AIRPROX REPORT No 2022178

Date: 16 Aug 2022 Time: 1029Z Position: 5300N 00107E Location: 4NM NE Blakeney Point

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AW139	Typhoon
Operator	Civ Comm	HQ Air (Ops)
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	Traffic
Provider	Norwich	Swanwick(Mil)
Altitude/FL	FL033	FL032
Transponder	A, C, S	A, C, S
Reported		
Colours	Blue, White, Red	Grey
Lighting	Anti-col, Position, Searchlight	NR
Conditions	IMC	VMC
Visibility	5-10km	5-10km
Altitude/FL	3000ft	3000ft
Altimeter	QNH (1003hPa)	RPS (1002hPa)
Heading	350°	NR
Speed	140kt	330kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
Separation at CPA		
Reported	75ft V/1.38NM H	NR
Recorded	100ft V/1.2NM H	

THE AW139 PILOT reports that on the way out from Norwich to [destination] they were told about two fast-jets who were heading east towards 'Bacton'. They were given an avoiding steer to the west which put them clear. They became visual with one of the jets (above cloud) around the Bacton area. There was a Chinook helicopter below them around 'Sustead' which may or may not have been involved in a military exercise with the jets. They were VMC on top, but cloud was at various levels all over the area. At 1028, as they coasted out about 21NM from Norwich, at 3000ft, they had a TA "Traffic Traffic" caution on TCAS and observed the yellow contact on screen directly behind them, 300ft below, at a range of about 1.5NM. Norwich Radar then came on the radio and gave them immediate avoiding action to turn right onto 090°. A few seconds later they were told they were clear of the jet as it was climbing, and they were free to resume navigation to the north. They had since discussed the matter with Norwich ATC (who were super busy at the time) and discussed filing an Airprox.

The pilot noted that they were grateful for ATC's instruction to turn, even though they were on a Traffic Service. After calling Anglia Radar on return to Norwich to see if they had any information, they said that their trace showed the fast jets passed 75ft above them at a range of 1.38NM. The AW139 was fitted with TA only and they believed a resolution advisory would have been generated if they had had TA/RA. They opined it was certainly too close for comfort.

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

THE TYPHOON PILOT reports that they were a flight of 2 x Typhoons conducting helicopter affiliation training with [Chinook C/S] operating in Class G airspace, north of the Norwich Control Area overland between surface and 15000ft on RPS 1002hPa. Prior to the sortie, [Typhoon 1 C/S] had informed Norwich ATC by telephone of their plan, and intended to work with Norwich Radar. However, once the Typhoons were on station the Traffic Service was provided by Swanwick(Mil). At 1020:14 Swanwick(Mil) reported traffic outbound from Norwich tracking northwest and requested [Typhoon C/S]

to proceed no further west then their present position, this was approximately in alignment with the eastern edge of Cromer. [Typhoon C/S] accepted this lateral deconfliction and planned to execute the next intercept with [Chinook C/S] east of this restriction. At 1023:05 Swanwick(Mil) updated [Typhoon C/S] on the outbound traffic from Norwich, reporting that it was southwest of them by 8NM at 3000ft, tracking northwest, this placed the traffic still within the Norwich CTA. [Typhoon C/S] acknowledged. At 1026:30 [Typhoon 1 C/S] called a 'Terminate' on the final intercept due to weather and fuel. At 1026:41 Swanwick(Mil) passed an update on the traffic, but it was stepped-on by communication on radio 2 with [Chinook C/S]. [Typhoon C/S] did not acknowledge. At 1027:00 [Typhoon 1 C/S] called for [Typhoon 2 C/S] to re-join with them. At 1027:04 Swanwick(Mil) again tried to pass an update on the traffic, but it was stepped on by communication on radio 2 with [Chinook C/S]. [Typhoon C/S] did not acknowledge. At 1027:54 [Typhoon 2 C/S] targeted a radar contact tracking northwest, at 3000ft, coasting out 6.3NM away from [Typhoon 2 C/S] and proceeded to conduct a radar join on the track. At 1028:34 [Typhoon 2 C/S] locked the track. At 1029:16 [Typhoon 2 C/S] recognised visually that the locked track was not [Typhoon 1 C/S] and commenced a breakout. The breakout was commenced at 8000ft [slant range] with a vertical separation of ~300ft and minimal lateral separation of ~6000ft (1NM).

Contributing factors were, [Typhoon 2 C/S] had an equipment failure that resulted in no MIDS (Link 16) or A/A TACAN with [Typhoon 1 C/S]. [Typhoon 1 C/S] was fully synchronised to MIDS (Link 16) but was not receiving a surveillance picture, therefore provided no SA [to Typhoon 2] on [AW139 C/S].

[Typhoon 2 C/S]'s perception of their SA at time of Airprox: The last intercept was terminated by [Typhoon 1 C/S] due to weather, which they estimated at around 7km visibility and a cloudbase of around SCT 2500-3000ft with the cloudbase decreasing further west. They had lost visual with [Typhoon 1 C/S] due to the cloud between them. Not having MIDS or A/A TACAN meant that they had no in-cockpit SA of [Typhoon 1]'s position. They requested a position report from [Typhoon 1 C/S] but did not hear a reply. They then mis-identified a radar track as [Typhoon 1 C/S] which was actually [AW139 C/S]. Due to the weather and visibility, they could see an object in the position of the radar track from approximately 5.5NM but could not identify it as not being a Typhoon until approximately 1.5NM. At which point they commenced a breakout. In addition to these factors, they also believed at the time that the traffic was no longer a factor as they had not heard an update on it for some time. However, on reviewing the tapes, they noted that Swanwick(Mil) did try and pass updates, but they were stepped-on by communications on radio 2. The breakdown in deconfliction likely occurred due to: poor weather, limited SA on [Typhoon 1 C/S]'s position, busy radios resulting in stepped-on ATC communications, and mis-identifying a radar track by not matching its speed and height to [Typhoon 1 C/S]. Lessons that they will take from this incident are: take extra caution when there is limited cockpit SA, have a formation contract for one member to prioritise monitoring ATC whilst the other prioritises the tactical comm, and ask for an update on traffic if unsure of its position.

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

THE NORWICH CONTROLLER reports that at 1030 a Typhoon under the control of Swanwick(Mil) came within 1.5NM of an AW139, under the control of Norwich Radar, at the same level (3000ft). The incident took place 20NM north-northwest of Norwich airport. In the preceding hour the two Typhoons had been operating SFC-5000ft, north of Norwich, undertaking an exercise involving a low-level Chinook. Throughout that time, agreements had been made between Swanwick(Mil) and Norwich Radar for the jets to move either east or west, to vacate the area for arriving and departing North Sea helicopters. At 1017 [AW139 C/S] departed Norwich on a track of 342° and climbed to 3000ft on the Yarmouth pressure setting 1003hPa. Norwich Radar called Swanwick(Mil) who agreed that the two Typhoons would move 10NM to the east, and remain no further west than that position (roughly in the vicinity of Bacton). Traffic Information was passed to [AW139 C/S] on the Typhoons and it was suggested that the helicopter take up a northwesterly track to increase spacing further. Swanwick(Mil) Supervisor called Norwich Radar to suggest that the Typhoons be handed over to Norwich Radar and it was agreed that once Norwich Radar 2 position had been opened, this could take place. An attempt to hand over the Typhoons to Norwich Radar was made a few minutes later, but had to be abandoned due to Norwich Radar's workload. Traffic Information was passed to [AW139 C/S] as one of the Typhoons passed 3NM behind the helicopter, approximately 500ft below, before climbing to 5000ft. Shortly after this, at approximately 1030, the STCA sounded as one of the Typhoons closed to [AW139

C/S] from behind, descending through the level of the helicopter. Traffic Information was passed promptly followed by an instruction to turn right immediately onto an easterly track, in an attempt to deconflict the two aircraft. The Typhoon was then observed to make a sharp right turn so the AW139 was instructed to return to a northerly track. During the incident, the Swanwick(Mil) Supervisor called to inform Norwich Radar that the exercise was complete and the Typhoons were returning to base.

THE SWANWICK(MIL) TAC LEFT CONTROLLER reports they were controlling in the Mil East AOR working 3 aircraft during the time of the occurrence. A pair of Eurofighter Typhoons were operating in the block SFC-15000ft on RPS 1002hPa. The operating area was to the north of Norwich airport approximately 10-15NM working against a slow, low-level Chinook. The [Chinook C/S] was squawking 7360 under the control of Norwich Approach, who were aware of the Typhoons inbound to their AOR, as in a previous Traffic Information call Norwich had asked if the Typhoons were the ones conducting intercepts against the [Chinook C/S]. Throughout the session there were multiple requests from Norwich Approach for coordination with [Typhoon C/S] against all inbound and outbound Deconfliction Service traffic to Norwich. [Typhoon C/S] were very accommodating in agreeing to lateral restrictions, as vertical ones would have hindered their sortie profiles. Norwich called requesting further coordination against the two Typhoons for a departure squawking 4604 (AW139 C/S). The controller asked [the Typhoon C/S] to manoeuvre to the east by approximately 10 miles to facilitate the Norwich departure to the northwest. The pilots then requested that they wanted to work 20 miles to the north of Norwich due to the location of the helicopter target, to which the controller responded that the location was currently blocking the outbound departure lanes for Norwich. The pilots then manoeuvred to the east as requested. The outbound 4604 traffic was then called in relation to Norwich, and they then subsequently provided a second Traffic Information call on the aircraft, indicating it was northwest-bound indicating 3000ft. When this second Traffic Information was passed, the controller shifted their focus to another aircraft on frequency who required handing over to Lakenheath Approach to conduct general handling. As they shifted their attention back to [Typhoon C/S] they had proceeded to manoeuvre west, fast moving. This then brought in 2 more conflicting aircraft inbound to Norwich. They called Traffic Information to the Typhoons for an aircraft that was co-level at 6 miles, they received no response and proceeded to re-call and ask if the pilot had heard the Traffic Information. The Norwich controller then called asking for a handover of the two Typhoons, and they began to handover [Typhoon C/S], on handover [Typhoon 2 C/S] began to track north. In the middle of the handover the Norwich controller cut them off and said they would call back. At this point they returned their attention to an aircraft they had at FL280 in CAS that required vectors throughout their sortie to maintain clear of the upper air routes, and issued them a turn. When they returned their focus to the Typhoon formation, the lead Typhoon reported complete, and they instructed both to report in standard formation at FL80. They did not notice [Typhoon 2 C/S] continue their descent and therefore did not see the occurrence. [Typhoon 2 C/S] did not report anything untoward on the frequency and the formation transited back to [destination] with no further issues.

The controller perceived the severity of the incident as 'Medium'.

THE SWANWICK(MIL) PLANNER reports they were the East Bank Planner with a Tac Right and Tac Left. Tac Right had two formations of Typhoons exiting the D323 danger area, an air test in CAS at FL360 in EAMTA[1] and a tanker in AARA8.[2] Tac Left had a pair of Typhoons general handling low-level north of Norwich, an air test operating in CAS at FL280 in EAMTA and a C130 operating in EAMTA shortly returning to operate with Mildenhall.

Throughout this period as Planner they had taken multiple phone calls from Norwich where coordination was needed with [Typhoon C/S] flight against aircraft transiting inbound and outbound. Coordination by means of lateral separation was negotiated each time and Tac Left was calling various low-level aircraft to the two Typhoons throughout the sortie. A conversation with the East-bank Supervisor prompted them to contact Norwich and ask if they were able to take the formation to negate the need to keep having to coordinate and update Traffic Information.

[1] East Anglia Military Training Area.
[2] Air-to-Air Refuelling Area 8.

Just prior to the occurrence they were handing over the [non-Airprox] Typhoons returning to Coningsby from the D323s, updating PC East on the change of level for an OTBED join and taking a prenote from Waddington for a Rivet Joint into AARA8. They then heard [Typhoon C/S] flight transmit completion of the sortie to Tac Left and ready to RTB. They immediately contacted Norwich to let them know so they didn't need to open the additional console to take the formation themselves. Whilst on the landline the Norwich controller stated that one of the Typhoons had flown straight towards their aircraft and hung up. They turned towards Tac Left and asked if they had called the traffic, to which they replied that they had. The two Typhoons proceeded to transit back to [destination] with no further issues.

Factual Background

The weather at Norwich was recorded as follows:

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METAR COR EGSH 161020Z VRB03KT CAVOK 24/15 Q1007 NOSIG=
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Analysis and Investigation

Norwich Unit Investigation

Brief Details of Incident: [AW139 C/S] was heading north-west at 3000ft. Two Typhoons, under the control of Swanwick(Mil), were coordinated to remain east of [AW139 C/S]'s intended track but one of the Typhoon aircraft came within 1.5NM and at the same level, before heading east away from the AW139.

Investigation: The controller had coordinated several helicopter departures utilising geographical separation before the incident and had every reason to expect that the Typhoons would remain clear of [AW139 C/S], as they had done before. The Swanwick(Mil) Supervisor did offer the Typhoon aircraft to be controlled by the Norwich controller, but this necessitated the opening of the 2nd radar position as the unit was working to capacity. Whilst in the process of opening the 2nd console, the incident took place and then the Typhoons called complete and RTB. Traffic Information was offered several times, but the Typhoon was approaching from the 6 o'clock and [the AW139 pilot] was unable to get visual contact. The controller attempted an avoiding turn, but the relative speeds meant that this was unlikely to have made a difference, especially as the Typhoon turned the same way. It was unknown whether the Typhoon pilot was visual with [AW139 C/S] or received Traffic Information on it.

Recommendation of Investigator: Continue to educate military pilots of the prevalence of commercial helicopter traffic in the 1500–3000ft altitude bracket in the north to north-east sector from Norwich.

Military ATM

The Swanwick(Mil) controller was working 3 sorties at the time of the incident with two Typhoons, a C130 and an air test operating within CAS at FL280 within the East Anglia MTA. The Typhoon formation operating north of Norwich Airport by approximately 10-15 miles was conducting a 'low and slow' sortie. Multiple requests for co-ordination from the Norwich Approach controller were made due to the Typhoon operating area. Lateral separation was agreed throughout. Traffic Information was passed throughout by the Swanwick(Mil) controller; however, their focus was reported to have shifted on several occasions when dealing with other aircraft on their frequency, with one requiring continued vectors and other requiring a handover to another agency.

The Swanwick(Mil) Supervisor at the time had a Tac East Left, Tac East Right Planner and an Overload (OV2) in position. With the complexities of the Typhoon formation and multiple calls between the Swanwick(Mil) controller and Norwich Approach, the Swanwick(Mil) Supervisor spoke directly with Norwich requesting that they provide the Typhoon formation a service due to multiple co-ordination requirements. However, this was delayed due to an overload controller being required to be set up at Norwich. At some point during the occurrence, the Swanwick(Mil) Supervisor was stood behind the Swanwick(Mil) controller and asked whether Traffic Information between the

Typhoon formation and the AW139 had been passed, which the Swanwick(Mil) controller confirmed they had.

The Swanwick(Mil) Planner was supporting two Tac controllers which was their standard operating procedures. Due to the volume of transmissions from other aircraft, under the control of the other Tac, they did not witness the occurrence. However, on completion of the Typhoon formation, they contacted Norwich Approach to inform them they were no longer required to provide an ATS to the Typhoon formation. Whilst on the landline, they were informed that the Typhoon had flown towards the AW139.

The Typhoon pilots reported they were conducting helicopter affiliation training with a Chinook north of Norwich Control Area, overland, surface to 15,000ft on the RPS. Traffic Service was provided by Swanwick(Mil) on the AW139, which the pilot deemed within the Norwich CTA. Due to fuel and weather, the sortie was terminated early. Several transmissions from Swanwick(Mil) were attempted, however these were stepped-on by transmissions on another frequency. No2 of the Typhoon formation lost contact with the lead. With little situational awareness due to multiple in-cockpit failures, the pilot reported mistaking the AW139 as their playmate.

Figures 1-3 show the positions of the Typhoon formation and the AW139 at relevant times during the Airprox. The screenshots are taken from a replay using the NATS radars which are available to the Swanwick(Mil) controller, however, it is not a direct copy of the controller's screen, therefore may not be entirely representative of the picture available.

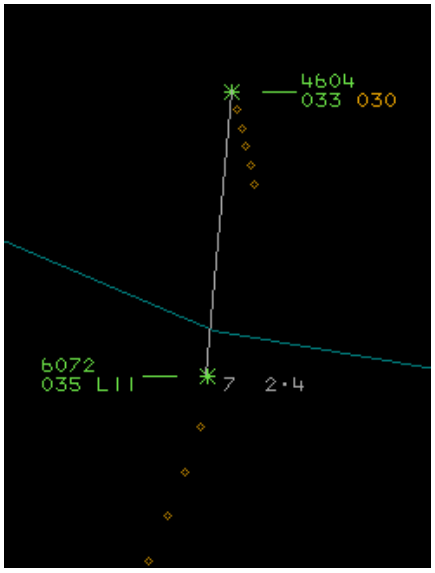

Figure 1: 1029:03 Swanwick(Mil) controller responds to the formation's return to base request.

At 1028:58 the Typhoon formation reported their sortie completed and requested to return to [destination]. The Swanwick(Mil) controller responded at 1029:03 (See Figure 1). Traffic Information was provided at 1027:00. At 1027:30 Norwich Approach contacted the Swanwick(Mil) controller, to accept handover of the Typhoon formation. On handover to Norwich, the Typhoons' position was reported with no reference to the AW139 traffic. Separation between the Typhoon squawking 6072 and the AW139 squawking 4604 measured at 2.4NM and 200ft. The Norwich controller said they would have to call back and the handover was not completed.

Figure 2: 1029:25 The Swanwick(Mil) Planner contacts Norwich Approach

The Swanwick(Mil) Planner contacted Norwich Approach, informing them that the Typhoon formation had completed their sortie and were returning to base. Figure 2, separation decreased to 1.3NM and 400ft.

Figure 3: 10:29:30 CPA.

Figure 3 shows CPA measured at 1.2NM and 100ft. No Traffic Information was provided by the Swanwick(Mil) controller.

ANALYSIS

The Typhoon pilots reported they were scheduled to receive an ATS from Norwich Approach prior to departing [airfield]; however, it is unclear from the investigation why this did not happen.

Although Traffic Information was provided on several occasions by the Swanwick(Mil) controller, both as a formation and separately, as one Typhoon was seen tracking towards the AW139. Neither pilot acknowledged the transmissions, and the transmission was not repeated by the Swanwick(Mil) controller. It is not clear why additional Traffic Information wasn't passed. It is possible the complexities of the sorties, as well as the workload of the Swanwick(Mil) Planner, could have created a misunderstanding over what had been agreed with the Norwich Approach controller. The Swanwick(Mil) controller was dealing with complex sorties which required their attention to be divided for periods of time and therefore with relative speed differences between the Typhoon and the AW139 they didn't witness the escalation of the occurrence.

UKAB Secretariat

The AW139 and Typhoon pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[3] If the incident geometry is considered as overtaking then the AW139 pilot had right of way and the Typhoon pilot was required to keep out of the way of the other aircraft by altering course to the right.[4]

Comments

Norwich Airport

It is disappointing that after all the effort we have made to engage with [a local military airfield] and RAF(U) Swanwick that another Airprox between a Typhoon and a Norwich-based helicopter has occurred, especially as there have been visits to [the local military airfield] to provide information on the characteristics and operating procedures of the NAL-based helicopters in order to mitigate against further Airprox between Norwich-based helicopters and [a local military airfield]-based Typhoons.

The Norwich ATCO was working multiple GA, military and CAT tracks and called for a second radar ATCO to provide an ATS to the Typhoons; indeed, earlier in the week similar sorties had seen Norwich ATC provide an ATS to the Typhoons. The Typhoons had previously been coordinated with Swanwick(Mil) and had adhered to that coordination without issue.

However, it is recognised that Norwich is surrounded by Class G airspace and this incident, along with the previous Airprox between a Typhoon and a Norwich-based helicopter, will not deter us from continuing to engage with our military colleagues to reduce the Mid Air Collison risk in East Anglia. I continue to attend both the LAUG[5] and the EAAUWG[6] to liaise with our military colleagues in an effort to mitigate the risk of flying in East Anglia's Class G airspace.

HQ Air Command

This Airprox was subject to a Local Investigation. Both Norwich and Swanwick(Mil) East were busy. The Swanwick controller worked with Norwich to deconflict the Typhoons and outbound Norwich traffic to allow the Typhoon-helicopter affiliation training to take place. It is unfortunate that after the coordination and agreements, when the Typhoon training serial was completed, the failures in cockpit equipment, coupled with the fact they had lost visual with their playmate, meant that the pilot of Typhoon 2 had limited situational awareness and incorrectly radar ID-ed the AW139 as Typhoon 1. In becoming focussed on re-joining their playmate for RTB, they broke the lateral deconfliction limits that had been agreed for the serials and were still extant. It is also unfortunate that they did not hear Swanwick(Mil)'s attempts to pass TI; this may have clued them earlier to their mistake. Whilst the Typhoon pilot was visual with the AW139 and therefore the risk of collision was low, it is understandable that it was alarming for the AW139 to have a TA and not be visual with the Typhoon as it was approaching from behind. In addition to this, Norwich's (correct) issue of an avoiding turn to the AW139 added to the confusion and perceived urgency of the situation.

Following this incident, an annex has been added to the [local military airfield's] Flying Order Book highlighting the high intensity helicopter operations in this area. In addition to this information, it stipulates: "To reduce this risk [increased low-level activity in this area], …[station-based] crews are to either: a. contact Norwich Radar on 119.355 for traffic information or a radar service. Or b. receive a radar service from Swanwick and request traffic information to be relayed from Norwich."

[3] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[4] (UK) SERA.3210 Right-of-way (c)(3) Overtaking. MAA RA 2307 paragraph 14.
[5] Lincolnshire Airspace Users Group
[6] East Anglia Airspace Users Working Group

HQ Air Command continues to support the ongoing engagement between Norwich and [the local military airfield]. At the most recent EAAUWG in Jan 23, the Norwich Airport Flight Safety Officer provided an overview of helicopter operations from Norwich. Subsequent to this meeting, the [local military airfield's] Flight Safety Officer is looking to facilitate further discussion between [the airfield] and Norwich.

Summary

An Airprox was reported when an AW139 and a Typhoon flew into proximity 4NM northeast of Blakeney Point at 1029Z on Tuesday 16th August 2022. The AW139 pilot was operating under IFR in IMC and in receipt of a Traffic Service from Norwich. The Typhoon pilot was operating under VFR in VMC and in receipt of a Traffic Service from Swanwick(Mil).

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.

Before looking at the actions of the pilots, the Board considered some of the planning elements prior to the flight. They were told that Norwich had been telephoned prior to the Typhoons getting airborne and that during that phone call it had been requested, and agreed, that Norwich would provide the ATS. However, for some unknown reason, even though Norwich had been providing a service to the Chinook that the Typhoons were working with, once airborne the Typhoons had been handed over to Swanwick(Mil). This had then presented a situation where the Typhoons and the Chinook had been working with two different ATSUs, both of whom had been experiencing a high workload. Members thought that it had been disappointing that the reason behind this change in plan had not been identified in the investigation, because they believed that had Norwich been providing the radar service to the Typhoons, the Airprox probably would not have occurred (**CF9**). Some members questioned the area that the sortie took place, given the busy location, with a steady flow of helicopters leaving Norwich for the North Sea platforms, and noted that there were various segregated areas of airspace specifically designed for fast-jets to manoeuvre in. However, they were informed that it had been an important part of the training that this sortie had taken place over land whilst the Chinook operated at a lower level to the Typhoons. Whilst members stopped short of attributing planning as a contributory factor on this occasion, nevertheless, they wondered whether there had been a better area for this type of exercise to take place.

Turning to the actions of the Typhoon pilot, members noted that they had first been told about the AW139 when it had been requested that they remain over Bacton for coordination purposes. Typhoon 2 pilot had then been given updated Traffic Information, however, this information had clashed with calls on the inter-formation frequency and the pilot had not heard it (**CF11**). Members thought it likely that the Typhoon pilot had not assimilated that the earlier information with the co-ordination had still been extant (**CF13**) and therefore had inaccurate situational awareness on the position of the AW139 (**CF12**) because when the sortie was reported as complete and the controller told the Typhoon to climb to FL080, Typhoon 2 pilot descended instead (**CF7**). The Typhoon pilot had reported seeing a target on their radar that they interpreted as the other Typhoon (**CF8**) and so, noting that it had been reported that some of the links normally used for identifying friendly aircraft had not been working, members wondered whether the pilot had enough information to be able to conduct the sortie safely. They were assured by military representatives on the Board that the information available on the HUD should have been enough to tell the pilot that the target had been a slow-moving helicopter, and that it had been down to a lack of experience, and perhaps a lapse in concentration at the end of a difficult sortie, that meant the mistake had been made (**CF10**). Members noted that both pilots reported cloud and visibility issues and thought that this probably prevented the Typhoon pilot from seeing the AW139 at range (**CF17**), however, once visual, the Typhoon pilot realised their mistake and turned away.

For their part, the AW139 pilot could have done little in the circumstances to affect the outcome. They had received Traffic Information from the Norwich controller and so had known the Typhoon was approaching from behind. They had also received a TA from their TCAS (**CF15**) but, given the speed differential, and because they could not see the Typhoon as it approached from behind (**CF17**), there had been very little the pilot could have done to manoeuvre out of the way. Members thought that, understandably, the increasingly worrying warnings from ATC, culminating in avoiding action even though they had been receiving a Traffic Service, together with the warnings from the TCAS, would have left the pilot feeling vulnerable, and rightly concerned, by the fast-moving aircraft as it approached from behind (**CF14**). In the end, the AW139 pilot had not seen the Typhoon because it had broken away at just over a mile away (**CF16**), but not becoming visual may well have added to the sense of unease that the AW139 pilot had felt, because they had had no idea how close the Typhoon had been before it had turned away.

The Board then discussed the role of ATC. There could be no doubt that both controllers had been controlling with a high workload. The Swanwick(Mil) controller in particular appeared to have had more than one aircraft undertaking a complex sortie that required multiple controller inputs (**CF5**). Some members familiar with this type of controlling wondered whether at least one, and possibly two, of the sorties that the Swanwick(Mil) controller had been dealing with should have been given a dedicated controller and frequency. This high workload meant that it appeared that once the Typhoons had reported finishing the sortie early, and the controller had issued an instruction for the Typhoons to climb to FL080, the controller had turned their attention elsewhere. Certainly, they had not noticed that the Typhoon 2 pilot had not only descended, but had also transited towards the AW139 against which they had coordinated (**CF3**). Consequently, they did not pass any updated Traffic Information to the Typhoon pilot (**CF1**, **CF2**), which may have alerted the pilot to their error earlier than subsequently occurred. For their part, the Norwich controller had also been busy and had needed to call in another controller in order to effect the proposed handover of the Typhoons. The controller had already coordinated the AW139 against the Typhoons and so could have rightly assumed that the Typhoons would remain clear. They had given Traffic Information to the AW139 pilot, but, once the STCA had alerted (**CF6**), had been concerned enough to further provide avoiding action as well (**CF4**).

Finally, when assessing the risk, the Board took into consideration the reports from the pilots and the controllers, together with the radar replay. They quickly agreed that there had been no risk of collision because the Typhoon pilot had become visual and had taken action to remain clear at a range of more than a mile. However, members thought that there were a number of opportunities for this Airprox to have been averted and for that reason thought that safety had been degraded; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022178			
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
	• Situational Awareness and Action			
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
4	Human Factors	• Expectation/Assumption	Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality	Concerned by the proximity of the aircraft
5	Human Factors	• Task Monitoring	Events involving an individual or a crew/ team not appropriately monitoring their performance of a task	Controller engaged in other tasks

	• Electronic Warning System Operation and Compliance			
6	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
7	Human Factors	• Flight Crew ATC Clearance Deviation	An event involving a deviation from an air traffic control clearance.	
	• Tactical Planning and Execution			
8	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
9	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
	• Situational Awareness of the Conflicting Aircraft and Action			
10	Human Factors	• Interpretation of Automation or Flight Deck Information	Interpretation of Automation or Flight Deck Information by the flight crew.	
11	Human Factors	• Monitoring of Communications	Events involving flight crew that did not appropriately monitor communications	
12	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
13	Human Factors	• Understanding/Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
14	Human Factors	~~• Unnecessary Action~~	~~Events involving flight crew performing an action that was not required~~	Pilot was concerned by the proximity of the other aircraft
	• Electronic Warning System Operation and Compliance			
15	Contextual	• ACAS/TCAS TA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system traffic advisory warning triggered	
	• See and Avoid			
16	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
17	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

Degree of Risk: C.

Safety Barrier Assessment[7]

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 **partially effective** because the Swanwick(Mil) controller did not update Traffic Information on the AW139 to the No2 Typhoon pilot.

Situational Awareness of the Confliction and Action were assessed as **partially effective** because the Swanwick(Mil) controller was busy with their other aircraft and did not see the No2 Typhoon approach the AW139.

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

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Typhoon pilot did not climb to FL080 as instructed by the controller.

Tactical Planning and Execution was assessed as **partially effective** because the No2 Typhoon pilot saw a radar track and assumed it was the No1 Typhoon.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the Typhoon pilots were given Traffic Information on the AW139 but were not monitoring the ATC frequency sufficiently closely to hear and assimilate it. Furthermore, when identifying the radar track, the No2 pilot did not realise that it was too slow to be a Typhoon.