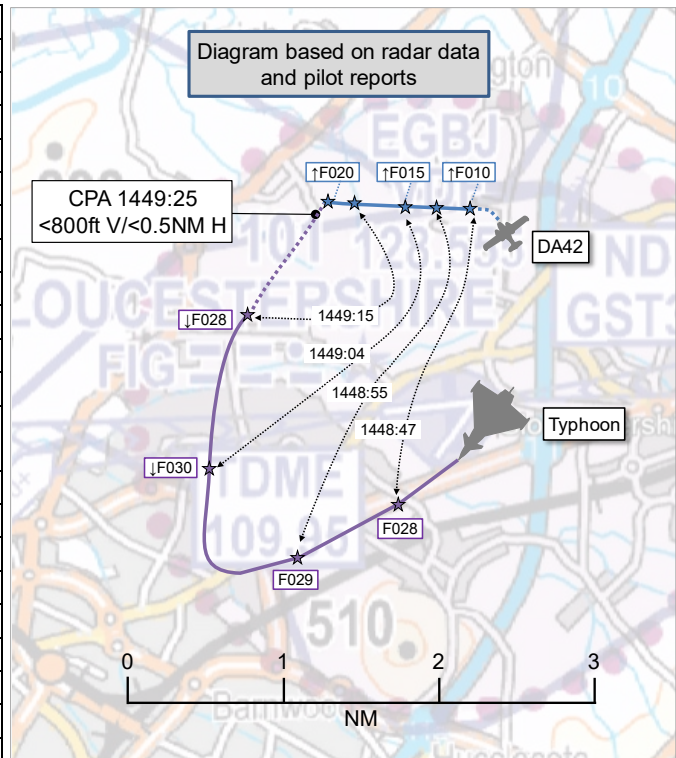


AIRPROX REPORT No 2023219

Date: 13 Sep 2023 Time: 1449Z Position: 5155N 00212W Location: 1NM NW Gloucester Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Typhoon	DA42
Operator	HQ Air (Ops)	Civ FW
Airspace	Gloucester ATZ	Gloucester ATZ
Class	G	G
Rules	VFR	VFR
Service	ACS	ACS
Provider	Gloster Tower	Gloster Tower
Altitude/FL	Unknown	FL020
Transponder	A, C, S	A, C, S
Reported		
Colours	Grey	White
Lighting	Strobe and nav.	Landing, position and strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	1500ft
Altimeter	QFE (1018hPa)	QNH (1022hPa)
Heading	041°	330°
Speed	250kt	100kt
ACAS/TAS	Not fitted	TAS
Alert	None	TA
Separation at CPA		
Reported	500ft V/NK H	500ft V/0ft H
Recorded	<800ft V/<0.5NM H	



THE TYPHOON PILOT reports that, as part of a trial work-up, they flew a practice diversion to Gloucestershire airport (GLO) to use their small runway for low approaches. The transit through the Daventry radar corridor was uneventful and the handover to GLO radar [sic] from Swanwick Military was timely but the transition to GLO Tower was slow. They were requested to make a 5 mile call to Tower, by GLO radar [sic], but were already at 1NM so elected to stay at 3000ft on the QFE, that is, above the upper 2000ft limit of their ATZ. Holding within the lateral boundaries of the ATZ but at 3000ft on runway QFE, they circled over the airfield until two-way communication was accomplished with GLO Tower. They got acknowledgement from GLO Tower that they were at 3000ft and were cleared 'Number 1 for RW22'. As they reset onto downwind for a 1200ft circuit, at approximately 2000ft, heading 041° magnetic, they quickly became aware of a DA42 flying towards them on a converging heading also at approximately 2000ft, both aircraft being just within the lateral boundary of the ATZ. They pushed minus 1G to ensure a break in collision and called the traffic to the Tower controller. The Tower controller seemed to have acknowledged the confliction but, on review of their tapes, it was not definite that [the Tower controller] had acknowledged the close call. They queried if there might be other conflicting traffic and that they were definitely cleared to proceed in the visual circuit. Helicopter traffic at a similar height, with a separation of 2NM, that was outside of the GLO ATZ, was called to them and they got [sight of it] quickly. Seeing that there was no further confliction, they continued their circuit work. They completed their low approaches and departed without further incident. During their return to base, they called through to their squadron operations and requested they call GLO on the landline to question the incident, and GLO confirmed that they were not aware of nor had received a report of the [Airprox] occurring. The Typhoon pilot had not initiated an Airprox airborne as they thought the message to GLO had been heard, understood and acknowledged. Only after review of their tapes did they believe that was not the case. Use of historic ADS-B tracking allowed them to talk directly to the Pilot-in-Command of [the DA42] who confirmed that they too had not been given a traffic point out to the Typhoon, but they were visual throughout and also actioned a breakaway based on visual contact with them, once

they had assessed that there might be a confliction. [The Typhoon pilot's] assessment of separation is not less than 500ft.

The pilot perceived the severity of the incident as 'Low'.

THE DA42 PILOT reports they were conducting a CPL skill test. The candidate requested taxi [instructions] and was told to hold at C1 for a RW09 departure as planned. They were then informed by the Tower controller that an inbound military aircraft would be operating in the circuit soon, and that if they did not depart relatively quickly they would be expected to hold for this traffic. The Tower controller suggested a RW04 departure to expedite the departure (shorter taxi time). As the candidate had completed performance for all runways they accepted this suggestion and stopped at the holding point for RW04. Another aircraft was told of the inbound military aircraft and was then given a take-off clearance for RW27 (wind reported on ATIS 'R' was 040/02). After completing pre-take-off checks and reporting ready, they were cleared for take-off to depart to the northwest, and were passed Traffic Information on the light-aircraft that had departed RW27 ahead of them. The candidate had confirmed that they were visual with this light-aircraft and departed RW04.

At approximately 1500ft QNH the PIC heard and almost simultaneously spotted the Typhoon to their left overhead the airfield. [The Typhoon pilot] reported at 3000ft and was told to report final RW22. They pointed the Typhoon out to their candidate [who] had the previously mentioned light-aircraft in sight but they had had no prior notification of the proximity of the Typhoon to the overhead. As the Typhoon rolled right and started to descend towards base leg for RW22, their candidate instinctively increased pitch attitude to increase climb rates, as it appeared that the other aircraft was going to pass below them. They thought the Typhoon [pilot] made a radio call having seen them, and also thought that they had, themselves, made a cryptic comment too. They saw the Typhoon pass directly below their aircraft, with approximately 500ft vertical separation.

The pilot assessed the risk of collision as 'Medium'.

THE GLOSTER TOWER CONTROLLER reports at 1447 they cleared [the DA42] for take-off from RW04 with a left turn to the northwest after noise abatement. The [Typhoon] had been pre-noted by Swanwick Military at this time. At 1448 the [Typhoon] was on frequency 8 miles north with Gloster Approach. They first observed the [Typhoon] on what they believed to be [direct on runway heading] for RW22. Before they could pass any Traffic Information or delay the [Typhoon] pilot reported passing a DA42, at this point [the Typhoon] was due west of the field. They had given [the DA42 pilot] RW04 for expedition purposes. If [the DA42] had taxied to C1 for RW09 it would not have been airborne and [the crew] could have expected a delay of approximately 20-30min. Their plan was initially to delay the Typhoon in the overhead, then pass Traffic Information and integrate them accordingly.

THE GLOSTER APPROACH CONTROLLER reports they had been anticipating the arrival of the Typhoon for some minutes and arranged ATZ traffic accordingly. The aircraft was pre-noted by Swanwick Military. They could not remember what level [had been] said, possibly FL70 or 80, but, as [the Typhoon] would be joining VFR, they had not allocated a level. On first contact, they thought [the Typhoon pilot] reported 8 miles northeast. There was some conversation about which runway they required, the wind was light so the Tower controller said they could have RW04 or RW22. [The Typhoon pilot] chose RW22 and requested a base leg join. They asked [the Typhoon's] range and [the pilot] reported 1NM, [being] closer than they had expected. The Tower controller asked where [the Typhoon] was and they said they had just heard them go over the top of them, they believed northeast to southwest. They transferred [the Typhoon C/S] to Tower and thought they heard the Tower controller ask them to report downwind. They assumed that as [the Typhoon] had been quite high on first contact and close to the field, they had done a 'run and break' type manoeuvre, overflying RW22 and turning right downwind to lose height. They heard the Tower controller say that a DA42 had been mentioned, presumably the [DA42 C/S] who had departed from RW04. They had been expecting the aircraft for some time, and they knew that the Tower controller had been offering expeditious departures to move everything out of the way, so they were surprised that there had been a conflict.

Factual Background

The weather at Gloucester was recorded as follows:

METAR EGBJ 131450Z 13002KT 9999 SCT044 21/10 Q1022

The entry in the UK AIP GEN 3.3 provides the VFR procedure for pilots approaching an aerodrome with an Approach Control Service:

AIP GEN 3.3 AIR TRAFFIC SERVICES

3 TYPES OF SERVICE

3.8.3 Procedures for Arriving VFR Flights

3.8.3.1 An aircraft approaching an aerodrome under VFR where an Approach Control Service is available should make initial RTF contact when 15 nm or five minutes flying time from the Aerodrome Traffic Zone boundary, whichever is the greater. If the aircraft is not equipped with the Approach frequency, communication on the Aerodrome Control frequency will be acceptable. As well as landing information, ATC will pass information on pertinent known traffic to assist pilots of VFR flights to maintain separation from both IFR and other VFR flights.

Analysis and Investigation

Gloster Air Traffic Assessor

The initial investigation has been made by a controller who is also an assessor. This was completed after reviewing the radio recordings only and an initial discussion with the controllers concerned. The investigator understands that the [Typhoon] was to be expected by Tower at 3000ft in the overhead for RW22 right-hand after effectively rejecting a straight-in approach as too fast and too close. As the Typhoon manoeuvred in the circuit, there was some confusion on the Tower frequency between [the Typhoon pilot] and the Air Traffic Control Operator (ATCO) as to which pressure value was correct. As the [Typhoon] pilot read back the pressure and confirmed downwind for RW22, they swore and executed a manoeuvre, which clearly shocked and unsettled [the ATCO], reporting something going over the top of them; this aircraft is believed to be [the DA42]. Some 4min prior [the DA42] departed RW04, after following noise abatement procedures, to the northwest. No Traffic Information was passed on the [Typhoon]. It is also evident that no Traffic Information was passed to the [Typhoon pilot] at any time, on Approach or Tower.

The initial investigation allows other contributing factors to be identified:

- The relative speed and manoeuvrability of the [Typhoon] and its overall performance appears to have been overlooked or underestimated by the ATCOs leading to a situation which developed extremely quickly.
- Co-ordination was evident between the two controllers, however, [the Typhoon pilot] did not receive pro-active instructions or information to minimise the risk of collision as they entered the ATZ.
- The decision for the Tower controller to offer or allow an approach to RW22 to [the Typhoon pilot] when still having departing traffic from RW04.

Both controllers have had an initial debrief with the assessor.

CAA ATSI

Synopsis

Gloucestershire ATC no longer uses its primary radar to provide any form of surveillance service. The feed from the radar is still used for the air traffic management (ATM) in the visual control room (VCR). The snapshots used within this report have been taken from the National Air Traffic Services (NATS) radar replay system and, whilst the Airprox itself was not captured by that system, the events leading up to and following the Airprox were viewable and so have been included to illustrate the occurrence.

At **1436:35** the Swanwick Military (Mil) West controller called Gloucestershire ATC on the landline to pre-note the Typhoon Eurofighter (EUFI). The call was passed to the Approach controller. The Swanwick Mil controller advised them that the aircraft would be leaving the "Daventry Corridor" in approximately 10min and passed the aircraft's squawk. The Approach controller confirmed the lowest level that could be allocated by Swanwick Mil (FL40) and then passed a clearance [directly to a non-directional beacon at FL40 initially, expecting a VFR join] and they passed the Gloucestershire Approach frequency for first contact, all of which was read back correctly by the Swanwick Mil controller.

At **1445:50** a phone-call was received by the Approach controller from a controller who did not identify themselves, (believed to be Brize Norton), advising of traffic descending through the Gloucestershire centreline, 6NM east, northwest-bound. During the conversation, that controller advised they could see [the Typhoon] inbound from the north passing FL95. (The aircraft was 17NM northeast.)

At **1447:40** the pilot of the [Typhoon] called on the approach frequency, estimating 8NM to the north and "descending FL40. Request join and patterns on RW04". The Approach controller advised the pilot that it was a Basic Service and then offered them the choice of RW04 or 22, passing the surface wind as "170/2". The [Typhoon] pilot advised that they were happy to take either, to fit in with their traffic.

The Approach controller cleared them to "make a straight-in approach RW22" and passed the QFE as 1018hPa. The [Typhoon] pilot readback "*1018 set. We're descending initially down to 2000ft, and we're left base for initials RW22*". The controller then requested "report with 5 miles to run", to which the [Typhoon] pilot replied "(callsign) is one mile to run". The controller immediately transferred the pilot to the Tower frequency (**1448:35**).

Prior to the above taking place, at **1427:45**, the pilot of the DA42 had called the Tower controller for taxi but was initially ignored by the controller who was busy preparing other pilots for the arrival of the [Typhoon]. The pilot of an aircraft in the circuit was given the option to depart the circuit or land - the pilot accepted the latter.

At **1440:35** the Tower controller called the DA42 pilot back advising that there was a [Typhoon] "*for circuits again*", and asked if they could accept a departure from RW04 as the controller would be able to "*get you away ASAP*". The DA42 pilot asked the controller to standby, and then at **1441:08** called them back to advise that they would need 3min. (The [Typhoon] was 45NM northeast at this time.)

The controller then dealt with other pilots of aircraft on the ground who were advised of potential delays (of up to 20min) to their departures. There was grass cutting taking place on the airfield and the driver of that vehicle was given a restriction to remain east of RW04 and north of RW09. Finally, the pilot of an RV7 was offered an expeditious departure from RW27 which was accepted.

At **1445:53** the pilot of the DA42 reported ready and was given a clearance to "*line-up and wait*" with Traffic Information being passed on the RV7 departing RW27. The [Typhoon] was 17NM northeast at this time. The Tower controller subsequently spotted and corrected the pilot of the RV7 who had incorrectly lined-up on RW22.

At **1446:42** the DA42 pilot was again passed Traffic Information on the RV7 which was departing to the north, and then cleared "*left turn northwest after noise abatement. RW04 cleared for take-off, surface wind calm*". The [Typhoon] was 12NM east-northeast.

The [Typhoon] squawk was seen to change at **1447:40** coincidental with the pilot making their first call to the Approach controller.

The Tower controller then dealt with pilots of other aircraft on the ground before, at **1448:38**, clearing the pilot of an R22 helicopter for take-off on a standard northerly departure.

At **1448:45** the pilot of the [Typhoon] reported on the Tower frequency; “*in the overhead 3000ft 1018 QFE for RW22*”. The Tower controller replied “(callsign) *good afternoon I have you visual. Report final RW22, Number One*”.

The first part of the [Typhoon] pilot’s reply was unintelligible but they continued; “*and confirm you’re good with a 1200ft pattern, QFE?*” (Figure 1 at **1449:04**).

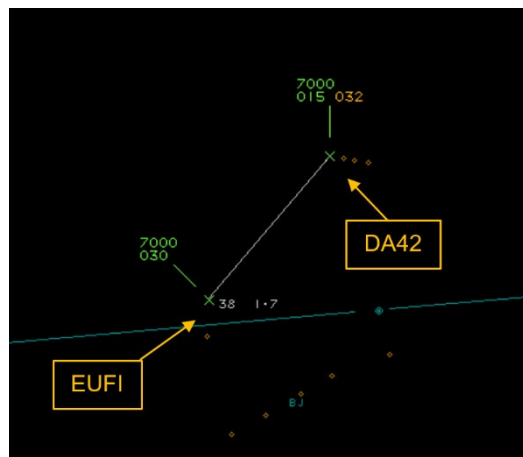


Figure 1 - 1449:04

The controller replied “*QFE 1019*” to which the [Typhoon] pilot responded “*10... we’ve been handed 1018 for RW12 (sic)*”. The controller then confirmed the QFE for RW22 as 1018 (Figure 2 at **1449:13**).

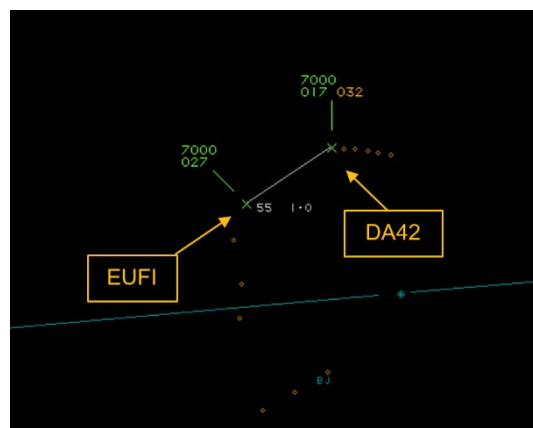


Figure 2 – 1449:13 – [Typhoon] observed in the descent

The [Typhoon]’s radar return disappeared from the radar replay at **1449:20** which was coincidental with the [Typhoon] pilot’s readback of the QFE and “(expletive) *my bad – apologies – someone just went over the top*” (Figure 3).

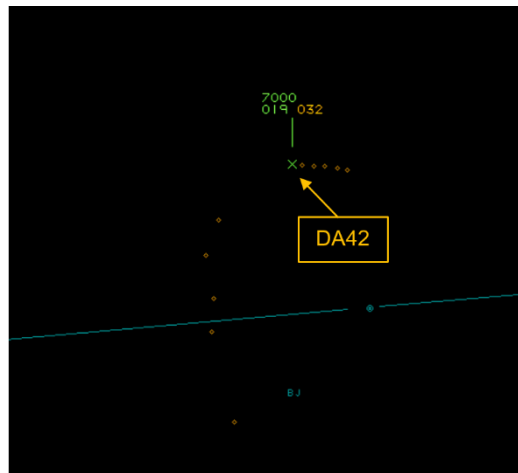


Figure 3 - 1449:20 – EUFI radar return disappeared.

The pilot of the DA42 immediately transmitted “(callsign) *that would have been a nice one*”.

The [Typhoon] pilot then continued; “*Roger – twin engine just over the top – I was in the descent through 3000ft. I was probably about 2000ft. Confirm there is nothing else to affect if I turn in?*” (Figure 4 at **1449:33**).

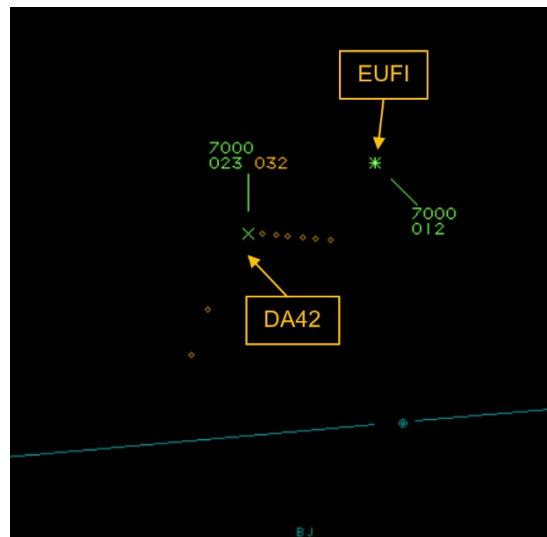


Figure 4 – 1449:33 – [Typhoon] radar return reappeared.

The Tower controller confirmed that there was nothing else in the ATZ, and at **1449:50**, transferred the DA42 to the Approach controller.

Analysis

ATSI conducted a review of the reports from both pilots and the controllers involved as well as the NATS radar replay recording. An interview was conducted in person with both controllers at the unit. This was completed without the benefit of having received or reviewed the recorded RTF first. Following the visit, the radar replay was reviewed again, this time in conjunction with the RTF recordings.

The [Typhoon] pilot’s first call to Gloucestershire ATC (Approach) was at **1447:40**. According to the radar replay the aircraft had a groundspeed in excess of 370kts. The aircraft arrived in the overhead less than 60sec later, still with a groundspeed in excess of 350kts. With no useful situational display available, (both controllers reported apparently not seeing anything on the ATM), neither controller assimilated how quickly the [Typhoon] was going to arrive in the circuit. This was evidenced by the

Approach controller's request for a "5 mile to run" call at which point the [Typhoon] pilot reported being at 1 mile.

The decision to have the [Typhoon] pilot make their first call to approach was in this scenario unnecessary due to their proximity to the airfield. The Approach controller had no other IFR traffic and had cleared the [Typhoon] in VFR. The [Typhoon] pilot's first call could have been on the Tower frequency, giving both the Tower controller and the DA42 pilot better situational awareness. The [Typhoon] pilot's initial position reports at 8NM and then 1 mile to run would then have been available for all to hear.

The [Typhoon] pilot also reported "left base for initials RW22" as they were approaching the airfield. As the recorded RTF was not received by ATSI until some time after the interviews, the Approach controller was not questioned about their understanding of such a call. It is possible that with no experience of military circuits, that this call might not have been understood by the controller, and which had suggested that the [Typhoon] pilot was anticipating a join straight onto final approach as originally specified by the Approach controller, rather than through the overhead as was subsequently flown.

The Tower controller did not pass any Traffic Information to either pilot, likely because by the time they had agreed circuit height and confirmed the correct pressure setting with the [Typhoon] pilot and established visual contact with them, the [Typhoon] had already descended and come into conflict with the DA42. The Tower controller mentioned in interview that they had been unaware of the exact position of the [Typhoon] until they became visual with it to the northwest of the airfield, (late downwind/turning base leg at or just before the moment of conflict with the DA42). This does not quite match the RTF recordings when the controller had advised the [Typhoon] pilot on first contact in the airfield overhead that they had them visual. The Tower controller reported asking the Approach controller for an update on the [Typhoon]'s position, and the Approach controller had said that they thought they had just heard the aircraft pass through the overhead.

A better plan would have been to keep the [Typhoon] in the overhead to help deconflict with the DA42 which had effectively been given an opposite end departure. The Tower controller stated in interview that they had intended to have the [Typhoon] join in the overhead and then report downwind for RW22 and to then assess the position of the DA42. There was no instruction by the Tower controller to the [Typhoon] pilot regarding that join, instead they instructed them to report final for RW22 advising them that they were "Number 1". The request by the [Typhoon] pilot to confirm that they were OK to descend to 1200ft (for "the pattern") was not acknowledged by the Tower controller and possibly not assimilated by them as they were still clarifying the correct pressure setting with the pilot.

According to their report, the [Typhoon] pilot had elected to stay at 3000ft in the overhead until they'd established two-way [contact] with the Tower. This would have been the opportunity for the Tower controller to deconflict it from the outbound DA42, but they appeared have been rushed or were feeling pressurised into allowing the [Typhoon] to enter the circuit immediately. They admitted to feeling pressured to depart the DA42 as it was an examination aircraft.

Determining the runway in use was confused by a lack of effective decision making by ATC. That morning, another [Typhoon] had carried out approaches to RW04. The afternoon's [Typhoon] pilot indicated on their initial call that they were set up for RW04. In the misbelief that it was the same pilot who had flown in the morning, and that they might wish to switch to the opposite end, the Approach controller had tried to be helpful and offer both runways to the pilot, (having first checked with the Tower controller). As the [Typhoon] pilot expressed no preference the decision fell back to ATC. In all circumstances, the runway in use is determined by the Tower controller, but according to the Approach controller they felt that it fell on them to make a decision and so they opted for RW22 to provide the [Typhoon] with a straight-in approach.

Had the offer of both runways not been made, or a decision been made earlier, then perhaps it might have influenced the Tower controller to stay with RW04 having departed the DA42 that end,

(for expedition due to shorter taxiing distance/time). Ultimately the traffic situation developed to a point where both aircraft were “head-to-head”.

When the [Typhoon] pilot asked if there was any other traffic to affect their turn in, the controller stated that there was not. However, technically the R22 which had been given a clearance to depart a minute earlier would have still been in the ATZ. Whilst the R22 was required to be not above 700ft until clear of the circuit, it was subsequently seen to climb to a similar level as the [Typhoon] before finally exiting the ATZ. The controller did pass Traffic Information on the R22 once the [Typhoon] pilot reported downwind on their second circuit, and after the helicopter had already been transferred to Approach but whilst still inside the ATZ.

Both controllers reported being fit and well that day. The Tower controller has been valid for just over a year and was just starting their Approach validation training. The Approach controller is an experienced controller at Gloucestershire but, as with the Tower controller, inexperienced in the handling of fast jet traffic of this type. There is no guidance to be found in the unit Manual of Air Traffic Services (MATS) Pt2 for the Senior Controller on duty (SCOD) in the management and considerations of bookings of traffic of this type, or for controllers in their integration with the other types of movements at Gloucestershire Airport.

It should be noted that the unit had already handled another [Typhoon] for approaches that morning, and the same Tower controller had been in position for that. The Approach controller, however, who was also acting as the Senior Controller on duty, and who had originally accepted the booking, was aware of both movements, but had not been in position for the first [Typhoon]’s circuits.

When the first [Typhoon] arrived, all were expecting it to carry-out just a single approach and then depart. This was not the case, as the aircraft stayed for some time carrying out multiple circuits. With a [Typhoon] in the circuit it would have been difficult to integrate other arrivals and departures and, from speaking to both controllers, a lot of pressure came to bear on the unit that morning in trying to manage other pilots’ expectations. As such, they were better prepared for the arrival of the second [Typhoon] that afternoon, and the planning and control of other aircraft had been good.

The [Typhoon] pilot reported (their report being completed in the 3rd person) that the purpose of the flight was to practice approaches to a small runway. They felt that the handover to Gloucestershire from Swanwick Mil was timely but the transfer from Approach to Tower was “slow”. As a result, they deliberately stayed above the ATZ at 3000ft.

The [Typhoon] pilot reported “circling” in the overhead until establishing 2-way contact with the Tower controller, although this was not evidenced on the radar replay. The [Typhoon] appeared to move away from left base towards the overhead and then passed straight through to join downwind right-hand. The pilot then reported descending into the circuit to the “agreed” height of 1200ft, (it was never formally agreed). It was as they were passing 2000ft on a north-easterly track (downwind right-hand) that they became aware of the presence of the DA42 tracking towards them at a similar level. They initiated a “-1G” (descent) to clear. They reported speaking to the pilot of the DA42 later that day, who confirmed that they had been visual with the [Typhoon] and had taken “breakaway” (avoiding) action. They were also certain that they had not received any Traffic Information on the DA42 and that the DA42 pilot had confirmed in that same phone call that they too had not been passed any information on the [Typhoon].

The pilot of the DA42 was under examination, and their Airprox report was completed by the examiner. The examiner reported that they were both aware of the imminent arrival of the [Typhoon]. They reported first seeing the [Typhoon] as the DA42 was passing 1500ft in the climb after departure, with the [Typhoon] in the airfield overhead at 3000ft. The examiner pointed out the aircraft to their pilot. In the belief that the [Typhoon] would pass below them, the DA42 pilot increased their rate of climb and the [Typhoon] was then seen to pass below by an estimated 500ft. They reported not being aware of the close proximity of the [Typhoon] to the overhead until they heard the [Typhoon] pilot’s call reporting there.

Reporting by the controllers was tardy and lacking in detail, hampered by an apparent confusion about the notification, and a period of upheaval due to changes in unit management. The [Typhoon] pilot wrongly believed that their comments on the RTF might have prompted a report, although they had made no mention of “Airprox” at the time. The DA42 pilot examiner’s report indicated that the telephone call between them and the [Typhoon] pilot later that day made it clear that an Airprox report would be filed, and they apparently informed Gloucestershire ATC of this. The unit was formally advised by UKAB 9 days after the event. A combined narrative from both controllers was received 4 months later.

Conclusion

A late transfer from the Approach controller and lack of positive control by the Tower controller with no Traffic Information having been passed to either pilot, meant that neither pilot was aware of the presence of the other.

It is apparent that such movements are rare at the airfield. The ATC team, despite having already experienced the arrival of a [Typhoon] earlier that day, appeared unprepared for the handling of such high-performance aircraft. The speed being flown by the [Typhoon] gave neither controller time to fully assimilate the exact traffic situation, to pass effective Traffic Information and to exercise more positive control of the traffic.

A number of recommendations have been made to Gloucestershire ATC regarding guidance to ATC staff on the handling of military fast-jet traffic.

Gloucestershire ATC is reminded of its obligations under Regulation (EU) 2017/373 of 1 March 2017 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 ATM/ANS.OR.A.065 paragraphs (a) through (e), with regards to the initial submission of a mandatory occurrence report and any follow up reports within the specified timescales as defined within Regulations (EU) 996/2010 and 376/2014.

UKAB Secretariat

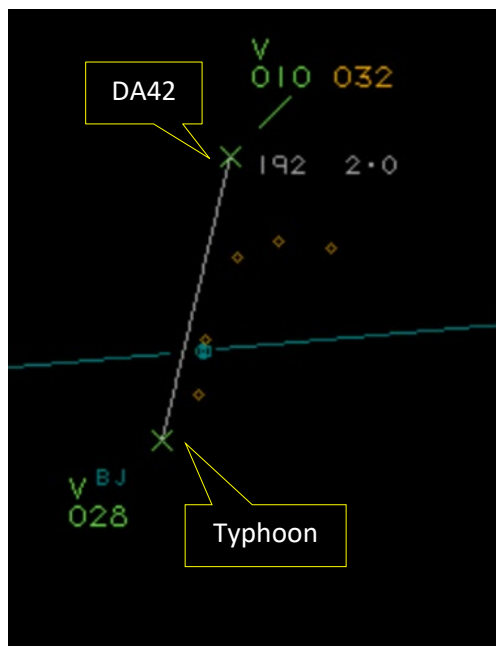


Figure 5 – DA42 appeared on radar at 1448:47

An analysis of the NATS radar replay was undertaken and both aircraft could be positively identified from Mode S data. The Typhoon was approaching from the east and manoeuvred into the overhead. At 1448:47, the Typhoon was southbound and the DA42 had just become visible on radar 2NM bearing 012° from the Typhoon (Figure 5).

The Typhoon made a right turn after appearing to cross the centreline of RW27/09 at FL028. At 1449:20, the Typhoon was descending and being repositioned for an approach to RW22 while the DA42 was climbing out to the west after departing from RW04. The Typhoon continued to display FL028 at this time, but had momentarily displayed FL030 beforehand (Figure 6).

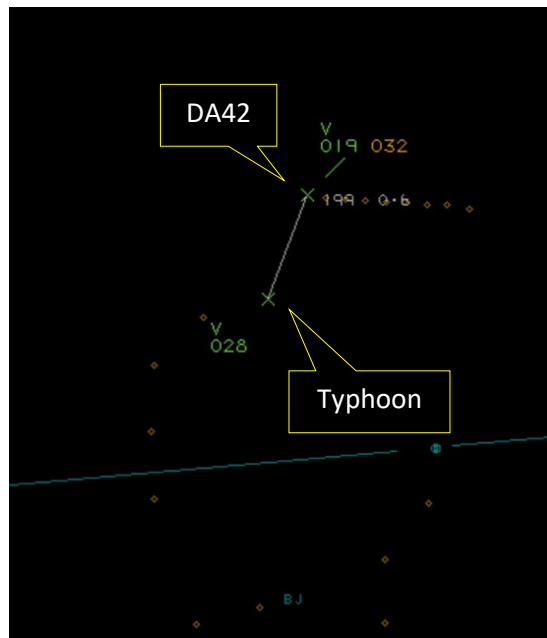


Figure 6 – Time 1449:20

Although the Typhoon was displaying FL028 and the DA42 FL019, the Typhoon was descending and the DA42 was climbing. The Typhoon pilot had reported an aircraft passing above them, and the Typhoon disappeared from radar immediately after the 1449:20 radar sweep and reappeared to the northeast of the DA42's track at 1449:35 displaying FL012 (Figure 7).

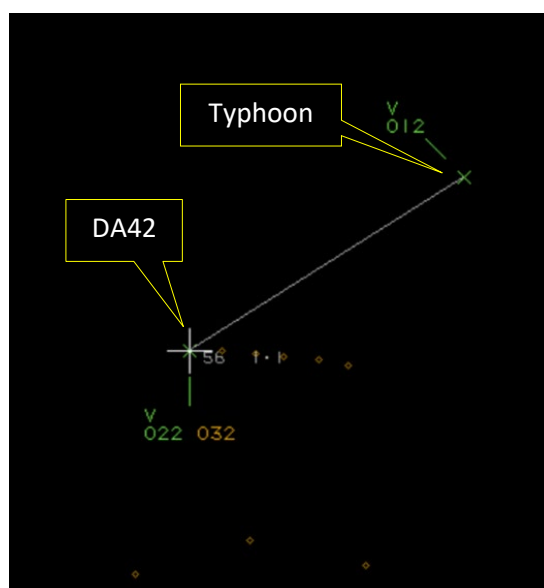


Figure 7 – The Typhoon reappeared on radar at 1449:35

The CPA was calculated at 1449:25 based on the estimated position of the Typhoon relative to the DA42 (Figure 8).

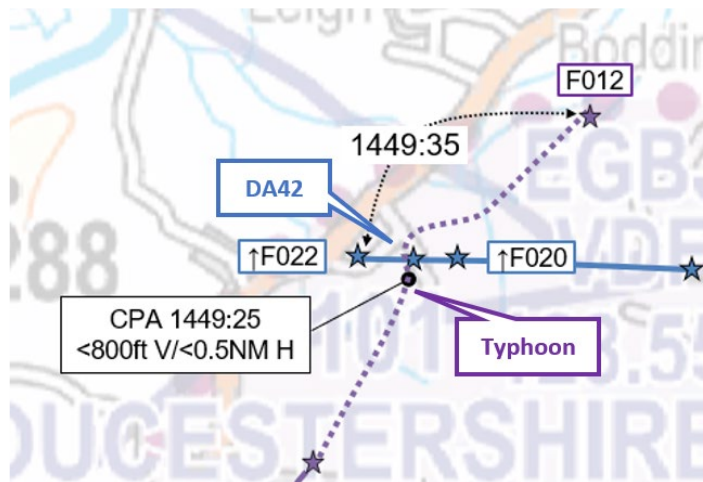


Figure 8 – CPA at 1449:25

The Typhoon and DA42 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.¹ If the incident geometry is considered as converging then the Typhoon pilot was required to give way to the right.² An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.³

Comments

HQ Air Command

It appears from the local ATC investigation that the speed of the Typhoon exerted an element of time pressure on the Gloucester controllers, which then denied the pilots the ability to form situational awareness on each other. The Typhoon pilot recognised the potential for this and sensibly held in the overhead to assimilate situational awareness on any traffic. Due to the speed of fast jets it's not routine to conduct an overhead join as GA aircraft would, hence the pilot opted to intercept the base leg once they thought situational awareness had been built. Had the pilot been informed of surrounding traffic it is likely they would have maintained height de-confliction until all conflicts were identified; there was no rush. This occurrence has been useful to identify likely frictions of using such small airfields for training in the future. Differences in the services expected from a military airfield have been identified, not limited to the provision of a Basic Service without radar and difficulty of integrating military fast jets with GA.

AOPA

It is paramount when operating in an ATC environment that appropriate and timely information is given to all pilots to ensure situational awareness, especially until aircraft are fitted with electronic conspicuity.

Summary

An Airprox was reported when a Typhoon and a DA42 flew into proximity at Gloucestershire airport at 1449Z on Wednesday 13th September 2023. Both pilots were operating under VFR in VMC and in receipt of an Aerodrome Control Service from Gloster Tower.

¹ (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

³ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome. MAA RA 2307 paragraph 17.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

The Board first examined the actions of the ATC unit and noted that the operation had been rushed, probably due to lack of situational awareness on the proximity and speed of the Typhoon (**CF4**). Members considered that the controller would have been better served to have passed Traffic Information to the Typhoon pilot on the departing DA42 and to the DA42 pilot on the relative position of the Typhoon (**CF3**) whilst also holding the Typhoon overhead the airfield.

The Board remarked that the 'straight in' approach given to the Typhoon pilot for RW22 had been inappropriate due to the opposite direction departing traffic on RW04 (**CF5**), thereby providing the Typhoon pilot with an inappropriate clearance (**CF6**). Members regarded the outcome had been contributed to by a lack of sequencing, no passing of Traffic Information and no obvious plan (**CF1**), and they further agreed that no-one had fully taken charge of the situation (**CF2**).

Turning their attention to the Typhoon pilot, the Board wondered how they could have improved their arrival. Members commented that the Typhoon pilot had been unable to conform to AIP GEN 3.8.3.1 relating to VFR arrivals (see Factual Information above) due to a late ATC handover (**CF7**). They opined that the 'straight in' clearance could have led the Typhoon pilot to misunderstand that there had been no Traffic to affect them derived from their expectations formed by their local base procedures and, with no Traffic Information having been passed to them, they had not had any situational awareness of the DA42's position (**CF9**). Members noted that the pilot had taken avoiding action after a late sighting of the DA42 (**CF11**) and agreed that the tactical planning stage could have been improved, perhaps by preparing to exercise caution within the GA environment and setting expectations with the Gloster controllers regarding their intended arrival and flight profile (**CF8**).

With regards to the DA42 pilot, the Board acknowledged that, although the pilot had known that the Typhoon had been arriving, they had only had generic situational awareness as they had not received Traffic Information on its arrival and resultant position (**CF9**). The Board noted that the DA42 pilot had sighted the Typhoon after having heard them on frequency, had received a Traffic Advisory on their TAS and had reacted accordingly (**CF10**).

When assessing the risk of the Airprox, the Board reviewed the interactions of ATC and effect on the Typhoon arrival and how the overall preparation of their arrival could have improved or prevented the outcome. They concluded, by a majority, that safety had not been assured and that the aircraft had been sufficiently close for their safety to have been compromised and a risk of collision to have been present (**CF12**); Risk Category B.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2023219				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Regulations, Processes, Procedures and Compliance				
1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
• Manning and Equipment				
2	Human Factors	• ATM Leadership and Supervision	An event related to the leadership and supervision of ATM activities.	
• Situational Awareness and Action				
3	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late

4	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
5	Human Factors	• Inappropriate Clearance	An event involving the provision of an inappropriate clearance that led to an unsafe situation	
6	Human Factors	• Traffic Management Information Provision	An event involving traffic management information provision	The ANS instructions contributed to the Airprox
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
7	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
• Tactical Planning and Execution				
8	Human Factors	• Pre-flight briefing and flight preparation	An event involving incorrect, poor or insufficient pre-flight briefing	
• Situational Awareness of the Conflicting Aircraft and Action				
9	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
10	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
• See and Avoid				
11	Human Factors	• Identification/ Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
• Outcome Events				
12	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B

Safety Barrier Assessment⁴

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because ATC had not sequenced the aircraft correctly or passed Traffic Information.

Manning and Equipment were assessed as **ineffective** because of inadequate planning for the arrival of fast jet traffic.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the DA42 or Typhoon pilots' were passed Traffic Information on the other, lack of a timely coordination plan, and an inappropriate 'straight in' clearance to the Typhoon pilot with conflicting traffic departing in the opposite direction.

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the Typhoon pilot had not been able to make a timely in-flight call to Gloster regarding their imminent arrival.

⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Tactical Planning and Execution was assessed as **ineffective** because the Typhoon pilot had not adequately assessed the differences of the GA environment or considered a briefing with ATC to establish their expectations.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the Typhoon pilot had no situational awareness of the departing DA42, and the DA42 pilot only had generic situational awareness of the Typhoon's arrival.

See and Avoid were assessed as **partially effective** because of the late sighting of the DA42 by the Typhoon pilot.

Airprox Barrier Assessment: 2023219		Outside Controlled Airspace					
Barrier	Provision	Application	Effectiveness				
			Barrier Weighting				
			0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✗	[Red bar: 0% to 5%]			
	Manning & Equipment	✓	✗	[Red bar: 0% to 2.5%]			
	Situational Awareness of the Conflicting & Action	✓	✗	[Red bar: 0% to 15%]			
	Electronic Warning System Operation and Compliance	○	○	[Grey bar: 0% to 2.5%]			
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗	[Red bar: 0% to 10%]			
	Tactical Planning and Execution	✗	✗	[Red bar: 0% to 10%]			
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓	[Red bar: 0% to 20%]			
	Electronic Warning System Operation and Compliance	⚠	✓	[Green bar: 0% to 15%]			
	See & Avoid	⚠	⚠	[Yellow bar: 0% to 20%]			
Key:							
	Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision	✓	⚠	✗	○			
Application	✓	⚠	✗	○	○		
Effectiveness	■	■	■	■	□		