The crew of Hawk (A) replied, "*copied I'll be requesting the same departure clearance*"; the crew of Hawk (A) was instructed that after the go-around the clearance would be VFR not above 1500ft up the Mersey, direction of turn to be advised but that it was likely to be a R turn.

At 0949:00, Hawk (A) was advised about the PA31, "*..joining down the river.. towards L base you happy to..be low level up the river initially 'til you've passed him*". The crew of Hawk (A) acknowledged the transmission and stated that they would be, "*..not above 500 feet*".

At 0950:00, the PA31 pilot advised that he was entering the zone at SEAFORTH routing to Garston Docks with the A/D in sight and that he had copied, "*..the Hawk traffic coming down the Mersey*".

At 0950:00, Hawk (B) had turned R after the go-around and was over the S bank of the River Mersey. Hawk (B) then proceeded westbound and followed the western bank of the Mersey, crossing the extended centre-line 2.7nm W of the airfield, ahead of Hawk (A) who was at 1800ft on final approach.

At 0950:10, the crew of Hawk (B) was passed TI on Hawk (A) on final and informed that the PA31 was, "*..at..the mouth of the river inbound to the field VFR at a thousand feet*".

At 0951:10, the crew of Hawk (A) was given clearance for a low approach and go around with a R turn. The PA31 pilot was given updated TI on Hawk (A) and informed that Hawk (A) would be going around before making a R turn to route up the river at low-level. The pilot of the PA31 replied that he was visual with Hawk (A). The PA31 pilot was instructed to contact Liverpool TOWER on 126.350MHz. The PA31 pilot reported visual with Hawk (A) on contact with TOWER and was instructed to report final number 2.

At 0953:50 Hawk (A) reported, "[Hawk (A) C/S] *on the go-around low approach..below 5 hundred feet over the Mersey*" and was informed by the Liverpool RADAR controller, "*..roger the Piper twins [the PA31] on a 1 and a half mile final to runway 0-9 so if you just continue downwind until you pass behind it please*". There was no reply from the crew of Hawk (A) and the controller asked if he had copied the instruction. The crew of Hawk (A) replied, "*....copied but we're below..5 hundred feet up the Mersey*".

At 0954:05, Hawk (A) had turned further R and was converging with the FAT 0.8nm to the SW of the A/D, close to the eastern bank of the Mersey.

[UKAB Note: The Prestwick System radar recording shows that at 0954:02, the PA31 was on final approach, about midstream, indicating 500ft Mode C (1013hPa) while Hawk (A) was S of the FAT to

RW09 NW bound at a range of 1.6nm from the PA31, that is also indicating 500ft Mode C (1013hPa). At 0954:10, the two ac close to a range of 0.7nm, with both ac indicating 400ft Mode C. Hawk (A) crosses ahead of the PA31 from R – L, just after 0954:16, indicating 400ft, with the PA31 also shown at 400ft 0.3nm to the WSW, however, the position of the Hawk may be inexact due to ‘track jitter’. Hawk (A) is then shown at 0954:20, about 2nm W of the Airport, N of the CL, indicating 800ft Mode C before subsequently climbing to 1200ft Mode C as the ac transits downstream.]

The PA31 pilot reported to the Liverpool ADC that he was, “*visual with that Hawk [(A)] that’s just about hit us*”. The written report from the pilot of the PA31 stated that he had seen Hawk (A) as it conducted the go-around but lost sight of it as it turned downwind. When the PA31 was on final at 300ft, Hawk (A) crossed in front of the PA31 from R-L, about 100m away and 50-100ft above the PA31 climbing.

The written report from the pilot of Hawk (A) states that he had heard the TI passed to Hawk (B) on the PA31 and believed that the PA31 was at 1000ft. The report also states that the controller informed the pilot of Hawk (A) that the PA31 was on a 1½nm final and that he was instructed to continue downwind until he passed behind it. The report states that extending downwind would have taken the ac over a built up area at 500ft. It also states that TCAS gave a TA on the PA31, which initially showed the PA31 to be R of Hawk (A) and then changed to the L, which caused the pilot to lose SA. The pilot was reluctant to turn to the L towards the contact and, in the belief that he was height deconflicted against the PA31, the pilot of Hawk (A) continued down the Mersey. The student PF became visual with the PA31 front left and slightly below and initiated a RH pull up. Hawk (A) passed slightly in front of the PA31 at an estimated slant range of approx 100-150ft.

The Liverpool RADAR controller stated that Hawk (A) conducted a much tighter cct following the go-around than he expected. Although nothing is laid down in unit instructions regarding the size of the cct pattern, the controller expected that Hawk (A) would follow a similar pattern to that flown by Hawk (B) previously. The controller stated that Hawks operate there about every 2 weeks and that standard procedure is to retain the ac on the APPROACH frequency and pass TI as required.

The Liverpool TOWER controller stated that he lost sight of Hawk (A) after it turned crosswind. The controller was looking out of the window at the time of the incident but did not see the conflict with the PA31. The TOWER controller had only recently obtained a unit endorsement and, despite being an experienced Military controller, had not seen that particular situation before.

Both aircraft were operating VFR in Class D CAS. CAP 493, The Manual of Air Traffic Services Part 1, Section 3, Chapter 4, Paragraph 3.1 states:

‘Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routeing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.’

When Hawk (B) made the approach and go-around to RW09 the cct flown followed the S and then the W bank of the Mersey and the Liverpool RADAR controller expected that Hawk (A) would conduct the go-around and subsequent cct in a similar manner. This may have been reinforced by Hawk (A) requesting the “*same departure clearance*” as Hawk (B). If Hawk (A) had followed a similar cct pattern to Hawk (B) it is very unlikely that a conflict with the PA31 would have occurred so it is likely that the controller did not expect Hawk (A) and the PA31 to interact.

The Liverpool RADAR controller gave TI to Hawk (A) prior to the go-around stating that the PA31 was joining down the river and requested that Hawk (A) remain low-level until past the PA31. The TI was not updated until after Hawk (A) conducted the go-around when the PA31 was on a 1½nm final, nor were positive instructions given to Hawk (A) prior to the go-around to ensure that the cct pattern conducted did not bring it into conflict with the PA31.

When RADAR saw that the cct conducted by Hawk (A) was much tighter than anticipated, the position of the PA31 was passed (1½nm final) together with the instruction to continue downwind until Hawk (A) had passed the PA31. The pilot of Hawk (A) did not follow the controller's instruction due to the belief that the instruction would take the ac over a built up area at 500ft (although at the time the instruction was issued Hawk (A) was close to the eastern bank of the Mersey while the PA31 was above the centre of the river – continuing downwind as instructed would have taken Hawk (A) behind the PA31 before reaching the western bank of the Mersey). As Hawk (A) continued the R turn the geometry of the situation changed so that where the PA31 had been to the R of Hawk (A) it changed to the L – as indicated by the TCAS, which made the pilot reluctant to turn to the L downwind.

The pilot of Hawk (A) did not have the PA31 in sight and made an incorrect assumption that he was height deconflicted from the PA31 based on the TI passed to the other Hawk (B) stating that the PA31 was at 1000ft. The pilot of Hawk (A) was not passed altitude information on the PA31 but at 1½nm final, the PA31 could reasonably be expected to be approximately 450ft aal, descending to land.

The Rules of the Air Regulations 2007, Rule13 states:

'(1) An aircraft landing or on its final approach to land shall have the right-of-way over other aircraft in flight or on the ground or water.

(2) An aircraft shall not overtake or cut in front of another aircraft on its final approach to land.'

Hawk (A) crossed the FAT approximately 1nm W of the threshold RW09 at 300ft whilst the PA31 was on final approach 1nm W of the threshold at 300ft.

On his first call to TOWER, the PA31 pilot reported having Hawk (A) in sight; however, he did not inform TOWER when he lost sight of it, and therefore TOWER was not prompted to update the TI to assist the pilot of the PA31 to 'see and avoid'.

As Hawk (A) was on RADAR's frequency the pilot did not hear TOWER's instruction to the PA31 to position number 2 to Hawk (A), which may have alerted the pilot of Hawk (A) to the relative position of the PA31 and given an indication that the PA31 was descending on final approach.

Despite PDs from Valley being a regular occurrence at Liverpool Airport, the newly validated TOWER controller had not seen the scenario before. When Hawk (A) conducted the go-around the TOWER controller did not see the subsequent cct and was therefore unaware of the resulting conflict with the PA31. A discussion before validation may have prompted improved awareness by the TOWER controller to the potential issues encountered when integrating military training traffic with other traffic approaching to land and encouraged more vigilant monitoring of the situation and resultant updates in TI.

The Airprox occurred in the Liverpool Airport ATZ, when Hawk (A) flew into conflict with the PA31.

Contributing factors were considered to be:

RADAR expected the cct flown by the pilot of Hawk (A) to mimic that flown by Hawk (B) but did not provide positive instruction to ensure that this was the case.

The crew of Hawk (A) did not comply with RADAR's instruction to continue downwind until past the PA31.

The crew of Hawk (A) believed that following the Mersey instead of following the controller's instructions was a safer course of action due to the incorrect belief that Hawk (A) was height deconflicted from the PA31, and a loss of SA regarding the position of the PA31.

Hawk (A) and the PA31 were on two different frequencies whilst operating in the ATZ, which reduced the SA for the pilots of both ac.

The TOWER controller was not aware that the PA31 had lost sight of Hawk (A) or that the crew of Hawk (A) was conducting a tighter than expected cct and did not pass updated TI to the PA31 pilot.

Recommendations:

It is recommended that Liverpool ATC review their procedures for traffic conducting go-arounds for training purposes and give consideration to ensuring that all ac operating in the ATZ are transferred to the TOWER controller.

It is recommended that Liverpool ATC ensure that PDs by Hawk ac from Valley are discussed as part of unit training prior to validation.

The unit has accepted these recommendations and will progress them accordingly.

HQ AIR (TRG) comments that the crew of Hawk (A) were instructed to continue downwind until clear of the PA31 but did not read this back. Their initial lack of response suggests they were preoccupied with other tasks and their subsequent transmissions suggest that they believed their altitude would keep them clear of the traffic; they clearly did not assimilate the TI regarding the PA31's position and therefore its proximity. Indeed, given the proximity of Liverpool airport to the River Mersey, there was always going to be a potential conflict on the extended RW centreline as the PA31 turned in. The crew also seem to have been preoccupied with the TCAS display, possibly at the expense of their lookout. It is well known that TCAS azimuth information is unreliable and should not be used for taking lateral deconfliction, as this Airprox highlights all too well. Furthermore, the crew's concern about overflight of built-up areas was allowed to over-ride compliance with ATC instructions in CAS and deconfliction with the PA31. Extending to the W bank before turning would have removed the collision potential and should have been the instinctive response to their concerns, assuming that the TI had been fully assimilated. However, their apparent preoccupation with TCAS appears to have prevented such an option being completed.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

This Airprox developed very quickly as Hawk (A) was departing after completing the go-around and the PA31 turned onto final for RW09. Members discussed the efficacy of ac completing approaches on different frequencies in close proximity, as it denied the TOWER controller positive RT contact with the crew if things went awry whilst they flying were through the visual cct area in contact with RADAR. Conversely, if the Hawks had been switched to TOWER, the high relative speed of the jet training ac meant they would be with TOWER for a very short period indeed and the added complexity of switching frequency twice, increasing the potential for error, weighed against the practice.

The PA31 pilot's report shows that whilst he was on L base he was aware of what Hawk (A) was doing from previous TI and saw the jet execute the low approach to RW09, but had subsequently lost sight of Hawk (A) during the go-around as it departed in the vicinity of the downwind leg. Consequently, the PA31 pilot did not see Hawk (A) until 1.5nm final when it crossed ahead of his ac climbing from R to L. Similarly, TOWER had also lost sight of Hawk (A) after it turned crosswind, but unaware that the PA31 pilot had also lost sight of the jet, the controller had focussed his attention elsewhere and had not observed the close quarters situation. Consequently, as TOWER had not tracked the progress of Hawk (A) the controller did not recognise that it had turned tight outbound

onto a conflicting course with the PA31 on final. Therefore, he would have been unable to offer an immediate update of the Hawk's position if the PA31 pilot had asked for it. In the Board's view, neither the PA31 pilot nor TOWER had any effective influence over the outcome of this Airprox.

However, RADAR reports he had seen Hawk (A) making a very tight cct to the S, as reflected on the radar recording, so the controller had reiterated further TI on the position of the PA31, "*..on a 1 and a half mile final...*" and instructed Hawk (A)'s crew to, "*..just continue downwind until you pass behind it..*". With no immediate reply from the crew of Hawk (A), Members postulated whether the controller should have pressed for an accurate read back as the crew's eventual answer, "*..copied but we're below..5 hundred feet up the Mersey*", did not make it obvious that they had not spotted the PA31 or that they would pass astern of it. Members debated whether this lack of a read back was a factor and it was noted that if pilots are unable to comply with the clearance issued they must say so, but a CAT pilot Member did not perceive that there were grounds for the RADAR controller to question the Hawk crew's understanding at that stage. This all occurred less than 30sec before the CPA and the Hawk QFI's laudably frank account made it plain that he perceived that the PA31 was further away from the Airport at 1000ft amsl. This, coupled with the reply, suggested that he believed they would be vertically separated if he remained at low-level, but it was evident from his report that he had lost SA on the position and altitude of the PA31, which at 1½nm final to land would plainly be descending below 450ft. Members noted the QFI's overt concern at passing over built up areas at 500ft, which he reports is why had not extended downwind to the W bank of the Mersey. However, the Board recognised that this was a self-imposed limitation; RADAR's departure instructions to the crew of Hawk (A) out of the Class D CTR were "*..it should be a right turn..VFR not above 1 thousand 5 hundred feet up the Mersey*", so as long as Hawk (A) stayed out of the way by remaining S of the FAT until it they were visual with the PA31 and continued downwind as instructed, they could climb clear of the PA31 to a maximum of 1500ft QNH.

Here the PA31 on final had right-of-way and the crew of Hawk (A) had been given TI about it by RADAR twice, before and after the go-around. Although ATSI reports that positive instructions were not given to ensure that their cct pattern did not result in a conflict with the PA31, in the Board's view, RADAR's TI and instructions were sufficient to enable the crew of Hawk (A) to remain clear of the approaching PA31 on final, maintaining their own separation as appropriate astern. However, it was at this point that TCAS also came into the equation and unusually created more confusion in the cockpit of Hawk (A). Pilot Members agreed with the HQ Air (Trg) Member's view that the QFI had spent too much time on trying to reconcile his mental air picture with what he could see on TCAS, rather than scanning visually for the PA31. The Board was well aware of the inherent unreliability of TCAS in azimuth, but it seemed to pilot Members that the QFI had elected to manoeuvre on the basis of the displayed relative position of the PA31 and his belief that there was altitude deconfliction, which was most unwise. If the crew of Hawk (A) had continued downwind as instructed and not attempted to cut through the FAT until they had sighted the PA31 visually the conflict would not have occurred. The Board concluded therefore, that the Cause of this Airprox was that the crew of Hawk (A) did not comply with ATC instructions and flew into conflict with the PA31.

Turning to the inherent Risk, the radar recording shows that the Hawk turned mid channel to pass through the FAT and both ac indicated the same level just before they passed. Without the benefit of TCAS, the PA31 pilot had seen the Hawk only as it was crossing ahead and 50-100ft above his ac and too late to take any avoiding action. Confused by their own TCAS display, which nonetheless seemed to have shown the crew where to look for the PA31, the PF finally saw the descending PA31 slightly below, in their front L quarter a mere 300ft away whilst they were descending towards it. To avoid the PA31, the student pilot in the Hawk front seat pulled up to the R and they passed slightly in front of, and above, the twin. Both pilots' written reports broadly concurred that the minimum horizontal separation was between 50-100m and the radar recording confirmed that horizontal separation was less than 0.3nm; however, the Board was briefed that given the associated track jitter of the Hawk contact, the separation was probably closer to that of the pilots' accounts.

This was plainly a Risk-bearing Airprox, but as to the degree of Risk some Members opined that the avoiding action taken by the Hawk crew was just in time to be effective in forestalling a collision, albeit that safety had not been assured. However a civilian GA pilot Member was concerned at the

high speed of the Hawk within the pattern compared to the twin which resulted in a high closure rate. Members postulated that the time between the Hawk student's sighting of the PA31 about 100m away and pulling up out of the way was so short, coupled with the miss distance being so slim, that chance had played a significant part here in preventing a collision. The Membership was fairly evenly divided in their views and so a vote was necessary. By a majority verdict, the Board concluded that an actual Risk of collision had existed in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The crew of Hawk (A) did not comply with ATC instructions and flew into conflict with the PA31.

Degree of Risk: A.