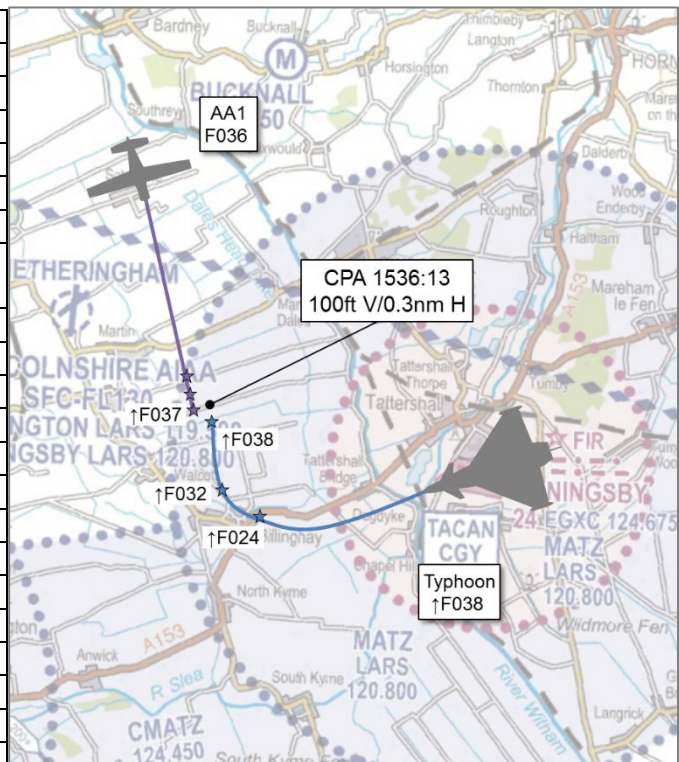


AIRPROX REPORT No 2019017

Date: 28 Jan 2019 Time: 1536Z Position: 5306N 00016W Location: 4nm WNW Coningsby

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------|----------------------|--------------------|
| Aircraft | Typhoon | Grumman AA1 |
| Operator | HQ Air (Ops) | Civ FW |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | VFR | VFR |
| Service | Traffic | Basic |
| Provider | Coningsby Departures | Coningsby Approach |
| Altitude/FL | 3800ft | 3600ft |
| Transponder | A, C, S | A, C, S |
| Reported | | |
| Colours | Grey | White, Red |
| Lighting | HISLs, Nav | Beacon, Nav |
| Conditions | VMC | VMC |
| Visibility | 60km | 15nm |
| Altitude/FL | 3800ft | 3400ft |
| Altimeter | QFE (1006hPa) | NK |
| Heading | 340° | 166° |
| Speed | NK | 100kt |
| ACAS/TAS | Not fitted | Not fitted |
| Separation | | |
| Reported | 500ft V/0.25nm H | 0ft V/500m H |
| Recorded | 100ft V/0.3nm H | |



THE TYPHOON PILOT reports that he was No4 in a 4-ship of Typhoons on a rolling departure. After take-off he elected to remain on the Tower frequency due to a conflict with circuit traffic which was deadside and slightly ahead. He decreased his rate of climb and accelerated ahead of this conflict whilst in communication with Tower. Having resolved this conflict, at 1535:50 he changed to the pre-briefed departure frequency and heard the Departures controller make a Traffic call, but missed the start of the call because it occurred before he was on the frequency. At 1536:01 the controller made another call, this was garbled to the Typhoon pilot, although he was aware that it was intended for him so he asked for the call to be repeated and, at 1536:12, Traffic Information was given as 'north, 2nm tracking south indicating slightly above, if not sighted turn right heading 020°'. He was in a right turn passing 330° and due to the traffic being north of him he perceived that a turn to the north would worsen the potential conflict so he rolled out to look for the traffic. As he did so he saw a light-aircraft pass down his left-hand side, very slightly below, heading in the opposite direction. He declared a 'potential Airprox' and visually assessed the other aircraft to be within 0.25nm and 500-1000ft below.

He assessed the risk of collision as 'Medium'.

THE AA1 PILOT reports that whilst in straight-and-level flight passing RAF Coningsby, two Typhoons climbed past him in quick succession in the opposite direction. He was in contact with Coningsby Approach and squawking the transponder code allocated to him. Prior to this he had been with Waddington Zone, had requested a MATZ penetration for Coningsby and was subsequently handed over. He was unaware of the Typhoons until visual contact was made but whilst it all happened very quickly, he was unconcerned because he could see that they would pass each other at a safe distance.

He assessed the risk of collision as 'Low'.

THE CONINGSBY DEPARTURES CONTROLLER reports that he was the Departures and LARS controller at the time of the incident. Prior to the event he was controlling Typhoons on Stud 3 whilst also controlling other traffic on VHF frequency 119.2. The Airprox Typhoons were pre-noted for a MID-North departure and, after a short while, ADC called for release. At this time, some other airborne Typhoons were North of Coningsby by about 20nm, climbing FL150 on a MID North profile; a Prefect was low-level having completed a CWL MATZ Stub crossing south bound; and another aircraft was 12nm North-East of Coningsby tracking towards Skegness at 6,000ft. With no imminent traffic to affect them he released the Typhoon formation. He was aware the visual circuit was busy, which led to a delay on the formation getting airborne. Whilst waiting for the formation to get airborne he continued to scan the radar picture and noticed a 3606 Squawk about 12nm North-West of Coningsby tracking southbound, slow-moving. He rang Waddington to request Traffic Information and subsequently decided this aircraft was going to be a factor and so requested to take control of it in an effort to deconflict this traffic against Coningsby departing traffic. It was an AA1 at 3100ft on the regional pressure setting. The first of the Typhoon formation got airborne as he was completing the handover from Waddington and the AA1 was now 9nm northwest of Coningsby tracking south. He rang ADC to try and get them to put the Typhoon formation onto a MID-E departure to avoid the AA1 and for ADC to call the traffic. However, ADC was busy with visual circuit and departing traffic, so ADC simply informed him that the formation were now airborne. He then requested to keep them climbing out on runway track but the formation was already in the turn onto 'MID-North'. As soon as all elements of the formation were airborne they contacted Stud 3. He identified them, kept them climbing to FL150 to get above the conflicting traffic and immediately passed Traffic Information. The lead and No2 were already above the LARS traffic (now at 7nm tracking South). He passed Traffic Information to the No3 and gave them a turn to avoid 'if not visual', it appeared he took the turn but he didn't reply. The controller then continued to pass Traffic Information to the No4 and again gave a turn to avoid if not visual. With no response, he passed the information again and gave a turn to avoid; as he was about to transmit a third time, the No4 pilot transmitted on the frequency saying he only heard part of the Traffic Information; however, he stated he was visual with the conflicting aircraft in his close proximity. He then informed the controller that it was a possible Airprox, which he acknowledged. He ensured the rest of the tracks under his control were safe before initiating the handover to Hotspur for both Typhoon formations. At the time of submitting the report he could not accurately state how close the No4 Typhoon and AA1 were in relation to each other vertically, but he recalled they were within approximately 0.5nm laterally.

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

THE CONINGSBY ADC reports that he was the screen controller in the ADC position with an Under Training (UT) Controller during an afternoon departure wave when the incident occurred. Weather conditions were BLU, RW25 was in use and they had 3 aircraft in the Visual Circuit, a further 2 joining visually and a 4-ship taxiing for departure. The UT ADC correctly sought release for the Typhoon formation from the Departures (Deps) Controller as they approached the holding point. The Deps Controller granted release of the formation; therefore, one aircraft in the visual circuit was instructed to go around and the Typhoon formation were issued with a take-off clearance. With 2 of the formation airborne and the third rolling for departure, Deps called and asked to amend the climb out details of the Typhoon to a MID-E rather than the previously agreed MID-N. At this point the intensity was extremely high; however, utilising the Air Traffic Monitor, the lead and No2 Typhoons were indicating as already passing 4500 ft and well established into the turn, so he instructed the UT to inform Deps of the situation and therefore would be unable to amend their details. The Deps controller then requested a change to 'Runway track'. However, due to the fact that all but the last of the formation were now airborne, climbing and turning, the Screen Controller refused this request. By this point there were 4 aircraft in the visual circuit, radar traffic at 8nm and with the UT's capacity waning he instructed them to put down the landline as the Typhoons had already informed them of switching to the Deps Controller's frequency. When debriefing the UT, he outlined that in the future if given ambiguous amendment details, the safest and most helpful thing to do is call the conflicting traffic to the departing aircraft.

THE CONINGSBY SUPERVISOR reports that he was the Air Traffic Control Supervisor at the time of the incident. Coningsby were operating off RW25 in BLU weather conditions. With the weather being such, all station-based aircraft would therefore be provided with a Traffic Service (TS) on departure,

in accordance with the RAF Coningsby Flying Order Book. Leading up to the incident Coningsby had just started to recover the first wave of aircraft. The controller in the Radar Approach position was undergoing training, having returned from an extended period of absence, and was being monitored by a fully endorsed radar instructor. In the Aerodrome Control position was an Under-Training (UT) Controller, with a fully endorsed instructor. As the Supervisor, he was instructing an Under-Training Supervisor (UTS), who was a multi-tourist and extremely experienced, on his first Sup session. In the Departures/LARS position was a fully endorsed controller and was the one controlling the aircraft at the time of the reported Airprox. Coningsby ATC rules state that only four aircraft are permitted in the visual circuit flying continual circuits, with an addition of two able to join as long as they intend to land. The capacity should never then exceed six aircraft flying multiple circuits. A 3-ship had recently recovered and were conducting multiple visual circuits, with a pair inbound on radar, when the Typhoon 4-ship called ready for departure. The Deps controller had one fast-jet aircraft on stud 3, which was about 20nm north, and two transiting aircraft on VHF at the time of releasing the formation. He was also taking a handover from RAF Waddington on a Basic Service (BS) transit that would take its projected flight path approximately 4-5nm west of Coningsby's overhead at around 3500ft. At the time of the handover the BS aircraft was 9-10nm NW of Coningsby tracking south-southeast. The UT ADC called the Deps controller for release on the formation, and this was approved. As a Supervisor, a decision had to be made as to whether he was required in the Visual Control Room (VCR), as there would be three aircraft in the visual circuit with four departing, or to remain in the Approach Control Room (ACR) to assist with the recoveries and departures, and the transit traffic. He elected to send the UTS to the VCR to provide assistance, as an experienced controller only, should it be required, and he remained in the ACR. By this time the BS aircraft had travelled 2-3nm from when first contact was made and was now 6-7nm NW of Coningsby's overhead at 3500ft. With the proximity of the BS aircraft to Coningsby the Deps controller was required to provide the UT ADC with a course of action to ensure the Typhoons didn't erode the required separation between themselves and the transit traffic. Whilst he was on the landline to the UT ADC the Supervisor instructed him to tell the UT ADC to pass Traffic Information to the departing formation, for their situational awareness. This would have then insured that the whole formation, who were still on the ADC frequency, were in receipt of the Traffic Information and would have been able to manoeuvre to maintain separation. He then proceeded to call the UTS who was in the Local Supervisors position to ensure that this information had been relayed. As the UT ADC was busy ensuring that the remaining three aircraft were made aware of the 4-ship departing, the UTS was unable to inform the Supervisor whether this information had been received from the Deps controller and indeed passed. By the time the 4-ship formation had transferred to the Deps frequency, the first 3 members of the formation were passed information on the transit traffic; however, the last aircraft was not. The Deps controller did pass Traffic information to the formation but was asked to repeat it as the No4 didn't get the whole message. When it was re-passed the message was mumbled and not clear, causing confusion to the pilot. The Typhoon appeared to roll out, without taking evasive action and reported the Airprox to the Deps controller.

Factual Background

The weather at Coningsby was recorded as follows:

```
METAR EGXC 281450Z 31015KT 9999 FEW020 05/M03 Q1006 BLU NOSIG=
```

Analysis and Investigation

Military ATM

The Typhoon was part of a streamed 4-ship departure from Coningsby completing a MID-North departure. Following radar release of the aircraft, the Departures Controller noted a potential conflicting aircraft (the AA1) working RAF Waddington and took control of the aircraft. Due to a congested visual circuit, the incident Typhoon did not change frequency to Departures at the same time as the rest of the formation. As a result, the Airprox occurred almost at the same time as the Typhoon changed to the departures frequency.

Having issued a radar release on the 4-ship of Typhoons, the Coningsby Departures Controller identified a possible conflict with the AA1 which at the time was working Waddington LARS. At this point, the Departures Controller took control of the AA1 which was 8nm North West of Coningsby (Figure 1).

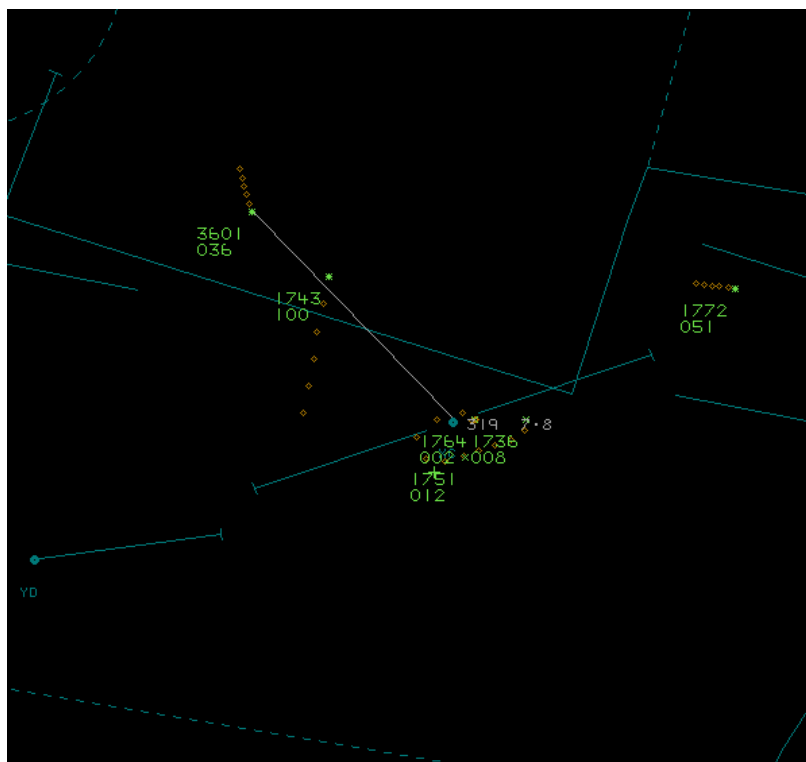


Figure 1

One minute after taking control of the AA1, the Coningsby Departures Controller attempted to change the climb out details of the Typhoon formation from a MID-North to a MID-East. However, as the Aerodrome Controller stated that the first two aircraft of the formation were already airborne, this plan was amended to 'maintain runway track' and then further amended to 'doesn't matter'. As a result, the climb out details of the formation were not changed. At this point, the AA1 was 6.4nm north west of Coningsby (Figure 2).

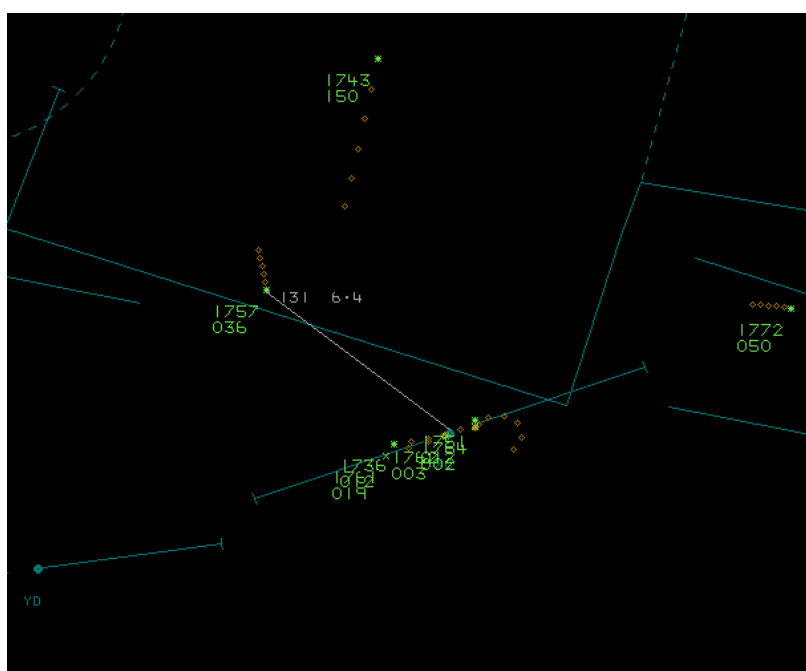


Figure 2

50secs after this aborted attempt to change the climb out details, the Typhoon formation checked in on the departures frequency; the Departures Controller was unaware that, due to congestion in the visual circuit, the incident Typhoon was not on his frequency. The Departures controller passed Traffic Information to the Typhoon flight on the AA1 which stated that the AA1 was 0.5nm away. The radar replay shows this distance as 2nm from the Typhoon lead aircraft (Figure 3).

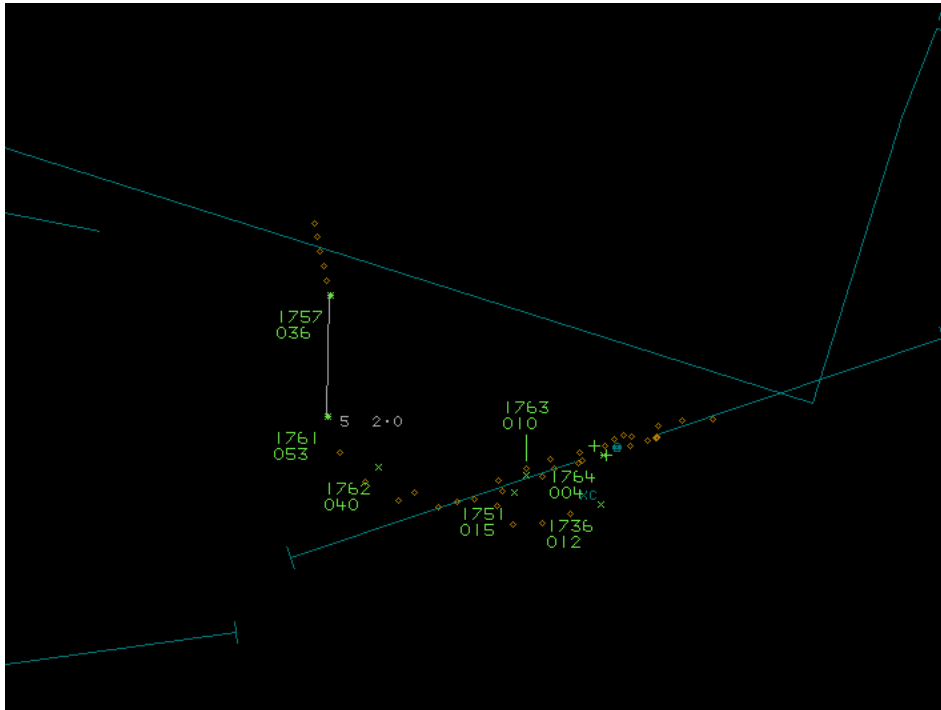


Figure 3

As this R/T exchange was acknowledged by the formation lead, the Departures Controller provided bespoke Traffic Information to the third aircraft in the formation which was accompanied by an instruction to turn right onto a heading of 020 degrees if the AA1 was not in sight (Figure 4).

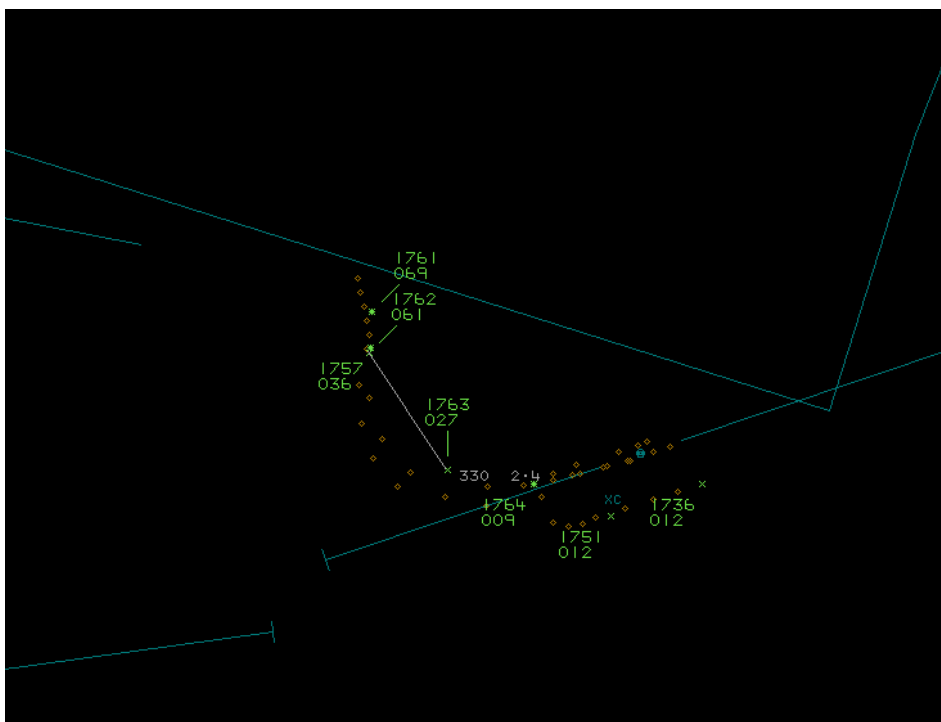


Figure 4

Immediately following this, the Departures Controller passed bespoke Traffic Information to the incident Typhoon which had only just changed to the departures frequency. As a result, the first part of the Traffic Information was missed and the pilot requested it again (Figure 5).

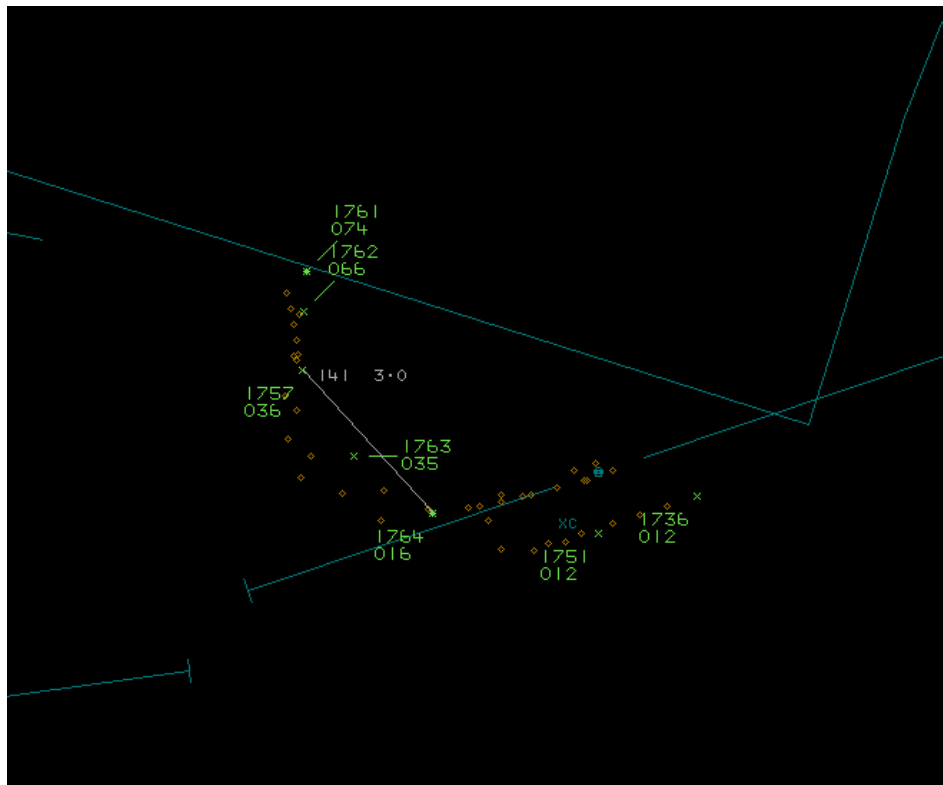


Figure 5

Although this Traffic Information was passed at 2nm (shown as 3nm on the radar replay at Figure 5) the request for it to be repeated meant that by the time it was assimilated by the pilot the Airprox had occurred and was reported on frequency. CPA was measured as 0.3nm and 100ft (Figure 6).

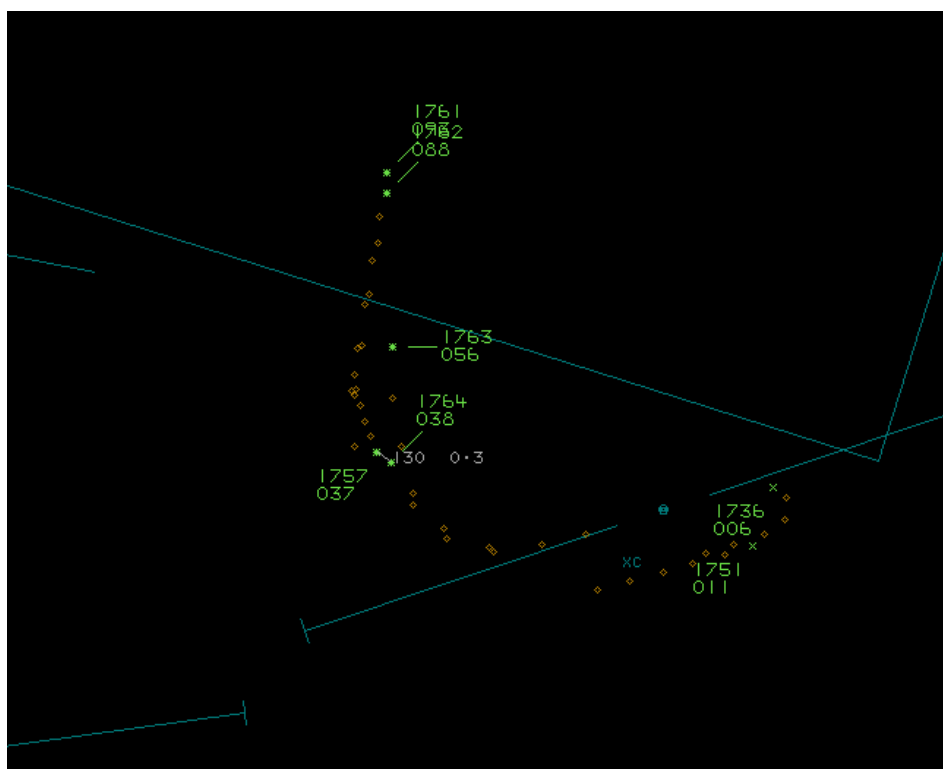


Figure 6 - CPA

The Unit conducted a thorough investigation and found that the decision by the Departures Controller to try and apply lateral separation rather than vertical separation was not correct. Given that the AA1 was 8nm north west of Coningsby when the Departures Controller took control of it, there was plenty of time to seek a level agreement from the AA1. This, coupled with a climb out restriction on the departing Typhoons, would likely have prevented the Airprox from occurring.

UKAB Secretariat

The Typhoon and AA1 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right².

Comments

HQ Air Command

The dynamic nature of a formation departure meant that the plan-to-avoid barrier was not available in this instance. The ATS barrier was available and being utilised by the aircraft ahead but, due to a perception of a greater threat of conflict with visual circuit traffic, the No4 Typhoon (the Airprox aircraft) had not changed to the Departures frequency and was therefore unable to receive TI on the AA1. Additionally, a lack of CWS on Typhoon meant that there was no onboard equipment to warn the pilot of the proximity of the AA1. The AA1 was visible on the Typhoon's radar display (established post-mission) but the pilot was – quite justifiably – prioritising lookout at this stage rather than monitoring head down displays. On switching to the departures frequency the Typhoon pilot was issued TI on the AA1, but too late to materially affect the separation.

The ATC investigation found that a better course of action for the controller might have been to place a climb-out restriction on the departing Typhoons – albeit at late notice – to effect vertical rather than lateral deconfliction. That said, this was a rapidly changing environment and the controller did not have the Airprox Typhoon on frequency as soon as he would normally expect.

This Airprox shows that deviations from the normal can have unintended consequences. If the Typhoon pilot felt that extra time on the Tower frequency was necessary to ensure adequate separation from circuit traffic then that is his prerogative. However, in this instance it proved to be the difference between receiving TI on a conflictor on his departure profile in time to do something about it or not. This is not a criticism of the pilot's actions but does provide food for thought.

Summary

An Airprox was reported when a Typhoon and an AA1 flew into proximity near Coningsby at 1536hrs on Monday 28th January 2019. Both pilots were operating under VFR in VMC, the Typhoon pilot in receipt of a Traffic Service from Coningsby Departures and the AA1 pilot in receipt of a Basic Service also from Coningsby Departures.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, transcripts of the relevant R/T frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and 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 looked at the actions of the Typhoon pilot. He was the last in the formation of 4 Typhoons to take-off on a streamed departure (in which aircraft depart approximately 10 secs after one

¹ SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

another, meaning that the lead aircraft departed about 30-40 seconds before the No4). He was concerned about the proximity of traffic in the visual circuit and so remained on the Tower frequency after the rest of the formation had switched to Departures. The Board discussed the merits of this, with the military member pointing out that it was for the visual circuit traffic to avoid departing aircraft and that this had become a distraction for the Typhoon pilot (**CF6**). Others commented that perhaps it was understandable that he wanted to remain on the Tower frequency, which was obviously busy, so that he had full situational awareness of aircraft in close proximity to him. Either way, the outcome was that the Typhoon pilot was later than the rest of the formation in switching to the Departures frequency (**CF4**) and, as a result, he did not hear the initial Traffic Information on the AA1 and needed to ask the controller to repeat the message. Consequently, he did not get any situational awareness on the AA1 in time to materially affect the incident (**CF5**). By the time he did assimilate the Traffic Information and rolled his wings level to look for it, he saw the AA1 just as it passed down his left-hand side (**CF7**).

Turning to the AA1 pilot, the Board thought that there was little more that he could have done in the circumstances other than to have pro-actively sought a Traffic Service rather than a Basic Service. Waddington were the LARS unit for the area and he was receiving a service from them when the Coningsby controller thought that because he would route close to Coningsby's airspace they would be better placed to provide a service. He was above their MATZ and, because the Coningsby Departures controller did not pass any Traffic Information, he had no situational awareness about the Typhoons until he saw them fly past (**CF5**). Had he opted for a Traffic Service then there may have been more likelihood of him receiving earlier information about the Typhoons such that he might have then opted to route outside the MATZ perhaps. Members noted that the AA1 pilot had reported that the incident all happened very quickly and that he did not think he needed to take avoiding action. Some members wondered whether his sanguine approach was based on an assumption that the Typhoon pilots were aware of his presence and were duly avoiding him when in fact the reality was that the No4 pilot at least was not aware and not actively avoiding him until the last moment.

Finally, the Board looked at the actions of the Coningsby Departures Controller. He had identified that the AA1 could be an issue for the Typhoons and called Waddington to take the traffic from them. But having received the AA1 on frequency, the Board thought that he did not then adequately resolve the developing situation (**CF1**). Although he called the ADC to try and amend the departure clearance for the Typhoons, the lead aircraft was already airborne and the ADC could not help. Whilst recognising that they had the benefit of hindsight, controller Board members thought that rather than trying to amend their clearance, he should have immediately placed a climb-out restriction on the Typhoons until he could assess whether it was safe for them to climb; in this respect, they observed that the coordination between the Departures controller and the ADC had been ineffective (**CF3**). Furthermore, he knew the ADC was under training, and that the visual circuit was busy, so he should have anticipated that problems might occur. The Board were told that at RAF Lossiemouth, which is also a Typhoon base, the Departures Controller can transmit directly onto the Tower frequency for just such circumstances so that a late-notice climb-out restriction can be applied. The Board wondered whether this was something that Coningsby could consider. Once the Typhoons switched to the Departures frequency the controller passed Traffic Information, but he was not aware that the No4 was not on frequency and consequently had to repeat it. Although the AA1 pilot was only on a Basic Service, members thought that the controller could still have given him Traffic Information about the formation of fast-jets climbing out towards him (**CF2**).

In assessing the risk, some members thought that safety had been much reduced as a result of the closure rates of the aircraft and the fact that the Typhoon pilot did not see the AA1 until it passed down his left-hand side (risk Category B); they argued that even just a minor further delay in the Typhoon pilot's right turn would have led to much more serious consequences, that the separation had been generated purely by good fortune, and that the AA1 pilot had been poorly placed to take avoiding action against a high-speed manoeuvring aircraft even if he had decided to. Other members commented that the AA1 pilot had not been concerned by the encounter and that, at 0.3nm, although safety had been degraded, the lateral separation was such that there had been no risk of collision (risk Category C). After a robust debate and a subsequent vote, the latter view prevailed.

PART C: ASSESSMENT OF CAUSE AND RISKContributory Factors:

| C F | Factor | Description | Amplification |
|---|---------------|--|---|
| Ground Elements | | | |
| • Situational Awareness and Action | | | |
| 1 | Human Factors | • Conflict Resolution- Inadequate | |
| 2 | Human Factors | • Traffic Management Information Provision | Not provided, inaccurate, inadequate, or late |
| 3 | Human Factors | • ATM Coordination | Inadequate or ineffective |
| Flight Elements | | | |
| • Tactical Planning and Execution | | | |
| 4 | Human Factors | • Communications by Flight Crew with ANS | Pilot did not communicate with appropriate airspace controlling authority |
| • Situational Awareness of the Conflicting Aircraft and Action | | | |
| 5 | Contextual | • Situational Awareness and Sensory Events | Pilot had no, or only generic, Situational Awareness |
| 6 | Human Factors | • Distraction - Job Related | Pilot was distracted by other tasks |
| • See and Avoid | | | |
| 7 | Human Factors | • Monitoring of Other Aircraft | Late-sighting by one or both pilots |

Degree of Risk: C.

Safety Barrier Assessment³

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

Ground Elements:

Situational Awareness and Action were assessed as **ineffective** because the Departures controller did not resolve the confliction; did not provide Traffic Information to the AA1 pilot or ensure that the all the Typhoon formation members received timely Traffic Information; and did not effectively coordinate with the Tower Controller.

Flight Elements:

Situational Awareness and Action were assessed as **ineffective** because neither pilot had any timely information on the other aircraft prior to the Airprox.

³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

| Airprox Barrier Assessment: 2019017 | | Outside Controlled Airspace | | | | | | |
|--|--|-----------------------------|--------------------|--------------------------|--------------------|-----------------|-----|-----|
| Barrier | | Provision | Application | Effectiveness | | | | |
| | | | | Barrier Weighting | | | | |
| | | | | 0% | 5% | 10% | 15% | 20% |
| Ground Element | Regulations, Processes, Procedures and Compliance | ✓ | ✓ | | | | | |
| | Manning & Equipment | ✓ | ✓ | | | | | |
| | Situational Awareness of the Confliction & Action | ✓ | ✗ | | | | | |
| | Electronic Warning System Operation and Compliance | ○ | ○ | | | | | |
| Flight Element | Regulations, Processes, Procedures and Compliance | ✓ | ✓ | | | | | |
| | Tactical Planning and Execution | ✓ | ✓ | | | | | |
| | Situational Awareness of the Conflicting Aircraft & Action | ✗ | ✓ | | | | | |
| | Electronic Warning System Operation and Compliance | ○ | ○ | | | | | |
| | See & Avoid | ✓ | ✓ | | | | | |
| Key: | | <u>Full</u> | <u>Partial</u> | <u>None</u> | <u>Not Present</u> | <u>Not Used</u> | | |
| Provision | ✓ | ⚠ | ✗ | ○ | ○ | | | |
| Application | ✓ | ⚠ | ✗ | ○ | ○ | | | |
| Effectiveness | ■ | ■ | ■ | ■ | □ | | | |