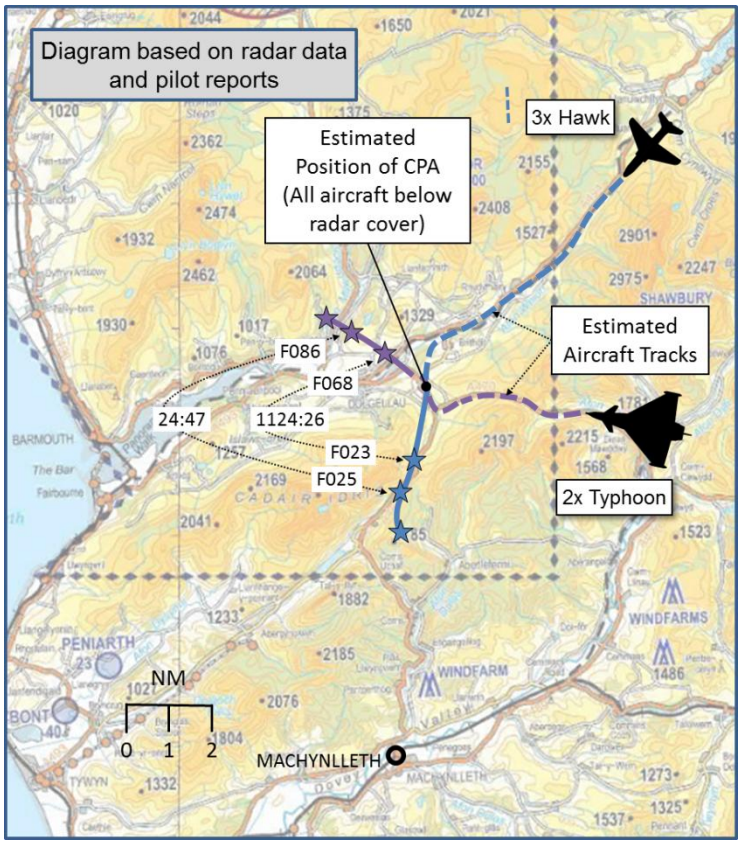
AIRPROX REPORT No 2014154

Date/Time: 27 Aug 2014 1124Z

Position: 5244N 00352W (10.5nm SE of Llanbedr)

Airspace:	LFA7	(*Class*: G)
	Aircraft 1	*Aircraft 2*
Type:	Hawk T2	Typhoon FGR4
Operator: (Ops)	HQ Air (Trg)	HQ Air
Alt/FL:	NK	NK
Conditions:	VMC	VMC
Visibility:	8km	10km
Reported Separation:	500ft V/NK H	NK V/NK H
Recorded Separation:	NK V/NK H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK (2) PILOT reports flying as part of a 3-ship of Hawks carrying out a low-level evasion sortie in LFA[1] 7. The aircraft was black with white strobe lights, navigation lights and nose conspicuity lights illuminated, and was squawking transponder Modes 3/A, C and S; the aircraft was also equipped with TCAS[2]. Prior to departure, the Hawk pilots had checked on CADS[3] and had acknowledged all highlighted conflictions; they noted a pair of Typhoons scheduled to operate in the same area. Once airborne, the pilots of the other two Hawks were making regular position calls on the Valley low-level deconfliction frequency, whilst the pilot of Hawk (2) made position reports on the UHF UK LL[4] frequency. At 1117, the Hawk(2) pilot made a call on UK LL stating that three Hawks were entering the low-level system at Conwy, Southbound for an evasion exercise. The weather was quickly assessed as unfit for evasion in the planned area so the pilots decided to re-route. At 1121 the pilot of Hawk (2) reported, on the UK LL, that the formation was at Bala and routing to the south. The weather forced the formation west towards 'The Loop' and, when it became clear that the formation would enter 'The Loop' from the North, Hawk(2)'s pilot made a further position call. At 1123:55, heading 260° at 420kt, the lead Hawk pilot saw a pair of Typhoons exiting 'The Loop'; he alerted the other Hawk pilots to the Typhoons' presence and initiated a climb. The pilot of Hawk(2) quickly saw both Typhoons around 1nm away and, shortly afterwards, received a TCAS TA[5] so he made a sharp climb in order to fly over the top of the trailing Typhoon, and then established 2-way communication with the Typhoon pilots on the UK LL frequency. Previously, he had not heard any reports from the Typhoons on the UK LL frequency and realised that it was likely that terrain would have blocked his previous position reports from reaching the Typhoons; he did not see the Typhoons take any avoiding action.

He assessed the risk of collision as 'Medium'.

[1] Low Flying Area
[2] Traffic Alerting and Collision Avoidance System
[3] Centralised Aviation Data Service.
[4] UK low-level common frequency
[5] Traffic Advisory

THE TYPHOON PILOT reports leading a pair of Typhoons, at 420kt, 2000ft below cloud, with HISLs and navigation lights illuminated and squawking transponder Modes 3/A, C and S. The pilots were tasked with conducting affiliation training in the D613 complex, before conducting air-to-air refuelling and low-level operations as a pair in LFA 7. The sortie was made available on CADS approximately 3hrs before the Airprox but no conflictions were noted at the time of planning or at the out brief when the Typhoon pilots once again checked CADS. The pair entered the low-level system at Lleyn Peninsula at 1115Z, and proceeded into LFA 7. Both aircraft were monitoring the UK LL frequency but they did not make an initial low-level entry call. Neither of the Typhoon pilots heard any radio calls on the UK LL frequency, with the exception of one garbled call that was unreadable; they followed their route with minor deviations and were on time. On reaching Machynlleth, the lead Typhoon had a minor fuel system issue, which required a gradual climb out of low-level to work through the problem; once the issue had been resolved, the formation re-entered low-level to complete the remaining section of the route.

On exiting the 'Machynlleth Loop' at 1124Z, they saw a single Hawk 1nm to the right of the formation, which passed right-to-left, above and slightly behind them. The second Typhoon pilot made an immediate call to the lead pilot on the intra-formation frequency, and stayed low to avoid any further confliction with the Hawk, which was already higher. Co-incident with this sighting, the Typhoon pilots heard a call on the UK LL frequency from the Hawks and acknowledged it; this was the first radio call that they had heard on the UK LL. After landing, the Typhoon pilots realised that, due to their sortie time being much longer than the Hawks', the Hawk pilots had seen the Typhoon sortie details on CADS, but they were not aware of the sortie details of the Hawks.

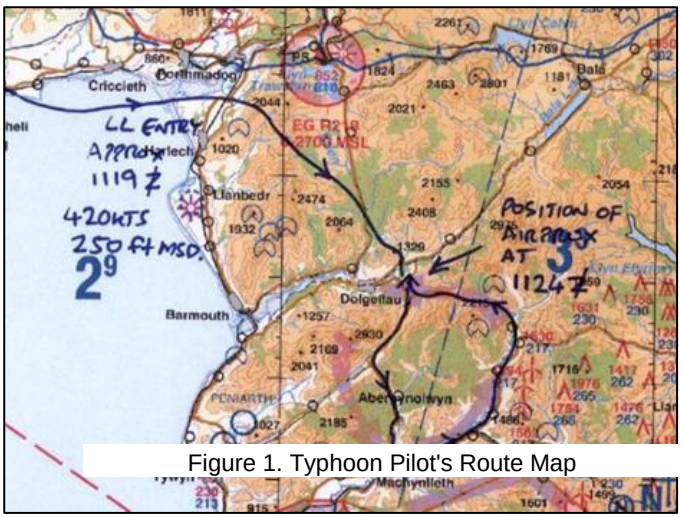


Figure 1. Typhoon Pilot's Route Map

He assessed the risk of collision as 'Low'.

Factual Background

The weather at Shawbury at 1050 was recorded as:

METAR EGOS 271050Z 10012KT 9999 SCT020 SCT035 BKN250 17/11 Q1014 WHT BECMG SCT025 BLU

The weather at Valley at 1050 was recorded as:

METAR EGOV 271050Z 15014KT 9999 FEW025 BKN250 18/07 Q1012 BLU NOSIG

Analysis and Investigation

UKAB Secretariat

The aircraft were converging, and the Hawks were on the right of the Typhoons, so the Typhoon pilots were required to give way[6]

[6] Rules of the Air 2007, Rule 9, Converging, reflected in RA2307, Aircraft Converging

Comments

HQ Air Command

Although the Typhoon formation did not make an initial call on entering the UK Low Flying System it is unclear whether or not this would have had any bearing on the incident. Notwithstanding, both formations followed extant regulation by submitting their routes to CADS (acknowledging that the extended Typhoon mission length meant that the Hawk sortie was unavailable to the Typhoon formation prior to departure) and making/monitoring calls on the Low Level Common Frequency; regulation on when and what to transmit is in the process of being revised and will be trialled across Scotland shortly. It is likely that terrain screening, both of R/T transmissions and SSR, reduced the effectiveness of TCAS and radio messages as barriers to MAC. Disciplined lookout in an area where aircraft are funnelled ultimately led to detection of the threat by both formations, albeit quite late. This incident reminds us that barriers to MAC are complementary and that lookout was once again the decisive factor in the detection and resolution of an airborne conflict.

Summary

An Airprox occurred, in Class G airspace in LFA7, between a Hawk, which was being flown in a formation of 3 aircraft, and a Typhoon, which was being flown in a pair. Neither formation was in receipt of an Air Traffic Service; both sorties had been entered in to CADS, and both formations were listening on the UK LL frequency. However, the Typhoon pilots were airborne before the Hawk pilots had entered their mission on CADS and also did not hear any of the position reports broadcast by the Hawk pilots.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both aircraft, radar photographs/video recordings, and reports from the appropriate operating authorities.

Board members were heartened that all of the pilots had used CADS to notify others of their planned sortie details but noted that, with a much earlier departure time, CADS could not enhance the Typhoon pilots' situational awareness about the Hawks because that had not entered their data at that point. Board members opined that this reinforced the need to maintain a good lookout at all times in recognition that CADS could not be relied upon to highlight all conflictions and, in this respect, given their long sortie length some Board members wondered whether it would have been possible for the Typhoon pilots to have contacted their Operations Team as they left the tanker (perhaps using the tanker crew to do so) so that a check could be made of CADS on their behalf. The Board noted that the UK LL frequency is intended as a tool for military pilots to inform each other of their intentions whilst low-flying and, whilst members of both formations had selected the frequency, it was unfortunate that the terrain in the area had prevented the Typhoon pilots from hearing the Hawk pilot's transmissions. Members were informed that the RAF is carrying out a trial in Scotland to improve the procedures and effectiveness of the UK LL frequency, and also to test the effectiveness of a VHF LL frequency, which, although probably not relevant to this Airprox, should provide greater benefits for civilian pilots also operating in Class G airspace within the Low Flying System. The Board hoped that the procedural lessons learned from this trial may improve matters for this type of Airprox.

It was noted that all of the pilots were keeping a good lookout and that the Hawk and Typhoon pilots had seen each other's aircraft in time to take effective action. However, members wondered if it was sensible to have aircraft entering and exiting the 'Machynlleth loop' at the same point given the terrain screening problems that pertained. Whilst noting that there are many training benefits of low flying in the valleys in this area, the Board wondered whether it might be sensible to define an exit point from the loop some distance before Bala Valley given that Bala Valley was a popular point for aircraft to enter the Machynlleth Loop. In short, the Board resolved to recommend that Air Command should consider reviewing the entry and exit procedures for the Machynlleth loop with a view to removing the

most northern section of the loop just prior to the Bala Valley thus forcing aircraft to climb at this point and thereby improve their chances of detecting any aircraft entering from the north near Dolgellau (for which they were required to give way) and which might otherwise be terrain-screened.

Members swiftly agreed that the cause of this Airprox was a late sighting by both pilots, but that terrain screening of both sight-lines and radio calls had been a contributory factor. Turning to the risk, members agreed that, whilst separation had been less than ideal in these circumstances, the pilots had, in the end, both seen each other in time to take effective action, and that the Degree of Risk was Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by both pilots.

Contributory Factor: Terrain screening.

Degree of Risk: C.

ERC Score[7]: 4.

Recommendation: Air Command consider reviewing the entry and exit procedures for the Machynlleth loop.

[7] 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.