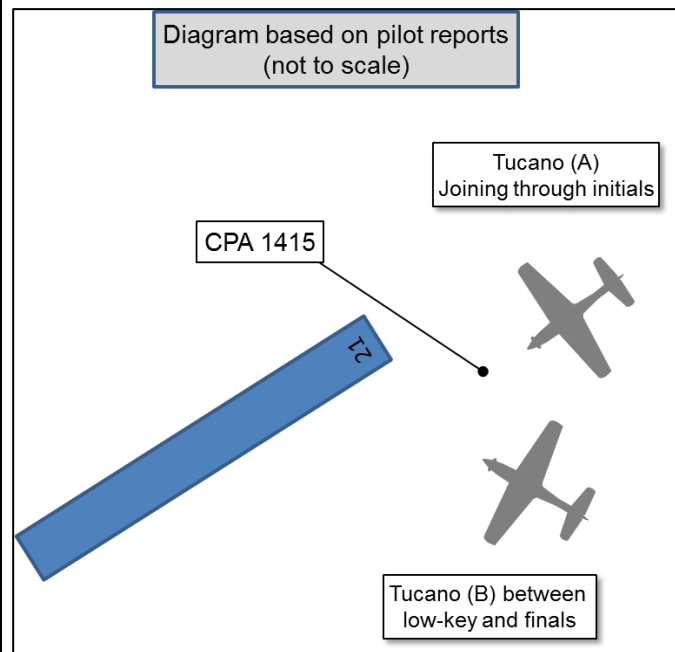


AIRPROX REPORT No 2015047

Date: 20 Apr 2015 Time: 1315Z Position: 5202N 00115W Location: Linton on Ouse

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tucano	Tucano
Operator	HQ Air (Trg)	HQ Air (Trg)
Airspace	Linton ATZ	Linton ATZ
Class	G	G
Rules	VFR	VFR
Service	Aerodrome	Aerodrome
Provider	Linton	Linton
Altitude/FL		
Transponder	A,C,S	Off
Reported		
Colours	Black	Black
Lighting	Strobes, Nav and landing lights.	Strobes, Nav and landing lights.
Conditions	VMC	VMC
Visibility	8km	>10km
Altitude/FL	1000ft	NK
Altimeter	QFE (1031hPa)	QFE
Heading	210°	300°
Speed	200kt	110kt
ACAS/TAS	TCAS I	TCAS I
Alert	Nil	Nil
Separation		
Reported	300ft V/NK H	200ftV/ 0.5nm H
Recorded	NK	



THE TUCANO (A) PILOT reports that he was joining through initials, the ADC had reported two aircraft in the circuit, one downwind and one between high and low key. The crew were visual with the downwind traffic and were searching for the second aircraft, which was assumed to be descending onto the live side. However, at approximately 1nm to the threshold the Captain, who was the non-handling pilot, saw a Tucano slightly high 10 o'clock, 350ft above and descending on a constant bearing. He ordered the handling pilot to pull up to achieve separation of approximately 300ft. The crew then proceeded deadside, extending upwind for separation and re-positioned for initials, re-joining with no further incident.

He assessed the risk of collision as 'Medium'.

THE TUCANO (B) PILOT reports that after completing a turn-back from RW21RH to RW10 at Linton on Ouse, he did a climbing left-hand turn to 2500ft for a PFL prior to departing the circuit to return to Cranwell. He left high-key but instead of flying a right-hand pattern for RW21, he had an "aberration" and flew a left-hand pattern. As he flew from low-key towards finals, he came close to a Tucano who was flying through deadside to join for RW21RH.

He assessed the risk of collision as 'Medium'.

THE LINTON ADC CONTROLLER reports that he was OJT¹ in ADC when the pilot of Tucano (B) requested departure and turn-back [from RW21 onto RW10]. On completion of the turn-back he

¹ On-the-job training instructor.

repositioned for a PFL to RW21RH and requested to climb to high-key, which was approved. Whilst he was climbing, a [non-Airprox] Tucano called for join and was given standard joining instructions. Tucano (B) called high-key and was given the surface wind, the Tucano (A) pilot called initials and was passed the circuit state of one between high and low-key. Due to the roof of the tower it is not possible to see high-key on RW21RH. Tucano (B) pilot subsequently called finals gear down, but neither the instructor, nor the UT controller could see the aircraft. They asked his position and were informed that he was deadside at 1000ft. At this point they realised that he was in the way of any joining traffic and they could see him descending steeply at 400-500ft heading to the runway threshold. The UT controller was unsure whether to issue a clearance or not, but the instructor told him to issue the clearance and get the aircraft out of the way of other circuit traffic. Tucano (A) then called again at initials to re-join at 1500ft. On climb-out Tucano (B) said he believed there had been an Airprox between himself and the joining Tucano and he believed that he was at fault.

He perceived the severity of the incident as 'High'.

THE LINTON SUPERVISOR reports that the Unit workload was low and the controller workload medium-low. He did not witness the event as he was in the ACR, but was informed about it soon afterwards.

Factual Background

The weather at Linton was recorded as:

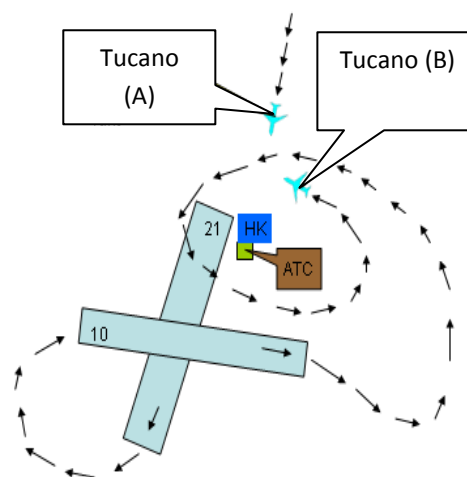
METAR EGXU 201250Z 17004KT 9999 FEW025 SCT200 12/05 Q1033 BLU NOSIG

Analysis and Investigation

Military ATM

The Airprox occurred between a station-based Tucano (A) and a visiting Tucano (B) both under an Aerodrome Control Service with the Linton Aerodrome Controller. The radar replay was not able to capture Tucano (B) who was believed to be non-squawking in the visual circuit. The diagram below shows the Occurrence Safety Investigation (OSI) interpretation of events.

Tucano (A) was on a training conversion flight in VMC with 8000m visibility in haze. Following the initials call, Tower confirmed that there were 2 aircraft in the visual circuit, 1 downwind and 1 between high and low key. The crew were visual with the downwind traffic and searching for the other track, which was assumed to be descending onto the live side. At approximately 1nm to the threshold, the aircraft captain (non-handling) saw a Tucano slightly high in the 10 o'clock position, descending on a constant bearing. The captain ordered the handling pilot to pull-up to achieve separation of approximately 300ft. The perceived severity and risk of collision was 'medium'. The aircraft appeared from the 10 o'clock position but the pilot had been looking up to the right.



Tucano (B) had been completing a climbing left-hand turn to 2500ft to conduct a PFL prior to departing back to Cranwell. The pilot left high-key and flew a left-hand pattern instead of a right-hand pattern. As Tucano (B) flew from low-key to finals, he came close to Tucano (A) who was flying through deadside. The perceived severity and risk of collision was 'medium'. The first

sighting was at 0.5nm and the minimum separation was 0.5nm and 200ft. The PFL was flown the wrong way around the circuit pattern.

The Linton Aerodrome Controller OJTI recalled Tucano (B) positioning for a PFL for high-key. Tucano (A) joined and was given standard join instructions; Tucano (B) called high-key for a touch-and-go. Due to the roof in the Visual Control Room, it is not possible to see the position of high-key and it was assumed that the next call would be low-key finals on the liveside. When Tucano (B) called 'finals gear down', the OJTI, trainee and Ground Controller could not view the aircraft and asked for a position report. Tucano (B) pilot reported deadside at 1000ft; the controllers became visual with him but the trainee was unsure of providing a clearance. The OJTI intervened to provide a clearance to 'touch and go' to get Tucano (B) out of the way of other circuit traffic. Tucano (B) informed Tower of the Airprox and the controller confirmed that it appeared that the pilot had taken a left hand circuit instead of the expected right hand orbit. The perceived severity was 'high'; workload was 'medium-to-low'.

Linton were using runway 21RH (right hand circuits); the high-key point for Tucanos is at 2500ft QFE and the normal circuit height is 1000ft QFE. Portions of the tape transcript are below:

To	From	Speech	Time
ADC	Non-Airprox Tucano	Linton Tower (Non-Airprox Tucano) request join from Topcliffe.	1308:06
Non-Airprox Tucano	ADC	[Non-Airprox Tucano c/s] Join Rwy 21RH QFE 1030 one in.	1308:13
ADC	Tucano B	[Tucano B c/s] High Key touch and go.	1308:47
Tucano B	ADC	[Tucano B c/s] S/W 100/04.	1308:56
ADC	Tucano A	Tower, [Tucano A c/s] join.	1309:40
ADC	Tucano A	[Tucano A c/s] {Inaudible} join.	1309:41
Non-Airprox Tucano	ADC	[Non-Airprox Tucano c/s] one between high key and low key S/W 130/04.	1309:44
Tucano A	ADC	[Tucano A c/s] Linton Tower join RW21RH QFE 1030 two in.	1309:50
ADC	Tucano A	Join 1030 [Tucano A c/s].	1309:58
ADC	Tucano B	[Tucano B c/s] finals gear down.	1310:01
ADC OJTI (live mic)	ADC	"Where is he?"	1310:04
ADC OJTI (live mic)	ADC	Shall I request position?	1310:08
Tucano B	ADC	[Tucano B c/s] request position.	1310:10
ADC	Tucano B	[Tucano B c/s] dead side 1000ft.	1310:13
ADC OJTI (live mic)	ADC	Can I call a clearance there?	1310:15
Tucano B	ADC OJTI	[Tucano B c/s] Cleared touch and go.	1310:17
ADC	Tucano A	[Tucano A c/s] is 1500ft initials with another aircraft coming towards	1310:24

At 1308:06, a non-Airprox Tucano called for a join at a range of approximately 10nm and Tower responded with “one in”. At 1308:47, Tucano (B) called, “High-key touch and go”. Tucano (A) called for a join at 1309:40 and immediately called again at 1309:41. Tower responded to the non-Airprox Tucano with, “one between High Key and Low Key.” Tower then cleared Tucano (A) to join with ‘two in’ (Tucano (B) and Non-Airprox Tucano).

At 1310:01, Tucano (B) transmitted, “finals gear down.” At 1310:10, Tower transmitted, “[Tucano (B) c/s] request position?” At 1310:13, Tucano (B) pilot replied with, “deadside 1000ft.” Tower cleared Tucano (B) to touch and go following a conversation between the ADC OJTI and trainee.

At 1310:24, Tucano (A) declared, “[Tucano (A) c/s] is 1500ft Initials with another aircraft coming towards.” The CPA was not captured on radar replay as Tucano (B) was non-squawking; however, between 1310:23 and 1310:27, Tucano (A) climbed rapidly 300ft.

The unit investigation highlighted a number of contributory factors. The Tucano (B) pilot, focussed on flying the PFL, was unaware that he had turned left-hand onto deadside into conflict with joining traffic; a right-hand SOP turn would have taken the Tucano onto liveside. The high-key point is not visible from ATC and the controllers were not aware of the Tucano (B) positioning. As Tucano (A) was flying through deadside, the crew were looking to the right of their cockpit to view Tucano (B) on the liveside of the airfield; when in fact Tucano (B) was descending onto deadside. The poor visibility provides context to the late sighting by Tucano (A).

Tucano (A) may have called to join the visual circuit later than expected as the join and probable Initials call were within 1 second of each other. Tucano(A) was informed of ‘two in’ and, at the Initials call, the pilot of Tucano(A) called a conflict and was seen to climb 300ft on radar replay. An initial at Linton is at 3nm from touchdown and, had “Initials” been called at this point, there should not have been a conflict with circuit traffic and a detailed breakdown of traffic position would have been passed by the ADC. Upon the finals call from Tucano (B), the OJTI and trainee can be heard searching for the traffic and then requesting a position report. From the transcript, the OJTI was coaching the trainee and assisting with requests for information. Tucano (B) pilot confirmed that he was deadside and when the controllers became visual, the trainee was unsure of the non-standard position and the OJTI intervened to provide Tucano (B) with a clearance to ‘touch and go’. Tucano (A) then confirmed extending upwind.

The normal barriers to an Airprox would be Traffic Information, ACAS, lookout and deconfliction procedures. TCAS was inhibited for Tucano (B), as per SOP when the undercarriage was down, and Tucano (B) was not squawking. The information was passed by ATC with the number in the circuit, but the probable late Initials call from Tucano (A) reduced the chance to have a more in-depth position report. That said, Tucano (B) had not followed the SOP PFL circuit direction and ATC were unsure of its position until deadside at 1000ft. The normal procedure should have deconflicted the Tucanos. The Tucano (A) crew had a late sighting but this is because they were expecting Tucano (B) to appear to the right and the hazy conditions did not assist lookout.

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard². An aircraft operated on or in the vicinity of an aerodrome shall: (a) observe other aerodrome traffic for the purpose of avoiding collision; (b) conform with or avoid the pattern of traffic formed by other aircraft in operation³.

² SERA.3205 Proximity.

³ SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Comments

HQ Air Command

This is a reminder to all to expect the unexpected and be prepared for the real life picture not to match the situational-awareness you have built in your mind. The late sighting and subsequent avoiding action was primarily due to look-out being channelled in the wrong direction. A very thorough Occurrence Safety Investigation (OSI) was conducted into this event which identified numerous contributory factors and several recommendations. The contributory factors identified included: the pilot of Tucano (B) positioned himself at high-key on the north side of the runway and then proceeded to conduct his PFL in the wrong direction, late 'join' and 'initials' calls by Tucano (A) generating confusion between ATC and pilots with respect to the location of aircraft, limited visibility from the ATC tower, and inhibited TCAS. Recommendations put forward included identifying the direction of a PFL (eg calling "high-key left") and installing equipment in the tower which would display ac call signs from Mode 'S' IFF which should help increase the SA of both controllers and pilots in the visual circuit.

Summary

An Airprox was reported on 20th April 2015 at 1415 between two Tucano's in the visual circuit at Linton. Tucano (A) was joining through initials, whilst Tucano (B) was spiralling down from a PFL in the wrong direction and was passing 'low-key'. Linton ADC could not see Tucano (B), and were unaware that he had spiralled in the wrong direction; therefore, Traffic Information was not passed.

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, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first considered the actions of the Tucano (B) pilot and noted, by his own admission, that he had had an "aberration" when he flew the left-hand PFL instead of the right-hand one. Having made the mistake, the Board noted also that the error could not be detected visually by ATC due to the roof of the VCR; even if he had positioned correctly in the right direction, it was evident that ATC could not see the high-key position at all. The Board discussed whether they could have asked the pilot earlier for an update on his position, and were heartened to hear that the Unit OSI had made the recommendation that, in future, pilots should call at high-key with their direction of turn – not only would this make it clear if an error had been made in the training environment, but it would also make clear the intentions of pilots who might not be able to comply with the published circuit direction under actual emergency conditions.

The Board also discussed whether the decision to clear Tucano (B) pilot for his touch-and-go from his non-standard position on the dead side introduced more risk into the circuit than from requesting that he go around from the approach. In the end, they agreed that the controllers were placed in a difficult position because sending the aircraft around wouldn't have removed it from the path of the joining traffic, and may have also introduced a conflict with the aircraft downwind; they therefore agreed that the clearance to continue was likely the best course of action.

Turning to the actions of the Tucano (A) pilot, the Board opined that his late initials call had meant that he hadn't received information on circuit traffic as early as he could have; therefore, he had less time to spot traffic as he joined. Notwithstanding, at the point where he would have called 'initials', ATC had not assimilated that Tucano(B) was flying in the wrong direction anyway, and so their traffic information may not have materially altered the Tucano(A) crew's situational awareness or cued their lookout towards it. The Board considered that it was understandable that the crew of Tucano(A) was looking in the 'wrong' direction for Tucano(B) given that they would have expected it to be on their right-hand side; they commended the rear-seat pilot for spotting Tucano(B) as it descended from the left, and agreed with HQ Air Command's comments that this was a timely reminder to all to retain a

good all-round lookout even when within the ATZ in order to detect those who might not be complying with normal procedures, or might unwittingly fly through the ATZ.

The Board briefly discussed the transponder selection of Tucano (B), noting that it was not switched on, thus meaning both that ATC couldn't see him easily on the ATM, and the TAS on Tucano (A) was rendered ineffective. The Board opined that it was probably not switched on because, having just got airborne into the circuit from a turn-back manoeuvre, switching on the transponder probably wasn't on the circuit check-list. They wondered whether selection of 'SSR on' should be part of the pre-take-off checks given its value in highlighting aircraft presence to TAS/TCAS-equipped aircraft even in the visual circuit.

In assessing the cause of the Airprox, the Board quickly agreed that it was that Tucano (B) pilot flew the PFL in the wrong direction and into conflict with Tucano (A). The risk was assessed as category B; avoiding action had been taken by Tucano (A) pilot to prevent a collision, but safety margins were much reduced below the normal.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tucano (B) pilot flew the PFL in the wrong direction into conflict with Tucano (A).

Degree of Risk: B.