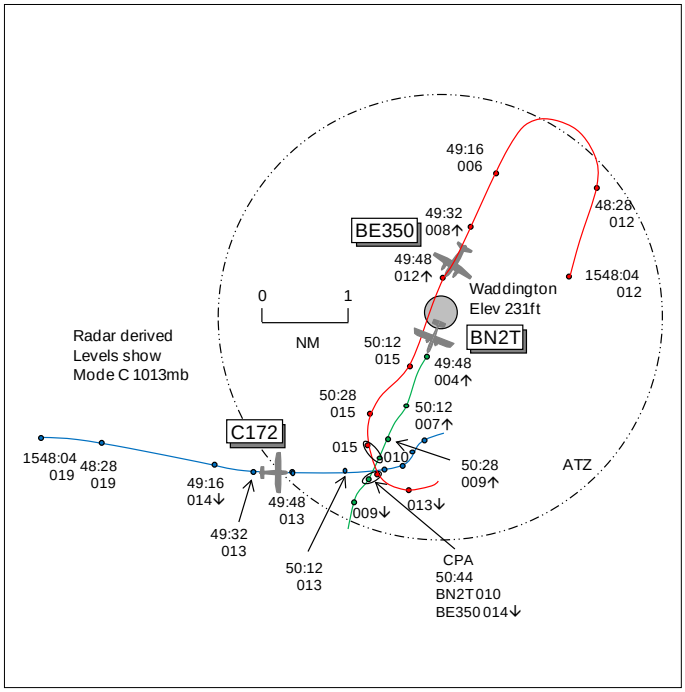
AIRPROX REPORT No 2011100

Date/Time: 5 Aug 2011 1551Z

Position: 5308N 00033W (2nm SSW Waddington - elev 231ft)

Airspace: ATZ (*Class: G*)

	Reporting Ac	*Reported Ac*
Type:	BN2T Islander	BE350
Operator:	HQ AAC	HQ Air (Ops)
Alt/FL:	900ft↑ QFE (1002mb)	1000ft QFE (1002mb)
Weather:	VMC CLBC	VMC NR
Visibility:	10km	NR
Reported Separation:	<100ft slant	NR
Recorded Separation:	400ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BN2T ISLANDER PILOT reports outbound from Waddington, VFR and in communication with Tower and then Approach on UHF, squawking 3610 with Modes S and C; TCAS was not fitted. The visibility was 10km flying clear below cloud in VMC and the ac was coloured grey with nav and strobe lights switched on. After normal start-up and taxi ATC Ground asked what type of departure they required. He requested VFR and was given a standard clearance, "Depart as requested, squawk 3610, Stud 3 once airborne"; this clearance allows for a non-standard turn against the cct direction; Tower then cleared them for take-off. Just as they began to rotate (the front wheel had just left the ground so not the best time to pass info) Tower advised "light ac in your 2 o'clock". Once safely clear of the ground heading 200° at 90kt he acknowledged this and confirmed that he had seen the light ac, possibly a C152 [actually a C172], in the 2 o'clock high; he then changed to Stud 3 (Approach) at approximately 500ft. They began a gentle climbing RH turn to pass behind the light ac as it was now going to pass in their 12 o'clock on the extended C/L at a range of approximately 0·25nm; Approach also confirmed the light ac. At about 900ft QFE 1002mb he spotted a King Air in his 4 o'clock position slightly high. As he was the NHP in the RH seat he had to take control, stopping the R turn and turning L onto 200° before halting the climb and carrying out a descent of 100ft to avoid the King Air as it was in a gentle rate 1 LH turn from the deadside of the cct, presumably to join. At no time were they informed of the King Air and he suspected the King Air was unsighted to their ac as they were underneath and in its blind-spot and very close (<100ft separation). Had he not taken avoiding action he suspected they would have impacted into the underside of the King Air. He assessed the risk as very high. He opined that this was a potentially serious incident. At no time had he requested an expeditious departure. In hindsight it would have been more sensible for ATC to have held them on the RW for a couple of minutes to allow the light ac (which was operating on VHF and not the standard UHF for military ac) to move away from the extended C/L and for ATC to have made them aware of the King Air joining on the deadside.

THE BE350 PILOT reports flying a local training sortie from Waddington. Whilst in the visual cct on short final to RW20 they were instructed by ATC to go-around as an Islander had yet to get airborne. Established on the deadside heading 200° at 140kt level at 1000ft QFE 1002mb they were informed of a light ac [the C172] joining for downwind. With the departing Islander in sight climbing straight ahead they delayed a downwind turn until visual with the light ac. Once visual with both ac they

turned downwind. Although they received a TCAS TA against the Islander, they were visual with both ac throughout and the flight safety risk was minimal.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a BN2T Islander CC2 conducting a VFR departure and a BE350 going around within the visual cct at Waddington.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated, with a 2-300ft difference between QFE height and radar altitude. All speeds quoted are based upon the recorded GS.

At the time of the incident, Waddington was operating to RW20 with a LH cct at 1000ft QFE. The TWR and GRD positions were bandboxed which is common at Waddington due to the lack of task load on GRD. The ADC assessed the task complexity as medium and their workload as high to medium.

There were 3 ac involved within the incident sequence, the Islander operating on UHF and the BE350 and a C172 operating on VHF. At times during the incident sequence the RT is congested, with 3 separate occasions where transmissions from ac were made simultaneously on UHF and VHF. Whilst the ATC Order Book states that 'when operating a visual circuit containing a mixture of VHF and UHF ac, all UHF traffic must be transferred onto VHF' the ADC has stated that they interpreted this as referring to ac remaining within the visual cct; consequently, they allowed the Islander flight to remain on UHF as it was departing the airfield. Moreover, the ADC did not take the opportunity to transmit on both frequencies simultaneously but alternated between them.

The incident sequence commenced at 1547:36 when a C172 pilot called to join the visual cct from the W, positioning for a downwind join to RW20 (WAD 257° 5nm indicating 1900ft). However, the ADC did not respond as they were liaising with APP about the Islander's departure details and then passing these to the Islander crew. At this point, the Islander was taxying for departure and the BE350 was downwind, 1·5nm NE of the airfield. At 1548:00, co-incident with the C172 pilot calling again on VHF for join, the Islander stated on UHF that they were switching to Tower.

At 1548:07 the ADC authorised the C172 flight to join the cct downwind which was acknowledged by its pilot. At 1548:14 the Islander crew called on UHF that they were, *"ready for departure"* and the ADC cleared them for take-off at 1548:20. At 1548:30 the BE350 called final on VHF and, having initially been placed on a *"continue"*, was instructed to, *"go-around"* at 1549:17. Waddington have subsequently confirmed that the *"continue"* clearance was issued in expectation of the Islander departing but that the Islander's pre-takeoff checks took longer than expected as the pilot was new to type.

At 1549:32 APP called the ADC to highlight the crosswind position of the C172 joining from the W, which was 2·8nm SW of the airfield. This prompted the ADC to pass a warning of the traffic to the Islander flight at 1549:45, stating that there was, *"one light aircraft joining from the west."* Co-incident with this transmission on UHF, the C172 pilot called on VHF stating that they were, *"upwind request location of the other aircraft*." The ADC responded by correctly re-stating the positions of all of the cct traffic and, at 1549:48, the Islander is seen to get airborne on the radar replay.

At 1549:52 and co-incident with the C172 pilot reading back the TI on VHF, the Islander crew asked the ADC on UHF to, *"confirm that's one aircraft from the west "* which was confirmed by the ADC. At this point the Islander was accelerating through 73kt and indicated FL004 (~100ft QFE 1002mb) climbing, with the BE350 0·9nm N, indicating FL012 (~900ft QFE) and 156kt and 0·2 nm lateral separation between their respective tracks.

Between 1550:02 and 1550:18 the ADC exchanged RT with the C172 pilot to ensure that he was visual with both the Islander and the BE350. During this exchange at 1550:14, the BE350 turned starboard to diverge from the track of the Islander. At 1550:12, 0·5nm lateral separation existed between the incident ac; the BE350 indicating FL015 (~1200ft QFE) and 160kt, with the Islander indicating FL007 (~400ft QFE) and 93kt.

At 1550:28, with the Islander 1·6nm SW of the airfield indicating FL009 (~600ft QFE), the Islander crew stated that they were, *"taking a right turn for that aircraft* [the C172] *in our twelve o'clock, changing stud 3."* This turn can be witnessed on the radar replay between 1550:15 and 1550:22. At the same time the BE350, 0·4nm NW of the Islander, commenced a L turn to pass through the Islander's 6 o'clock. The BE350 pilot stated in their report that they remained visual with the Islander throughout the incident sequence and turned downwind once they were visual with the C172.

The CPA occurred at 1550:44 as the BE350 passed 0·1nm through the Islander's 6 o'clock, indicating 400ft above.

Based upon conversation between APP and the ADC after the incident, the call from APP to the ADC at 1549:32 was as a result of APP's concern about the release of the Islander with the C172 in the crosswind position. However, although the Islander turned to position themselves behind the C172, the change of direction was only around 2-5°. Consequently, given that the BE350 was visual with the Islander throughout the incident sequence, the positioning of the C172 had no bearing on this incident. Furthermore, on the basis that the BE350 was visual with the Islander throughout, it is clear that the separation that existed was controlled and thus the crew of the Islander were concerned over the proximity of the BE350, which would have been ameliorated by improved situational awareness.

The ADC's understandable yet incorrect interpretation of the ATC Order Book where it related to the operation of the visual cct on VHF, removed the ability for the Islander crew to develop their SA. Moreover, the ADC's workload meant that they were too busy to pass individual TI to the Islander crew on UHF, as their focus was on the C172. Finally, the Islander crew's decision to switch to APP whilst still within the ATZ removed the ADC's final opportunity to have passed TI, albeit that that TI would have only been 12sec prior to the CPA.

Following this incident, RAF Waddington has reviewed their Flying and ATC Order Books and has adopted the use of VHF as the primary TWR freq.

HQ AIR (OPS) comments that it seems that the Islander crew was not aware of the presence of the BE350 due to the fact that they were operating on UHF, whereas the cct traffic was on VHF; this may account for their planning to turn R on their departure when a LH cct direction was being used and there was another ac (the BE350) on the deadside. It is pleasing to note that the RAF Waddington FOB has been revised to avoid this situation in the future. However, ultimately the BE350 flew close enough to the Islander to cause concern, even though the pilot of the BE350 seemed to have good SA on all cct traffic (despite the issue of the ac being on different frequencies) and was visual with the Islander throughout the Islander's departure. All aircrew should be reminded of the need to give sufficient avoidance to other ac to prevent these sorts of situations arising.

HQ AAC agreed with HQ Air (Ops), and added that it is imperative that sufficient 'separation' is maintained at all times. It is felt the clearance to allow the C172 to join non-standard across the extended C/L with ac departing contributed to the incident.

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.

Members agreed that there were several factors which had led to this Airprox being filed and a critical element was that the BN2T crew had no warning of the BE350's approach. First, the ADC had prevented the BN2T gaining SA on cct traffic by allowing the flight to remain on UHF whilst the other traffic was on VHF. Second, ATC had not transmitted on both frequencies at the same time which would have improved the BN2T crew's mental 'air picture' by hearing ATC's instructions and information, even if they could not hear the pilots' responses on VHF. As a result, they did not hear

the BE350 being told to go around, after the BN2T apparently took longer to take-off than expected by the ADC when he issued its clearance. Having gone around on to the dead-side, the BE350's turn crosswind, normally initiated at the upwind end of the RW, was effectively 'baulked' by the C172, which was allowed to join in a non-standard manner across the climb-out. This delay in the BE350's turn crosswind while the crew were looking for the C172 led to the BE350 catching up the BN2T as it was climbing out straight ahead. The BE350 crew, after visually acquiring the C172, turned slightly R to generate some separation before turning L to pass behind both of the other ac. However, for their part, the BN2T crew was unaware of the BE350 until it was first spotted in their 4 o'clock slightly above. Without the benefit of SA gained from the RT, this sudden appearance undoubtedly caused the BN2T crew concern and this was a part cause of the Airprox. Had the ADC been minded to do so, his ability to pass a late warning to the BN2T crew would likely have been frustrated because they followed his departure instructions to call on Stud 3 when airborne. Given the traffic situation, with ATC cognisant of the BN2T's intended R turn to leave the cct, and with the BN2T and the BE350 on different frequencies, Members agreed that ATC should have passed early TI on the BE350 to the BN2T flight and the absence of this was another part cause.

Turning to risk, the BE350 crew had good SA on the traffic and had maintained visual contact on the departing BN2T throughout. However, they had been forced to delay their turn crosswind until after assimilating the C172's flightpath which had led to them flying closer to the BN2T than normal. The BN2T crew had only seen the BE350 very late in their 4 o'clock, as it was about to turn L onto the crosswind leg, estimating it passed very close with <100ft separation. That said, the radar recording reveals the separation, although close in azimuth with 0·1nm (185m), was 400ft vertically. Taking all of these elements into account, Members agreed that the BE350 crew had the situation under control and was always in a position to manoeuvre further, if necessary, which allowed the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, the BN2T crew was concerned by the proximity of the BE350.

Degree of Risk: C.