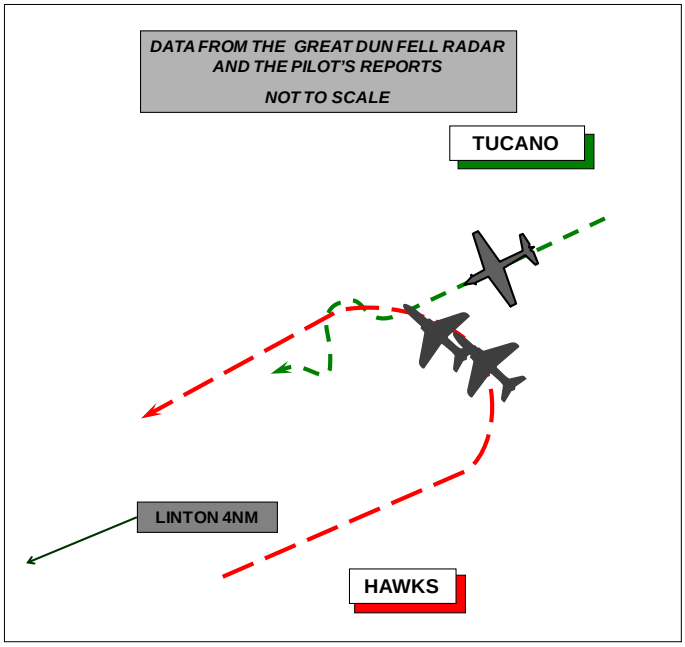
AIRPROX REPORT No 2010153

Date/Time:	7 Oct 2010 1545Z	
Position:	5407N 00109W (4nm NE Linton-On-Ouse - elev 53ft)	
Airspace:	Linton MATZ	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Tucano	Hawk x 2
Operator:	HQ AIR (Trg)	HQ Navy Cmd
Alt/FL:	2000ft (QFE 1016mb)	1500ft (QFE 1016mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	7km	45km
Reported Separation:	0 V/70m H	Not Seen
Recorded Separation:	NR (See UKAB Note: (5))	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO STUDENT PILOT reports he was solo and flying a visual recovery to RAF Linton-on-Ouse, squawking 7001 with Mode C, having just exited from low level and he was in receipt of a BS from Linton APP [See UKAB Note: (1)]. He was heading 230° at 160kt and 2000ft QFE, in poor visibility, and he had transmitted his recovery call to APP at about 9nm from the airfield but the reply was interrupted by a 'Practice PAN' call by another Tucano. He then became visual with the airfield and switched from APP to TWR. He later learned that 2 Hawks were also recovering [to RW 21] on a radar-to-visual recovery from the W but they were not displayed on his TCAS [1]. He was also informed later by ATC that APP had become aware of the possible confliction but was unable to warn them due to the 'Practice PAN' call in progress. The Airprox occurred as the 'Practice Pan' call was being completed and the pair of Hawks in echelon left, passed about 70m away in his 10 o'clock at the same height, in a 60° bank left turn, belly up to him. He did not take any avoiding action as he first saw the other ac at the CPA and he assessed the risk as being high. The visibility into sun (the direction of the Hawk's approach) was poor.

UKAB Note (1): Due to the RT congestion the type of service was not proffered by Linton APP or agreed by the pilot.

THE HAWK PILOT reports that he was leading a pair of black Hawk ac, on recovery to Linton on Ouse having been handed over to Linton DIR on leaving CAS over Leeds Bradford. They were squawking as directed and had all lights switched on and on initial contact with DIR he requested a 'radar to initials' recovery. Although they were visual with the airfield from about 20nm they remained in contact with DIR so that they could receive TI. When they were descending through about 5000ft QFE about 5nm S of the airfield he asked if there was any other joining traffic to affect their approach and, since none was reported, he stated his intent to contact TWR. On contacting TWR he requested a visual join which was approved as they were approaching initials in a left-hand banked turn in a slow descent. He called *"Initials"* as they turned onto a heading of 210° at 300kt and TI was passed regarding a Grob ac in the circuit; he could not see the Grob so he requested further information to aid his visual acquisition. He then saw the Grob ac which was crossing the upwind end of the RW and climbing through 800ft. Once clear of all known traffic, they carried out a break to

land. Neither he nor his No2 crew saw the Tucano at any time so they were unable to take any avoiding action but he assessed the risk as being Medium.

The APP CONTROLLER reports that during the period the frequency was busy but the scenario was uncomplicated. He had a number of Tucanos and a Church Fenton based Tutor at the time with several Practice PANs and the reporting pilot calling for a visual recovery while he was dealing with the initial call from an ac requiring an instrument approach.

Although initially he did not put the reporting Tucano on a 'standby', he finished identifying the other Tucano and then checked if the Tutor was visual with the aerodrome (not identified but believed to be on the extended C/L at 4 nm), the Tutor pilot reported that he was and then continued with TWR. He then asked the reporting Tucano to continue his message but it was then interrupted by a further Tucano calling a Practice PAN. He was aware of a primary only contact coming in from the SW, which at first he did not believe would affect the traffic joining visually. He asked the reporting Tucano to pass his message but while this Practice PAN message was being transmitted he realised that the primary only contact had extended further [upwind] than he had expected. By the time the Practice PAN message had been completed he called the traffic with reference to the contact he believed to be the reporting Tucano (it had not been identified) but he mistakenly called that traffic as being a *'similar type'.* While he was transmitting this TI he saw the ac that he believed to be the reporting Tucano making a left hand orbit. Then another Tucano acknowledged the TI meant for the reporting ac (although he believes that the Airprox had already taken place while the Practice PAN call was being transmitted). The reporting Tucano then called that he had an Airprox with 2 Hawk ac in the Easingwold area with no more than 50m separation which he acknowledged and rather than question the pilot on frequency allowed him to continue.

Following discussion with the pilot he assessed the risk as being high.

THE SUPERVISOR concurred the APP's report and added that he immediately proceeded to the VCR when it became apparent that the ADC was becoming very busy and was present when the ac joined the cct. The Tutor was asked to cancel its Practice PAN and leave the cct due to the ac joining and the two other Tucanos already in the cct.

He saw the pair of Hawks joining dead-side in formation and he thought pass down the right hand side of the Tucano which took evasive action in the form of a left hand break and orbit. He could not estimate the lateral separation between the ac but believed that they were both at about 1000ft QFE and was not aware whether the Hawks had been visual with the Tucano.

HQ 1 GP BM SM reports that the Tucano was in receipt of a BS from Linton APP [see UKAB Note (1) above], approaching the airfield from the NE and Hawk Lead was initially in receipt of a TS from Linton DIR but at the CPA they had transferred to Linton TWR as they approached the airfield from the S.

Examination of the timeline in the Supervisor's (SUP) report did not appear to accord with the actual timeline of the event and included elements that could only have been ascertained after the event, however it was confirmed that:

a. The SUP left the ACR, en-route to the VCR, at about 1544:46 (following the transmission of a Practice PAN on the APP freq) as a result of the increasing workload in TWR caused by the Hawks joining the already busy circuit.

b. Given the size of the ATC building it takes about 45sec to reach the VCR, from the ACR.

The Hawk formation had been originally pre-noted as requiring a radar to visual approach which would have required them to be 'worked' by DIR to facilitate their integration with ac in the Radar Training Circuit; however, at 1543:23 the Hawks converted to a visual approach.

[UKAB Note (2): The Visual recovery was requested by Hawk leader at 1543:23 and the request was approved at 1544:15, DIR starting:

"C/S roger no radar traffic to affect continue with Linton Tower freq 240.82"

At 1544:08, Hawk leader stated that he had the airfield in sight and asked whether there was any traffic to affect; DIR replied that there was "*no radar traffic to affect*" the formation, was transferred to TWR and instructed to squawk standby. At this point the Hawks were 2.5nm S of the airfield, descending through FL060, with the reporting Tucano 10nm NE of the airfield indicating FL029 but not yet in contact with APP. Although it is not recorded in the transcript, the unit investigation showed that GND had pre-noted TWR about the Hawks' intentions, saying, *"[Hawk callsign], visual recovery".* No information was given to TWR or GND however, regarding the direction of the Hawks approach or their SSR code; moreover, although locally based ac leave their SSR selected to 'on' in the visual circuit, visiting ac are instructed to 'squawk standby'.

At the point at which the Hawks were transferred from DIR to TWR [1544:15] there was no traffic known to DIR traffic [radar traffic] to affect their routeing and the absence of SSR and the routeing intentions of the Hawks will have hampered TWR's efforts to associate the fast moving, primary only contact with the Hawk formation.

At 1544:27 the Hawks squawked standby, as instructed by DIR and 13sec later Lead called TWR requesting that they join the visual circuit and were informed, "*two in, one joining through the overhead*"; at that time they were 2.3nm SE of the airfield heading ENE, with the subject Tucano 9nm NNE of them, tracking SW and indicating 2700ft. The other circuit traffic was a Tutor joining from a PFL and 2 Tucanos.

Just before this (at 1544:21) when the ac was about 9nm NE of the airfield inbound, the Tucano pilot [still squawking 7001 – military low level] re-called APP requesting recovery, having made his first call 30sec earlier and getting no response. Although the [second] call for recovery was interrupted by another Tucano declaring a Practice PAN, APP elected to answer the reporting Tucano first but passed only the airfield details and then instructed the Practice PAN ac to standby. Following an internal handover lasting 15sec APP returned to the Practice PAN at 1545:01 with the sequence continuing until 1545:19. At 1545:32, [after the ac had passed] APP passed TI to the reporting Tucano stating, *"Tucano callsign traffic believed to be you has traffic west, one mile, similar type, similar heading, no height*". He stated in his report, that he was "*aware of the primary only contact coming in from the south-west* [the Hawks]*, which at first I didn't believe would affect the visual joining traffic* (reporting Tucano)*. I asked* [the Practice PAN] *Tucano to pass his message, it was while this…message was being transmitted that I realised the* [Hawks] *had extended further than I had expected. By the time that the Practice PAN message had been completed, I called the traffic to who I believed was* [the reporting Tucano]".

The CPA was at about 1545:23, during the Practice PAN transmission to APP, when the Hawks crossed the Tucano's nose from left to right, belly-up. The Tucano pilot reported the Airprox to APP 20sec later.

At about 1544:46 the SUP left the ACR en-route to the VCR due to the increasing congestion in the circuit.

[UKAB Note (3): Although not mentioned in his report the radar recording shows that the Tucano makes a hard 'S' turn after the CPA presumably to increase the separation on the Hawks.

At 1545:05 when the Hawks began turning towards the IP, placing them into confliction with the Tucano, TWR's focus of attention would have been the provision of information to the ac in the visual (and PFL) cct (1544:55 to 1545:26) and then on the Tucano turning finals to land (1545:28 to 1545:36). This means that TWR would not have been able to detect the confliction developing as their priorities were rightly with the already established visual cct traffic.

At 1545:01 APP commenced their transmission to the Tucano declaring the Practice PAN. Notwithstanding the verbal response required by APP, they would also have been selecting and completing a new flight strip for this Tucano and viewing the DRDF display to obtain a steer (passed at 1545:10). It is reasonable that these tasks would have also precluded APP from being able to detect immediately the developing confliction. Once APP had acknowledged the Practice PAN at 1545:10 and given the time taken for the Tucano to respond, it was not feasible for them to have provided TI to the reporting Tucano any earlier than 1545:39 [the frequency being continuously busy until then].

Understandably given the developing situation, the SUP elected to leave the ACR to go to the VCR. However, this meant that he arrived in the VCR at about the same time as the CPA occurred; consequently he was unable to advise the ADC of the situation in time for him to pass a warning.

While the Hawk pilot stated that DIR did not make them aware of any joining traffic, at the point when they were transferred to TWR, there was none known. However, this raises an interesting point in terms of nuance of language, considering that the response from DIR was about no ***'radar traffic'***, whereas the Hawk pilot's request was regarding any ***traffic affecting their flight***.

Finally, the procedure whereby visiting ac squawk standby on joining the visual circuit removed the last operative barrier to the occurrence, TCAS.

From an ATM perspective, there appears to have been nothing that the ATC personnel involved could have done to prevent the occurrence. Under the terms of CAP774 (see Note), the pilots of both ac were responsible for collision avoidance.

Note: CAP 774 states that under a BS:

a. If a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.

b. Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller.

UKAB Note (4): Although the Great Dun Fell radar shows the event the Hawks were squawking standby and the CPA was between sweeps. By projection, however, the lateral separation was too close to measure with any degree of accuracy. The CPA was 4.7nm on the extended C/L of RW21. At the time there were 6 other ac displaying Linton squawks.

HQ AIR (TRG) comments that the incident occurred because the pilots of both ac did not see each other in time to adequately deconflict their flight-paths. As Mil ACC state, this remains firmly the responsibility of the ac commanders. Several factors may have affected their ability to acquire the conflictions visually. Firstly, the visibility may have contributed and is reported as 'poor' by the Tucano pilot. Only in the very late stages, when the Hawks' final approach was from S through SE, would visibility not have been a factor. The Hawks reported 45km visibility. 'Poor' visibility would therefore only have been an issue for the Hawk crews if it distracted the crews by forcing them have to spend extra time on visually acquiring the airfield and the cct traffic, which would have been approximately into-sun.

Secondly, the procedure to instruct visiting ac to switch IFF to standby on joining the circuit reduces the effectiveness of TCAS as an aid to deconfliction. However, this scenario emphasises the status of TCAS as an aid to visual acquisition. The fact that TCAS shows no conflictions does not absolve pilots from looking out and clearing their flightpaths and measures should be in place to ensure that visual lookout is not reduced in light of TCAS equipment being fitted.

Thirdly, and in a similar vein, DIR's response of "*no radar traffic to affect"*, while technically accurate, would have lulled the Hawk pilots into a false sense of security. Having asked whether there was

"*any traffic to affect"* he would have been conditioned to accept the response as being to the question he had asked. Re-asking the question may have elicited information about the other joining traffic. Absence of information on the Hawks to the Tucano by APP also contributed by not enabling the Tucano pilot to refocus his lookout scan. It is unfortunate that this information was not passed but it is noted that the Tucano was under a BS. Upgrading to a TS in light of the reported visibility could have been a consideration.

The fact that both ac were not with the same agency at the time may also have contributed in that it denied TWR the ability to inform the Hawks that the Tucano was joining. In addition, the pilots would not have been alerted to each others' presence by their joining calls. Thus, the close proximity of the Tucano to the Initials Point, whilst not talking to TWR was also a factor.

In sum, this incident highlights the fact that all measures to reduce the chance of mid-air collisions are fallible and that crews must apply rigorous lookout scans at all times, particularly when flying under VFR.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both flights, 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.

Members noted that all ATC positions involved in this incident were very busy and specialists commented that under the circumstances they would have expected the Supervisor to consider measures to reduce the volume of non-essential traffic.

Although accepting that the respective pilots were ultimately responsible for collision avoidance when joining the cct, the Board noted that neither of the flights was provided with relevant traffic information that was available to the various controllers. Notwithstanding that he was receiving a BS, the Board considered that the Tucano pilot should have been advised about the Hawk formation joining through initial. In the event, he was passed the runway and weather information then left in 'limbo' for about 1min at a critical period while APP apparently being unaware of the Hawks while busy handling 'Practice PANs'. Similarly, the Hawks, despite having asked for information on other traffic to affect them were told there was no "*radar traffic*" which, while technically accurate, did not answer the question posed by the pilot; this, in the Board's view, misled the Hawk crews into believing there was no traffic to affect them when in reality the Tucano was potentially (at the time) and later actually in conflict. It appeared that the ADC had not assimilated the GND controller's prenoteing of the inbound Tucano and therefore he, in turn, was not able to warn the Hawks about it. Controller Members observed that while in isolation the respective ATC positions did the minimum that was expected of them there was almost no information cross-flow between them resulting in none of them having 'the big picture' thus the SA of all the pilots involved was incomplete, resulting in their flying into conflict while in contact with APP/TWR and positioning to join the cct.

Members noted that from the Tucano cockpit the visibility into sun was poor and the Hawks had been descending fairly rapidly, thus they were difficult to see from the Tucano pilot's perspective. The down-sun visibility, on the other hand was good and, despite that the ac had initially been almost head-on, they were not on the same frequency and that the Hawk crews had been led to believe that there was no other traffic to affect their flightpath, Members considered that the Hawk pilots had a responsibility to clear their flightpath before they turned onto initials (5nm on the extended C/L).

Since neither of the pilots had seen the opposing ac in time to take avoiding action, a majority of Members considered that there had been a risk that the ac would have collided.

Members agreed that the SOP requiring visiting ac (but not locally based ac) to squawk stand-by when joining the visual cct had been a significant factor in this incident; it had both prevented the Tucano pilot from 'seeing' the Hawks on TCAS and had deprived the ADC of information on the

joining Hawks. That being the case the Board directed that a recommendation be made to review the procedure in the light of this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilots flew into conflict with the Tucano which they did not see.

Degree of Risk: A.

Recommendation: That RAF Linton on Ouse reviews the SOP requiring visiting ac to squawk standby when transferring to TWR.