AIRPROX REPORT No 2014147

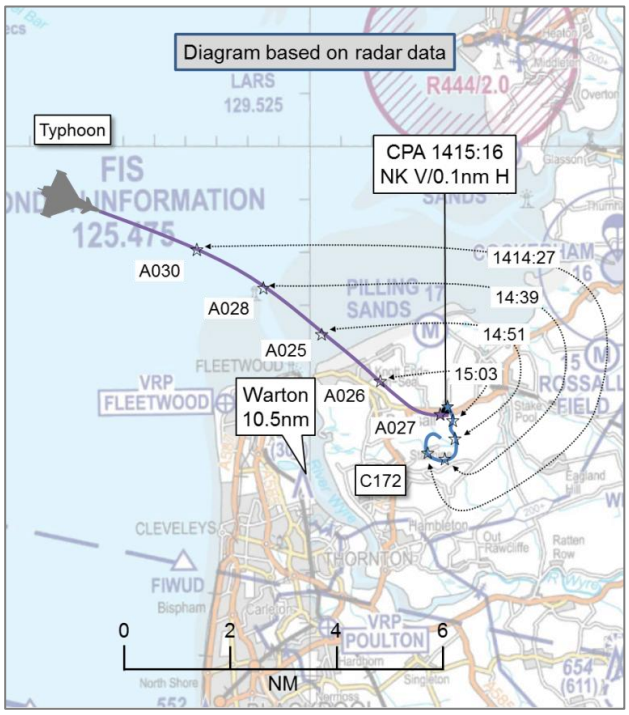
Date/Time: 22 Aug 2014 1415Z

Position: 5355N 00256W (10.5nm N Warton)

Airspace: London FIR (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	C172	Typhoon FGR4
Operator:	Civ Trg	HQ Air (Ops)
Alt/FL:	3000ft QNH (1012hPa)	2600ft QFE (1009hPa)
Conditions:	VMC	VMC
Visibility:	NK	10km
Reported Separation:	100ft V/0m H	500ft V/750ft H

Recorded Separation: NK V/0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports conducting an instructional PFL sortie. The white aircraft had its red beacon selected on, as was the SSR transponder with Mode A only. The aircraft was not fitted with an ACAS or TAS. The pilot was operating under VFR in VMC, in receipt of a Basic Service from Blackpool Radar. The student was levelling off at about 3000ft, heading 330°, at 90kt, in a slight left turn, when he called 'Typhoon, low' and pointed to the 11 o'clock position. The instructor looked in that direction but did not see another aircraft. As he scanned left to right he then saw a grey camouflaged Typhoon in the 3 o'clock position, roughly 100ft almost directly below their aircraft. The Typhoon appeared to be in an 'increasing roll toward the right', before heading away in the 5 o'clock. Both the instructor and the student were taken by surprise by the Typhoon's appearance, the speed it passed, and the close proximity. The Instructor reported to Blackpool Radar that they had 'come into close contact' with a Typhoon; however, the event was not specifically reported as an Airprox. The controller informed them that the Typhoon pilot had been visual with them. The Instructor decided, with hindsight, that an Airprox report would be worthwhile, and noted that there was high instructor and student workload in de-briefing the student's prior PFL attempt whilst positioning for another. He stated that he would consider an upgraded ATC service in future during high workload exercises.

He assessed the risk of collision as 'Medium'.

THE TYPHOON PILOT reports recovering to his home airfield. The grey camouflaged aircraft had HISLs and navigation lights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with an ACAS or TAS. The pilot was operating under VFR in VMC, in receipt of a Traffic Service from Warton Radar. The pilot received Traffic Information of traffic "Just right of 12 o'clock, now 12 o'clock at 2.5nm". He responded by making a hard turn to the left through 35°, and was then informed the traffic was now passing down his LH side. He observed the traffic on roll-out in front of him, approximately 500ft above and about 500-1000ft to the right. At this point, heading 100° at 360kt and level at 2600ft, he assessed that there was no risk of collision and continued the recovery. The pilot stated he was aware of the closer than ideal separation and reported the fact to ATC approximately 1min later. He was informed that the other pilot was 'working Blackpool Radar' and was aware. The pilot stated that he had previously had an 'unstable lock' on the traffic at about 10nm but did not have contact at the time of the incident. He noted that his initial avoiding-action left turn was in response to ATC Traffic Information and that it had probably reduced the separation.

He assessed the risk of collision as 'Low'.

THE WARTON RADAR CONTROLLER reports controlling the Typhoon. There were no other aircraft on frequency and it was a low-intensity workload. The Typhoon pilot departed Warton at 1326 and was given a reduced Traffic Service owing to poor radar performance. After high-level manoeuvring, the Typhoon pilot descended to enter LFA17 at 1337. The controller re-identified the Typhoon at 1353 and, after a period of general handling, the pilot called for recovery to Warton from the north at 1411. The controller passed Traffic Information on the Typhoon to Blackpool Radar, 25nm northwest of them. The Blackpool controller then advised him of local area traffic, general handling to the north of Warton, not above 3000ft altitude under a Basic Service. The Warton controller passed Traffic Information to the Typhoon pilot at range 10nm from the Blackpool local traffic squawk, advising him it was operating below 3000ft. He passed further Traffic Information at a range of 2.5nm, as the squawk was just right of the Typhoon's 12 o'clock, then in his 12 o'clock. He updated this as the squawk was about to pass down the Typhoon's left hand side. The Typhoon pilot reported that he was visual with the other aircraft, which had passed over the top of him. Prior to handover to Warton Tower, the Typhoon pilot advised him that "Just for the record, that traffic passed about 500ft above me, right of the nose. I didn't think that it was anything significant, but just in case Blackpool ask". The controller relayed this information to the Blackpool radar controller.

He perceived the severity of the incident as 'Low'.

THE BLACKPOOL RADAR CONTROLLER reports that he was not aware of the Airprox until contacted on the 26th August, 4 days after the event. Therefore, apart from the flight strip, no detailed notes were taken at the time of the incident. The C172 pilot was operating unidentified under a Basic Service about '10 miles' north of Blackpool in a 'popular GA area'. Warton Radar requested Traffic Information on the level of a Blackpool unvalidated/unverified squawk, believed to be the subject C172; the pilot stated 2-3000ft. Warton Radar informed the controller that the Typhoon pilot planned to recover visually; the Typhoon was about 25nm northwest of Blackpool at that time. Approximately 5min later, the C172 pilot informed the controller that a Typhoon had passed close by. The controller informed the pilot that if he required Traffic Information he needed to request a Traffic Service; the pilot was satisfied with a Basic Service. Whilst speaking to Warton Radar on another matter the controller was informed that the Typhoon pilot had been visual with the C172; the controller informed the C172 pilot. The C172 pilot did not report an Airprox.

Factual Background

The weather at Warton was recorded as follows:

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METAR EGNO 221420Z 30014KT 9999 FEW030 16/08 Q1011
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Analysis and Investigation

CAA ATSI

CAA ATSI had access to Blackpool and Warton RTF, area radar recording, together with the written report from both pilots.

The C172 pilot was operating on a VFR local training flight and was in receipt of a Basic Service from Blackpool Radar. The Typhoon pilot was returning to Warton under VFR and was in receipt of a Traffic Service from Warton Radar.

At 1354:00, the C172 pilot contacted Blackpool Radar for a Basic Service. A Basic Service was agreed and the controller passed the Blackpool QNH, 1012hPa. At 1411:12, the Typhoon pilot called Warton Radar requesting a visual recovery. The Warton controller advised *"*[Typhoon C/S] *own navigation to the field the er circuit is clear two five left hand colour blue and the QFE one zero zero niner",* which was acknowledged. The Warton controller then telephoned Blackpool Radar and advised them of the Typhoon, 25nm northwest for a visual recovery to Warton. The Blackpool controller advised Warton about the C172, operating not above 3000ft and the Warton controller confirmed that he would call it to the Typhoon on a Traffic Service.

At 1414:00, Warton advised *"*[Typhoon C/S] *traffic twelve o'clock at ten miles manoeuvring over land er indicating not above er tw- correction three thousand feet",* which was acknowledged. At 1414:59, Warton updated the information *"*[Typhoon C/S] *previously mentioned traffic just right of your twelve o'clock at in fact now twelve o'clock two and a half miles height unknown"*. The Typhoon pilot replied *"Yeah just over the top now* [Typhoon C/S]*"*.

At 1415:11, the Typhoon was 0.6nm west of the C172 at FL025 (2500ft). The C172 was not indicating Mode C level reporting, see Figure 1.

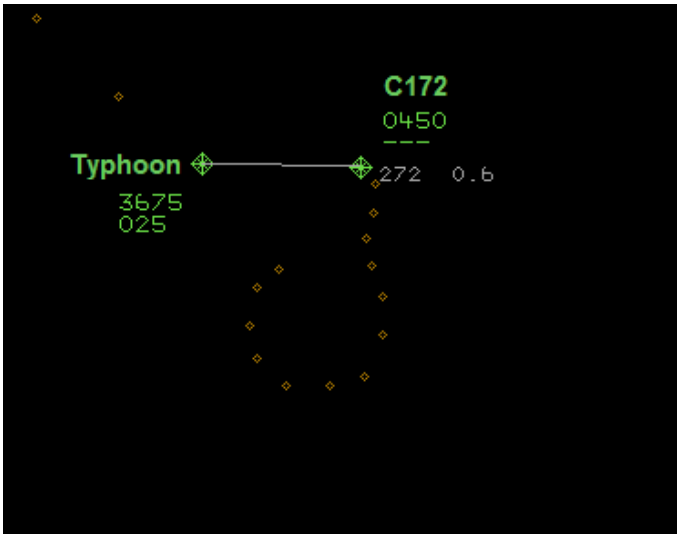

Figure 1: Swanwick MRT at 1415:11

The Typhoon pilot's written report indicated that after the Traffic Information he initiated a hard turn to the left through 35°. At 1415:15, the Typhoon, indicating FL027 (2700ft), had turned to pass behind the C172, see Figure 2.

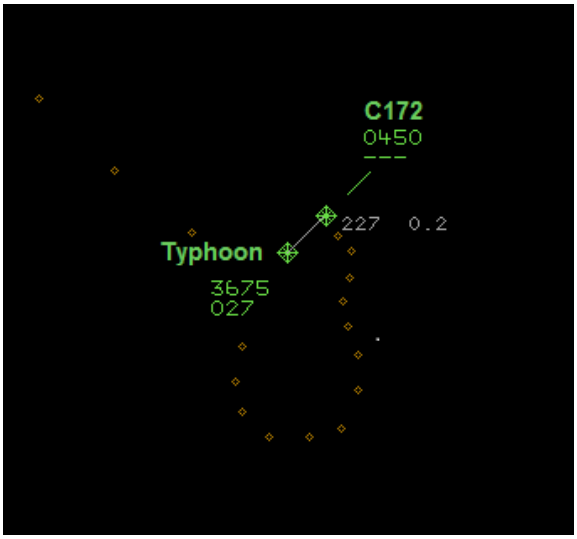

Figure 2: Swanwick MRT at 1415:15

At 1415:19, Warton radar advised the Typhoon pilot "Just passing down your left hand side". The Typhoon was 0.4nm east of the C172, indicating FL028 (2800ft), see Figure 3.

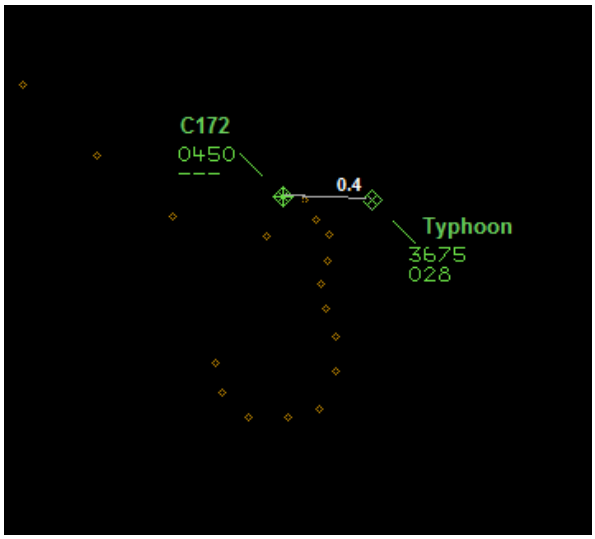

Figure 3: Swanwick MRT at 1415:19

At 1416:13, the C172 pilot called Blackpool Radar and the following RTF exchange occurred:

C172 *"er just so you know we came within about a hundred feet of a Eurofighter routeing east to west along the coastline"*
ATC *"Roger yep er the er Eurofighter is just doing a visual recovery to Warton and had you visual at all times and er roger"*
C172 "*No problem he just caught us a bit off guard there"*
ATC *"and* [C172 C/S] *for future reference if you require traffic to be called into you you'd need to request a Traffic Service*"
C172 *"Er it's not a problem I just er felt like you know we're got a bit close"*
ATC *"No problems yep er I last saw it it's about thirty miles away er a bit quick those ones"*
C172 *"Yep"*.

At 1416:47, the Typhoon pilot called Warton *"*[Typhoon C/S] *field in sight and just for the record that traffic passed about five hundred feet above me just to the right of the????? I don't think it was anything significant but just to update Blackpool"*. The Warton controller acknowledged *"*[Typhoon C/S] *thank you yeah Blackpool were aware of you and er the traffic was operating not above three thousand so er everybody was aware"*.

The Typhoon pilot was in receipt of a Traffic Service from Warton Radar. The Warton controller notified Blackpool Radar about the Typhoon, passed Traffic information to the Typhoon pilot regarding the C172 at a range of 10nm and updated the Traffic Information at a range of 2.5nm. CAP774, Page 29, Paragraph 3.1 and 3.6 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 pilot remains responsible for collision avoidance.

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 C172 pilot was in receipt of a Basic Service from Blackpool Radar and the Blackpool controller had been notified about the Typhoon. CAP 774, Chapter 2, Paragraphs 2.1, and 2.5 to 2.8, states:

> 'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conducts of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.
> Given that the provider of a Basic Service is not required to monitor the flight, pilots should not expect any form of traffic information from a controller/FISO. A pilot who considers that he requires a regular flow of specific traffic information shall request a Traffic Service.
> However, where a controller/FISO has information that indicates that there is aerial activity in a particular location that may affect a flight, they should provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update.
> A controller with access to surveillance-derived information shall avoid the routine provision of traffic information on specific aircraft but may use that information to provide a more detailed warning to the pilot.
> If a controller/ FISO considers that a definite risk of collision exists, a warning should be issued to the pilot.'

The C172 pilot had not requested a Traffic Service and under a Basic Service he would not have been routinely passed Traffic Information. The Blackpool controller had been advised about the Typhoon but reported on RT last seeing it some 30nm before CPA. Had he perceived its track as converging on the C172 then Traffic Information in general terms, or a warning would have been appropriate and would have alerted the C172 pilot.

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision[1]. If the incident geometry is considered as converging then the Typhoon pilot was required to give way to the C172[2]. If the incident geometry is considered as head-on then both pilots were required to turn to the right[3], notwithstanding their responsibility not to collide or present a danger of collision.

Summary

An Airprox was reported when a C172 and a Typhoon flew into proximity at 1415 on Friday 22nd August 2014. Both pilots were operating under VFR in VMC, the C172 pilot in receipt of a Basic Service from Blackpool Radar and the Typhoon pilot in receipt of a Traffic Service from Warton Radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authority.

The Board first considered the pilots' actions. The C172 pilot was conducting an instructional sortie covering Practice Forced Landings. Although this would necessarily concentrate the crew's lookout towards the ground, members felt that they were at sufficient altitude that a normal lookout scan was being used at the time of the Airprox. The student saw the converging Typhoon first but the instructor was not able to visually acquire it until, what the Board assessed was at, or soon after, CPA. As such, this amounted to effectively a non-sighting by the C172 crew (no action was taken before CPA and the instructor saw the Typhoon too late to take action to increase separation). The instructor commented on the high task workload and members noted the conflicting requirements of the utility of Traffic Information from a Traffic Service and the desire for lack of interruption for in-cockpit discussion. In this instance the Blackpool controller stated that he last saw the Typhoon radar track

[1] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).
[2] ibid., Rule 9 (Converging).
[3] ibid., Rule 10 (Approaching head-on).

'about 30 miles away' and so may not have been able to give effective Traffic Information to the C172 pilot anyway even if a Traffic Service had been requested. Members also commented that the C172 pilot may have been better served by using the Warton LARS service when operating at 'low altitude' in that area, thereby affording the opportunity to increase SA on any Typhoons recovering to Warton which may transit the area.

For his part, the Typhoon pilot had been passed Traffic Information by the Warton controller on the C172 at 10 miles in his 12 o'clock position, a separation of about $1^{1}/_{3}$ min before CPA. On the information given ('12 o'clock', then 'just right of the nose', then '12 o'clock'), the Typhoon pilot chose to manoeuvre to the left. Unfortunately, he could not know it but the C172 was actually crossing the Typhoon's nose from right to left, so the left turn served to reduce separation. Some GA members noted the ANO speed limit of 250kt when below FL100 and questioned whether the Typhoon pilot needed to recover to Warton at 360kt. The Board understood that the Typhoon was being operated iaw Military Flying Regulations, which permits flight at speeds greater than 250kt when below FL100 and that military fast-jets have higher minimum safe handling speeds than GA aircraft. However, some members were of the opinion that a modern fast-jet such as the Typhoon did not suffer from the same minimum safe speed requirements as previous types and that, once level at an appropriate altitude, a recovery profile at or below 250kt could have been achieved. In this instance, this would have increased the time from first Traffic Information to CPA to the order of 2min, and would also have afforded more time for effective lookout and controller assessment of closing geometry for effective Traffic Information. Whilst there were good tactical reasons for front-line aircraft to practice high-speed recovery techniques, members wondered whether it was necessary to do so for non-front-line operations. Additionally, members noted that the Typhoon pilot had been informed that the C172 would be operating at and below 3000ft, and that he could have taken that opportunity to achieve deconfliction by recovering above 3000ft.

The Board noted that the controllers had communicated with each other and passed details on their respective traffic. Members recalled that, even under a Basic Service, 'If a controller/ FISO considers that a definite risk of collision exists, a warning should be issued to the pilot'. The Blackpool controller reported last observing the converging Typhoon at a range of 30 miles from CPA and so could not assess a 'definite risk of collision'. However, members expressed their surprise that the Blackpool controller had not observed the Typhoon converging on the C172 at closer range given that Warton were clearly concerned over the propinquity of the two aircraft. The Board opined that the Blackpool controller could have taken the opportunity to pass Traffic Information on the recovering Typhoon to the C172 pilot based on Warton's information, even if he couldn't see it on his own radar, on the basis that 'where a controller/FISO has information that indicates that there is aerial activity in a particular location that may affect a flight, they should provide traffic information in general terms to assist with the pilot's situational awareness'.

The Board members agreed that the Airprox was caused by a late sighting by the Typhoon pilot and the effective non-sighting by the C172 pilot, and that this, together with the closing speed and reported radar separation at CPA, amounted to safety margins being much reduced.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Typhoon pilot and effectively a non-sighting by the C172 pilot.

Degree of Risk: B.

ERC Score[4]: 20.

[4] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.