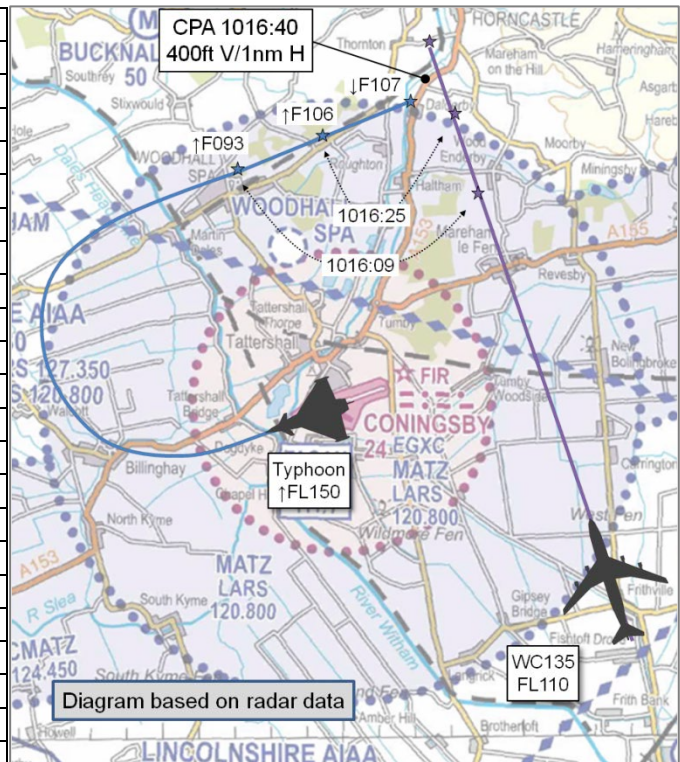


**AIRPROX REPORT No 2017028**

Date: 01 Mar 2017 Time: 1016Z Position: 5311N 00007W Location: 5nm N Coningsby

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	Typhoon	WC135
Operator	HQ Air (Ops)	Foreign Mil
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Traffic
Provider	Coningsby	Swanwick
Altitude/FL	FL107	FL111
Transponder	A, C, S	A, C, S
<b>Reported</b>		
Colours	Grey	
Lighting	Nav, Strobes	
Conditions	VMC	VMC
Visibility	>10km	
Altitude/FL	FL105	FL110
Altimeter	1013hPa	1013hPa
Heading	069°	020°
Speed	305kt	300kt
ACAS/TAS	Not fitted	TCAS II
Alert	N/A	RA
<b>Separation</b>		
Reported	500ft V/1nm H	0ft V/0.5nm H
Recorded	400ft V/1nm H	



**THE TYPHOON PILOT** reports that he was climbing out of Coningsby on a SID East and receiving a Traffic Service from Coningsby Departures. When about 5nm north of Coningsby at FL110, a large aircraft was seen 50° to the right of the nose and slightly above. No traffic information had been received from ATC. He perceived that they were on a collision course and took avoiding action by descending to FL105 and turning 10° right to pass behind. Once deconfliction was achieved, the incident was reported to ATC.

He assessed the risk of collision as 'Low'.

**THE WC135 PILOT** reports that during a climb and level off at FL110, Swanwick(Mil) gave Traffic Information on a fighter type aircraft in the 11 o'clock position. Traffic was spotted visually at about 1nm, co-altitude, travelling in the opposite direction. The traffic then performed a left turn towards them, which triggered a TCAS RA causing the pilot to climb to FL115. The traffic was not seen again and they returned to FL110.

He assessed the risk of collision as 'Medium'.

**THE CONINGSBY DEPARTURES CONTROLLER** reports that he was band-boxing Departures and LARS at the beginning of a busy departures wave from Coningsby. The overall air picture in the vicinity of Coningsby was busy with lots of Cranwell and Waddington traffic and multiple Swanwick(Mil) tracks transiting through the airspace close to the Coningsby overhead. There were also numerous phone calls received from Hotspur regarding climb-out details and updates on departing traffic. The Typhoon taxied out as one of a formation of three, and departure details were passed via the Ground Controller. The aircraft were then delayed on the ground. In the interim period, other formations and singletons taxied and the numerous calls from Hotspur continued. The Typhoon formation was released via ADC, and Traffic Information was given on Waddington traffic

operating to the NE that was potentially a conflict. The Typhoon formation got airborne and called on frequency whilst the controller was handing over another formation to Hotspur. The Typhoons were wearing unexpected squawks, were therefore identified using the departure method, and were placed under a Traffic Service. The controller was expecting all 3 to get airborne and therefore some confusion arose when only 2 squawks were observed on radar, which seemed to be backed up by only 2 aircraft showing on the Electronic Tote. He was confirming with the ADC that only two had got airborne and, whilst on the landline, another aircraft was released with a climb-out-restriction imposed due to traffic transiting through the overhead. Although the controller had spotted multiple potential conflicting tracks transiting through the overhead at various levels, the distractions of the landline calls, the confusion over the squawks and number of Typhoons in the formation, as well as trying to hand over the LARS VHF frequency to another controller who had come to split the LARS/Departures task, distracted him from passing timely Traffic Information to the Typhoons on traffic working Swanwick(Mil). The conflicting traffic was transiting south to north, 5nm east of Coningsby. The lead Typhoon called visual with it and reported levelling off and taking a turn to track behind. They advised on frequency that they would discuss on the ground whether to report an Airprox.

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

**THE CONINGSBY SUPERVISOR** reports that there was a UT App controller, a Departures controller and a standby controller for either Director or LARS in the ACR. It was a BLU [weather] day and because the aircraft had started to taxi all together, rather than staggered as on previous days, it was decided to have a LARS controller in position. The LARS controller was in position quite quickly; however, there was no LARS traffic at the time. Two formations got airborne and the tempo in the ACR was starting to increase. He asked the Departures controller whether they wanted him to handover one of the formations, but Hotspur were already on the landline in the process of taking the handover. At the time, he noticed Swanwick had aircraft tracking thorough the Coningsby overhead, but he thought nothing of it because he had heard the Departures controller put numerous climb-out restrictions on, and they seemed to be in control of the situation. As the Typhoon flight got airborne, the Departures controller queried the code callsigns because they didn't match expectations; the ATC assistant was asked to check the allocations and the Supervisor checked the GUI<sup>1</sup> to see whether it was an ATC issue. Shortly afterwards he was informed that an incident had just occurred and he heard the pilot say on the frequency that he would be calling ATC once he was back on the ground.

**THE SWANWICK (MIL) CONTROLLER** reports the he was working on the east bank in the TAC-left position, there was a planner in place and TAC-right. The sector was very busy, north-east sector were also busy, which meant they couldn't take on the majority of traffic until later than usual, so east had to hold onto traffic that was well inside north-east's airspace. He was controlling 5 aircraft: one Typhoon and 2 USAF tankers and 2 receivers, all separate elements. The USAF aircraft were transiting to AARA7 to refuel. The D323 complex was active with aircraft operating inside and co-ordination could not initially be achieved. However, after a lengthy discussion with Hotspur, the planner managed to get clearance through D323 A/B, at first with all elements but this later changed to the first two aircraft only, which were about 50nm ahead of the other two. The Airprox WC135 was under a Traffic Service, transiting northbound under Y70 at FL110, approximately 2nm east Coningsby. He saw traffic climbing out of Coningsby and gave the WC135 pilot an approximate information call and then updated it with a more accurate call. The Coningsby traffic continued to climb and, when it was passing FL080, he attempted to complete some admin calls with the WC135 pilot when in hindsight he should have updated the Traffic Information. The traffic continued to climb and, once the pilot had answered the admin call, he called the traffic again. He did not have time to call Coningsby, and he did not received a call from them. Looking back on the incident he thought he perhaps should have called Coningsby with Traffic Information.

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

**THE SWANWICK(MIL) SUPERVISOR** reports that the Traffic Intensity on the unit was building, the East sector had 2 TACs and a planner on a Standards Check in place, and the North-East sector was

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<sup>1</sup> Graphical User Interface

also getting busier and already had 2 TAC controllers and a planner in place. He decided to get the overload controller in place, did not see the incident occur, and was not made aware of it until later that afternoon.

## Factual Background

The weather at Coningsby was recorded as follows:

METAR EGXC 010950Z 24010KT 9999 FEW010 SCT140 BKN220 07/04 Q0997 BLU NOSIG=

Portions of the tape transcripts between the Coningsby Departures controller and the Airprox Typhoon (Typhoon B) are below, Typhoon C is the number two in the formation, the departures controller was also controlling another Typhoon formation, Typhoon A and refers to a further formation (D):

From	To	Speech Transcription	Time	Remarks
Deps	Hotspur	<i>Coningsby departures, request controller two for handover, [Typhoon A c/s]</i>	10:14:05	
Hotspur	Deps	<i>Okay, standby</i>	10:14:10	
Deps	App assistant	<i>[name], can you sort code call sign out for.. ???????? ???? ????????</i>	10:14:27	Inaudible after 'for'
Typhoon A	Deps	<i>[Typhoon A c/s] flight looking for further climb, block when able.</i>	10:14:29	Steps on previous transmission.
Deps	Typhoon B	<i>[Typhoon B c/s] flight, Coningsby departures. Good morning, identified, climb flight level one five zero.</i>	10:14:35	
Deps	Hotspur	<i>Hello, hotspur??</i>	10:14:47	
Typhoon B	Deps	<i>Coningsby departures, [Typhoon B c/s] flight, SID east, flight level one five zero, traffic service.</i>	10:14:48	
Deps	Typhoon B	<i>[Typhoon B c/s] flight, Coningsby departures. Good morning, identified, climb flight level one five zero, traffic service.</i>	10:14:55	
Typhoon B	Deps	<i>Flight level one five zero, traffic service, [Typhoon B c/s] flight.</i>	10:15:00	
Hotspur	Deps	<i>Hotspur</i>	10:15:00	
Deps	Hotspur	<i>It's Coningsby departures, handover [Typhoon B c/s] flight.</i>	10:15:01	UKAB Note - the controller refers to the wrong callsign, he is handing over Typhoon A formation.
Hotspur	Deps	<i>Go ahead.</i>	10:15:05	
Deps	Hotspur	<i>Coningsby north fifteen miles tracking zero one zero squawking five one two one. Number two, two miles in trail squawking five one two two.</i>	10:15:06	
Hotspur	Deps	<i>Contact.</i>	10:15:13	
Deps	Hotspur	<i>Climbing flight level one five zero, traffic service.</i>	10:15:14	
Hotspur	Deps	<i>Climbing flight level one five zero, [Typhoon A c/s]. Identified traffic service. Contact hotspur tad one two nine, backup zero eight seven.</i>	10:15:16	UKAB Note- Hotspur use the correct Typhoon callsign.
Deps	Hotspur	<i>One two nine, zero eight seven thank you. Coningsby.</i>	10:15:22	
Hotspur	Deps	<i>Hotspur</i>	10:15:22	
Deps	Typhoon A	<i>[Typhoon A c/s] flight, contact hotspur TAD one two nine, backup zero eight seven, good day.</i>	10:15:26	
Typhoon A	Deps	<i>One two nine, backup zero eight seven, [Typhoon A c/s]. Many thanks.</i>	10:15:29	

From	To	Speech Transcription	Time	Remarks
Deps	unknown	<i>Right, so that's not what I was prenoted and all the squawks are wrong.</i>	10:15:50	
Tower	Deps	<i>Tower</i>	10:15:53	
Deps	Tower	<i>Err, deps. Just confirming how many [Typhoon B c/s] 's came out? Two?</i>	10:15:54	
Tower	Deps	<i>Yeah, it was two ship yea. They.... I was, just saw the squawks on the screen and err, I've told ground about that.</i>	10:15:55	
Deps	Tower	<i>Ah, roger.</i>	10:16:00	
Tower	Deps	<i>Okay, and request release on [Typhoon D c/s] formation?</i>	10:16:01	
Deps	Tower	<i>[Typhoon D c/s] erm, climb flight level one hundred released.</i>	10:16:04	
Tower	Deps	<i>Flight level one hundred and released. Thank you</i>	10:16:11	
Deps	Tower	<i>Deps</i>	10:16:13	
Tower	Deps	<i>Tower</i>	10:16:13	
Deps	Typhoon B	<i>[Typhoon B c/s] request level passing?</i>	10:16:15	
Typhoon B	Deps	<i>Passing flight level one zero five, [Typhoon B c/s].</i>	10:16:19	
Deps	Typhoon C	<i>[Typhoon C c/s], request level passing?</i>	10:16:22	
Typhoon C	Deps	<i>[Typhoon C c/s], passing flight level eight five.</i>	10:16:24	
Deps	Typhoon B	<i>[Typhoon B c/s] flight squawk five one one one and one two.</i>	10:16:28	
Typhoon B	Deps	<i>For info, [Typhoon B c/s] flight just passing behind a heavy traffic this time.</i>	10:16:35	
Deps	Typhoon B	<i>Err, [Typhoon B c/s] flight roger, traffic left eleven o clock one mile, tracking north, no factor</i>	10:16:39	
Typhoon B	Deps	<i>Yea, copied. We had to level and pass behind for that traffic.</i>	10:16:47	
Deps	unknown	<i>Right I've just not called that traffic to him.... Distracted and he's called it.</i>	10:16:51	Believed to be to another controller in the room.
Hotspur	Deps	<i>Hotspur</i>	10:16:56	
Deps	Hotspur	<i>Coningsby departures, handover [Typhoon B c/s] flight.</i>	10:16:57	

Portions of the tape transcripts between the Swanwick East Tac Left and the WC135 are below:

From	To	Speech Transcription	Time	Remarks
Swanwick	WC135	{WC135 c/s} there's traffic just getting airborne out of Coningsby now flying through FL40.	10 15 02	
WC135	Swanwick	{WC135 c/s} 'believed to be' request position	10 15 12	
Swanwick	WC135	It's to the West of you approximately 5 miles indicating FL50 climbing routing North Bound	10 15 15	
Bing 88	Swanwick	Unreadable	10 15 21	Believed to be an acknowledgement
Swanwick	WC135	{WC135 c/s} Swanwick Mil	10 15 54	
WC135	Swanwick	Unreadable	10 15 57	
Swanwick	WC135	{WC135 c/s} we can't get you direct to umm, Towline 7 through the 323's unfortunately, there's a sortie going in there, would you rather route to	10 15 58	

From	To	Speech Transcription	Time	Remarks
		the West or to the East.		
WC135	Swanwick	Swanwick Mil from {WC135 c/s}if we go direct 'BROKEN', then to Towline 7 does that keep us clear of that	10 16 13	
Swanwick	WC135	You'd have to route all the way to Newcastle so NATEB. November, Alpha, Tango, Echo, Bravo and that previously called traffic is now West, 2 miles, indicating FL100 climbing.	10 16 21	
WC135	Swanwick	Unreadable	10 16 36	Believed to be an acknowledgement

## Analysis and Investigation

### Military ATM

Figures 1 - 5 depict the positions of the Typhoon and WC135 at pertinent times in the lead up to the Airprox. Screen shots are taken from replays using the Claxby radar feed.

At 10:14:48 (Figure 1), the formation of Typhoons checked in with Coningsby Departures, requesting SID East, FL150 and TS. The Coningsby Departures Controller identified the formation, issued the climb and agreed TS before immediately calling Hotspur on landline to handover a different formation.

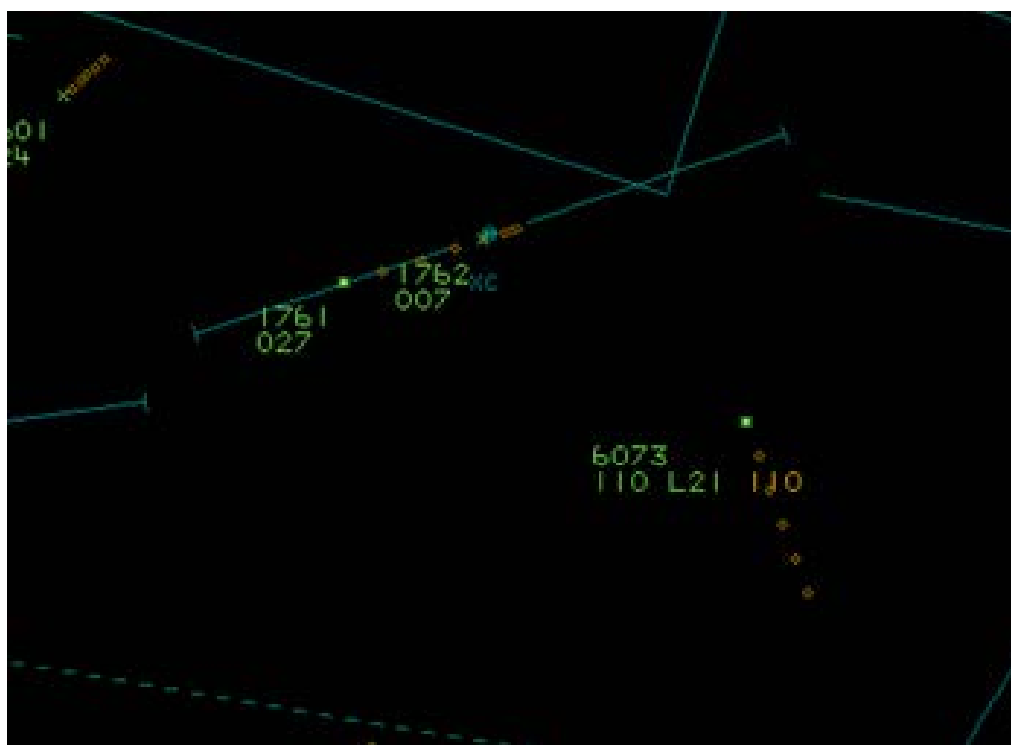


Figure 1: Geometry at 10:14:48 (Typhoon 1761; WC135 6073)

At 10:15:15 (Figure 2), the Swanwick East Tac Left passed TI to the WC135 as traffic west, approximately 5nm, indicating FL50 climbing, routing northbound.

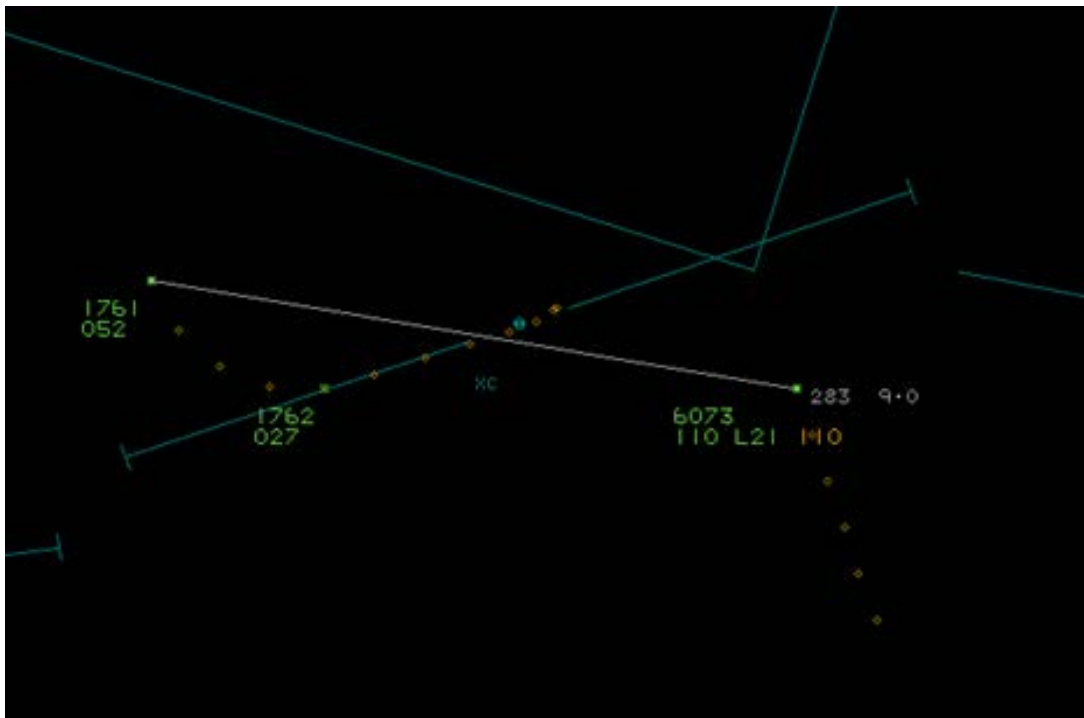


Figure 2: Geometry at 10:15:02 (Typhoon 1761; WC135 6073)

At 10:16:15: (Figure 3), the Coningsby Departures controller requested the level passing of each Typhoon in order to verify mode C. No TI was passed on the conflicting traffic. At 10:16:21, the Swanwick East Tac Left updated TI to the KC135 as traffic west, 2nm, indicating FL100 climbing.

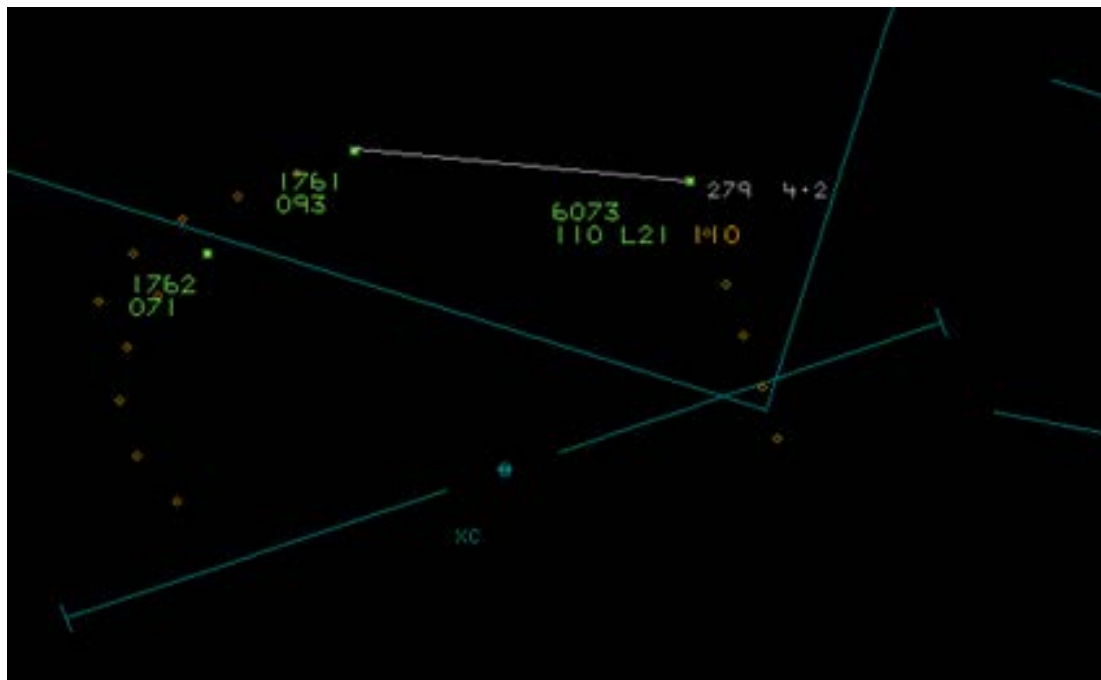


Figure 3: Geometry at 10:16:15 (Typhoon 1761; WC135 6073)

At 10:16:28 (Figure 4), the Typhoon formation was instructed to change squawk in preparation for handover to the next agency. The lead Typhoon responded that they were just passing behind 'heavy traffic' [meaning a large aircraft].



Figure 4: Geometry at 10:16:28 (Typhoon 1761; WC135 6073)

At 10:16:39 (Figure 5), the Coningsby Departures controller passed TI to the Typhoons on traffic left, 11 o'clock, 1nm, tracking north, no factor. This was the traffic the Typhoons had already stated they were passing behind, achieving a CPA of 1nm.



Figure 5: Geometry at 10:16:39 (Typhoon 1761; WC135 6073)

The Coningsby Departures controller had been operating band-boxed as Departures and LARS until the start of a relatively busy departure wave, by which time LARS was split out. It was noted that the traffic complexity and intensity that day was higher than it had been in the previous 3 months and that background noise was high due to the air conditioning being broken and sufficient ventilation only achieved by opening the Approach Room door. Although the controller involved had maintained currency throughout, replicating the background noise and multiple landline inputs associated with live controlling is not feasible when utilising ATA (computer based training aid).

When the Typhoon formation got airborne, they were not displaying the expected squawks, therefore code-callsign conversion did not display the anticipated details on the Departures controller's screen. Coupled with only 2 aircraft departing rather than the pre-noted 3, the changes led to the Departures controller becoming confused and having their capacity taken up

with resolving the issue. This was also evident in the controller using the incorrect aircraft call sign when handing over a different formation in the minutes prior to the Airprox.

The Coningsby Departures controller had seen the conflicting WC135 at FL110, which prompted a climb out restriction of FL100 on a later departing singleton. Unfortunately, they did not make the connection between the traffic at FL110 and the formation of Typhoons already climbing out to FL150. With the Typhoons under TS, the controller should have passed TI on the WC135; however, the distraction caused by the changes to the formation meant that TI was not passed.

The Swanwick East Tac Left was working a high traffic load, which was compounded by them not being able to hand traffic to the NE sector (also high traffic load) until well past the standard handover point. The controller passed TI to the WC135 when the Typhoon formation was climbing through FL50, and then updated it as the conflicting traffic continued to climb through FL100 towards the KC135 at FL110.

Since the incident, Coningsby ATC have updated their procedures for any amendments to squawks or numbers in formations to ensure that all relevant parties are informed. The controlling cadre have also been reminded of the importance of awareness of their own and others' capacity, and how to prevent overload.

### **UKAB Secretariat**

The Typhoon and WC135 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>2</sup>. The incident geometry was converging and the Typhoon pilot was required to give way to the WC135<sup>3</sup>, which he did.

## **Comments**

### **HQ Air Command**

This incident took place when there were particularly high traffic levels for all controllers involved. A number of aircraft were departing to conduct training in the Managed Danger Areas (MDAs) and the terminal controller was working particularly hard to ensure that the aircraft departed and were handed over to the next controlling agency. The controller's SA was disrupted by a change of transponder codes and a reduction in the number of aircraft compared to that which he was expecting for the formation involved in the Airprox. In trying to resolve this issue and thus re-establish accurate SA, he did not assimilate that the WC135 was a factor for the departing formation (though he had placed a climb out restriction on a following aircraft based on the position of the WC135).

The Typhoon pilot was visual with the WC135 though and took action to avoid it; it was unfortunate that at some point during the Typhoon's manoeuvring a TCAS RA was triggered on the WC135, but since he was visual throughout there was never any risk of collision.

All three available barriers worked to some extent – the TCAS on the WC135 interacted with the Typhoon's transponder; the Swanwick(Mil) controller passed TI on the Typhoon to the crew of the WC135; and the Typhoon pilot looking out visually acquired the transiting tanker and was able to avoid it. However, much came out of the investigation into this incident, particularly with respect to procedures for informing those that need to know of changes to departure details (squawks, number of aircraft) and identifying when the limits of controlling capacity are being reached.

This incident shows that no one single barrier can be relied upon to be fully effective, hence the need to adopt a layered approach to mitigating the risk of MAC.

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<sup>2</sup> SERA.3205 Proximity.

<sup>3</sup> SERA.3210 Right-of-way (c)(2) Converging.



## USAFE

Both the Coningsby Departures controller and the Swanwick Mil controller were busy to a greater and lesser degree and both allowed themselves to be distracted from their primary tasks; in the case of the Departures controller, seemingly little aided by the ACR supervisor. In the event, the Typhoon pilot saw and avoided the WC-135 while the WC-135 pilot reacted to the TCAS RA triggered by the close passage of the Typhoon.

### Summary

An Airprox was reported when a Typhoon and a WC135 flew into proximity at 1016 on Wednesday 1<sup>st</sup> March 2017. Both pilots were operating under VFR in VMC, the Typhoon pilot in receipt of a Traffic Service from Coningsby and the WC135 pilot in receipt of a Traffic Service from Swanwick(Mil).

### **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 and operating authorities.

The Board first discussed the actions of the Typhoon pilot. He was receiving a Traffic Service from Coningsby and could reasonably have expected to receive Traffic Information on the WC135, nevertheless under a Traffic Service the responsibility for avoiding other traffic was still his own, whether or not it was called to him. Under the rules of the air it was for him to give way to the WC135, who was converging from the right; in the event, he did see the WC135 in time to give way, and took avoiding action by descending slightly and turning. Some members wondered whether he could have been expected to see the WC135 before he did, and therefore avoid it by a greater margin, but it was quickly agreed that his actions ensured that there was adequate separation (1nm), it was just unfortunate that his trajectory set off a TCAS RA for the WC135.

Turning to the WC135 pilot, the Board heard that he was also receiving a Traffic Service, this time from Swanwick(Mil), but that he had received timely Traffic Information when the Typhoon was passing FL50 which was then updated as they passed FL100. Some members wondered whether he could have done more; having been given the Traffic Information he had the situational awareness that it was climbing out towards him. However, his report indicated that he hadn't become visual with it until it was 1nm away, by which time the Typhoon pilot had already become visual and taken action. In the end the Board agreed that there was little else he could have done to avert the Airprox.

The Board then looked at the actions of the Swanwick(Mil) controller. He had correctly given Traffic Information to the WC135, and had updated it. Noting that he was very busy, the Board thought that despite his opinion in his report that perhaps he should have called Coningsby with Traffic Information, it was unlikely that this would have made much difference. The Coningsby controller had already seen the traffic and had imposed a climb-out restriction against it for another aircraft so he was already aware that it was present; furthermore, given that the Coningsby controller was also very busy, he was unlikely to have been able to take a call from Swanwick(Mil) anyway. Military controllers on the Board stated that Swanwick(Mil) could not be expected to give Traffic Information to every airfield that they passed; they relied upon airfields seeing their squawk and calling for co-ordination if necessary.

Finally, the Board turned to the actions of the Coningsby controller, they were informed that, prior to this day, Coningsby traffic levels had been low and so controllers had kept current by using a synthetic procedures training aid. However, even with using the training aid, it was very difficult to match the complexity of the scenario that the controller was faced with on the day. That said, there was nothing to suggest that the controller felt out of practice and he had not reported a lack of currency in any of his reports. Noting that there was a lot happening at the time, with Hotspur calling for information and multiple departures, the Board could see how the incorrect squawks on the Typhoons would cause a distraction. Nevertheless, controlling members of the Board noted that the

adage 'control first, admin later' applied here; the controller could have allowed the Typhoons to continue with the wrong squawks, letting the Supervisor deal with the admin side. He was expecting the Typhoons to get airborne, and they called him with the correct callsign, so he could have identified them using a method other than the squawk, which he did, and continued with his other priorities. Whilst on the line to the ADC to question the squawks, he put in place a climb-out restriction against the WC135, so he had seen it on his radar, but for some reason did not assimilate that it would also affect the Typhoons that were already airborne. Ultimately, the Board thought that he had allowed himself to become distracted by the circumstances, which led to a lack of Traffic Information to the Typhoon pilot.

The Board briefly looked at the role the Supervisor had to play. Noting that it was very busy in the ACR, the Supervisor was present and some members wondered whether he was watching the incident unfold when some intervention was necessary. However, others pointed out that he reported that he had tried to ease the burden on the Departures controller by offering to conduct a handover, but that the Departures controller was already doing it. He was also trying to sort out the error with the squawks, which controlling members noted was a fiddly process. Having noted that the controller had placed a climb-out restriction on traffic climbing out against the WC135, members concluded that the Supervisor had thought that the controller had seen it and would call it to the Typhoon. The Board agreed that there was a fine line between helping and hindering when supervising; nevertheless, they thought that he could have made it clear to the controller that he would deal with admin of the squawk issue, allowing the controller to get on with the controlling.

In determining the cause of the Airprox, some members thought that, because the pilots were ultimately responsible for collision avoidance, this was a straightforward conflict in Class G resolved by the Typhoon pilot. However, others opined that because the WC135 was on the radar and the controller was aware of it he should have passed Traffic Information to the Typhoon pilot. After much discussion, the latter view prevailed and the Board agreed that the Coningsby controller had allowed the Typhoon to climb into conflict with the WC135. Notwithstanding, they also agreed that that the complex ATC environment had been a contributory factor which had distracted the controller, who had then not passed Traffic Information to the Typhoon pilot. Turning to the risk, the Board decided that, although safety had been degraded, both pilots were visual with each other, and the Typhoon pilot had taken timely and effective avoiding action. They therefore assessed that there had been no risk of collision - risk Category C.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The Coningsby controller allowed the Typhoon to climb into conflict with the WC135.

Contributory Factor: A complex ATC environment distracted the controller, who did not pass Traffic Information to the Typhoon pilot.

Degree of Risk: C.

#### **Safety Barrier Assessment<sup>4</sup>**

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

**ATC Conflict Detection and Resolution** was assessed as **ineffective** because although the Swanwick(Mil) controller passed TI to the WC135 pilot he didn't update it, and the Coningsby Controller did not pass TI at all.

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

**Flight Crew Situational Awareness** was assessed as **partially effective** because the WC135 pilot was aware of the Typhoon, but the Typhoon pilot was not aware of the WC135 until he saw it visually.

