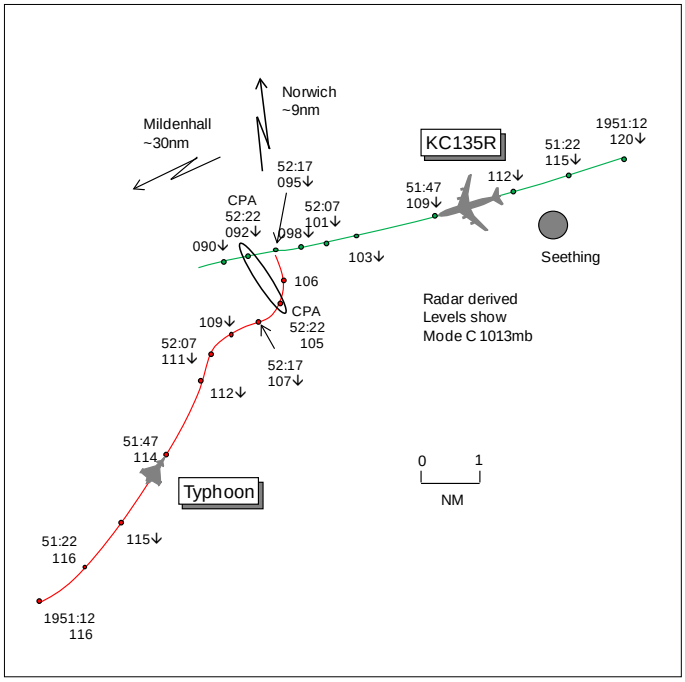
AIRPROX REPORT No 2012169

Date/Time:	4 Dec 2012 1952Z	(Night)
Position:	5230N 00117E (30nm ENE Mildenhall)	
Airspace:	LFIR	(*Class: G*)
	Reporting Ac	*Reporting Ac*
Type:	KC135R	Typhoon
Operator:	Foreign Mil	HQ Air (Ops)
Alt/FL:	↓FL80	11000ft (RPS (996hPa))
Weather:	VMC CLBL	VMC CLAC
Visibility:	>10km	20km
Reported Separation:	200ft V/2nm H	Slant 4000ft
Recorded Separation:	1300ft V/0·9nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE KC135R PILOT reports in an en-route descent from FL160 to FL80 returning to Mildenhall, IFR and in receipt of a DS from London Mil E on 259·6MHz, squawking an assigned code with Modes S and C; TCAS was fitted. The visibility was >10km flying 2000ft above cloud but between layers in VMC and the ac's strobes, nav and nacelle lights were all switched on. Heading 200°, he thought, at 300kt both pilots noticed on TCAS an ac 8nm away, tracking towards them in close proximity and descending towards their level. Shortly after, a TCAS TA was received on traffic in their 11 o'clock about 400ft above that was descending at a faster rate than them. The PF acquired a Typhoon visually and deviated 30° to the R while deploying speed-brakes and increasing their ROD. The PNF kept eyes on TCAS and relayed to the PF that the Typhoon was 200ft above and within 3nm. They then communicated the position of the ac and their deviation to London Mil E. They ceased their deviation and levelled-off at FL80 after the Typhoon passed. London Mil E asked if they wished to file an Airprox and they stated they would telephone after landing.

THE TYPHOON PILOT reports checking out at the end of a night CAS serial using NVGs and in receipt of TS from London Mil on a discrete frequency, squawking an assigned code with Modes S and C. The visibility was 20km flying clear above cloud in VMC and the ac's red strobes, nav and formation lights were switched on. Heading 020° at 300kt about 10nm NE of Mildenhall he was asked by London to maintain above 9000ft amsl to deconflict from traffic inbound to Mildenhall. He climbed to 11000ft and tracked N to start recovery to Coningsby. He was aware of a contact from his radar which was 10nm to his NE heading towards Mildenhall and it appeared to be at his level. He assumed from his deconfliction with London that the other ac would be in a descent so he maintained his heading and level. He went heads-in for a short period to compile an In-Flight Report and when he looked out he could see the lights of an ac in his 1 o'clock at a similar level appearing to be on a collision course. He queried the height of this ac with London but his call was stepped-on by another formation. He broke away to the R at about 1nm range to avoid colliding with this ac, estimating 4000ft separation at the CPA. Once clear of this traffic he reversed his turn and followed the ac in order to try and identify it whilst again asking London of its altitude. It was reported as a KC135 that he was supposedly de-conflicted with flying FL100. He was working RPS of 996hPa so flying at 11000ft meant a difference of approximately 300ft between them, he thought. He recovered to Coningsby without further incident, assessing the risk as high.

THE LATCC MIL E TACTICAL CONTROLLER reports as the oncoming controller with the Typhoon operating between 5000ft and 19500ft RPS 996hPa and 2 F15s operating O/H Lakenheath between FL50 and FL190 on separate discrete frequencies, but MARSA and in contact with each other on a tactical frequency. As he took over control a KC135R was leaving the UAR in the vicinity of MOLIX at FL260 to descend into Lakenheath for a PD before recovering to Mildenhall for a full-stop. On its call of ready for descent he instructed the KC135R flight to descend to FL80 and ascertained that the crew would require a DS on leaving the upper air. After assessing the ROD he saw fit to stop the Typhoon not below 9000ft RPS, to which the pilot agreed. He then took a pre-note from ScATCC(Mil) for a GR4 transit from the N to Marham. As he ranged his radar display out to look for the GR4 he noticed a large number of ac (circa 30) in the D323 complex at various levels tracking S. Knowing that there were a number of F15s and Typhoons operating with Boulmer CRC in that airspace, he was anticipating pre-notes and checked the KC135R's range against the subject Typhoon and its ROD and was still content that his coordination would be sufficient. At this point various landlines were ringing and he believed he answered the Boulmer CRC line to take a pre-note on another formation flight. His Planner then stepped in to take the pre-note and he, TAC, answered the ScATCC(Mil) line to take the handover on the GR4. At this point the KC135R crew requested information on traffic in his 12 o'clock 3nm to which he responded, "Roger, apologies, expedite descent through FL80, traffic S 2nm Typhoon 500ft above". He believed he was distracted by the massive wave of ac heading out of D323 complex and by various pre-notes and handovers of traffic. At no point did he issue avoiding action to either ac as the developing situation had distracted him to such a degree. The KC135R crew stated that they were descending and taking a RH turn to avoid the Typhoon. The Typhoon pilot then requested information on the KC135R, believing it to be civil traffic before advising him to expect an Airprox report from the KC135R flight. On asking the KC135R crew if they would be filing a report, they requested the LATCC(Mil) telephone number which he gave. He believed the ac closed to 500ft vertically and 2nm laterally before the Typhoon passed 1200ft over the KC135R. Later he learnt the Supervisor received calls from both crews after his shift had ended.

BM SAFETY POLICY & ASSURANCE reports that this Airprox occurred at night on 4 Dec 12 between a KC135R operating IFR in receipt of a DS and a Typhoon operating VFR in receipt of a TS; both ac were receiving an ATS from LATCC(Mil) E TAC.

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

Both pilots reported VMC above and between cloud layers, with the Typhoon pilot operating on NVGs. E TAC reported medium to low workload with increasing task complexity and were providing ATS to a pair of F15s unrelated to the incident, in addition to the Typhoon and KC135R. All 3 of these 'speaking units' were operating on separate frequencies, with the Typhoon and F15 formation requiring 'discrete' frequencies; consequently, although frequency 'cross-coupling' was available to E TAC, it was not utilised.

The incident sequence commences at 1945:51 as the KC135R crew advised E TAC that they were, "*ready for descent*" and were instructed to descend to FL80. At this point, the KC135R is 69·8nm ENE of Mildenhall, tracking WSW'ly at FL260; the Typhoon is manoeuvring 12·7nm SW of Mildenhall indicating FL102; the unrelated F15 flight was manoeuvring between 13-20nm E of Mildenhall. The Typhoon is operating in an altitude block of 5000-19500ft on the RPS of 996hPa, thus the SSR Mode C of FL102 equates to an altitude of approximately 9690ft. Prior to the start of the incident sequence, at 1945:00, E TAC had taken a pre-note from ScATCC(Mil) on an unrelated GR4 transiting to RAF Marham. During this pre-note, E TAC increased the range on their surveillance display to 108nm and re-centred the display to enable scanning of the airspace to the NW of L975; the surveillance display was centred just N of the eventual point of confliction. E TAC had also selected 1min 'vector predict' lines, a tool which predicts the position and, if the option is selected, the level of all ac on the surveillance display. E TAC's surveillance display remained in this configuration throughout the incident sequence.

At 1949:00, the KC135R's clearance to descend was amended to FL60; at this point, the KC135R is 33·6nm ENE of the Typhoon, descending through FL184. At 1949:07, having previously ascertained the type of ATS that the KC135R crew would require on leaving the Upper Air, E TAC applied a DS which was read back by the crew. At 1949:14, E TAC initiated an exchange of RT with the Typhoon pilot requesting that for, "*coordination against traffic inbound to Lakenheath, are you happy to remain not below 9000 feet 996*?" The Typhoon pilot replied at 1949:30, "*copied, not below 9000 feet on 996*." 9000ft on the RPS of 996hPa equates to 9510ft on the SAS of 1013·2hPa. At this point, the KC135R is 30·4nm ENE of the Typhoon, descending through FL165. In their DASOR, E TAC reports that they asked the Typhoon whether they were "*happy to remain not below 9000 feet 996*" having assessed the KC135R's RoD. The LATCC(Mil) radar replay system enables an investigator to see a replica of the controller's surveillance display at the time of the incident. Analysis of the data for this Airprox demonstrated that E TAC did not utilise the 'predict vector' tool to assess the KC135R's RoD and the potential for conflict with the Typhoon.

At 1950:04, E TAC 'hooked' both the Typhoon and the KC135R and established a 'range and bearing line' between them; this line was left in place throughout the remainder of the incident sequence. Between 1950:23 and 1950:40, E TAC was involved in an exchange of RT with the unrelated F15 formation, elements of which were operating 3·4nm NW and 6·1nm W of the Typhoon respectively. The KC135R continues to track WSW'ly, descending through FL144, 22nm ENE of the Typhoon; the Typhoon has begun to track ENE'ly and is indicating FL114, approximately 10890ft on RPS 996hPa. At the start of this RT exchange, the GR4 pre-noted to E TAC by ScATCC(Mil) is approximately 125·3nm NW of the impending CPA and had begun to squawk the SSR 3A code assigned to it by E TAC during the pre-note. It is shortly after this RT exchange that the additional landline exchanges with Boulmer CRC and ScATCC(Mil) reported by E TAC occurred; however, E TAC's recollection of these calls was incorrect. At 1950:44, the ScATCC(Mil) line began to ring and, although E TAC may have initially 'clicked in' to the call, the call was answered at 1950:50 by the Planner, who accepted the handover of the GR4; the handover concluded at 1951:13. At 1950:49 the Boulmer CRC line began to ring and was answered by E TAC at 1950:55, accepting a pre-note on unrelated traffic that was part of a package of around 20 ac (reported as circa 30 by E TAC); the pre-note concluded at 1951:30. At this point, the lead elements of that package were approaching the S edge of EGD 323B, transiting S.

Analysis of the LATCC(Mil) radar replay data for this Airprox shows that at 1951.12 the KC135R is 12nm ENE of the Typhoon; the 1min 'predict vector' lines on both ac indicates that approximately 2nm lateral separation would exist at the CPA 1min later, with the KC135R passing N of the Typhoon. The KC135R's data block reads FL120 descending to FL60 and the 1min 'predict vector' reads FL94; the Typhoon's data block reads FL116, manoeuvring in the block to FL200, the 1min 'predict vector' indicates FL116. In essence, the 'predict vector' line shows that the KC135R will not reach FL80 or below, before the lateral separation breaches the deconfliction minima and thus E TAC's deconfliction plan was unachievable. At 1951:22, lateral separation between the Typhoon and KC135R closes to 10·5nm and thus represents the approximate point at which the Typhoon pilot detected the KC135R on his AI radar. The KC135R is descending through FL115, the Typhoon is continuing to track ENE'ly, indicating FL116. Up to this point, the KC135R has averaged approximately a 2600fpm ROD but the ROD then begins to reduce markedly, reaching approximately 830fpm at 1951:43.

At 1951:44, the KC135R crew advised E TAC, "*we have contact with traffic in our 12 o'clock, 500 high*." The KC135R is 6·5nm NE of the Typhoon indicating descent through FL111, the Typhoon is indicating FL114 (equating to approximately 10890ft on 996hPa), tracking NE'ly having turned at 1951:28. At 1951:47, the KC135R's ROD begins to increase, achieving approximately 3600fpm by the time of the CPA. E TAC replied, *"(KC135R c/s) apologies, affirm, that's a Typhoon 500 feet above. Expedite descent through FL80*" which was acknowledged by the KC135R's crew, who added, "*also got him showing descent. We're deviating right of course*." Up to this point, the KC135R had received no TI from E TAC with regards to the Typhoon. As the KC135R crew's call was acknowledged by E TAC at 1952:07, the radar replay shows the KC135R initiating a gentle turn to the R as it descends through FL101, 2·8nm NE of the Typhoon; the Typhoon is indicating FL111, maintaining its NE'ly track.

CAP 413 Chapter 5 Section 1.6.4 states the phraseology to be utilised 'when the controller considers that an imminent risk of collision will exist if action is not taken immediately'. In this example, instructions such as '(KC135R c/s) avoiding action, expedite descent through FL80' or 'descend immediately FL60', followed by essential TI would have been expected.

Immediately following E TAC's acknowledgement of the KC135R crew at 1952:05, the unrelated Marham GR4 called on handover, 114·7nm NW of the impending CPA. E TAC did not have an opportunity to respond to the Marham GR4 however, as the Typhoon pilot then called them, "*requesting location of the traffic*?" Up to this point, the Typhoon pilot had received no TI from E TAC with regards to the KC135R. At 1952:15, as E TAC advises the Typhoon flight, *"(Typhoon c/s) apologies, FL100 descending*", the Typhoon is observed on the radar replay commencing a tight R turn onto a NE'ly track. The KC135R is 1·2nm NNE of the Typhoon descending through FL95, the Typhoon is indicating FL107 (10190 ft on RPS 996hPa).

The CPA occurs at 1952:22 as the Typhoon passes 0·9nm SE of the KC135R which is indicating descent through FL92, the Typhoon indicating FL105 (approximately 9990ft on RPS 996hPa) and in a L turn.

With the benefit of good VMC, AI radar and TCAS, both the Typhoon pilot and the KC135R crew were able to visually acquire the other's ac and took decisive action to break the confliction; however, this was achieved in the absence of TI and, in the case of the KC135R deconfliction advice, which both crews had an expectation of receiving.

Based on the information presented by the 1min 'vector predict' function, it was clear from 1951:13 that the deconfliction plan put in place by E TAC at 1949:14 would not be effective. Moreover, whilst E TAC had expanded the range of the surveillance display to better encompass the airspace to the NW of L975, the area of the CPA remained at approximately the centre of the display and the depiction of the incident geometry was still relatively clear. Given this and the lack of TI and/or deconfliction advice from E TAC, it is clear that they were either not monitoring the progress of the Typhoon and KC135R, or were not fully assimilating the information presented to them. E TAC stated in their DASOR that they had became distracted by landline calls from Boulmer CRC and ScATCC(Mil) and the package transiting the EGD323 complex; however, it is reasonable to argue that the most significant distracting factor was the 'unfortunate' timing of the handover from ScATCC(Mil) of the transiting GR4 and the pre-note from Boulmer CRC, as this would have directed E TAC's attention some distance away from the developing situation. Consequently, although E TAC had a plan to deconflict the KC135R and the Typhoon, they did not monitor either the Typhoon's position or the KC135R's ROD, to ensure that the plan could be achieved. Once the Typhoon began to track NE'ly, closing the lateral separation between it and the KC135R, E TAC's deconfliction plan became unachievable. As the LATCC(Mil) Examining Officer has identified, an enhancement to E TAC's plan would have been to have restricted the Typhoon's movement to the E. That said, it is reasonable to suggest that even with such a restriction, a base altitude of 9000ft on RPS 996hPa left little room for error; a better option may have been to have requested a higher base altitude.

The crews of the KC135R and Typhoon were able to discharge their responsibility to "see and avoid" each other to resolve this conflict in Class G airspace; however, this was achieved in the absence of TI and deconfliction advice from E TAC.

HQ AIR (OPS) comments that it is clear that in this case TCAS aided the KC135's crew to gain visual and their 30° turn helped to increase the time available for avoiding action; a timely breakaway by the Typhoon ultimately resolved the issue but it would not have been necessary if the de-confliction plan by ATC had been better. There have been a number of cases in recent months where information provided on traffic by LATCC(Mil) controllers working traffic in that sector has not been effective, perhaps it is time to consider whether the LATCC(Mil) manning for that sector is appropriate.

HQ USAFE UK comments that, amongst others, 2 points arise from this Airprox. Firstly, that forward planning is a vital controlling skill but it should not dominate to the detriment of those ac already in receipt of a service. Secondly, there are pros and cons to controlling with predict vectors selected on

permanently; on the one hand, they are an additional aid to spotting and resolving conflictions in busy circumstances but on the other, they create additional clutter on the radar display. In this case, the pros of using predict vectors were negated as the information provided was seemingly overlooked.

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.

Members agreed with the BM SPA Advisor's summing up of the incident. E TAC had formulated a plan to deconflict the subject ac by restricting the Typhoon to a level more than 1000ft above the cleared level of the descending KC135. However, with no further restrictions/limitations placed on either ac the successful outcome of the plan was predicated on E TAC monitoring the situation to ensure the ac were performing in accordance with his intentions. Although E TAC had selected prediction vectors, he did not assimilate the deteriorating situation when the Typhoon manoeuvred to the NE towards the descending KC135R. Having selected an expanded range on his radar display to search for a GR4, which would be handed-over from ScATCC(Mil), he apparently became distracted with the handover and a pre-note from Boulmer CRC on exercise traffic about to depart EGD323B. This was to the detriment of the KC135R and Typhoon, both of which were under an ATS from E TAC to enhance their SA within Class G airspace. Having agreed a service contract with both flights, both crews were poorly served by E TAC. It was clear to Members that E TAC had not fulfilled the requirements of a DS for the KC135R crew and did not provide TI to the Typhoon pilot under a TS and these were the causal factors in the Airprox.

The KC135R crew were concerned when they noted the approaching Typhoon on TCAS without receiving any deconfliction advice. They noted the height differential and, after visually acquiring the Typhoon, elected to increase their ROD and turn R 30° before informing TAC E of the Typhoon's proximity; E TAC acknowledged the call with TI and an instruction for the crew to expedite their descent. The Typhoon pilot had seen the KC135R on his AI radar about 2min after agreeing to maintain above 9000ft and going heads-in for a short while. On looking up he was undoubtedly concerned when, in the belief he had been de-conflicted, he could see the ac closing into confliction in his 1 o'clock without any TI from E TAC. The HQ Air Member commented that the Typhoon pilot's perception of geometry and separation would have been difficult to gauge owing to the characteristics of NVGs. After a short delay, when the GR4 flight made initial contact, the Typhoon pilot called E TAC requesting the position of the traffic and was told it was FL100 descending. During this RT exchange he broke away to the R before passing behind the KC135R, estimating 4000ft slant range separation at the CPA. The radar recording had shown the ac passing 1300ft vertically and 0·9nm horizontally at the CPA. Although it was disappointing that ATC had not provided the agreed service to either flight, the KC135R crew and the Typhoon pilot had discharged their responsibilities to see and avoid which was enough for the Board to conclude that their combined actions had been effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: LATCC(Mil) TAC E did not fulfil the requirements of a DS for the KC135R crew and did not provide TI to the Typhoon pilot.

Degree of Risk: C.