

AIRPROX REPORT No 2010124

Date/Time: 3 Sep 2010 1228Z

Position: 5300N 00034W (10nm SbyW of Waddington elev: 231ft)

Airspace: Lincolnshire AIAA (Class: G)

Reporting Ac Reported Ac

Type: Tristar TB20

Operator: HQ Air (Ops) Civ Pte

Alt/FL: FL66↓ FL61↓

Weather: VMC In rain VMC CLAC

Visibility: 5km >10km

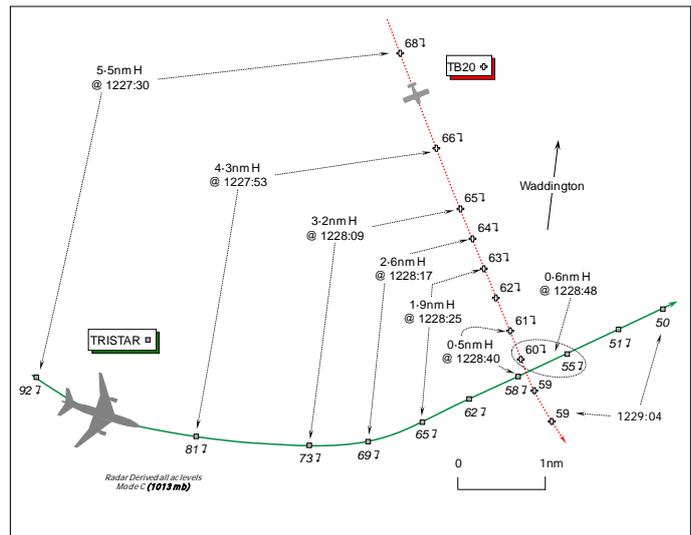
Reported Separation:

200ft V 300ft V

Recorded Separation:

Nil V @ 1.2nm H

0.5nm Min H @ 300ft V



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TRISTAR PILOT, a QFI, reports he was instructing an IFR training flight inbound to Waddington, descending to FL50 under a TS, as 'cleared' by LATCC (Mil) following a handover to Waddington APPROACH (APP) on VHF 123.3MHz. A squawk of A3612 was selected; Mode S and TCAS are fitted.

Approaching FL70 some 10nm SSW of Waddington and turning L onto 090° at 250kt, they received a broken transmission from APP and heard FL75 mentioned. Clarifying the call whilst descending at 2500ft/min passing FL67, APP instructed them to level at FL70 and a level off was immediately initiated. At the same time TCAS annunciated an RA demanding a descent that was complied with. Initially they could not make visual contact with the conflicting ac, then TCAS demanded an increased RoD that was followed accordingly. They subsequently made visual contact with, he thought, a Tutor in their 10 o'clock ¼nm away about 200ft above their ac and also descending.

He is in little doubt that the TCAS RA prevented a collision between the two ac. TCAS declared Clear of Conflict passing about FL54 and they levelled off at FL50; ATC was informed of the TCAS event. He assessed the Risk as 'very high'.

The ac has a grey colour-scheme; the HISLs and nav lights were on. No RT report was made at the time of the Airprox, which was subsequently reported to their Station Flight Safety Officer.

THE TB20 PILOT provided a brief account stating that he was in transit from Inverness to Peterborough (Conington) under VFR, whilst in receipt of a TS from Waddington on 127.37MHz. A squawk of A3602 was selected; Mode S and TCAS I is fitted.

Heading 160° descending through FL61 in VMC at 155kt, he saw a Tristar below him at FL58. Minimum vertical separation was about 300ft but no avoiding action was needed. He assessed the Risk as 'low'.

His ac is coloured white and blue, with red and grey stripes; lighting in use was not stated.

THE WADDINGTON APPROACH CONTROLLER (APP) reports that the Supervisor accepted a handover from London (Mil) on the Tristar descending to FL50 heading S under a TS. She was working two frequencies when the Tristar crew eventually called; by this time the ac was heading E overhead Cranwell so she turned the ac onto N and then noticed there was conflicting traffic - the TB20 - in a steady descent through FL65 working Waddington ZONE. She called the TB20 traffic and instructed the Tristar crew to stop descent at FL75, but the crew advised they had just passed FL75 so she then instructed them to stop descent at FL70, which the pilot acknowledged. She then told ZONE the Tristar was stopping descent, whereupon the Tristar pilot advised that he was following a TCAS RA and descended through the level of the TB20 to FL50. The Tristar passed through the TB20's level in its 12 o'clock at 2nm, she thought.

She added that during this period an E3D was being vectored on another frequency around the radar pattern through an area of high traffic density.

THE WADDINGTON SUPERVISOR reports that the APP controller was busy so he took the handover from London (Mil) on the Tristar, which was heading S descending to FL50. He identified the ac and called conflicting traffic to London (Mil) who transmitted this to the crew and instructed them to contact Waddington APP on 250.85MHz. London (Mil) called back moments later to request a VHF frequency, which was not stated in either the prenote or handover. The controller then had to dial a NATO common frequency into the standby VHF set in order to take control of the ac. The Tristar crew then called on VHF 123.3MHz heading E. APP was now controlling on multiple frequencies and was transmitting on two, which he perceived led to some confusion with the Tristar pilot. APP then turned the Tristar to position it for the radar pattern. As APP widened her scan she saw conflicting traffic, which ZONE was now pointing out and giving traffic information about. APP quickly instructed the Tristar crew to stop descent at which point the pilot advised he had already passed FL75 and was at FL70, which she then requested him to level at and which he read back. However seconds later the Tristar pilot reported a TCAS descent.

The controller did what she believed was the best avoiding action to stop the ac from colliding with the TB10 by stopping its descent.

HQ 1GP BM SM reports that Waddington ATC was unable to provide a report from the ZONE controller or ZONE RT tape transcript, consequently, this analysis has been completed without it. Furthermore, comparison of the radar replay and APP RT tape transcript timings highlighted a significant discrepancy of approximately 21secs that was confirmed by engineers at the unit. Consequently, the RT transcript timings in this report have been amended to align with the radar recording time base.

It should also be noted that, given the differing data update rates between the Waddington ASR and the LATCC (Mil) radar recording used for this investigation, the indicated SSR Mode C levels may differ from that displayed to APP at the time of the occurrence.

Waddington was operating to RW02, the radar training circuit (RTC) overlaps the Cranwell radar pattern and climbout lane. The unit reports that this Airprox occurred during a lunch period where a DIRECTOR is not normally rostered unless multiple ac are expected to be operating within the RTC.

At 1225:51, LJAO NE commenced the handover on the Tristar, which was completed at 1227:14. Meanwhile, it is apparent that the Tristar commenced a L turn at 1227:01, introducing the risk of conflict with the TB20. The unit investigation states that this turn was issued by LJAO, although there is no evidence to substantiate this. The turn occurs whilst the Supervisor is conversing with LJAO about the provision of a VHF for the Tristar; consequently, the Tristar is still on LJAO's frequency. The turn was not notified to Waddington ATC by LJAO. At this point, the Tristar is approximately 12nm SW of Waddington descending through FL96 Mode C and 3nm NW of the extended CL.

APP's workload was high, providing a TS to the RAFAT operating within EGR313 on a dedicated VHF frequency, plus a TS to an E3D completing multiple circuits within the RTC on UHF and the

Tristar on a third VHF frequency. The Tristar crew established first contact with APP at 1227:33; however, APP was receiving and then responding to a transmission from the E3D. The Tristar crew re-transmitted their initial call on VHF 'stepping on' the UHF transmission from the E3D. APP provided a vector to the E3D but the Tristar crew mistakenly believed that the transmission was for them asking, "*confirm that was for [Tristar C/S] to head 1-1-0°?*" APP replied at 1227:56, "[Tristar C/S] *negative, working 3 frequencies at once now identified descending Flight Level 5-0 traffic service.*" The ATS was not 'Reduced'. At this point, the Tristar is 4.3nm SW of the TB20, descending through FL81 Mode C, with the TB20 itself descending through FL66.

With the Tristar descending through FL73, APP turned it L onto N at 1228:08, when it was 3.2nm SW of the TB20. CAP 774 states that:

"when providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced by the instructions passed."

The Supervisor reports that at some point between the time that the instructions to turn onto N and to stop descent at FL75 were issued, ZONE pointed out the TB20 to APP. At 1228:15, APP instructed the Tristar crew to, "*..stop descent flight level 7-5, traffic north east 4 miles, tracking south, at flight level 6-5.*" The TB20 is 2.6nm NE of the Tristar, the latter indicating FL69. The Tristar crew replied that they were, "*just passing 7-0 this time*" and APP instructed them to, "*stop descent 7-0*" at 1228:25. At this point the Tristar is shown descending through FL65, 1.9nm SSW of the TB20; the Tristar crew read back this instruction also advising that they were, "*rolling out [on heading] 0-7-0.*" At 1228:37, the Tristar pilot reported a TCAS RA, [which APP acknowledged] and just after this the point of minimum horizontal separation is shown at 1228:40 as 0.5nm, the Tristar passing FL58 having descended 300ft below the TB20 indicating FL61 Mode C. [The Tristar pilot reported "*..clear of conflict*" at 1229:03.]

APP would have been aware of the regulation regarding taking into account traffic in the immediate vicinity prior to issuing a vector to ac under their control. The ATSU has stated that the taskload on APP should not have been a problem for the controller, considering her ability and experience. However, it is clear that the taskload and complexity were significant factors in this occurrence. Specifically that APP was operating in the band-boxed APP-DIR position. The taskload and complexity faced by APP caused attentional tunnelling, which in turn meant that APP was unable to perceive the presence of the TB20, hence the Tristar was unknowingly turned into conflict with the TB20.

Operation of the band-boxed APP-DIR position and the associated increase in taskload that this generated was a causal factor in this Airprox.

SATCO Waddington has reviewed lunchtime manning arrangements to ensure that staff are available for DIR when appropriate.

HQ AIR (OPS) concurs with HQ 1 Gp BM SM, timely compliance with the TCAS RA ensured separation was sufficient.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of one of the relevant RT frequencies, radar video recordings, reports from two of the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board expressed concern at the lack of a report from the Waddington ZONE controller and the absence of an RT transcript for the ZONE frequency over the period that the Airprox occurred. It is fundamental to the investigation that, where appropriate, the controller's account is provided and the RT recording preserved so that all of the facts can be established. As ZONE was providing an ATS

to the reported ac a report should have been provided. The absence of these details hindered the Board's determination of Cause and Risk.

The LATCC (Mil) Member provided some added insight into the earlier stages of this occurrence when the Tristar crew was under the control of LJAO. Following a late hand-over from ScATCC (Mil), he confirmed the crew had been in receipt of a TS with LJAO NE and the ATS initially requested by them. It was also confirmed that the crew had contacted Waddington themselves and confirmed the availability of the PD at an earlier stage. Controller Members were somewhat surprised, therefore, that the Tristar had been accepted for the PD at Waddington when no controller was rostered for the DIR position; alternatively, having accepted the PD booking, that no controller was made available for the DIR position. Members noted that there was a missed opportunity at that stage for the SUP to cancel the PD if he believed that the unit was going to exceed its capacity to handle the Tristar without a rostered DIR. It was confirmed by the LATCC (Mil) Member that LJAO NE Tactical had turned the Tristar eastbound, as the controller perceived that the ac was progressing too far to the S away from Waddington during the extended handover whilst a VHF channel was obtained. This was not picked-up by the LJAO NE Planner controller during the hand-over to the SUP as the Planner was obtaining the VHF channel requested by the crew, which also delayed the transfer of control to APP. By turning the Tristar easterly, the LJAO NE Tactical controller perceived he was assisting APP, but the turn was not noticed nor notified by his colleague to the SUP in retrospect, who accepted the hand-over on APP's behalf. This requirement for VHF communication with the aerodrome it seemed might not have been specified at the outset, which concerned the Board. This clearly placed an unexpected and additional load on the SUP and APP at a busy moment, but a military Member advised that not all of the Tristar fleet are fitted with UHF radios and ATSUs should be prepared for such requests. Conversely, military crews should be aware that the availability of dedicated VHF frequencies at UK military ATSUs is limited and many will only have recourse to NATO 'common' frequencies on 'standby' sets, as here. This could potentially result in poorer transmission/reception quality compared to a dedicated UHF as NATO 'common' frequencies are inherently more susceptible to interference from other ATSUs using them in the vicinity, especially in locations such as the Lincolnshire AIAA with many military aerodromes in close proximity.

Some Members viewed the turn onto E as intrinsic to the Cause because it placed the Tristar and TB20 on conflicting flight paths. However, the TB20's squawk would have indicated to LJAO NE that it was also under the control of Waddington ZONE. LJAO NE might, therefore, have perceived quite reasonably that APP would co-ordinate with ZONE as necessary. As it was, the Tristar was descending steadily to FL50 and outpacing the TB20, which the radar recording revealed was also in a descent. There did not, however, seem to have been any co-ordination between APP and ZONE, either formally or 'off-mic', but in the absence of an input from the ZONE controller this was not clear. However, APP should have been scanning for conflicting traffic and should have detected the TB20 earlier. The HQ 1Gp BM SM report confirmed that in between the instruction to turn onto N at 1228:08 and the stop descent instruction at FL75 given by APP at 1228:15, ZONE had pointed out the TB20 to APP and controller Members concluded that this was the point that APP first realised the Tristar was in conflict with the TB20. APP immediately issued an instruction to the Tristar crew to stop their descent at FL75 in addition to TI, but by that stage it was too late. The Tristar had already descended through that level and, despite issuing an instruction to level at FL70, APP was unable to influence the outcome any further. Whilst some might argue that APP was exceeding her remit under the TS, but having turned the descending Tristar across the path of the descending TB20, in the Board's view, APP wisely endeavoured to resolve the situation in the vertical plane as best she could, but late appreciation of the true situation meant APP was continually behind the 'drag curve' and unable to catch up.

The Board accepted that APP was busy and faced a complex situation that was complicated by working multiple frequencies. Members also noted that the Unit perceived this should not have been a problem for an experienced controller albeit that the Command considered that the taskload and complexity were significant. Whilst accepting that APP did not *knowingly* turn the Tristar into conflict, controller Members contended that between them, the SUP, APP and ZONE controllers should have been alert to a conflict between the Tristar and the TB20 and taken action earlier to

forestall this close quarters situation; that they did not do so was indicative of a lack of teamwork within ATC. Whilst setting up the standby VHF box would undoubtedly have been a distraction, after accepting the hand-over the SUP should have recognised that the Tristar was turning L, that there was potential for a conflict and ensured that APP and ZONE did something about it.

On a wider point, a CAT pilot Member considered that a TS was inappropriate for such a large ac, and the Tristar crew would have been wiser to have asked for a DS. Controller Members contended that achieving stipulated deconfliction minima in the Lincolnshire AIAA would often preclude an expeditious recovery but there was no reason to suppose that separation could not have been engineered between these two ac by ATC that could have forestalled this Airprox. Generally, if an ATSU was not able to provide a DS then they will provide the best level of ATS that they can, other higher priority tasks permitting, within the limitations of available manpower and equipment. The Air Command Member suggested that if the Tristar crew considered that they were able to fulfil their responsibilities to 'see and avoid' other ac under the prevailing weather conditions and were satisfied that they only needed traffic pointed out to them, then a TS was acceptable while being vectored around the pattern. It was up to the PIC to decide what level of radar service was available and appropriate given the circumstances.

The absence of an RT transcript from ZONE prevented the Board from determining if TI had been passed to the TB20 pilot about the Tristar. The short account from the TB20 pilot did not provide any clarification of this point, neither did he mention if his TCAS I had warned him of the Tristar's presence, but it seemed that he had not seen the Tristar until it was below his aeroplane at FL58 he reports. Therefore, if he had not known about the other ac until that point, he would have been unable to fulfil his responsibilities under the Rules of the Air to 'give way' to the Tristar on his starboard side. A CAT pilot postulated that the TB20 pilot might have perceived that as he was in receipt of a TS from ATC he need not be concerned about 'right-of-way' and that ATC would issue appropriate advice to ensure separation. Any pilot that might perceive that a TS from an ATSU absolves them from their responsibility to 'see and avoid' other traffic was under a dangerous misconception. The Rules-of-the-Air still hold sway and here in Class G airspace separation is ultimately the pilot's responsibility under a TS.

In concluding their determination of the Cause, some Members suggested that supervisory aspects had played a significant part here coupled with an apparent lack of timely co-ordination between APP and ZONE. Other Members considered that whilst these all had some impact and there were lessons to be learned from this Airprox for the benefit of all concerned, fundamentally, the Tristar crew were following the vectors issued and complying with ATC instructions. Whilst acknowledging the view of HQ 1Gp BM SM and weighing all these factors for relevance, the Board concluded that the Cause of this Airprox was that the Tristar was vectored into conflict with the TB20.

Turning to the inherent Risk, it was clear that once APP had appreciated the conflict the controller had tried to stop-off the Tristar above the TB20, whilst also passing TI. At close quarters TI is essential and the Tristar pilot reports that he did see the TB20 in their 10 o'clock, he thought about ¼nm away but actually ½nm at the closest point, some 200ft above their ac and realised it was also descending. However, this was after TCAS had demanded a descent, and then further descent at an increased rate, which the Tristar crew had complied with. Such crossing descent scenarios are not always straightforward, but it was plain that the Tristar crew was able to descend clear below the level of the descending TB20, such that 300ft of vertical separation was evident from the recorded radar data before the tracks crossed. By that point the TB20 pilot was also visual with the Tristar, but decided that no avoiding action was needed as vertical separation continued to increase, with 500ft evident on the next sweep. The Members agreed unanimously that all these factors combined had effectively removed the Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tristar was vectored into conflict with the TB20.

Degree of Risk: C.