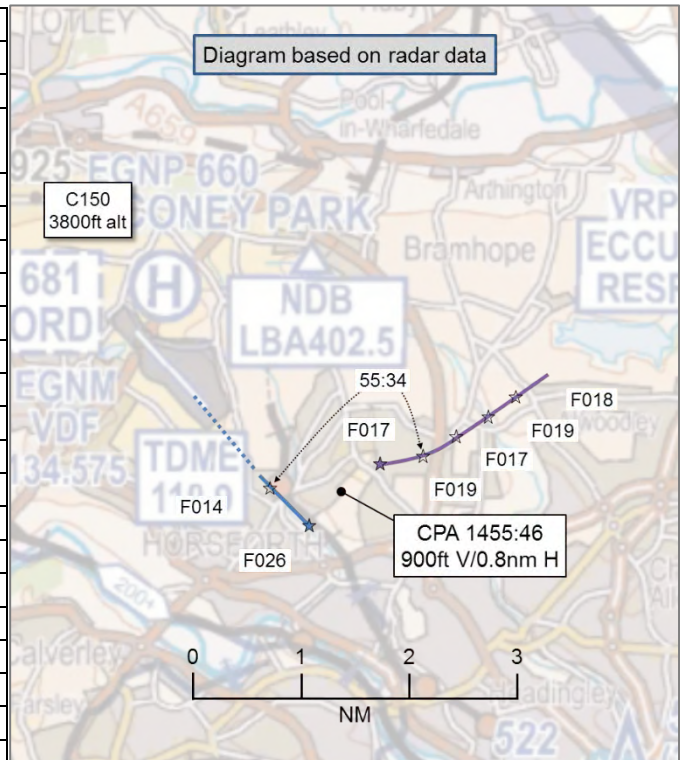


AIRPROX REPORT No 2018108

Date: 11 May 2018 Time: 1456Z Position: 5352N 00137W Location: Leeds/Bradford airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	PA28	B737
Operator	Civ FW	CAT
Airspace	Leeds/Bradford CTR	Leeds/Bradford CTR
Class	D	D
Rules	VFR	IFR
Service	Aerodrome	Aerodrome
Provider	Leeds/Bradford	Leeds/Bradford
Altitude/FL	1600ft	2500ft
Transponder	A,C,S	A,C,S
Reported		
Colours	White/blue	Company
Lighting	Strobes, nav	Standard
Conditions	VMC	VMC
Visibility	>10km	NK
Altitude/FL	1200ft	400ft
Altimeter	NK	QNH
Heading	260°	139°
Speed	100kt	160kt
ACAS/TAS	Not fitted	TCAS II
Alert	N/A	TA
Separation		
Reported	NK V/~2.5nm H	NK
Recorded	900ft V/0.7nm H	



THE LEEDS/BRADFORD AERODROME CONTROLLER reports that a solo student in the PA28 was joining the circuit downwind left-hand for RW14 from ECCUP Visual Reference Point (VRP). He was given the QFE and told to report downwind left-hand. The B737 became airborne at 1455 from RW14. As the B737 passed 2nm on the climb-out, the PA28 was observed from the Visual Control Room approximately 0.5-1nm east of the B737, tracking west. The PA28 pilot was instructed to turn north to remain clear of the climb-out and was asked to confirm he was positioning for downwind. The pilot reported that he would turn downwind in 2 minutes which put him downwind right-hand. The PA28 continued west instead of turning so the pilot was then instructed to continue for downwind right-hand because turning north for downwind left-hand would have exposed the PA28 to more wake turbulence from the departing traffic and would have turned it over the runway when an inbound aircraft was at 3nm to land. The B737 pilot reported a TA and then continued enroute after it was explained that the light aircraft had flown through the climb-out lane behind him. Once the PA28 was west of the airport the pilot was instructed to turn downwind. The controller made the decision to only give the pilot one command at a time to give himself greater control of him. A helicopter was holding on the southwest airport boundary waiting to transit; the helicopter was visible at all times. No comments were made about the Airprox to the student on the frequency because he was on his own and the controller did not think it sensible to comment at the time.

THE PIPER PA28 PILOT reports that he was conducting a first solo navigation flight on a previously flown route. The navigation exercise was uneventful until return. He was cleared to join downwind left-hand to RW14 from ECCUP. In error, he routed across RW14 climb-out with intention to position downwind to RW14 right-hand. ATC instructed him to continue west until he was called. The remaining approach and landing was uneventful.

He assessed the risk of collision as 'None'.

THE BOEING 737 PILOT reports that after take-off from RW14 the pilot of a light aircraft, who was meant to turn downwind for RW14, drifted towards the runway centreline. ATA was received at about 400ft. They were visual with the aircraft and decided no action was required.

Factual Background

The weather at Leeds/Bradford was recorded as follows:

METAR EGNM 111450Z 15013KT 9999 FEW043 14/05 Q1011=

Analysis and Investigation

CAA ATSI

ATSI had access to reports from the pilots of the B737 and the PA28 and Leeds ATC. The area radar and Leeds R/T recordings for the period were reviewed. ATSI also received a copy of the Leeds ATC unit investigation report, and the incident was discussed by telephone with the Aerodrome controller. Screenshots in the report are taken from the area radar. All times UTC.

At 1449:52, the pilot of the PA28 contacted Leeds Radar, reporting 2nm south of Doncaster, (12nm southeast of Leeds Airport), requesting joining information. The Radar controller advised him that it would be a Basic Service, passed the Leeds QNH and a transponder code, all of which was read back correctly by the pilot.

At 1451:10, the Radar controller cleared the PA28 pilot to enter controlled airspace via the ECCUP VRP, not above 2000ft VFR. They then instructed the pilot to join downwind left-hand for RW14 after the VRP, which again was readback correctly by the pilot.

At 1454:33, the Radar controller reminded the pilot that it was a downwind left-hand join for RW14, and transferred him to Leeds Tower, all of which was read back correctly by the pilot.

At the same time, (1454:33), the Leeds Aerodrome controller, who had been updating the pilot of the B737 on the position of a Bell 206 helicopter previously notified to them as tracking northbound through the ATZ, cleared the B737 pilot for take-off (Figure 1).

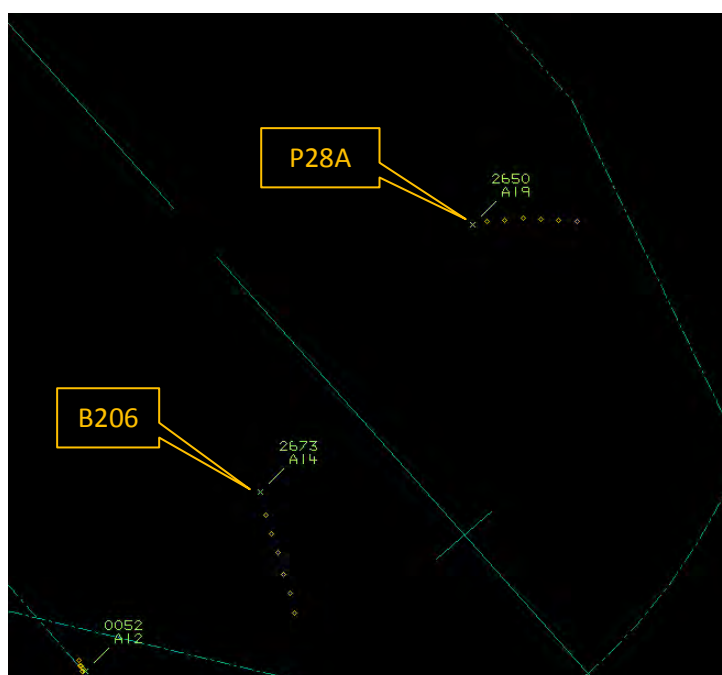


Figure 1 – 1454:33 (PA28 3.7nm E).

At 1454:50 the pilot of the PA28 contacted Leeds Tower, advising that he was “*routing er downwind er Left er to Runway One Four*” (Figure 2).

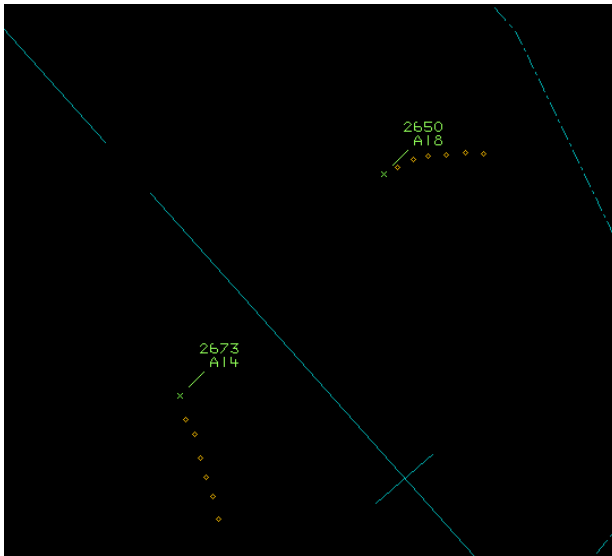


Figure 2 – 1454:50.

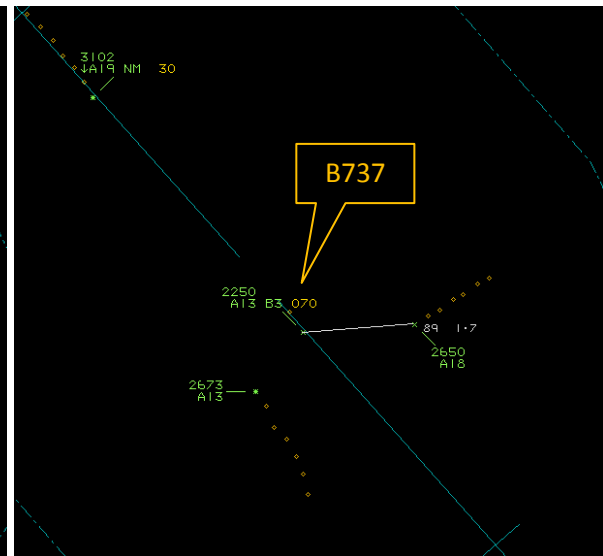


Figure 3 - 1455:33.

The Aerodrome controller replied, “[C/S] roger – report downwind left Runway One Four. The QFE is 987hPa”. The pilot asked for a repeat of the QFE, which was given, but subsequently not read back correctly by the pilot, nor corrected by the controller. The pilot’s readback did however, include the joining instructions for the left-hand downwind join to RW14. At 1455:33, the pilot of the B206 asked to fly through the climb-out, advising that they thought they would be clear of any wake turbulence (from the departing B737). The controller instructed the B206 pilot to hold to wait for further landing traffic (Figure 3). The Aerodrome controller then issued a landing clearance to the pilot of the aircraft on final approach (Figure 4).

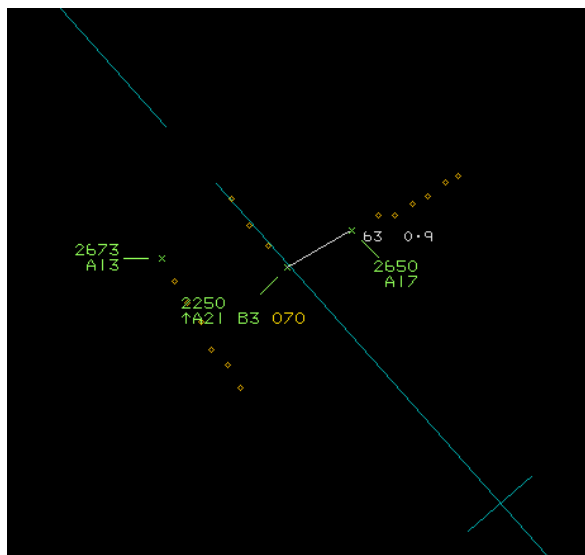


Figure 4 - 1455:45.

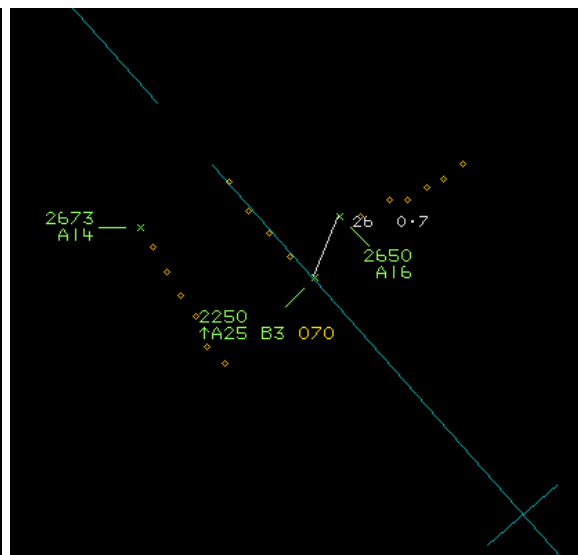


Figure 5 - 1455:51.

CPA was at 1455:51 with the aircraft separated by 0.7nm laterally and 900ft vertically (Figure 5).

At 1455:55 the Aerodrome controller asked the PA28 pilot, “confirm you’re turning downwind now”. The pilot replied, at 1456:00, “er yeah, turning downwind er in er two minutes er [C/S].” The Aerodrome controller instructed the pilot to turn north, but immediately changed their mind and had the PA28 pilot continue westbound. The PA28 subsequently came into proximity with the helicopter which had been holding to the southwest.

The PA28 pilot had been issued with, and readback correctly, clear instructions for joining the RW14 circuit in the downwind left-hand position. The pilot was reminded by the Radar controller prior to transfer to the Tower frequency, and the instruction was again repeated by the Aerodrome controller. The student pilot was either disorientated, or had confused left and right, as they continued to position downwind right-hand, even though that would involve crossing the climb-out area. His situational awareness did not appear to include the fact that the B737 was taking off, which, although the clearance for which was transmitted just before the PA28 came on frequency, could have been confirmed visually. There would not normally be any requirement to inform the pilot of the PA28 that traffic was departing RW14.

The Aerodrome controller, having confirmed the joining instructions with the pilot of the PA28, then focussed their attention on the B206 approaching the airfield from the south, ensuring it remained deconflicted from the departing B737, and ensuring it continued to hold clear of the runway until an arriving aircraft had also landed. It was after the controller had resolved this that they transferred their attention back to the inbound PA28. The Aerodrome controller looked for but did not immediately find the PA28 where they were expecting it to be. They had not been continuously monitoring its movements visually nor on the ATM, (and with no requirement to do so), as they had been watching the B206 through the Visual Control Room windows. Having visually acquired the PA28, and assessed the potential confliction with the B737, their initial action was to confirm with the pilot of the PA28 that he was positioning/turning downwind left-hand. The controller then instructed the pilot to continue westbound believing that to be the safer course of action.

By the time the Aerodrome controller had realised the PA28 pilot was not positioning correctly, the B737 was passing ahead of the PA28. Allowing the PA28 to continue westbound, through the climb-out area and behind the B737 neither contributed to, nor resolved the confliction, but did potentially allow the PA28 pilot to fly through the wake turbulence of the departing B737.

The pilot of the B737 reported receiving a TCAS TA, and that they were “*visual with the light aircraft at all times and no further action required.*” The pilot of the PA28 reported that he had been visual with the B737 some distance back, (“3nm??”) and that no avoiding action was required.

The controller stated that they felt they had needed to then take more positive control of the PA28 after this point, advising the pilot when to turn downwind. In doing so however, it then placed the PA28 in confliction with the B206 holding downwind right-hand, awaiting clearance to cross through the airfield overhead.

UKAB Secretariat

The PA28 and B737 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. 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 operation². Also, within Class D airspace, the pilot is required to comply with ATC instructions.

Comments

Leeds/Bradford ATC Investigation Report

The report concluded that the major problem in the incident was the PA28 pilot incorrectly joining downwind right-hand for RW14 from ECCUP instead of downwind left-hand. However, it was considered that the manoeuvre should have been spotted and corrected at a much earlier stage by the Aerodrome controller; additionally there was a the lack of Traffic Information provided to the pilots concerned.

¹ SERA.3205 Proximity.

² SERA.3225 Operation on and in the Vicinity of an Aerodrome.

The PA28 Operating Authority

The supervised solo student was returning from an uneventful navigation flight. He was instructed to join from ECCUP VRP downwind left-hand to RW14. He did not assimilate the instruction as join downwind right-hand RW14 and flew across the climb-out of RW14. The student is fully aware of his mistake and has been given a full debrief on his actions. Joining procedures will be reviewed before re-solo.

Summary

An Airprox was reported when a PA28 and a B737 flew into proximity at Leeds/Bradford Airport at 1456hrs on Friday 11th May 2018. The PA28, on a solo student flight, was operating under VFR in VMC, the B737 pilot was operating under IFR in VMC. Both pilots were in receipt of an Aerodrome Control Service from the Leeds/Bradford Aerodrome controller.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, the controller concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board first discussed the actions of the Aerodrome controller. The Board noted that the PA28 pilot, on a student cross-country flight, had been cleared to join downwind left-hand to RW14 from ECCUP by the Radar controller and the pilot had readback the clearance correctly on two occasions before being transferred to the Tower frequency. The PA28 pilot, on contacting the Tower frequency, stated that he was *"routeing er downwind er left er to runway one four"*. Although he had read back a number of positive instructions to join left-hand downwind the Board noted that there was some hesitancy in this transmission, which may have indicated that he was not completely sure of his positioning. Some controller members thought that this should have triggered the controller to monitor the PA28 pilot's approach carefully. A Civil ATC Airfield member, with experience of the Leeds/Bradford ATCU, commented that, because the PA28 was approaching the airfield from the east, it would have placed it behind the Aerodrome controller's position in the Visual Control Room (VCR). However, he considered that this should not have reduced his ability to track the PA28's arrival, apart from turning around to observe the aircraft, the VCR is equipped with an Aerodrome Traffic Monitor, therefore its position and routeing would have been available from this equipment without the necessity to avert his gaze from the traffic situation on the airfield. He confirmed that the procedures at the airfield would have ensured that the controller would have been advised that the PA28 pilot was a student on a solo flight.

The radar recordings show that instead of positioning to a left-hand circuit, the PA28 pilot was continuing his heading to position the aircraft through the runway departure track for a right-hand circuit, with the B737 pilot having been cleared for take off. The controller reported that at the time he had turned his attention to helicopter traffic, which wished to cross the airport from the southwest, to ensure that it was holding sufficiently clear of the B737's departure routeing. It was only after this that he had returned his attention to the PA28. It was apparent to the Board that the progress of the PA28 had not been closely monitored because the controller did not assimilate the PA28 pilot's deviation from his cleared routeing until he was close to the departure track. This was considered to be a contributory factor to the Airprox, especially because the incident occurred in Class D airspace, where positive control should have been expected.

The Board wondered why the PA28 pilot had not positioned himself for the correct circuit and deliberated whether he would have been used to different circuits whilst being trained. The Civil ATC member confirmed that the airport does use left and right-hand circuits to RW14, so he would likely have been used to operating on both. The Board could not determine the human factor which caused the PA28 pilot's error, but commented that instructors needed to ensure that sufficient emphasis was placed on joining procedures for bi-directional circuit patterns for early student pilots.

The Board then turned its attention to the cause of the Airprox. Some members thought that the fact that the controller had not intervened early enough was the cause. But, after further discussion, it was

considered that this was only a contributory factor and the fundamental cause related to the PA28 student pilot's actions in routeing to join downwind right-hand by mistake and flying into the proximity of the B737. Turning to the risk, the Board noted that both pilots had visual contact with each other and opined that there had not been a possibility of the aircraft colliding because at CPA they were separated vertically by 900ft. However, the Board did not consider that normal safety standards and procedures had pertained because the PA28 student pilot had not complied with his clearance. Therefore, the Board categorised the Airprox as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 student pilot routed to join downwind right-hand by mistake and flew into proximity with the B737.

Degree of Risk: C.

Contributory factor: The Aerodrome controller did not assimilate the PA28 pilot's deviation from his cleared routeing until close to the departure track.

Safety Barrier Assessment³

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

ANSP:

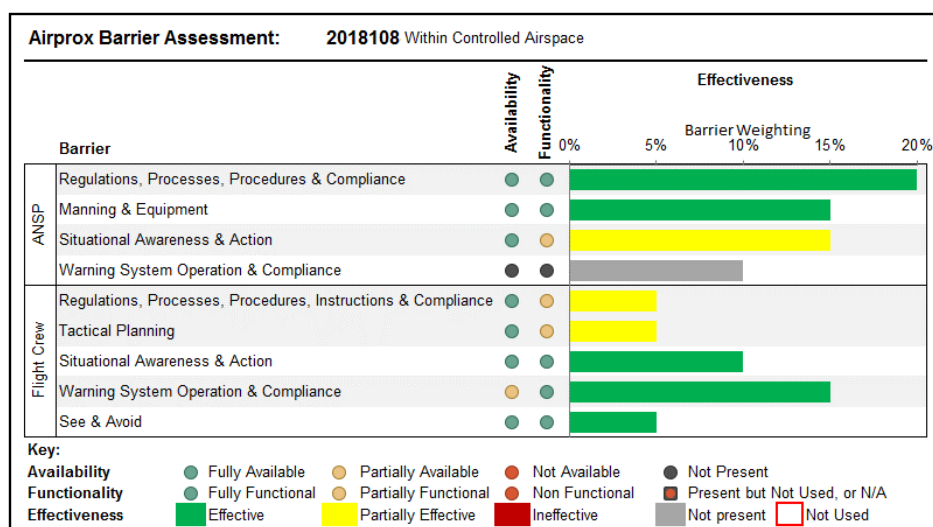
Situational Awareness and Action were assessed as **partially effective** because the controller did not notice early enough that the PA28 pilot was routeing to the incorrect downwind leg.

Flight Crew:

Regulations, Processes, Procedures, Instructions and Compliance were assessed as **partially effective** because the PA28 pilot joined downwind right-hand rather than left-hand.

Tactical Planning was assessed as **partially effective** because the PA28 pilot, although reading back the ATC instruction to join downwind left-hand, routed towards right-hand downwind.

Warning System Operation and Compliance were assessed as **partially available** because only one aircraft was equipped with an electronic warning system.



³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).