

AIRPROX REPORT No 2010133

Date/Time: 14 Sep 2010 1545Z

Position: 5309N 00043W (6½nm
S by W of Waddington
A/D - elev 231ft)

Airspace: Lincolnshire AIAA (Class: G)

Reporting Ac Reported Ac

Type: Sentry Tutor

Operator: HQ Air (Ops) HQ Air (Trg)

Alt/FL: FL85 8000ft
RPS

Weather: VMC CLOC VMC CLAC

Visibility: 30km 30km

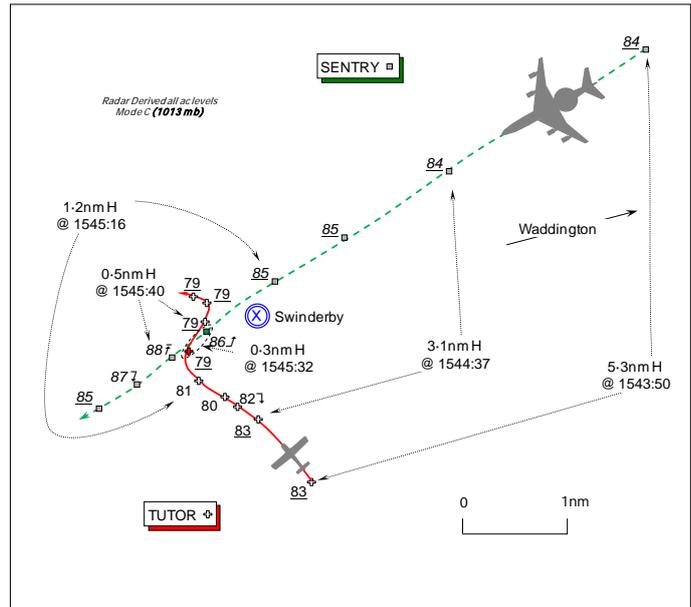
Reported Separation:

200ft V 500ft V/nil H

Recorded Separation:

100ft Min V @ 3.1nm H

0.3nm Min H @ 700ft V



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BOEING SENTRY PILOT reports he was on an IFR recovery to base at Waddington and in receipt of a TS from Waddington APPROACH (APP) whilst holding in the Waddington COLBY hold - approximately 210° WAD 7nm - heading 245° at 220kt. A squawk of A3612 was selected; Mode S and TCAS are fitted. The ac has a grey colour-scheme; the HISLS were on.

The Tutor ac was initially pointed out by APP and observed on TCAS 6nm away before being acquired visually, being on a constant sightline but slightly low. A decision to turn off the hold and potentially lose visual contact with the Tutor by going 'belly up' was delayed as the Tutor appeared to be manoeuvring and unaware of their presence. The contact displayed on TCAS became proximate traffic then quickly changed to an RA, whereupon the crew initiated a climb in response. The Tutor passed about 200ft directly below his ac with a 'medium' Risk of collision.

He stated that the cockpit workload was 'low' and added that they were operating in good VMC with a TS and functioning TCAS, therefore they maintained good SA on all local traffic. An Airprox was reported to APP on RT.

THE TUTOR T Mk1 PILOT, a QFI, reports he was teaching Effects of Controls (1) during an early instructional sortie in the SW Sector of the Lincolnshire Agreed Airspace and manoeuvring at 8000ft Barnsley RPS (1002mb). He was operating in compliance with the agreed procedures, not in receipt of an ATS, but squawking A2637 with Mode C and S on and operating on a discrete frequency, VFR in good VMC, some 2000ft above and 5nm clear of cloud with an in-flight visibility of 30km. TCAS is not fitted.

Due to particularly strong winds he was progressing slowly to the W (at a GS of about 40kt) and due to a poor horizon, had climbed to 8000ft. During the ascent he saw the Sentry as it passed from R – L in front of his aeroplane; he then saw it turn L and fly towards Waddington. As they continued W he saw it turn L and fly towards them again. Heading 300° at 75kt, at the point when it appeared to have zero angular velocity, he turned R and flew towards it to remain visual. The Sentry was higher than his aeroplane and he then decided not to continue but to reverse his turn so that he could stay

visual with it. He flew directly underneath the Sentry at what he judged visually was about 500ft vertical separation with a 'low' Risk of collision. He added that his cockpit workload was 'low'.

His Tutor has a white colour scheme; the HISLs and landing light were on.

THE WADDINGTON APPROACH CONTROLLER (APP) reports that the Sentry was established in the COLBY TACAN hold at FL85 under a TS. As the Sentry set course westerly from Waddington, an update on the Tutor, which had been called previously, was passed as the Tutor was indicating FL83, some 200ft below the Sentry.

The Tutor was then seen to descend, so an update was passed at 3nm as FL81 descending, which the pilot of the Sentry confirmed on TCAS. Shortly afterwards, the Sentry pilot followed a TCAS RA and climbed. The callsign of the Tutor aeroplane was confirmed by Cranwell.

THE WADDINGTON ATC SUPERVISOR (SUP) reports that the Tutor appeared to be conducting general handling in Class G airspace around the vicinity of the COLBY hold. The Tutor was called to the Sentry crew and shortly after TI was updated they received a TCAS RA and climbed to avoid the Tutor.

HQ 1GP BM SM reports that the Tutor pilot was operating VFR in the Lincolnshire AIAA and the Sentry in the Waddington COLBY hold, in receipt of a TS from APP whose workload was reported to be medium to low.

Based upon APP's choice of phraseology at 1543:50, it is clear that TI about the Tutor had previously been passed by the controller to the Sentry crew before the RT transcript commences. However, at 1543:50 this TI was updated describing the Tutor as, "*Tutor now south west, 5 miles, manoeuvring 2 hundred feet below.*" APP was able to positively identify the Tutor type due to the SSR code in use, which is recognised throughout the Lincolnshire AIAA. At this point the Tutor, indicating FL83, was 5-3nm SW of the Sentry at FL84 Mode C.

Based upon the Tutor pilot's report and the radar replay, the Tutor first became visual with the Sentry in an earlier phase of its exercise at approximately 1541:26. Both the Sentry and the Tutor pilots report being visual with each other's ac. However, the Sentry pilot reports that they became visual after correlating TI from APP with their own TCAS information. This might suggest that first sighting occurred when APP provided a further update to the TI at 1544:33, describing the Tutor as, "*left 11 o'clock, now 2 miles (the radar replay shows 3-1nm separation at 1544:37) manoeuvring 3 hundred feet below appears to be descending.*" The Sentry responds, "*yeah on TCAS that confirms it thank you.*" It is equally possible to interpret the crew's response as having already correlated a visual target with the TCAS prior to the updated TI and then simply acknowledging the TI. At the point when the Sentry crew acknowledges this updated TI, both ac are closing on a constant relative bearing with the Tutor's Mode C indicating a slow descent.

The Sentry pilot reports that in order to ensure that they remained visual with the Tutor, he elected to remain within the COLBY hold, rather than to manoeuvre to avoid it. At 1545:15, the Sentry pilot reports manoeuvring in accordance with a TCAS RA against the Tutor, with the Tutor 1-2nm SW of the Sentry indicating FL81 Mode C. It is between 1545:32 and 1545:40 that the Tutor begins its reported turn towards the Sentry once the angular velocity between the 2 ac had reduced to zero. It is between these times that the CPA occurs, with the TCAS RA Climb shown on the radar recording at 1545:32, the Sentry indicating FL86 and the Tutor indicating FL79.

From an ATM perspective, APP provided a good level of service to the Sentry crew, with timely updates of TI that would have enabled them to correlate the TI with their TCAS display and visual picture; furthermore, the reporting pilot stated that they had '*good SA on all local traffic.*'

Notwithstanding that CAP 774 states that 'pilots are ultimately responsible for collision avoidance', JSP 552 201.200.3 states that:

‘when 2 aircraft are converging in the air at approximately the same altitude, the aircraft that has the other on its right shall give way.’

UKAB Note (1): The LATCC (Mil) radar recording shows that the Tutor directly underflew the Sentry in between radar sweeps and Mode C indicates vertical separation of 700ft existed at the point of minimum recorded horizontal separation of 0.3nm just before the tracks crossed. The Sentry ascends to a maximum of FL88 above the Tutor that maintains FL79.

HQ AIR (OPS) comments that timely TI was passed to the Sentry which correlated with its TCAS, the crew then became visual and continued to the point of receiving a TCAS RA. Notwithstanding the Rules of the Air this incident could have been avoided by the higher performance ac with the greater situational awareness taking early avoiding action.

HQ AIR (TRG) comments that the Tutor avoided the E3-D in accordance with the Rules of the Air. Both crews were visual with each other in good time and the Tutor pilot did what he could considering his speed disadvantage, for which the Rules of the Air do not cater. A small turn by the E3-D, once visual with the Tutor, might have avoided the eventual TCAS RA, without impacting its ability to remain visual. Whilst this is against the instruction for the aircraft with the right of way to maintain its course, the Rules of the Air also require all crews ‘...to take all possible measures to ensure that his aircraft does not collide with another aircraft...’ and not to fly ‘...in such proximity to other aircraft as to create a danger of collision.’

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Each pilot had a legitimate right to operate here in Class G airspace but the Sentry pilot was concerned that the Grob Tutor pilot might have been unsighted on his ac. From the Tutor pilot's report it was clear that he had seen the distinctive ac at an early stage and had kept it in sight as it flew towards him. Whilst some Members saw potential for criticism of the Grob pilot for operating in the vicinity of the COLBY hold, the Board recognised how busy the Lincolnshire AIAA is with both basic and instrument training flights units vying for airspace amongst a profusion of other flying activities. The Grob pilot might not have known this was the location of an IFR hold and the difficulties of finding clear airspace within which to conduct basic training were well known. Considerable numbers of training ac operate in this vicinity every day so pilots operating under IFR in VMC should expect to see them. Conversely, when the weather was not so good, teaching early instructional sorties in IMC was impractical. Controller Members opined that to a certain extent, it was a self-regulating situation: on good VMC days traffic will be encountered throughout the AIAA; however, when flight under IFR is predicated by poor weather much of the training fleet is unlikely to be airborne.

Members agreed that APP had provided a good TS to the Sentry crew and was not required to effect separation between these ac. The Tutor had been observed by APP converging with the Sentry and TI had been passed by the controller in good time on at least three occasions overall. Furthermore, the Tutor was continuously displayed to the Sentry pilots on their TCAS throughout the encounter, which contributed to their SA until they saw the small white Tutor visually themselves.

The Rules of the Air required the Grob Tutor pilot to ‘give way’ in this situation as the Sentry turned and flew towards him. Whereas some Members thought it unwise for the Grob QFI to fly toward the Sentry, the Tutor pilot had kept it in sight throughout and elected to descend beneath it to remain clear. Pilot Members questioned the wisdom of descending directly below this large multi-engine jet ac in a small aeroplane as there was potential for wake vortex to affect the lighter more vulnerable Tutor. Furthermore, ‘the Rules’ discouraged pilots required to give-way from passing directly

beneath another ac. The Tutor pilot had limited ability to put distance between himself and the faster ac but a hard turn to the right while it was at range would have allowed him to break the collision course and regain visual contact almost immediately. A turn combined with a descent would have maximised the separation and avoided generating a TCAS RA. That said, the Tutor pilot had ensured that over 500ft of vertical separation existed before he flew underneath and all this before the Sentry pilot reacted to his TCAS CLIMB RA and increased the separation even more to 700ft just before the tracks crossed. The Board noted the comments from the Command and perhaps the Sentry pilot, operating IFR in VMC, had more options open to him, but both crews still had a responsibility to 'see and avoid' in Class G airspace. The Board agreed that the Tutor pilot had fulfilled his responsibilities and avoided the larger ac by a suitable margin; it was just unfortunate that it was not quite enough to prevent a TCAS RA. The Board concluded, therefore, that this Airprox was the result of a sighting by the Sentry crew of traffic operating in the AIAA and that no Risk of a collision had existed in the circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: C.