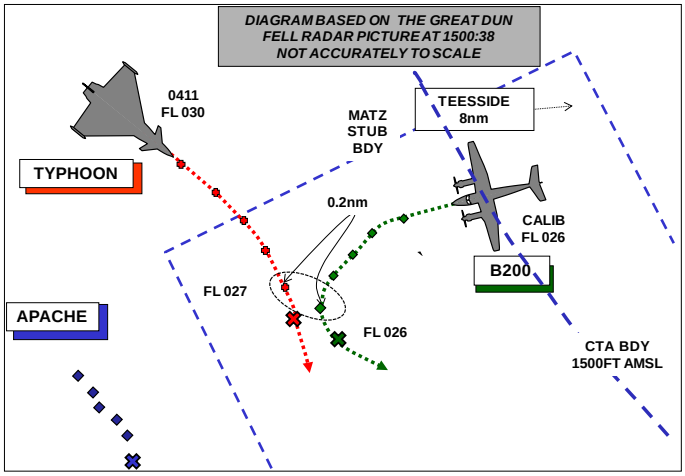
AIRPROX REPORT No 2011109

Date/Time:	24 Aug 2011 1501Z	
Position:	5425N 00138W (9nm Final 05 Durham Tees Valley- elev 120ft)	
Airspace:	Leeming MATZ	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	BE200	Typhoon
Operator:	Civ Comm	HQ Air (Ops)
Alt/FL:	2500ft QNH (1009mb)	NK NK
Weather:	VMC CLBC	VMC CLBC
Visibility:	8nm	30km



Reported Separation:

0ft V/2-300m H 200ft V 0.25nm H

Recorded Separation:

100ft V/0.2nm H

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE200 PILOT reports conducting a check on their calibration equipment using the ILS for RW05 at Durham Tees Valley (DTV). They were operating VFR, in receipt of a TS from Durham APR, she thought, and were squawking 0024 with Modes C and S but TCAS was not fitted. The pilot was heading 240° at 180kt positioning L downwind at 2500ft (1009mb) aiming to be established at on the ILS at 8nm. Two to three min prior to the Airprox, APR passed TI on an Apache and Typhoon tracking S'bound to Leeming. They were visual with the Apache 3nm to the W of them at the time of the Airprox as they turned L from the downwind heading at 8.2nm, the pilot (in the RHS) was looking for traffic joining for Leeming RW16. As they were passing through a heading of about 190° the Typhoon was sighted co-altitude in their 5 o'clock position so they continued the L turn with increased bank and descended causing them to lose visual contact. They estimated the Typhoon to be 200-300m away and it had a very high nose attitude. As they turned L to establish, she caught a glimpse of a strobe, but it was obscured by their wing; as the L turn continued the Typhoon came into full view.

The pilot reported the incident to ATC assessing the risk as being high and they noted the position.

THE TYPHOON T3 PILOT was asked on numerous occasions by the UKAB Secretariat, through his command, to complete an Airprox report, but it was not forthcoming until over 3 months after the event.

He was flying a grey ac with all external lights switched on, squawking as directed by Leeming APP with Mode C and in receipt of a TS from them with the student was flying a TACAN approach to RW16. They were approaching the FAF [11.2nm] heading 155° at 190kt [at 3500ft QFE] prior to the descent and he was monitoring the HP's instrument flying. They were informed of traffic in their 2 o'clock by Leeming APP and he saw an Apache helicopter about 2nm away in the reported position and below, which he discounted as it was not a factor.

ATC then informed them of further traffic in their 10 o'clock and both the student and he saw a low wing twin-engine ac, tail on, at their height and about at ¼nm from them and slightly below but

heading away. Although they were close, there was no risk of collision because of their divergent flight paths.

He assessed the risk of collision as being low.

THE LEEMING CONTROLLER reported that he was screening a UT Director (DIR) working a single Typhoon ac, on a TAC-TAC procedure to RW16. The Typhoon ac was handed over from ACC and the necessary administration regarding the procedure and subsequent intentions completed. Information regarding the approach profile of the Typhoon was passed to Durham Tees Valley Airport (DTV) as they had previously advised of a Calibrator ac conducting approaches to RW05. DTV then passed TI on an ac S of GASKO, inbound to DTV RW23.

The Typhoon ac completed a short hold and was cleared for the TAC-TAC procedure to RW16. The Leeming Approach controller advised DTV that the Typhoon ac was now inbound on the procedure. TI was provided to the Typhoon ac on an Apache which had been handed from DTV to Leeming Zone at 3000ft S'bound, first at 10nm range and when asked to 'say again', at 5nm range (these 2 TI calls were relatively close together – the assessed range was inaccurate on the first); the Typhoon ac subsequently passed behind and above the Apache. The Calibrator ac had been observed conducting approaches within the DTV Class D airspace and was not expected to be a factor. Nevertheless, TI on the Calibrator was provided to the Typhoon (at the request of the Screen Controller) by the UT Controller as it was possible the Calibrator would pass within 3nm of the Typhoon. As the Typhoon turned inbound from the procedure arc to the FAF, the Calibrator ac had still not turned inbound to DTV and further TI was provided to the Typhoon ac.

Shortly afterwards the Typhoon pilot reported visual with the Calibrator ac, stating it to be about 100-150m to their S and that he would be re-positioning to the FAF. TI on the Typhoon ac was then passed to DTV and subsequently, detail of the proximity of the 2 ac. DTV reported that the Calibrator had been visual with the Typhoon ac and was now 'turning left'. By that time, the Calibrator ac was in a position well within the stub of the RAF Leeming MATZ.

BM SAFETY MANAGEMENT reports that unfortunately, this investigation has had to be completed without the benefit of a report from the Typhoon pilot.

DIR was manned by a trainee and a screen who was also acting as the ATCO IC.

At 1444:53, the Leeming ATCO IC passed TI to the Durham Radar ATSA on the Typhoon in the Leeming TACAN hold. At 1454:57 DIR cleared the Typhoon to carry out the TAC procedure. The Typhoon was 17.9nm WSW of Leeming, with the BE200 15.8 nm N of Leeming, placing the latter 25nm NE of the Typhoon.

At 1456:33 DIR contacted DTV (the transcript does not differentiate between RAD or the ATSA) and informed them that the, "*Typhoon was descending on the TACAN*."

At 1458:08, DIR passed TI to the Typhoon on unrelated Apache traffic, with that TI updated at 1459:18. During this update, DIR also passed accurate TI on the BE200 stating, "…*further traffic north-east, six miles* [radar replay shows 6.9nm]*, tracking south-west, two thousand six hundred feet, calibrator at Durham Radar*."

At 1500:12, DIR updated the TI on the BE200 to the Typhoon stating, "*previously called traffic, south-east, two miles, tracking south-west, three hundred feet below climbing*." The radar replay shows the Typhoon turning through a heading of 100° towards the FAF and descending through 3200ft, with the Apache 1.1nm S, tracking S indicating 3300ft and the BE200 1.8nm E, tracking SW indicating 2600ft.

The BE200 pilot reported receiving TI from RAD on both the Apache and the Typhoon around 2 to 3 min before the Airprox but he does not state whether the TI was updated.

At 1500:34 the radar replay shows the BE200 entering a relatively tight left turn, which accords with the pilot's statement that on sighting the Typhoon they tightened a pre-existing left turn with 'increased bank and descent'. At that point 0.4nm lateral separation existed with the Typhoon indicating 100 ft higher than the BE200.

The CPA occurred at 1500:42 with the recording showing 100ft vertical and 0.1nm lateral separation. Shortly after the CPA the Typhoon pilot stated to DIR that they, "*were very close towards that calibrator, it was about a hundred metres away, one hundred and fifty metres away to the south of us…can you keep him clear please*?"

Although the vertical element of the updated TI provided to the Typhoon by DIR at 1500:12 does not correlate exactly with the radar replay, this could be explainable through the differences in display equipment and radar update rates. At the next sweep of the radar on the replay, the Typhoon is indicating 3000ft descending, with the BE200 indicating 2700ft.

Consequently, from an ATM perspective, DIR can be seen to have provided a good level of TI to the Typhoon, that should have enabled the crew to acquire the BE200 visually early enough to discharge their responsibilities for collision avoidance, or to have sought deconfliction advice.

ATSI reports that the Airprox occurred at 1500:40, within Class G airspace 9.5nm SW of DTV.

The BE200, using a Calibrator callsign, was operating VFR and was making an approach to the ILS on DTV RW05, and reported in receipt of a TS from them. Meanwhile the Typhoon T3, was making a TACAN approach to Leeming RW16 and was in receipt of a TS from Leeming Radar.

An Apache helicopter was in transit from N to S towards Leeming and was receipt of a LARS transit service initially from DTV Radar and then it was transferred to Leeming Radar. In addition a BE200(A) was routeing inbound to DTV from the west for a training exercise.

A portion of the Leeming MATZ and DTV Control Area (CTA-2) Class D CAS overlap and the Leeming RW16 CL crosses the DTV RW05 CL at a range of 8.5nm from DTV. A Letter of Agreement (LoA) exists between the two units and is published as Appendix A in the DTV, Manual of Air Traffic Services (MATS), Part 2. Paragraph 1 states:

> 'This LOA is designed to facilitate the safe and expeditious departure, arrival and transits of air traffic at both Leeming and DTV airfields. It is the duty of care of all ATC staff to provide the best service to all airspace users and also to assist both units in attaining the best possible separation between ac under their respective control. In conjunction with this agreement, ATCOs from both units will make regular liaison visits in order to achieve a better understanding of each other's respective procedures, and visit learning points will be recorded. All radar-qualified ATCO's should have at least one documented visit, however, more detailed liaison visit requirements are set out in the respective unit training documentation.'

CAA ATSI had access to RTF and area radar recordings together with pilot and controller reports. Due to a change in the ATSU impound procedures, the operational telephone calls and RTF recordings either side of the incident were not saved. In consultation with the CAA ATSI transcription unit, the unit procedures have now been updated.

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The BE200 Calibrator ac departed from DTV RW23 at 1434, to complete on-board equipment checks. The pilot had pre-arranged to carry out these checks on the RW05 ILS and the ac climbed initially to 2500ft QNH 1009mb.

The Radar controller stated that he had passed Leeming 'generic traffic information' about the BE200 intending to calibrate on board equipment which was not a normal calibration of the ILS and as such the ac 'may be doing the odd strange thing' using RW 05 ILS.

After departure the BE200 tracked W to leave CAS and at 1438:43, radar recordings show the BE200, 9.8nm W of the airfield. The BE200 then turned right, re-entering CAS and positioned to hold to the W of DTV.

The Radar Controller stated that he was aware of the Apache helicopter in transit, as it had earlier been transferred by the Controller to Leeming. The Controller also indicated that when coordinating a previous inbound BE200(A), Leeming had advised him that the Typhoon was carrying out a TACAN hold prior to making an approach to Leeming RW16.

The BE200 was in receipt of a RCS inside CAS and a TS in Class G outside CAS. The MATS, Part 1, Section 1, Chapter 5, Page 1, Paragraph 1.2.2, states:

> 'Pilots must be advised if a service commences, terminates or changes when:
> they are operating outside controlled airspace;
> or they cross the boundary of controlled airspace.'

At 1457:06, radar recordings show the BE200 holding 3.6nm W of DTV, whilst the crew were setting up their equipment. The Apache helicopter was 11.3nm W of DTV tracking S towards Leeming and squawking 0402.

At 1458:08, radar recordings show the BE200 turn downwind for RW05, indicating FL026, with the Typhoon 17.3nm SW of DTV tracking N, indicating FL040.

At 1458:50, the Radar Controller passed TI, *"(BE200) c/s traffic approximately er eight to the er west of you er positioning for er an approach to to RW one six at Leeming is a Typhoon descending out of three thousand five hundred feet"* and the pilot responded, *"Roger looking for traffic (BE200) c/s er we'll be er turning inbound in approximately two miles";* this was acknowledged. Radar recordings show the BE200, 5.5nm W of the airfield inside CAS. The Radar Controller stated that he expected that the BE200 would shortly turn onto base leg.

At 1459:20, the Radar Controller passed further TI, *"(BE200) c/s the previously reported Apache's approximately three to the west of you also southbound at three thousand feet"* and the pilot replied, *"Roger looking for traffic must be something going on at Leeming that we don't know about.*"

At 1500:05, the BE200 called, *"(BE200) c/s visual with that traffic".* (The BE200 pilot's report indicated that only the Apache was in sight at that point). Radar recordings show the BE200 leaving CAS with the Apache in its 12 o'clock at a range of 2.3nm and 600ft above and with the Typhoon in its 1 o'clock at a range of 2.1nm and 900ft above, crossing from right to left. The DTV Controller's report indicated that as the three contacts closed the labels began to garble. It was noted that the Controller did not notify the BE200 of the change in service as the ac left CAS.

At 1500:40, radar recordings show the BE200 tracking S on base leg, 9.5nm SW of DTV, with the Typhoon on a parallel track, in its 5 o'clock at a range of 0.2nm (CPA) and 100ft above. Both ac indicated FL026 (converts to 2492ft on QNH 1009 with 1mb equal to 27ft). The BE200 pilot's report indicated that the Typhoon was sighted at that point, 'as BE200 turned from 240 to 190 Typhoon was sighted co-altitude in my 5 o'clock position. Left turn continued with increased bank.'

At 1500:52, radar recordings show the BE200 turning towards DTV, with the Typhoon passing 0.5nm behind and 400ft above. Leeming subsequently called to advise that the Typhoon was breaking off its approach.

The DTV Controller stated that neither unit initiated any coordination prior to the conflict. He had not expected the BE200 to extend to 9.5nm and as the situation developed, and then he did not consider that there was sufficient time to coordinate. The DTV Manual of Air Traffic Services Part 2, Appendix A, LoA between Durham Tees Valley Airport (DTV) Ltd and Royal Air Force Leeming, states:

'12. All inbounds to DTV that are likely to affect Leeming traffic are to be notified and co-ordinated if and when necessary. All inbounds to Leeming that are likely to affect DTV traffic are to be notified and co-ordinated if and when necessary.

14. All instrument patterns to Leeming will normally be to the West of the airfield. The exception to this is the short pattern circuit for rwy 16, which due to terrain restrictions will be a left-hand circuit…..

17. Routine traffic arriving to and departing from both aerodromes shall have equal priority and conflictions shall be co-ordinated case by case. It is incumbent on the controller requiring standard separation to initiate any required co-ordination. However, all controllers are encouraged to instigate co-ordination in order to facilitate a safe flow of air traffic.'

19. The confliction between DTV ac inbound to RW05 and Leeming ac inbound to rwy 16 cannot be resolved purely by vertical separation as both ac should be at similar levels at the same position – 8.5 nm rwy 05 and 7.5nm rwy 16. In most cases lateral separation can be used to avoid confliction by agreeing on an order of recovery e.g. Leeming ac extend downwind so as to pass behind DTV ac or DTV ac turn / orbit to pass behind Leeming ac…..'

Both DTV and Leeming were each aware of the others' traffic in general terms. The DTV controller advised Leeming that the BE200, 'may be doing the odd strange thing' and Leeming had earlier advised the DTV Controller that the Typhoon was in the TACAN hold and would be making an approach to RW16. However, as the situation developed there was no further notification or coordination between the two units. The LoA paragraph 17 states:

"Routine traffic arriving to and departing from both aerodromes shall have equal priority and conflictions shall be co-ordinated case by case. It is incumbent on the controller requiring standard separation to initiate any required co-ordination. However, all controllers are encouraged to instigate co-ordination in order to facilitate a safe flow of air traffic."

It is likely that neither the DTV nor Leeming controller had expected the BE200 to extend to 9.5nm. Had this been known in advance, with the attendant potential for conflict, CAA ATSI considered that one or both units may have attempted to reach an agreed plan and prioritise the arrivals in accordance with the guidance provided in the LoA.

When the BE200 was downwind 5.5nm W of the airfield, the DTV controller had expected that the BE200 would turn close to the boundary of CAS, the pilot calling *"we'll be turning inbound in approximately two miles".* TI was passed on the Typhoon and Apache; however, the BE200 continued for another 4nm before turning. Had the DTV Controller questioned the pilot's intentions, it may have prompted him to coordinate with Leeming. As the two ac converged, the labels started to garble and the DTV Controller considered at that point, that it was too late to coordinate with Leeming. The BE200 reported, "*visual with that traffic*" but it was unclear whether this referred to the Apache or Typhoon (subsequently reported as being the Apache).

It is probable that the Leeming controller was unaware that the BE200 was going to extend to 9.5nm. Once the Typhoon left the TACAN hold to commence the procedure, the Leeming controller did not update DTV on the Typhoon's intentions. The Typhoon pilot's report indicates that as the ac turned onto final at the FAF, the Leeming controller passed TI on the Apache and then a twin ac (the BE200).

CAA ATSI considered that had the specific requirements of the BE200 pilot been known in advance, it was likely that timely and effective action could have been agreed to ensure the safe integration of the traffic. The problems associated with the overlapping approach requirements between the two units are well known and are stated in the LoA.

At the time of the Airprox the BE200 and Typhoon were operating in Class G airspace and both ac were in receipt of a TS and TI was provided to both pilots. CAP774, UK Flight Information Services, Chapter 3, Page 1, Paragraph 1 and 5, states:

> 'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.
>
> The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

The Airprox occurred when the BE200 and Typhoon came into close proximity whilst operating in Class G airspace, both were in receipt of a TS and both pilots were provided with TI.

The following were considered to be contributory factors:

> When the BE200 was 5.5nm from the airfield, the pilot indicated an intention to turn in 2 miles, which may have given the DTV an assurance that the ac would probably remain inside CAS, and may have negated any need to notify or coordinate with Leeming.
>
> The specific requirements of the BE200, in advance of the flight, were not known. The controller considered that the BE200, 'may be doing the odd strange thing' and led to a misunderstanding. CAA ATSI considered that in an environment with ac operating on overlapping approaches, it may have been appropriate to ensure that more accurate information was requested from the BE200 pilot.

CAA ATSI considered that the notification between the two units was minimal and did not meet the stated LoA requirement, 'designed to facilitate the safe and expeditious departure, arrival and transits of air traffic at both Leeming and DTV airfields. It is the duty of care of all ATC staff to provide the best service to all airspace users and also to assist both units in attaining the best possible separation between ac under their respective control'.

Recommendations:

1. It is recommended the ATSU ensure that controllers are reminded of the need to determine the intentions of pilots conducting unusual types of exercises or approaches, especially in situations that are likely to involve the overlapping RWs and the requirement for close liaison or coordination by both airfields.

2. It is recommended that the ATSU reminds controllers of MATS Pt1 requirement to advise pilots if a service commences, terminates or changes when they are operating outside controlled airspace or when they cross the boundary of controlled airspace.'

UKAB Note (1): The Great Dun Fell radar shows the incident clearly as depicted in the diagram above.

HQ AIR (OPS) comments that An Airprox is a mandatory reportable occurrence; all personnel who are involved in an Airprox event are to submit an Airprox report, preferably a DFSOR using ASIMS, within 2 working days. This will allow accurate analysis of events before the exact details fade from memory (see MRP RA 1410 for further details). Returning to the circumstances of this incident, the captain of the Typhoon reports that at the time of the incident he was monitoring the student's IF. All aircrew should be reminded that under a TS in class G airspace, lookout must take primacy; in this case it seems that the intent to monitor to the student was prioritised ahead of an effective lookout

scan against traffic which had been called to him by ATC. Equally, the BE 200 captain did not alter his flightpath to increase his separation against the Typhoon which he had been informed was joining for Leeming; perhaps if he had assimilated the information more carefully he would have altered his flightpath to avoid the potential conflict. It seems that in both cockpits a desire to complete the task overrode the need to avoid the developing conflict situation.

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 recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted that the BE200 was operating until just before the incident under VFR in Class D airspace and should have been under a RCS. Since the RT transcript did not go back to the beginning of the flight, it could not be determined what clearance it had been given. It was observed that calibration ac normally require freedom to manoeuvre and this would most likely have resulted in a relatively unrestricted horizontal clearance. Notwithstanding that there was an obligation on the DTV controller to change the level of service and remove the clearance when the ac left the DTV Class D airspace and entered Class G, and this did not take place, the Board agreed that the BE200 pilot was not under any misunderstanding about the type of service being provided.

Although it appeared to Controller Members that the DTV APR Controller had acted in the best interests of allowing the BE200 crew to conduct their calibration equipment task, the co-ordination with Leeming was insufficient to deconflict their respective ac. Further they opined that since the DTV traffic was not using the duty RW and was not flying a predictable flight profile, whereas the Typhoon was flying a standard approach to the Leeming duty RW, the onus was on the DTV Controller to initiate co-ordination. Although the whole LoA was not available, only extracts, Members thought it might be unclear and not cover these precise circumstances. Members agreed that the DTV controller had not expected the BE200 to fly as far West as it did, and this may have influenced his perception of the need for coordination.

In the event, by the time of the CPA, despite telling DTV that they would be turning left in 2nm (keeping the ac in or on the edge of CAS) the BE200 pilot continued further, left CAS without a change of service, entered the Leeming MATZ stub and came into conflict with the Typhoon. Controller Members also assessed this evolution as disordered; one Member opined that the BE200 even though VFR under a RCS in Class D airspace, should have been given avoidance on the Typhoon at an early stage rather than TI thus preventing a conflict; others, however, disagreed stating that the BE200 was VFR, the Typhoon was outside CAS and therefore only TI was required, the pilot being responsible for avoidance. Members agreed that the TI had been timely and accurate.

Controller Members agreed that Leeming APP had passed accurate and timely TI to the Typhoon crew regarding the BE200 and the Apache; they updated that TI and informed DTV (ATSA) of the both the presence of the Typhoon and that it was conducting a published TACAN approach. The HQ Air Flight Safety Member noted that it was disappointing that neither crew took any action on receipt of TI and both pressed on into the developing conflict.

After the BE200 left CAS, entering Class G, the respective pilots had an equal and shared responsibility to see and avoid other ac. The BE200 pilot having the Typhoon on her right throughout was required under the RoA (Rule 9 (3)), to give way to it. Since, at least in the latter stages of the conflict she was in a left turn, the Typhoon would have been obscured to her by the airframe, engine or wing so she did not see it until after it was in her 5 o'clock. The Typhoon instructor was in the rear seat and the ac was in a fairly high nose-up attitude and again in the latter stages of the 'merge' in a slow right-hand turn with the BE200 in his 11 o'clock a few hundred feet below. He was instructing the front-seat trainee pilot who was most likely concentrating on flying the instrument approach and the instructor also probably had the opposing ac obscured to him, possibly by the Canard, and did not see the opposing ac until it was ¼nm away tail on and after the CPA.

In summary despite both ac being in receipt of an ATS, and both being provided with accurate TI, the ac were both belly up as they closed and neither crew saw the opposing ac until after it had passed. The Board voted evenly on whether the risk had been B or A so the Chairman decided on a casting vote that there had been a risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively non-sightings by the BE200 pilot and the Typhoon Instructor.

Degree of Risk: A.