

AIRPROX REPORT No 2011155

Date/Time: 31 Oct 2011 1224Z

Position: 5219N 00008W (2nm
NNW of Wyton - elev
135ft)

Airspace: London FIR/ATZ (*Class: G*)

Reporting Ac Reporting Ac

Type: Grob Tutor TMk1 Grob Tutor TMk1

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

Alt/FL: 2500ft ↑2000ft
QFE (1008mb) QFE (1008mb)

Weather: IMC In Cloud VMC CLBC

Visibility: Nil 10km

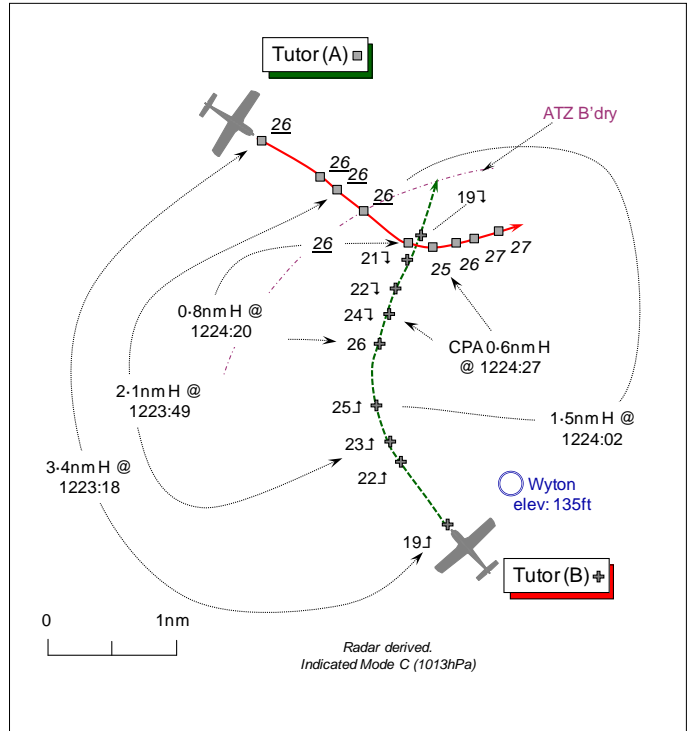
Reported Separation:

NK 800ft V/0.55nm H

Recorded Separation:

Nil V @ 0.8nm H

0.6nm Min H @ 100ft V



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR T MK1 (A) reports he was completing a local training sortie and initially contacted Cottesmore RADAR [ZONE] on 130.20MHz to commence the recovery to Wyton. As they were above 8/8 cloud it was decided that a QGH recovery [a controlled descent through cloud using VDF] should be flown into the A/D to get VMC below. Initial descent to 4000ft was executed with Cottesmore ZONE under a TS. Upon switching to Wyton APP on 134.050Mhz, a descent was initiated to 2500ft Wyton QFE (1009mb) under a PS. During the VDF homing to the A/D O/H from the NW, heading 140° at 100kt whilst still IMC in cloud, his Traffic Alerting System (TAS) enunciated a traffic warning for a contact displayed at 10'clock less than 1nm away and 100ft below his aeroplane. To avoid it a L turn was executed, away from the contact, onto a heading of 090° and once clear of the contact the remainder of the APP was flown without incident. He assessed the Risk as 'medium' but did not estimate the separation.

His aeroplane is coloured white; the HISLs, nav lights and landing light were all on. The procedure squawk of A4601 was selected with Mode C; elementary Mode S is fitted.

THE PILOT OF GROB TUTOR T MK1 (B) reports that his student had not flown for some time and so he planned to complete some upper-air GH as refresher training, before returning to the visual cct at Wyton. The RW in use was RW15, due to a moderate S'ly wind, with BKN cloud at around 2000ft agl although gaps were beginning to appear. He had booked a SID-1B with Wyton ATC, received a clearance and got airborne from RW15. Passing 1000ft Wyton QFE (1009mb) in the climb, he turned R onto a heading of 300° enabling him to maintain the required SID track of 310°. As he was turning, ATC informed him that QGH traffic – Tutor(A) - was homing from the NW. After acknowledging the call from Wyton he switched frequency and free-called Cottesmore RADAR [ZONE] on 130.200Mhz for a TS, passing his position, the squawk assigned and type of SID he was flying.

Cottesmore were having difficulty identifying him, as they had on a previous sortie that day, so he levelled the ac at what he thought was 2000ft Wyton QFE. He was very aware of the inbound QGH traffic but felt uneasy as his TAS was displaying no other ac within the parameters he had set - 5nm and +/- 2,700ft - and he felt as though the incoming ac should have been visible on the TAS display by then, which it was not. With this in mind, he informed Cottesmore he was turning R onto a heading of 360° in an attempt to increase separation on the other ac. Flying at 80kt, predominantly in IMC, although in and out of some large gaps and in between layers, TAS remained clear of other traffic until a TA sounded. As this occurred he was VMC in clear air and he elected to initiate a rapid decent to 1500ft, away from the conflicting ac. Whilst at all times remaining out of cloud and in sight of the ground, he never saw the other ac. The conflicting ac was within 15-30 sec closure and he estimated the minimum separation was 0.55nm and about 800ft vertically, with a 'high' Risk of collision. Maintaining 1500ft until he was sure he was completely clear of the traffic, TAS was now indicating the other ac was in his 4 o'clock. At that point Cottesmore ZONE had positively identified his ac so he climbed in VMC and completed the sortie.

His aeroplane is coloured white; the HISLs, nav lights and the landing light on the lower part of the engine cowling were all on. Elementary Mode S is fitted.

THE WYTON APPROACH CONTROLLER (APP) reports Tutor(A) was on a QGH homing at 2500ft. As Tutor(A) was getting close to the O/H, the pilot advised that he had a TAS warning of traffic 100ft below within 1nm and was taking avoiding action. The other ac was not on frequency but believed to be Tutor(B).

THE COTTESMORE ZONE CONTROLLER UNDER TRAINING [SATCO] reports that all equipment was serviceable but the primary radar filters were in use. The weather was fine but a cloud layer had resulted in a number of ac conducting cloud-breaks and IFR procedures throughout the morning. Traffic had been brisk and of medium intensity for much of the preceding period, but at the time of the Airprox he considered the traffic intensity was low.

At 1221, just before the Airprox, he had released Tutor(A) to Wyton ATC for a QGH procedure N of the A/D, cleared to 2500ft Wyton QFE iaw SOPs. Another Tutor switched en-route and at 1222, the pilot of Tutor(B), which had been prenoted out of Wyton for an IFR departure, called. There was no radar contact in Tutor(B)'s reported position on either primary or secondary radar so whilst looking for the contact the time was utilised obtaining the pilot's intentions. He expected Tutor(B) to maintain a NW'ly track climbing to 2000ft QFE in accordance with the SID-1B, but then the pilot reported turning onto N. Tutor(A) could be seen established on the QGH procedure, still indicating 2500ft Mode C. In the absence of a radar contact on Tutor(B), but cognisant that the pilot required a TS, he called Tutor(A) to him in relation to Wyton A/D. About halfway through the transmission the squawk appeared with Tutor(B)'s Mode C only 200ft below Tutor(A). The Controller then identified Tutor(B) and updated the TI.

BM SAFETY MANAGEMENT reports that Tutor(A) had been in receipt of a TS from Cottesmore ZONE until 1221:22, whilst descending to 2500ft Wyton QFE (1008mb) for the QGH procedure. The pilot of Tutor(A) switched to APP, 6.3nm NW of Wyton, passing through 4100ft QFE.

At 1222:44, the pilot of Tutor(B) contacted Cottesmore ZONE, in a right turn onto NW 1nm S of Wyton, indicating 1400ft Mode C, following SID-1B. The ac was 31nm SE of Cottesmore [therefore outwith theoretical radar coverage of the Cottesmore SRE]. Flights departing on this profile should 'Climb on RW track to 1000ft QFE, then turn right onto track 310°, climbing to 2000ft QFE. At 2000ft QFE pilots should free-call Cottesmore LARS 130.2.' At this point, Tutor(A) was 4.3nm NW Wyton descending through 2900ft. The pilot of Tutor(B) reported that prior to leaving Wyton's frequency, they were advised of Tutor(A) conducting the QGH from the NW.

At 1223:20, ZONE asked the pilot of Tutor(B) his intentions and was informed that they were, "requesting a traffic service to get victor mike on top currently passing 1 thousand 9 hundred feet on 1-0-0-8." ZONE replied that they were still looking for Tutor(B) on radar, later reporting that there was no primary or secondary contact in the ac's reported position. The ATCO IC added that this 'had

been the case with every Tutor climbing out of Wyton that day.' This is likely to have been due to a combination of the selection of the processing filters on the primary radar and the height of the ac on initial contact versus their range from the radar source, both primary and secondary.

At 1223:48, Tutor(B)'s pilot advised ZONE that he was, "*coming right heading north.*" The pilot later reported that this turn was to increase separation against Tutor(A) as he felt uneasy that the ac was in the vicinity and yet not displayed on their TAS. At this point, Tutor(A) was 2.3nm NNW of Tutor(B) indicating 2600ft; Tutor(B) was indicating 2200ft. Unfortunately, the turn onto N by Tutor(B) introduced a conflict between the 2 ac.

At 1224:02, ZONE informed the crew of Tutor(B) that he still could not detect the ac on radar and that there was, "*traffic to the...bearing from Wyton 3-4-0 3 miles south-east bound on the Q-G-H, similar height.*" The Tutor(B)'s pilot replied that he was, "*correcting*" and, on the radar recording seems to have turned R onto a NNE'ly track, further into conflict. At this point Tutor(A) was 1.5nm N of Tutor(B), maintaining 2600ft (1013mb), with Tutor(B) climbing through 2400ft (1013mb). This suggests that Tutor(A) was maintaining 2450ft Wyton QFE (1008mb) and that Tutor(B) had climbed to about 2250ft Wyton QFE. ZONE reported that halfway through his transmission at 1224:02, Tutor(B)'s SSR was displayed, hence ZONE's use of the phrase "*..similar height.*" Immediately following the pilot of Tutor(B)'s reply that he was "*correcting*", ZONE transmitted at 1224:17, "[Tutor(B) C/S] *identified, that traffic in your 12 o'clock, range of half a mile [radar replay shows 1nm], southeast bound, similar height.*" [At 1224:20, the radar recording shows Tutor(B)'s SSR Mode C indicated 2600ft - 2450ft Wyton QFE (1008mb) – some 450ft above the procedure height.]

At 1224:25, the pilot of Tutor(A) commenced a turn onto E, correlating with his report, following a TAS Traffic Warning whilst IMC; simultaneously, Tutor(B) commenced a descent having reported at 1224:23 that they were, "*level at 2 thousand feet.*" The CPA occurred at 1224:27 as Tutor(A) passed 0.6 nm NNE and 100ft above Tutor(B).

From an ATM perspective, ZONE acted correctly by providing the crew of Tutor(B) with as much information as was available, updating that information as soon as Tutor(B) appeared on their surveillance display. It appears that the crew of Tutor(B) un-intentionally climbed through 2000ft Wyton QFE. This Airprox represents a conflict in Class G airspace, as a result of a level-bust by the crew of Tutor(B), which was resolved by both pilots acting in accordance with their TAS information. However, it also represents a salutary reminder of the limitations of that information, the risk inherent in flight in IMC in the absence of a surveillance based ATS and the implications of cockpit distraction.

ATSI reports that the Airprox occurred in Class G airspace, 2nm NNW of Wyton and just above the Wyton ATZ, which comprises a circle radius 2½nm centred on RW09/27, extending from the surface to 2000ft above the aerodrome elevation of 135ft.

Tutor(A) was operating IFR on a training exercise returning to Wyton for a QGH recovery in IMC and in receipt of a PS from Wyton APP. Tutor(B) had departed Wyton on an IFR SID-1B, for a training exercise and was in receipt of an ATS from Cottesmore ZONE.

Wyton Aerodrome and Approach control were operating without the aid of surveillance equipment. The controllers are located in adjacent positions and the ADC was providing training as an OJTI. RW15 was reported as the runway in use. ATSI considered the workload to be medium.

The Wyton 1150UTC METAR was: 18012KT 9999 BKN014 16/13 Q1013 GRN= (QFE 1008)

At 1218:50, Cottesmore pre-noted Wyton APP with details on Tutor(A), 12nm NW of Wyton, inbound for a QGH approach. Wyton APP gave an acceptance level of 2500ft, Wyton QFE (1008mb).

Tutor(B) departed from Wyton at 1221 following the pre-booked SID-1B departure:

'RW15: Climb on RW track to 1,000 QFE, then turn right onto track 310, maintaining VMC climbing to a maximum of 2,000 QFE. By 2,000 QFE pilots should freecall Cottesmore LARS 130.2. Pilots are not to climb above 2000ft until cleared.'

The Wyton Manual of Air Traffic Services (MATS) Part 2, Section 2, Paragraph 1.6, states:

'IFR departures and arrivals

Provided that standard vertical separation is maintained between departing aircraft and aircraft homing to Wyton, IFR departures may be released prior to QGH traffic reaching the Wyton overhead

Vertical separation is to be maintained until:

Departing ac under the control of a neighbouring radar unit.

Ac departing IFR will then be separated in accordance with the requirements specified in CAP774. Departing ac are not permitted to climb above a height of 2000' until instructed by radar. Radar units will provide lateral separation from QGH ac (with a squawk of 4601) in accordance with MATM and CAP774.'

Tutor(A) contacted Wyton APP at 1221:30, passing 4700ft heading 140°. APP instructed the pilot of Tutor(A) to squawk A4601 and agreed a PS; this was acknowledged correctly and APP instructed him to descend to a height of 2500ft QFE (1008mb). The controller advised the weather code of 'F', with the QFE 1008mb and the CHATHAM RPS also 1008mb.

At 1221:57, radar recordings show Tutor(B), just S of Wyton, displaying a Cottesmore squawk A3732, indicating 800ft Mode C (1013mb); Tutor(A) is 5.3nm NW of Wyton squawking A4601, indicating 3600ft Mode C (3450ft QFE). The Wyton TOWER controller advised the pilot of Tutor(B) about the inbound QGH traffic [Tutor(A)] homing to the overhead from the NW and the pilot of Tutor(B) reported changing frequency to Cottesmore ZONE.

The pilot of Tutor(A) reported levelling at 2500ft QFE at 1223:45, APP confirmed the QGH approach for RW08 (minima 550ft), to break off at 3nm and then join for RW15. This was correctly acknowledged by the pilot of Tutor(A). The APP controller then commenced the QGH procedure by instructing the pilot to turn onto a heading of 145°, followed by subsequent transmission (bearing) checks and confirmation of the heading of 145°.

At 1224:08 the controller asked Tutor(A)'s pilot to make a long transmission. The pilot responded, "[Tutor(A) C/S] *is coming left 0-9-0 with a TAS contact on the nose.*" The controller responded, "[Tutor(A) C/S] *roger con-maintain VFR now*" and the pilot replied, "*...unable I'm already India Mike at 2 thousand 5 hundred feet steady...0-9-0.*" APP asked the pilot to report, "*..when happy to continue under control.*"

[At 1224:20, radar recordings show Tutor(A) 2.2nm NNW of Wyton, tracking SE, indicating 2600ft Mode C (2450ft QFE). Tutor(B) is shown 1.5nm NW of Wyton, squawking A3732, also indicating 2600ft Mode C (2450ft QFE) and turning R towards Tutor(A). The distance between the two ac was 0.8nm. The CPA is shown at 1224:27, with Tutor(A) tracking E at 2500ft (2350ft QFE), with Tutor(B), 0.6nm to the SW commencing a L turn and indicating 2400ft (2250ft QFE). At 1224:39, Tutor(A) is indicating 2700ft (2550ft QFE) with Tutor(B) at 2100ft (1950ft QFE).] Tutor(B) is shown passing 0.6nm behind, as the pilot of Tutor(A) reported, "*..I've got a ca-TAS contact just going behind now*"; shortly afterwards the pilot of Tutor(A) reported, "*happy to continue*". The QGH was completed and at 1228:31, the pilot of Tutor(A) reported good VMC and breaking off the procedure to position for initials for RW15. APP agreed a BS and instructed a change of squawk to A7000; the pilot of Tutor(A) then changed to TOWER.

The Unit indicated that the APP controller had an expectation that Tutor(B), on departure, would follow the IFR SID-1B, climbing to maintain 2000ft QFE and would only climb further when instructed by Cottesmore ZONE. The QGH traffic, Tutor(A), was required to maintain 2500ft QFE until reaching the O/H and this provided the 500ft separation required in accordance with local procedures. In discussion, the ATSU indicated that TI passed by APP may have aided the SA of the pilot of Tutor(A), but may not have been considered essential by the controller, as no confliction existed.

Radar recordings show that Tutor(B) climbed to 2600ft Mode C - a height of 2450ft QFE. Both pilots responded to their TAS warnings, but neither pilot acquired the other visually. Tutor(B) then descended to a height of 1950ft.

The pre-booked IFR SID-1B, required the pilot of Tutor(B) to maintain VMC and not climb above 2000ft QFE until cleared. Aircraft departing IFR are not permitted to climb above 2000ft QFE until instructed by ZONE. The pilot of Tutor(B) was aware of the inbound QGH traffic, but it was not clear why the pilot climbed to a height of 2450ft and turned towards Tutor(A) whilst in receipt of an ATS from Cottesmore ZONE.

The QGH procedure required the pilot of Tutor(A) to maintain 2500ft QFE to the O/H. Traffic information may have aided the SA of the pilot of Tutor(A) regarding the IFR departure of Tutor(B). However, APP considered that no confliction existed as Tutor(B) was in receipt of a service from Cottesmore ZONE and would not climb above a height of 2000ft QFE until clear of the QGH traffic. Tutor(A) was in receipt of a PS. CAP774, UK Flight Information Services, Chapter 5, Page 1, Paragraphs 1 and 5, state:

‘A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and APP clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.’

‘The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot’s situational awareness.’

‘Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that he is not in communication with, unless he has been passed traffic information by another ATS unit.’

Tutor(B) turned off the 310° track and climbed above the 2000ft height requirement of the SID-1B departure route. This resulted in the two ac flying into conflict and caused the pilot of Tutor(A) to be concerned about the close proximity of Tutor(B).

UKAB Note (1): Subsequent to this Airprox, the Wyton Flying Order Book at Section B, Part 2, Order No 9 (3) was amended to reflect that:

‘VMC must be maintained throughout all QGH recoveries....’

HQ AIR (TRG) comments that the crews of both Tutors were aware of the presence of the other and took actions to remove any risk of collision. The climb above a cleared height created the conflict by eroding a robust procedural deconfliction system. The fact that Tutor(A) was in IMC added to the concern because it made a visual sighting impossible; however, this is always a possibility with any IMC departure or arrival and the procedures are able to cater for this possibility.

This incident highlights the importance of maintaining cleared heights and the potential for misjudging an avoidance turn when it is based on limited situational awareness information. The performance of TAS was mixed but broadly in line with current expectation. It provided sound information for Tutor(A) to act upon to minimise separation loss, and potentially provided Tutor(B) with the information that triggered his rapid descent, which also helped minimise separation loss. As such, TAS was effective.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The pilot of Tutor (A) reported that he had encountered IMC when the Airprox occurred; therefore, having switched from Cottesmore ZONE, Members recognised that he was relying on his ac's TAS and the PS from Wyton APP to help him discharge his responsibilities to avoid other traffic in Class G airspace. Plainly APP could only provide separation against other known traffic participating in the PS but had not warned the pilot of Tutor(A) about Tutor(B) departing on the SID-1B beforehand. However, Members understood why the APP controller would have expected that 500ft separation would be maintained between Tutor(A) maintaining 2500ft QFE for the homing and Tutor (B), if the latter did not climb above the prescribed height for the procedure of 2000ft QFE before the flight was established under a radar service with ZONE. Without an SRE Wyton APP was 'blind' to any other traffic in the vicinity and the controller would have been unaware that Tutor(B) had exceeded the prescribed height for the procedure before he had been identified by ZONE, so APP was powerless to intercede. As it was, Tutor(A)'s TAS detected Tutor(B) and provided a warning of Tutor(B) closing from the S, thereby enabling the pilot of Tutor(A) to take positive action to resolve the conflict by turning away to the L, which helped ensure that the ac got not closer than 0.6nm horizontally.

The ADC showed sound awareness when he issued a warning to the pilot of Tutor(B) about the QGH traffic homing to the overhead, which may have prompted the swift change of frequency to Cottesmore ZONE. However, with Tutor(B) climbing slowly out of the ATZ towards the point of conflict over 31nm from Cottesmore, the ac was only just entering radar coverage as the Airprox developed. With the primary radar filters deployed it was not surprising to controller Members that the Cottesmore SRE did not detect Tutor(B) until later. Moreover, with Cottesmore's SSR data sourced from Cranwell, it was understandable that Tutor(B)'s Mode C was not seen by ZONE until it was only 200ft below Tutor(A). The Board concurred that ZONE had done all that might reasonably be expected under the circumstances; although the pilot of Tutor(B) had reported climbing to get VMC on top, he had not explicitly stated he was climbing above the prescribed SID height. Whilst the pilot of Tutor(B) elected to turn R onto N – off the SID – in an attempt to resolve the conflict, it was plain to pilot Members that his mental air picture was incorrect as the R turn meant he was still converging on Tutor(A) until he initiated his avoiding action descent. Members noted that Unit orders require the SID to be flown in VMC and opined that turning off the SID was unwise without better SA on the conflicting Tutor(A), which was not displayed on Tutor(B)'s TAS until a late stage. Although the pilot of Tutor(B) had expressed concern over the performance of his TAS, the Air Cmd Member stressed it was broadly in line with expectations and did eventually enable the pilot of Tutor(B) to fly clear beneath and astern of Tutor(A). The Members agreed unanimously that the Cause of the Airprox was that the pilot of Tutor(B) had climbed above the height prescribed for SID-1B. However, it was evident to the Board that the robust avoiding action executed by both pilots had removed any Risk of a collision in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The pilot of Tutor B climbed above the height prescribed for SID-1B.

Degree of Risk: C.