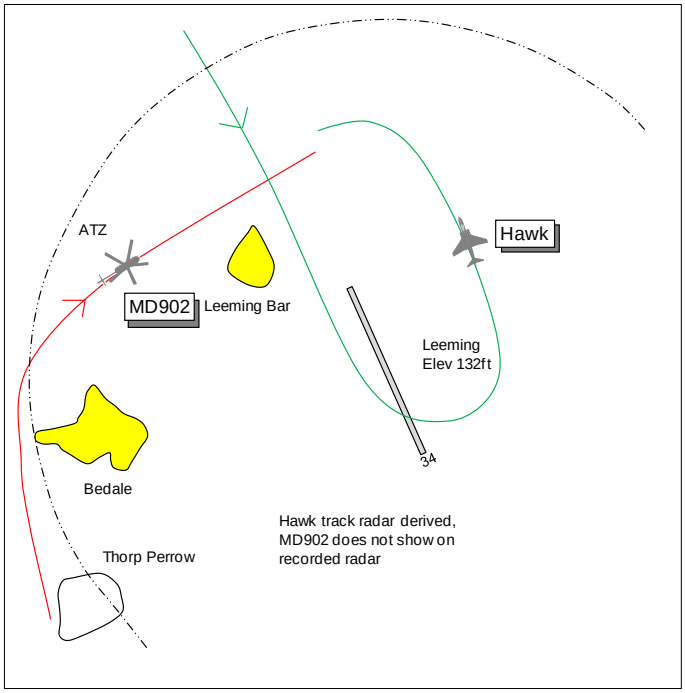
AIRPROX REPORT No 2011151

Date/Time:	27 Oct 2011 1459Z	
Position:	5419N 00133W (1·5nm NNW Leeming - elev 132ft)	
Airspace:	ATZ	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Hawk T Mk1A	MD902
Operator:	HQ Air (Ops)	Civ Comm
Alt/FL:	600ft↓ QFE (1003mb)	500ft agl
Weather:	VMC CLBC	VMC CLBC
Visibility:	25km	>10km
Reported Separation:	150ft V/50m H	300ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1A PILOT reports on a visual recovery to Leeming and in communication with Leeming Tower, squawking 0424 with Mode C. The visibility was 25km flying clear below cloud in VMC and the ac was coloured black with nose landing light and HISLs switched on. He called "initial" for RW16 with Tower and was told the cct was clear but there was a Helimed at Bedale (3km in his 2 o'clock) not above 500ft N'bound. He became visual with the Helimed in a hover and commencing departure, assessing it as no factor as a N'ly departure would deconflict from his intended cct RW16. He broke into the cct LH, turning away from the Helimed and he lost sight of the helicopter. He flew a standard pattern tipping in at the normal point. His attention was divided between the threshold and the cockpit parameters. At approximately halfway round final heading 240° at 140kt descending through 600ft QFE 1003mb he saw the helicopter in his 1130 position range 400m flying in the opposite direction and just below, assessing it was on his intended final approach path. He had time to roll off the bank to break the collision and pull gently, owing to the stall risk, and watched the helicopter pass 50m to his L and 150ft below. He reported the Airprox on the RT to Tower. At no time did Tower inform him of the Helimed's change of track. He assessed the risk as medium.

THE MD902 PILOT reports flying a HEMS mission and deployed to Thorpe Perrow near Bedale. He was in communication with Leeming Approach on 127·75Mhz when landing, squawking 0020 with Mode C; TCAS was fitted. The visibility was >10km clear below cloud in VMC and the helicopter was coloured yellow with HISLs, nav and 3 landing lights all switched on. On lifting he made an opening call to Leeming Approach with his intentions to fly to a hospital in Middlesbrough. He was asked by ATC to take up a NW'ly track initially to impose some separation as there was landing traffic on long final to RW16. He had the traffic, a Hawk, both visually in sight and on TCAS. He then requested to take up a N'ly track to shorten the transit to hospital and it was agreed. He passed up the W side of Bedale at 120kt and was then cleared direct to Middlesbrough so he stated that he would maintain 750ft on 1007mb and/or 500ft agl. His track took him N of Leeming Bar and Leeming, roughly on a heading 045°. The Hawk was seen to overshoot RW16 and then turn; initially he was unsure, owing to its aspect, whether it was away or towards him. He then realised it was E, away from Leeming's active RW and the Hawk climbed gently before it turned onto a N'ly track (R to L in front of his helicopter) and continued to climb before levelling slightly above his level. As he was still on track he told his crew that he would turn R to pass behind the Hawk and he let ATC know that he could see the Hawk. He was unsure if he informed ATC of his intention to pass behind but by convention he

did so. At this point the Hawk, which was slightly ahead of him, dropped his landing gear and turned SW'ly towards his ac while slightly above; a TCAS TA was generated. He elected to maintain course and descend below the oncoming Hawk which passed about 300ft above where upon he turned his helicopter back on track towards Middlesbrough, approximately 045°. He made another call to ATC apologising for the nearness and tried to explain his reasoning but he initially received no reply. His next call was to clear en-route to Middlesbrough through Durham Tees Valley airspace. He assessed the risk as none. Later on their return to base while passing through Leeming airspace he was asked by ATC to telephone after landing. He did so and spoke to SATCO who was very good about the whole thing and he gave his name and address for any follow up action. At no point did he think Leeming did not give a good service. With hindsight he thought that he should have been on their Tower frequency rather than Approach, which would have helped the situation. He did not realise, until the Hawk turned towards him, that it was making a second approach visually. Leeming ATC's initial non-reply afterwards was probably owing to an Airprox report by the other pilot, which he understood immediately and waited. ATC have been before, during and since, always very helpful.

THE LEEMING TOWER CONTROLLER reports the Hawk was the only ac on frequency and was conducting a radar-to-visual approach and in the process of joining the visual cct. The Met conditions were blue although visibility was degraded by mist. Zone passed TI on a rotary Helimed departing Bedale not above 500ft routeing N'bound and stated that the helicopter pilot was aware of the Hawk. TI on the rotary was passed to the Hawk pilot although it initially appeared that the Helimed would not be a factor as the Hawk was fully established in the visual cct. At this stage he was not visual with the Helimed. The Hawk flight was cleared for a touch and go and then its pilot reported an Airprox with a rotary ac whilst on final approach. At this point he saw the Helimed crossing W to E through the extended C/L at low level but relatively close to the Hawk. The Hawk pilot reported that the rotary had crossed beneath his track. Zone was informed of the Airprox and Zone reported that the Helimed pilot had apologised but had been visual with the Hawk throughout. From the initial TI it was expected that the Helimed would maintain a N'ly track and was not intending to cross the approach lane.

UKAB Note (1): Leeming METAR shows EGXE 271450Z 25003KT 9999 –RA FEW009 OVC050 11/10 Q1007 BLU TEMPO SCT009 GRN=

THE LEEMING ZONE CONTROLLER reports that at 1456 the Helimed MD902 pilot called him to advise that he was lifting from Thorpe Perrow, near Bedale (2nm W of Leeming), en-route to James Cook Hospital, Middlesbrough. The flight was placed under a BS and was requested to maintain a NW'ly track not above 500ft on the RPS 1003mb, he thought, as the Hawk was conducting a radar to visual approach at Leeming and was O/H Catterick (5nm N of Leeming). TI on the Helimed was passed to the ADC. The Helimed pilot reported that he had the inbound Hawk on TCAS and he was requested to route behind it. The Helimed was then pre-noted to Durham Tees Valley. The Helimed pilot then reported visual with the Hawk at which point he was given permission to resume own navigation not above 500ft. Shortly afterwards the Helimed pilot confirmed that he was still visual with the Hawk, which was now on a N'ly track, and that he would pass behind it. A short time later, the Helimed pilot reported he was descending with the Hawk in sight and almost immediately ADC reported that the Hawk had called an Airprox against rotary traffic that had passed beneath him on final. The Helimed pilot apologised and stated he had turned onto a S'ly track to go behind the Hawk but it had turned into the cct to land.

BM SAFETY MANAGEMENT reports that this Airprox occurred within the ATZ at RAF Leeming between a Hawk on final to RW16 and a MD902 HEMS flight, transiting NE to James Cook University Hospital (JCUH) Middlesbrough, in receipt of a BS from Leeming Zone.

The radar replay does not display the MD902 during the incident sequence and the Hawk's radar return is lost during the final turn, prior to the Airprox.

The ADC was a relatively inexperienced first tourist controller; the Zone controller was highly experienced at Leeming. Both controllers described their workload and task complexity at the time of the occurrence as low and both have been described as highly capable by SATCO Leeming. Due to

the low traffic levels and iaw local orders, no Supervisor was in place at the time of the occurrence, with the ATCO IC controlling on APP who has also described their workload as low.

At 1456:22 the Hawk pilot called Leeming TWR to join through initials and was cleared to join and the airfield details passed; the cct was clear. Almost simultaneously, the MD902 flight called Zone, *"(MD902 c/s) just lifting from Thorp Perrow, request MATZ penetration, er, for James Cook please, VFR, five hundred feet A-G-L, if that's alright?"* In reply, Zone asked, *"…could you maintain a north-westerly heading as you lift, I've just got traffic inbound* [the joining Hawk]*, overhead Catterick this time."* The MD902 pilot replied, *"copied, er, if you are happy, north-west side of Bedale this time?"* Zone stated, *"…roger, Basic Service, er, not above five hundred feet, I'll keep you advised on that traffic."* The MD902 pilot replied, *"…copied, er, if you are happy, I'll just maintain a northerly track for the moment?"* Zone replied, "*yeah that's fine*", which was acknowledged by the MD902 pilot.

Bedale is 2·2nm W of Leeming; Thorp Perrow is 3·6nm SW Leeming and 1·8nm SSW of Bedale. James Cook University Hospital is in south-central Middlesbrough, approximately 21nm NE of Leeming.

Immediately after the series of transmissions between the MD902 and Zone, Zone called TWR on landline at 1457:06 to advise them, *"Zone MD902 c/s lifting, HELIMED lifting from Bedale, not above five hundred feet, knows about the traffic inbound, he is routeing north*." At the tail of this statement at 1457:13, the Hawk pilot called initials and TWR instructed Zone to, *"standby"* while they responded to the Hawk. As this occurred, the MD902 pilot advised Zone that they could see the Hawk on TCAS. TWR then responded to Zone stating, *"okay, no worries, I'll call it if needs be, cheers Tower"* ending the landline call.

Immediately after finishing the landline call at 1457:20, Zone responded to the MD902 pilot's transmission about seeing the Hawk on TCAS stating, *"(MD902 c/s) once you're happy, continue behind that traffic* [the Hawk]" which was acknowledged by the MD902 pilot. The MD902 pilot reported that in addition to acquiring the Hawk on TCAS, they were visual with the Hawk from a range of 5-6nm; however, they believed, incorrectly, that the Hawk was 'landing traffic on long finals to RW16', rather than a join through initials. This supposition was not based on any information provided to the MD902 pilot by Zone.

At 1457:30, with the Hawk 2·6nm NW Leeming, TWR advised the Hawk pilot of the MD902 stating, *"(Hawk c/s) one Helimed lifting from Bedale, not above five hundred feet, routeing northbound";* this was acknowledged by the Hawk with c/s.

At 1457:52, the MD902 pilot advised Zone, *"(MD902 c/s) visual with traffic, passing behind, thanks."* Based upon Zone's recollection subsequent to completing their DASOR, they believe that at this point the MD902 was W of Leeming, tracking N'ly, which accords with the MD902 pilot's report that they were passing "up the west side of Bedale." Zone replied, *"(MD902 c/s) roger, own navigation, maintain not above five hundred*" which was acknowledged by the MD902 pilot. This communication occurred after the Hawk had flown through initials at 1457:13 and prior to reporting on the break at 1458:03. Based upon the MD902 pilot's report, they interpreted this instruction as clearance to fly direct to JCUH. Subsequent to completing their report, Zone has stated that they believed that, having been given own navigation, the MD902 would remain outside the ATZ and thus outside the lateral dimensions of the visual cct. Moreover, they suggested that their mental picture was based upon the N'ly track that the MD902 had been following and that the ac would route to Catterick, approximately 5·7nm NW of Leeming, prior to turning NE'ly for JCUH. Zone also stated that it is routine practice to transfer ac routing low-level through the ATZ to TWR's freq, if TWR considers it necessary. The fact that it did not happen in this instance is further evidence to support Zone's mental picture of the MD902's planned route as remaining outside the ATZ.

At 1458:30, the MD902 pilot re-iterated, *"(MD902 c/s) still visual with the north bound traffic"* adding 10sec later *"I'll pass behind him*." Zone acknowledged both these transmissions. Based upon the MD902 pilot's statement, the Hawk was established downwind in the visual cct. At 1458:55 the Hawk

called final and was cleared to touch and go. At 1458:58, the MD902 pilot added, *"(MD902 c/s) descending with him* [the Hawk] *visual*" which was again acknowledged by Zone.

The CPA occurred at approximately 1459:01 as the Hawk pilot asked TWR, *"(Hawk c/s) do you realise the helicopter [distorted word] right underneath me on finals?"* The Hawk pilot reports first sighting the MD902 with approximately 400m lateral separation, with separation at the CPA of 50m lateral and 150ft vertical. The MD902 pilot was visual with the Hawk throughout the incident sequence and assessed the minimum separation as 300-400ft vertical.

TWR reported that it was at this point that they 'established visual contact with (MD902 c/s) crossing W to E through the extended C/L at low level.' The Unit has reported that there are a significant number of buildings and trees to the N and NW of the airfield that precludes observation of low flying traffic and would have restricted TWR's view during this occurrence.

Subsequent to completing their DASOR, the ATCO IC has reported that although they were aware of the MD902, they were not actively monitoring Zone's freq and were thus unable to maintain oversight of the situation.

RAF ATM Orders 100.130.6 state that '…outside established supervisor hours, the SATCO is to roster an officer or WO as ATCO IC the Watch…The ATCO IC is to exercise the responsibilities, and carry out the duties, of a Watch Supervisor detailed in para 100.130.5.' RAF ATM Orders do not define established supervisor hours; however, the period that they encompass is typically deemed to be during Stn-based flying, with times defined within local orders. That said, local orders often stipulate a greater degree of flexibility than this, permitting the use of an ATCO IC during periods of reduced stn-based flying, as is the case at Leeming. At the time of the Airprox, the Hawk was the only Stn-based ac operating. 100.130.5a states that Terminal Supervisors, and by inference ATCO ICs, are to 'develop situational awareness to ensure that all watch-keeping staff maintain safe, orderly and expeditious ATC consistent with current regulations and instructions.' Moreover, 100.130.2 states that 'individuals rostered to supervise are not to assume controlling duties during the period of their watch.' However, this policy does not state whether 100.130.2 is applicable to ATCO ICs and, routinely, this decision is left to be made at a local level, generally on a day-to-day basis.

Whilst the MD902 pilot's decision to route behind the Hawk suggests either that he had not assimilated the fact that the Hawk had joined the cct, or that he assumed that the Hawk would be deconflicted from them by ATC, BM SM contends that the cause of the Airprox was grounded in ATM human error.

Based upon the information provided to TWR by Zone at 1457:06, that the MD902 would be routing N from Bedale, TWR had no reason to suspect that the MD902 would conflict with the visual cct; as illustrated at Figure 1.

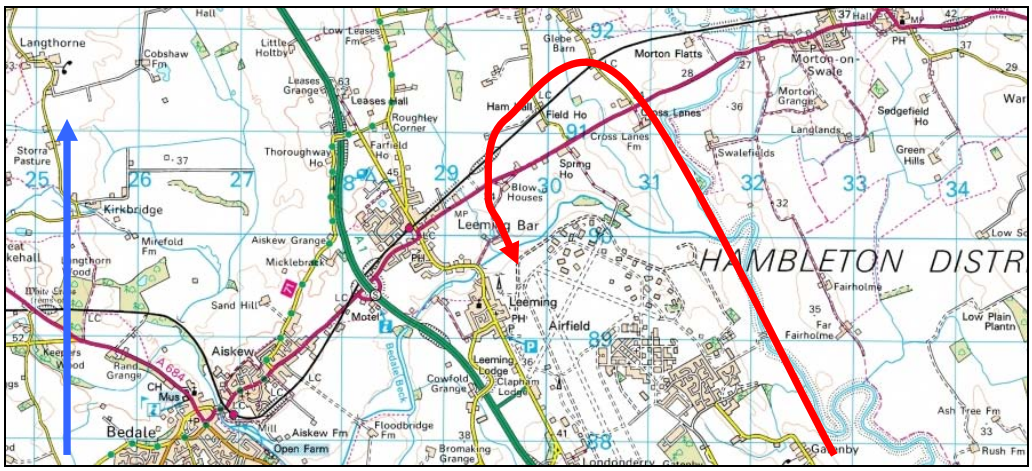


Fig: 1

Moreover, the obstructions to the N and NW of the airfield would have precluded TWR from visually acquiring the MD902 until a late stage. Finally, whilst given their low workload it is reasonable to suggest that TWR could have scanned their Hi-Brite VRD, it is just as reasonable to argue that with nothing to prompt TWR to do this, their visual focus would have remained on the Hawk.

From Zone's perspective, understandably, they wished to afford priority to the MD902; however, their mental picture of the MD902's intentions was based upon an assumed routing to the N of Leeming, outside the ATZ. Consequently, they were unable to perceive the risk inherent in authorising the MD902 flight to adopt its own navigation. Moreover, it is clear from the subsequent transmissions from the MD902 pilot and Zone's responses between 1458:30 and 1458:58, that Zone had not used this information to update their mental picture and thus their situational awareness, to perceive the developing confliction.

The remaining ATM related safety barrier in this occurrence would routinely be expected to have been provided by a Supervisor. However, due to the low traffic levels and in accordance with local procedure, a Supervisor was not operating. Moreover, APP as the ATCO IC was not actively monitoring Zone.

Having developed an incorrect mental picture of the MD902's routing, Zone authorised the MD902 to adopt own navigation. The MD902's routeing then placed it into confliction with the Hawk.

Recommendation:

BM SM requests RAF ATM Force Cmd to:

a. Review RAF ATM Force Orders 100.130 to determine whether paras 100.130.2 and 100.130.3 are applicable to ATCO ICs.

b. Direct RAF ATM Terminal units to review local orders permitting the use of an ATCO IC, in lieu of a dedicated Sup, in a rostered control position, during core opening hours.

HQ AIR (OPS) comments that the Helimed MD902 pilot clearly did not realise that the Hawk was joining the Leeming visual cct- he stated that he thought the Hawk was on long finals for a straight in to RW16, probably because he saw the Hawk's landing light. However, the Hawk's landing light is not on the undercarriage- it is on the nose and SOP is to have it on whether the gear is up or down (for conspicuity). Further weight is that he stated that the Hawk seemed to overshoot RW16 and turn back to the N (actually a join through the deadside and a break-turn downwind). It seems that the MD902 was a CAT A status CASEVAC flight and Leeming ATC should have afforded the HELIMED the appropriate priority by asking the Hawk to remain at cct height and allow the helicopter to transit the ATZ underneath him. Not communicating the Helimed's status meant that the Hawk pilot was unaware of the helicopter's priority, routing or intentions. As a result its proximity caused alarm to the Hawk pilot causing him to alter his flight path to increase separation at a time where he had limited manoeuvrability.

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.

It was clear that there were a number of assumptions made which had led to actions being taken on the basis of insufficient information. The MD902 pilot had called Zone lifting from Thorpe Perrow and requested MATZ penetration towards a hospital in Middlesbrough at 500ft agl. Zone asked if he could route NW'ly owing the inbound Hawk over Catterick and, after updating his position to the NW of Bedale, the MD902 pilot asked if a N'ly track was alright and that was approved. Zone had coordinated the MD902 N'bound with TWR who agreed to pass TI if he needed to. Meanwhile the

MD902 pilot had reported seeing the Hawk on his TCAS display and Zone stated that he could route behind the Hawk. However, the MD902 pilot, who may not have been familiar with fast-jet operations and without information from ATC as to the Hawk's intentions, had assumed the Hawk was carrying out a straight-in approach to land RW16. The Hawk pilot was conducting a run-and-break join into the visual cct. Tower told him about the MD902 routeing N'bound and the pilot saw it lifting as he ran in. The MD902 reported visual with the Hawk and passing behind it before Zone then released the MD902 pilot on his own navigation maintaining not above 500ft. Zone assumed the helicopter would route outside of the ATZ but, without ascertaining or stating a route, he had no idea where the MD902 helicopter would pass in relation to the Leeming ATZ. Members believed that Zone should have anticipated that the CAT A flight would take a straight-line track from his current position towards the hospital. The MD902 pilot, mindful of his CAT A flight status and priority, assumed that 'own navigation' was clearance to route direct to his destination and an implied clearance to transit through the ATZ. No mention was made by either party of a formal clearance to cross the ATZ which, Members agreed, in normal circumstances should always be clarified since a clearance through a MATZ does not give tacit approval through an ATZ. However, in these circumstances Members believed that the MD902 pilot's actions were entirely justified by his CAT A status. The MD902 pilot then told Zone that he could still see the Hawk routeing N'bound – downwind –and that he would pass behind it. Members thought Zone could have updated his SA from these transmissions and with reference to his radar, which should have revealed the MD902's position and routeing towards the final approach track at a range from touchdown where the Hawk would be turning onto final. Shortly after this the MD902 pilot reported descending with the Hawk 'visual'. Although TWR had only been told that the MD902 was routing N from Bedale and his view to the N and NW was restricted, the MD902's track would have been apparent on the Hi-Brite display and TWR could have challenged this with Zone or updated the TI to the Hawk pilot. As it was, the Hawk pilot had lost sight of the MD902 as he ran in and broke into the cct and it was only when he reported the MD902 passing underneath that TWR became aware of the helicopter's position. Members believed that all of the actions taken by ATC and assumptions made were indicative of a low state of arousal within Leeming ATC. Members agreed that Leeming ATC should have afforded the MD902 the most expeditious routeing possible and held the Hawk not below 1000ft until the helicopter was clear. In the event it was Zone releasing the MD902 flight on its own navigation resulted in a conflict with the Hawk, causing the Airprox.

Turning to risk, after seeing the MD902 whilst joining from initials, the Hawk pilot was oblivious to the MD902's track through the ATZ and saw it only as he was turning final in his 1130 position 400m away just below. Although this had been late, he was able to stop the turn and arrest his descent, watching the helicopter pass 150ft below and just 50m to his L. Meanwhile, the MD902 pilot saw the Hawk throughout, monitored its downwind track and was endeavouring to pass behind it when it turned towards him as he was crossing the final approach. He elected to descend, passing an estimated 300ft below the Hawk. Some Members thought that the incident was risk-bearing since the Hawk pilot had limited manoeuvrability during a critical stage of flight close to the ground with the MD902 passing below. Other Members believed that the MD902 pilot had the situation under control and had acted appropriately when faced with the Hawk turning towards him by maintaining visual contact with it and descending; the combination of both pilots' actions had removed the risk of collision. These two different viewpoints could not be resolved which led to the Chairman directing a vote. Although numerically close, the Board concluded by a small majority, that any risk of collision had been removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Zone released the MD902 own navigation resulting in a conflict with the Hawk on final.

Degree of Risk: C.