AIRPROX REPORT No 2011103

Date/Time: 5 Aug 2011 0951Z

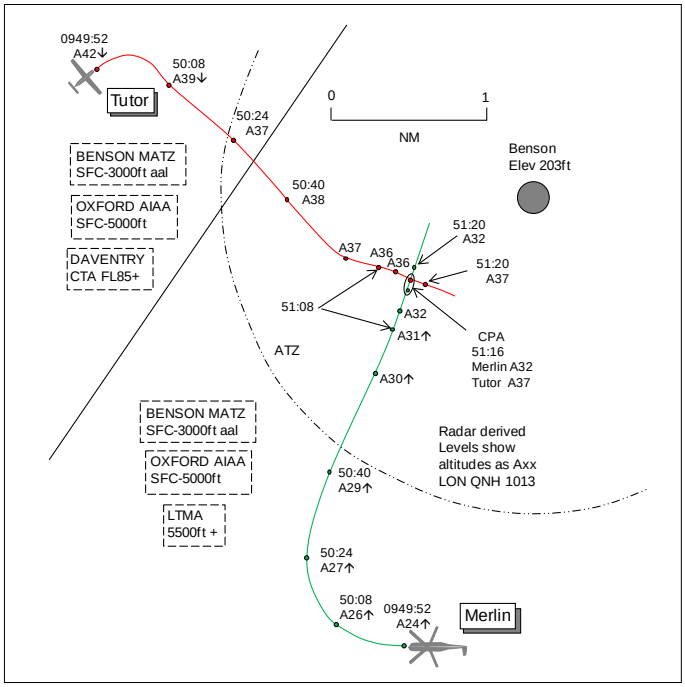
Position: 5136N 00107W (1nm SW Benson - elev 203ft)

Airspace: Benson MATZ/ (*Class: G*)
Oxford AIAA

	Reporting Ac	*Reported Ac*
Type:	Merlin	Tutor
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	4000ft↑ RPS (1012mb)	3000ft QFE
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	8km

Reported Separation:
1-200ft V/100m H 400ft V/0·5nm H

Recorded Separation:
500ft V/<0·1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports on departure from Benson, IFR and in receipt of a TS from Benson Approach on 136·45MHz, squawking 3615 with Modes S and C. The visibility was 20km flying 2000ft below cloud in VMC and the helicopter was coloured green with upper and lower strobe, nav and landing lights all switched on. Whilst carrying out a NE SID from RW19 tracking towards WCO heading 021° at 120kt and climbing through 4000ft for 5000ft, he thought, ATC reported traffic at 1nm and 1000ft above in their 10 o'clock. During their lookout for the traffic, a Tutor was seen approximately 200m away to their L and 150ft above. A descent and a turn to the L were initiated and the flight then continued without further incident. He estimated separation as 100-200ft and 100m at the CPA and assessed the risk as medium. Both flights were operating under a TS and the Tutor was positioning for a PFL to Benson.

THE TUTOR PILOT reports flying a local sortie from Benson and in receipt of a BS from Benson Tower on Stud 2, squawking an assigned code with Modes S and C; TAS was fitted. The visibility was 8km flying 1000ft below cloud in VMC and the ac was coloured white with nav, landing and HISLs all switched on. During a visual recovery for a PFL heading 090° at 80kt level at 3000ft whilst approaching high-key, he saw a Merlin in his 2 o'clock range 0·5nm approximately 400ft below as it appeared out of cloud. The traffic was not reported to him by ATC but a TA was generated on TAS. No avoidance action was taken as he deemed there to be no collision risk.

THE BENSON APP reports the Tutor flight called inbound to Benson for a PFL when approximately 8nm to the W and the APP and ADC approved the PFL. The Merlin was already warned out for a NE SID and the APP did not anticipate the possible confliction. The Tutor pilot called visual with the aerodrome and left the frequency just before the Merlin flight called climbing out on the NE SID, which takes the ac back through the O/H on passing 1500ft QNH climbing to 5000ft; the scenario presented had not been seen before. The Tutor was descending to 3000ft QFE (1005) and then further in the O/H whilst the Merlin was climbing to 4000ft. APP called the Tutor to the Merlin flight but the crew did not get visual until they were very close. APP called the TWR and told him to call the Merlin to the Tutor flight but this was quite late as they were only 1nm apart. In hindsight, the PFL should not have been approved; having not witnessed the scenario before, as NE SID departures are rare, it came as a shock.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Merlin operating IFR in VMC carrying out a NE SID from RW19 at Benson and in receipt of a TS from Benson APP and a Tutor, operating VFR conducting a PFL to Benson, in communication with Benson TWR.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

Benson METAR shows EGUB 050950Z 32005KT 9999 FEW030 BKN050 20/12 Q1012 BLU NOSIG=

The NE SID RW19 procedure requires a climb on RW track (189° M), calling approach by 1000ft; on passing 1500ft (QFE) turn R to WCO, continuing climb to 4000ft (illustrated at Figure 1).

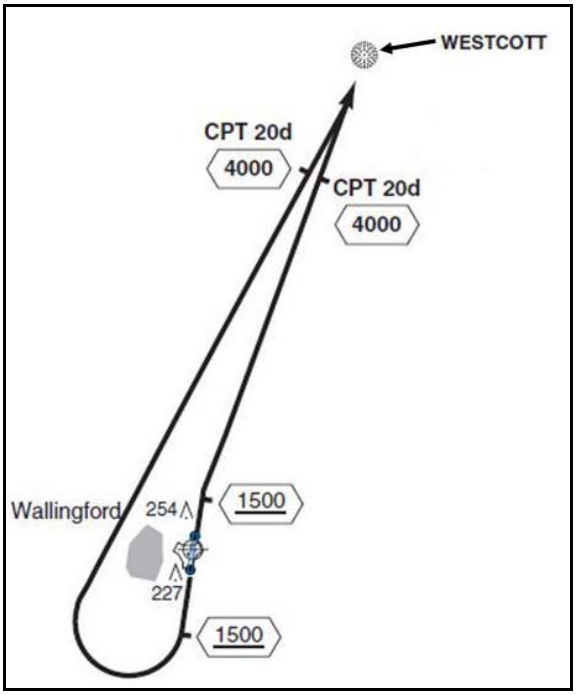


Figure 1. NE SID Benson

APP described the workload as high to medium with average task complexity. Unfortunately, APP did not report the number of ac on the freq and consequently it has not proved possible to conclusively determine the workload; however, analysis of the transcript seems to show that the APP was providing an ATS to at least 2 Tutors and 3 Rotary-wing, including the incident ac. TWR was unable to recall any aspect of the incident; however, analysis of the transcript suggests that the workload was moderate.

At 0949:11, the Merlin flight contacted APP, was identified, placed under a TS and instructed to climb to 6000ft on 1012mb, subsequently corrected at 0949:32 to 5000ft. At this point, the Merlin was 1·9nm S of Benson, maintaining RW track climbing through 2000ft, with the Tutor 3·9nm WNW of Benson, tracking ESE, indicating 4300ft; 4·6nm lateral separation existed between the ac.

At 0949:53, the Tutor flight, already in receipt of a TS from APP, called for a visual recovery through a PFL and was instructed to, "*report visual with the aerodrome*." At this point the Merlin was 3nm SW of Benson in the R turn for WCO, climbing through 2400ft; the Tutor was 4·2nm NW of the Merlin, tracking NE at 4200ft, descending. No TI was passed to the Tutor flight on the Merlin.

CAP 774 states that in providing a TS, 'controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5nm, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered

necessary. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.' APP did not reduce the service to any ac on frequency due to high workload.

At 0950:03, in accordance with a local procedure, APP commenced a landline call to Ground to advise TWR of the Tutor's PFL. During this exchange at 0950:05, the Tutor, 2·6nm WNW of Benson, reported, "*field in sight*" to APP.

At 0950:22 APP informed the Tutor flight that their PFL was approved and asked them to, "*report visual* (with the aerodrome)." The Tutor pilot replied immediately, "*field in sight, to Tower*" which was acknowledged by APP at 0950:26. APP reported that they had not seen a scenario before on RW19 where an ac was recovering from the W through a PFL coincident with an ac departing on a NE SID. Consequently, they did not "anticipate the possible confliction" and "in hindsight" should not have approved the PFL.

At 0950:40, the Tutor pilot called TWR to request a visual join for a PFL, which was approved at 0950:51 and included information on, "*radar traffic seven miles*."

At 0950:42, APP passed TI to the Merlin flight on the Tutor stating, "*Tutor north, two miles (*radar replay shows 1·8nm*), tracking south, one thousand feet above, inbound P-F-L*" which was acknowledged at 0950:49. Eighteen seconds later, at 0951:09, APP commenced a landline call to TWR stating, "*can you call the three-six-one-five, the Merlin, to your Tutor please (*3sec pause) *to (*Tutor c/s) *in the P-F-L, can you tell him that there's a Puma going through the overhead*." The Merlin mentioned by APP is the reporting Merlin; however, the Puma that is mentioned is un-connected to the incident and is inbound on an ILS approach from the NE of Benson.

At 0951:20 TWR broadcast to the reported Tutor flight that there was a, "*Puma going through the overhead, currently south, half a mile, five hundred feet below*." The Tutor pilot reports, "*Erm we saw him thank you.*" However, in reality, the subject of this broadcast was the incident Merlin, with the broadcast being made shortly after the CPA which occurred at 0951:16. Coincident with the landline call at 0951:09, a pair of Tutor flights un-connected to the incident had called TWR which may have obscured part of the landline call and caused the mis-communicated TI.

The radar replay shows that at 0951:16 the Tutor was passing L to R through the Merlin's 12 o'clock with <0·1nm lateral and 500ft indicated vertical separation. At 0951:20 the Merlin is 0·1nm NW of the Tutor, with both ac maintaining their respective altitudes; the avoiding L turn described by the Merlin is evident on radar.

The Tutor pilot reported that as they were approaching High Key, they visually acquired the Merlin in their 2 o'clock at a range of 0·5nm approximately 400ft below. The Merlin pilot reports first sighting the Tutor approximately 200m (0·1nm) to their L and 150ft above which, if accurate, would equate to just before 0951:16, immediately prior to the CPA. Of note is the fact that the Merlin pilot did not report the Airprox on the frequency at the time of the incident.

Notwithstanding the respective crew's responsibilities to 'see and avoid' other ac which they discharged, albeit at differing times in the incident sequence, the ATM aspects warranted further analysis; specifically, the suggestion by APP that they should not have approved the PFL.

Bearing in mind the process of human cognition and APP's workload, compounded by the Tutor flight's proximity to the O/H on their initial call at 0949:53, it is perhaps understandable that APP perceived their immediate priority to be to seek approval for the PFL from Ground. However, the ensuing relatively rapid sequence of events and their 'challenge and response' nature meant that APP had little time to intercede to control the developing situation, for example by providing vertical separation between the two ac, once they had started the landline call.

Realistically, once the Tutor had transferred from APP to TWR at 0950:26, the opportunity was lost to control the situation. The remaining course of action open to APP was to pass TI to the Merlin and

Tutor crews to enable them to develop their SA in order for them to 'see and avoid' each other. However, it was approximately 14sec later that APP passed TI to the Merlin flight and a further 18sec before they instructed TWR to pass the TI to the Tutor flight. Arguably, the point at which APP passed TI to the Merlin, when 1·8nm lateral separation existed, represents both the point that APP first perceived the confliction between the 2 ac and the point at which they realised that approving the Tutor's PFL had caused the Airprox. This suggests that APP's visual scan of the surveillance display had degraded, possibly as a result of attentional tunnelling caused by an elevated level of psychophysiological stress, in turn caused by high workload. That notwithstanding, the Merlin crew received the TI 30sec prior to the CPA, which enabled them to focus their visual scan, gain visual with the Tutor and take appropriate action, albeit later than is ideal.

Unfortunately, as TWR was unable to recall the incident, it has not been possible to determine their thought processes, or perception of priorities at the time. Whilst 'good practice' would suggest that TWR was monitoring the High-Brite VRD which would have enabled them to perceive the confliction and pass TI, the absence of a warning prior to APP's call at 0951:09 could be explained in a number of different ways.

Immediately following this incident the unit reviewed their PFL v IFR procedures and issued a temporary order precluding PFLs if a NE SID had been prenoted or TACAN approaches are being made.

HQ JHC comments that the issue of the temporary order precluding PFLs should be followed up with a permanent solution which could include improved education to APP controllers, TWR supervisors and Tutor pilots.

HQ AIR (TRG) comments that the root cause of the incident appears to be the organisational issue of conflicting procedures. Whilst not overtly dangerous, such conflicting procedures increase the likelihood of ac coming into close proximity and the unit's procedure change is welcome. The weather conditions (the Tutor reports the Merlin appearing out of cloud and the Merlin reports operating between cloud layers) reduced his time available to acquire the Merlin visually and this was compounded by the lack of TI, which would have suggested that there was unlikely to be any conflicting traffic. However, this was mitigated to a large degree by the effectiveness of TAS, which assisted in gaining the visual contact. This highlights the benefits that TAS offers in acquiring and avoiding transponding traffic. It is unfortunate that the Tutor pilot then elected to fly close enough to cause the Merlin crew concern.

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.

With this incident occurring in Class G airspace, there was equal onus on both crews to maintain their own separation from other traffic through see and avoid. Both flights were augmenting this with a TS from APP, although Members queried whether this service was appropriate in IMC where a DS would be better. The BM SM Advisor informed Members that a TS was mandated in the Benson FOB as the minimum service for flights in IMC. From the chain of events it appeared to Members that APP had no plan of action and was controlling reactively. Although APP reported not seeing the scenario beforehand, Members thought that the controller should, from knowledge of the procedures, have been able to assimilate that PFL traffic commencing from 3000ft QFE and routeing to the airfield O/H from the W could conflict with an IFR departure climbing to 5000ft on NE SID. However, it was only after coordinating the Tutor's PFL with TWR through GRD and the flight had been transferred that APP realised from the radar the developing conflict. It appeared that the coordination with TWR had been carried out in haste because of the Tutor's proximity to the Benson O/H but without considering the Merlin. APP recognised the potential conflict shortly thereafter but by that stage the TI to the Merlin crew on the Tutor was late (30sec prior to CPA) and a further delay

ensued before APP asked TWR to pass reciprocal TI to the Tutor, which was received as the ac crossed at the CPA. Had the potential conflict been assimilated, APP could have easily nipped this incident 'in the bud' by applying a level restriction to both flights until the crews reported visual with each other, particularly as both were approaching the radar O/H. Members noted that the TI given to the Merlin crew under the TS was incomplete, only stating that the Tutor was at 2nm and 1000ft above inbound for a PFL but not that it was descending. For their part, the Merlin crew had a responsibility to assimilate and then act on the TI, based on their mental air picture; the mention of PFL should have alerted the crew to the Tutor pilot's intentions, but they had continued their climb. Pilot Members believed that the Wx conditions had played a small part in this incident as there was a cloud layer in the area at 3000ft and the Tutor pilot reported seeing the Merlin as it appeared from behind cloud. Given these facts, Members believed that both crews saw each other a soon as practicable and that this Airprox had been a conflict.

Looking at the risk element, the Tutor pilot was aware of the Merlin from his TAS and saw it in his 2 o'clock range 0·5nm 400ft below, believing that no collision risk existed and no avoiding action was necessary. The Merlin crew saw the Tutor about 200m away, albeit later than ideal, and executed a L turn and descent, estimating it crossed 100m away and 150ft above. The radar recording shows the Merlin having levelled-off and the Tutor also level, after a slight climb of 100ft, with vertical separation of 500ft. These elements were enough to persuade the Board that the actions taken by all parties had been effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict between the Merlin departing on the NE SID and the Tutor positioning for a PFL.

Degree of Risk: C.