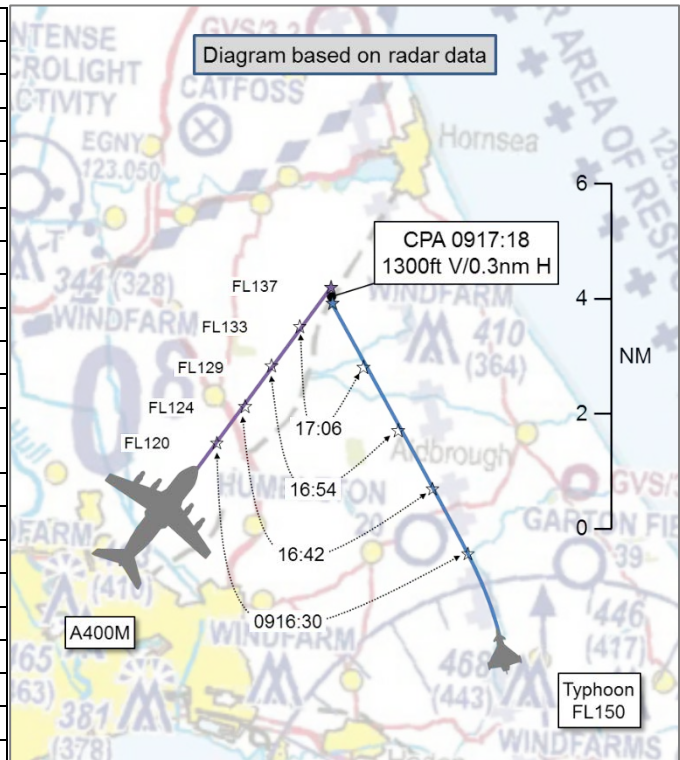


AIRPROX REPORT No 2018204

Date: 03 Aug 2018 Time: 0917Z Position: 5350N 00015W Location: 10nm NNW OTR

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Typhoon	A400M
Operator	HQ Air (Ops)	HQ Air (Ops)
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic ¹	Traffic
Provider	Leeming Zone	Humberside
Altitude/FL	FL150	FL137
Transponder	A,C only	A, C, S
Reported		
Colours	Grey	Grey
Lighting	White strobes	Strobes, Beacons, nav
Conditions	VMC	VMC
Visibility	40km	10km
Altitude/FL	FL150	FL150
Heading	330°	030°
Speed	300kt	180kt
ACAS/TAS	Not fitted	TCAS II
Alert	N/A	None
Separation		
Reported	1000ft V/0ft H	1000ft V/NK H
Recorded	1300ft V/0.3nm H	



THE TYPHOON PILOT reports that whilst still on the ground at Coningsby the Typhoon Flight were notified that due to limited capacity at Swanwick (Mil) they would be handed direct to Linton once they had departed on a SID North. After departure, and under a Traffic Service from Coningsby, Coningsby Departures informed them that due to communication issues at Linton, they were attempting to arrange a handover to Leeming because Humberside were unable to assist due to a lack of 8.33KHz radio capability within the Typhoons. By now they were clear of Airway Y70 and approaching the Ottringham (OTR) VOR overhead. The second Typhoon remained in the OTR overhead whilst the lead aircraft continued north to set up for the air exercise. It was agreed that the flight would free-call Leeming because the two stations' radar coverages did not overlap. Coningsby departures advised the Typhoon pilots to switch to Leeming Zone at 0916. The formation was checked in with Leeming at 0917 and, once identified, immediately received a call 'traffic, 0.5nm, 1600ft below, climbing'. The lead Typhoon rolled right and sighted an A400M directly below, crossing left-to-right, visually judged 1000ft below. No Traffic Information had been called up until this point and there was no contact on the Typhoon's radar. An Airprox was filed airborne with Leeming and the sortie was continued without further incident.

He assessed the risk of collision as 'Medium'.

THE A400M ATLAS PILOT reports that during the climb-out from Humberside to FL190 to conduct training, a Typhoon aircraft was reported under a Traffic Service. The aircraft was acquired visually and no air safety risk was perceived.

He assessed the risk of collision as 'Low'.

¹ The Typhoon pilot established a Traffic Service with Leeming very shortly before CPA.

THE CONINGSBY RADAR CONTROLLER reports that, at the time of the incident he was operating/monitoring multiple frequencies, which included LARS and Tower UHF as a discreet frequency for an aircraft operating in the Holbeach Range. Shortly before the Typhoon flight was airborne, at the request of the Supervisor he had also taken the Departures frequency in order to facilitate a controller break. The Typhoons had been pre-noted to him by the Ground controller and he was told that Swanwick (Mil) would not be able to provide a service. Pre-empting the aircraft getting airborne and not being able to work Humberside due to being non '8.33' compliant, he went to prenote Linton-on-Ouse; however, the landline was very poor and often difficult to understand due to a high-pitched noise (often experienced with external landlines). Speaking with the Linton Supervisor she informed him they had issues with their communications and were unable to provide any form of radar service. With the aircraft now being airborne on his frequency (Deps) he was keen to find an alternative solution. Liaising with the Approach controller at the time, he spoke with Swanwick to see if they could provide a service to the Typhoon pilots, however, again to no avail. The Approach controller then spoke with Leeming to see if they were happy to provide a radar service; however, a handover would not be achieved as Coningsby and Leeming don't have overlapping radar coverage. He once again spoke to Linton to establish if there was any way they could provide a service but, having spoken with the Supervisor, it was soon clear that they had been having ongoing issues with their equipment and communications, therefore would not be available to provide a service. He passed this information to the Typhoon pilots and they were happy to continue VFR and requested a Leeming frequency. They were now nearing the OTR area and aware that they were now operating at the edge of his radar coverage. The Approach controller quickly got on the line to Leeming for a frequency. Whilst speaking to Leeming, Swanwick called to say they could now provide a service. He started the handover, but the controller sounded busy with other traffic as well as him working the other two frequencies. As he was handing the Typhoon Flight over to Swanwick, his Approach controller handed him a flight strip with a frequency for Leeming. With the aircraft at the edge of his radar coverage, and with the Typhoon pilots happy to continue VFR, he felt that handing over to Swanwick was a hindrance at the time and therefore elected to free-call them to Leeming. At the time of handover (free-call) he had his radar ranged out to 45nm because the Typhoons were operating overhead the OTR area and he still had the Holbeach traffic, therefore his attention was stretched. Working 3 frequencies and making several landline calls, his workload went from low-high very quickly and therefore he forgot to limit the Typhoons service from ahead, because they were operating close to the edge of his radar coverage.

THE LEEMING LARS CONTROLLER reports that he was made aware by his Supervisor that a pair of Coningsby-based Typhoons were about to free-call on UHF. He was informed that the pilots' intentions were for General Handling (GH) and that Swanwick (Mil) were unable to provide a service. They were also unable to receive a service from Humberside radar because they were not 8.33KHz compliant. Also, Doncaster were unable to provide a service, Linton-on-Ouse had no radar and, because they had no overlapping radar cover with Coningsby, a radar handover could not take place. Approximately 2 mins later, the Typhoon Flight free-called; he issued an IFR squawk of 0403 and asked them to pass their message. Once he saw the 0403 squawk he identified them and in the same transmission called traffic. The traffic, squawking 4251, was 1nm north crossing left-to-right and indicating 1600ft below climbing. The pilot acknowledged his Traffic Information before calling contact and informing him that it was an A400M and that they would be filing an Airprox. He then placed the Typhoons under a Traffic Service in the block surface-to-15000ft.

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

THE LEEMING SUPERVISOR reports that prior to the Typhoon flight free-calling, he had two landline calls from Coningsby Approach because Swanwick (Mil) had refused a service and they were looking to operate in the Vale of York. A radar handover was not possible, and the second call informed him that they were content to free-call to the north of OTR, which was just inside radar cover. He informed the Zone controller of the aircraft and heard him issue a squawk when the Typhoon pilot called, then Traffic Information about a conflicting aircraft almost immediately after identification. On speaking to Humberside Radar, they were working the A400M which was climbing to FL190. The pilot had called visual with the Typhoon when it was called to him. Following Swanwick (Mil) refusing a service he would have expected this track to have been handed over to Humberside or Linton before handover to Leeming. He considered that this not being possible was a major factor in the incident.

THE HUMBERSIDE APPROACH RADAR CONTROLLER reports that he was working the A400M, whose pilot had just carried at a low approach at Humberside and was climbing to FL190 to the northeast, under VFR, in receipt of a Traffic Service. He was then to carry out further approaches at Humberside. The A400M was approximately 20nm north of Humberside, passing approximately FL110; when he noticed a Coningsby squawk approximately 12nm southeast of the A400M at FL150. About 3nm later the Coningsby aircraft turned east at FL150, which he considered was no problem to the A400M. About 4nm north of OTR, the Coningsby squawk then suddenly popped-up on his radar screen about 3-4nm southeast of the A400M, which was passing FL125. The traffic was immediately called to the A400M pilot, who reported visual. The aircraft squawk which popped up was initially on a Coningsby squawk code and then it changed to a Leeming squawk code.

Factual Background

The weather at Humberside was recorded as follows:

EGNJ 030850Z 24005KT 180V300 9999 SCT018 23/17 Q1022=

Analysis and Investigation

CAA ATSI

At 0850:10, the A400M pilot made initial contact with the Humberside Radar controller. The aircraft was identified and a Traffic Service was agreed. The pilot requested a Procedural NDB approach followed by an ILS approach to RW20. At 0904:10, the A400M was downwind in the radar pattern for an ILS approach and the pilot requested a low approach, to depart VFR to the north climbing to FL190 and return for a couple of steep visual approaches. The controller advised the pilot to expect to depart as requested. At 0909:20, the controller cleared the A400M pilot for a low approach RW20 and a climb to FL190. The A400M pilot acknowledged this and at 0911:20 the pilot reported going around. At 0915:00, the controller passed Traffic Information to the pilot of an aircraft they were providing a service to (transponder code 4255) on the A400M and this pilot responded that they were visual. The controller then passed Traffic Information to the A400M pilot on the traffic transponder code 4255, as southeast by 7nm, northbound, FL110 working Humberside and visual with him. The pilot acknowledged the traffic but did not call visual.

At 0916:30 (Figure 1), the Typhoon (SSR code 1734), was 4.8nm east-southeast of the A400M.

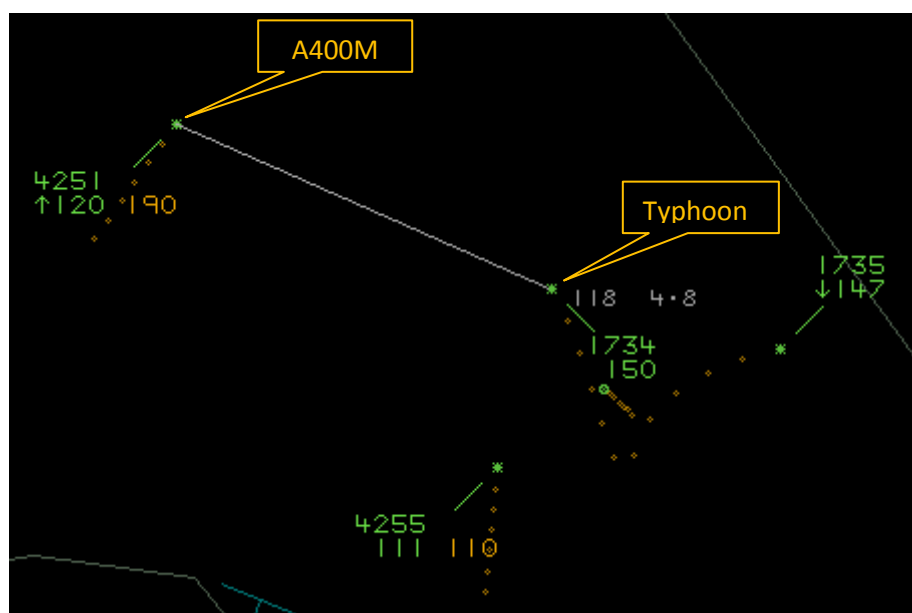


Figure 1 – 0916:30.

At 0917:00 (Figure 2), the controller passed Traffic Information to the A400M pilot as traffic east by 3nm, tracking northbound at FL150 believed to be a fast-jet. The pilot responded that they were visual.

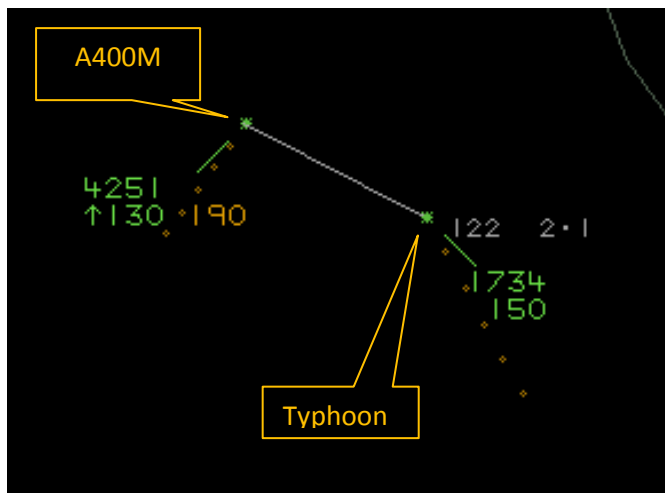


Figure 2 - 0917:00.

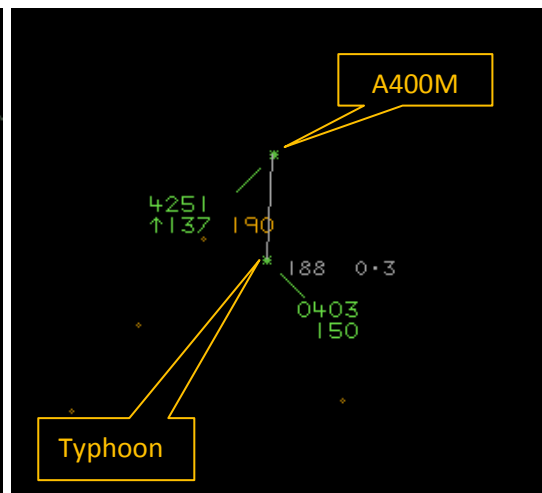


Figure 3 – 0917:19.

CPA occurred at 0917:19 (Figure 3), with the aircraft separated by 0.3nm horizontally and 1300ft vertically.

At the time of the Airprox the A400M pilot was receiving a Traffic Service from Humberside radar. Under a Traffic Service the controller is not required to achieve any deconfliction minima and CAP 493 states:

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.

Also:

Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed trajectory indicates that it will pass within 3 NM and, where level information is available, 3,000 ft of the aircraft in receipt of the Traffic Service or its level-band if manoeuvring within a level block. However, controllers may also use their judgment to decide on occasions when such traffic is not relevant, e.g. passing behind or within the parameters but diverging. Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 NM, in order to help the pilot meet his collision avoidance responsibilities and to allow time for an update in traffic information if considered necessary.

Whilst the controller could have passed Traffic Information to the A400M pilot on the Typhoon at an earlier stage (outside 5nm) the Traffic Information that was provided enabled the A400M pilot to visually sight the Typhoon.

The Airprox occurred in Class G airspace under a Traffic Service where collision avoidance is ultimately the responsibility of the pilot.

Military ATM

The Typhoon formation planned to complete an exercise in the Vale of York, the A400M pilot was completing training with Humberside Radar. Prior to departure from Coningsby, the Typhoon formation were informed that Swanwick (Mil) were working to capacity due to surge-flying from Lakenheath and therefore would not be able to offer a service to the Typhoons.

The Coningsby Approach controller formulated a plan to hand the Typhoons to Humberside for the transit. However, due to perceived 8.33KHz compliance issues with the Typhoons, the decision was taken to hand the aircraft to Linton-on-Ouse. Unfortunately, Linton had suffered a catastrophic communications failure, were operating on a reduced capacity, and were unable to accept the Typhoons.

The Coningsby ATC Supervisor contacted Leeming to advise them that the Typhoon formation would be free-called to Leeming Zone once north of the Humber Estuary and therefore inside Leeming radar coverage. At the same time, Swanwick (Mil) contacted Coningsby to advise that they could now accept the Typhoon transit. However, as a plan had been agreed with Leeming, and the Typhoon crews were happy to continue visually, the offer was declined and the Typhoons were free-called to Leeming as agreed. The Typhoon lead free-called Leeming Zone, was issued with a squawk, identified and immediately passed Traffic Information on the A400M. 21secs after the Traffic Information was passed, the Typhoon lead reported the Airprox.

Figures 4-8 show the positions of the Typhoon lead and the A400M at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the Great Dunn Fell Radar, which is not utilised by either Coningsby or Leeming ATC, therefore is not representative of the picture available to the controllers.

Figure 4, at 0915:00, shows the point the Typhoon formation (1734/5) began crossing the Humber Estuary at FL150, the A400M (4251) was passing FL80 climbing to FL190. Separation at this point was approximately 10.7nm. Analysis of the Coningsby Tape Transcript shows that this was the point at which Swanwick (Mil) had indicated they could accept the transit.

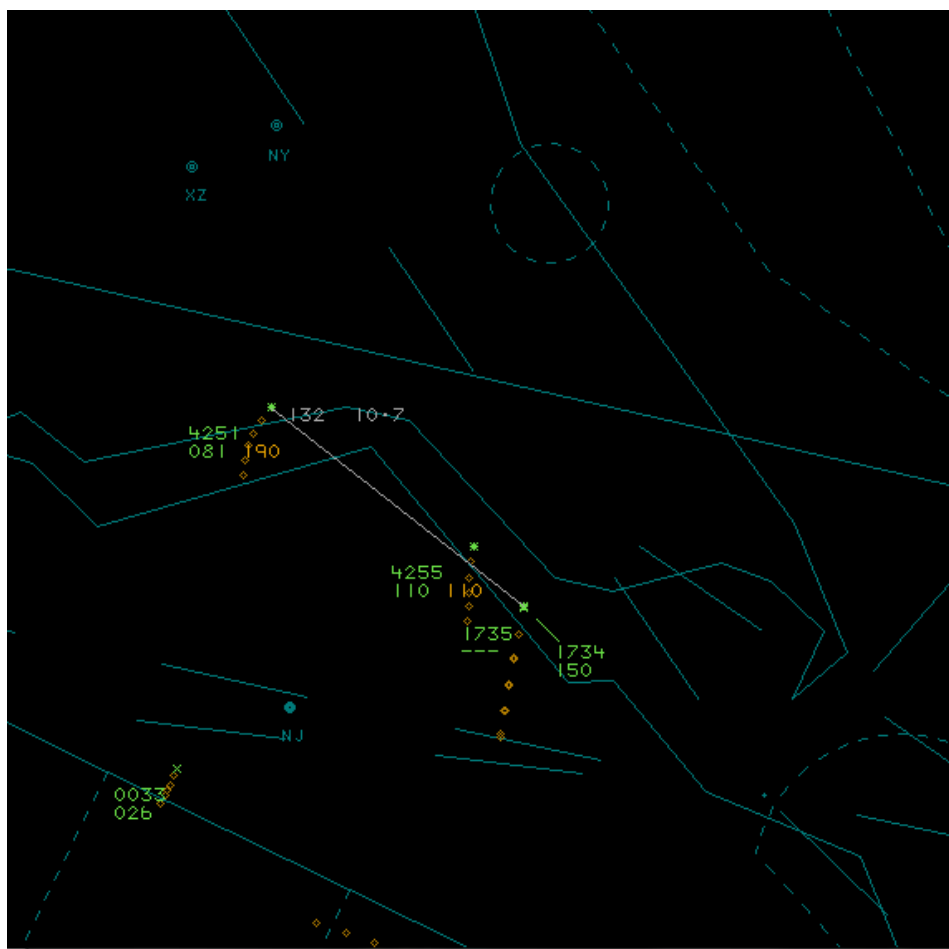


Figure 4-0915:00.

At 0916:16 (Figure 5), the Typhoon formation split to allow the lead aircraft to set up in the Vale of York for the air exercise whilst the No2 aircraft held near Ottringham. Separation at this point was 6nm and was the point at which the Typhoons were free-called to Leeming Zone.

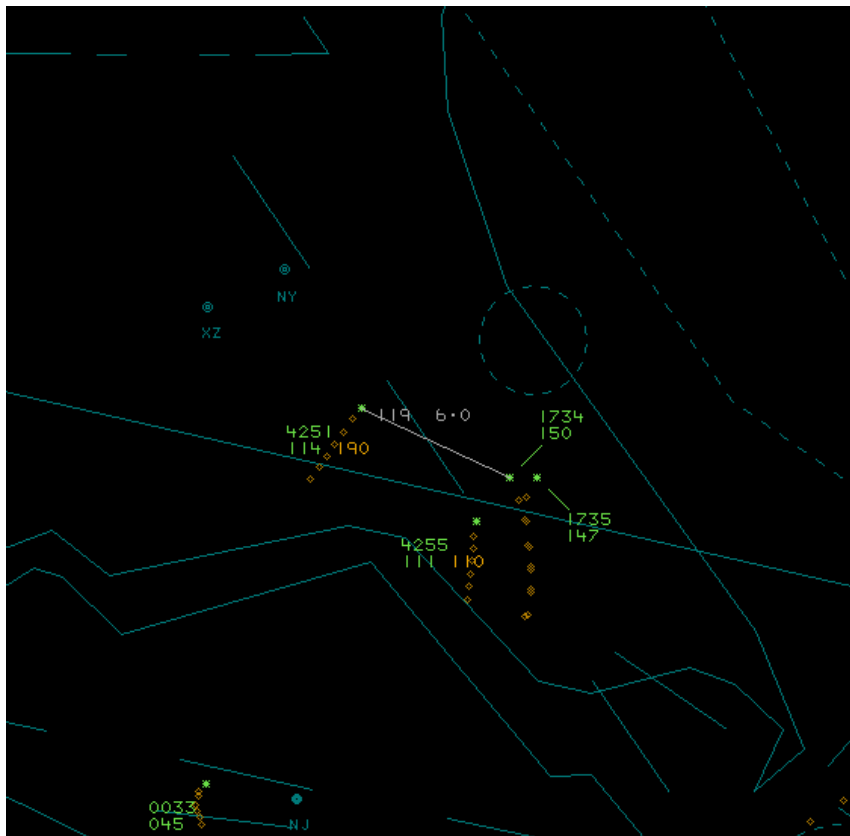


Figure 5-0916:16.

Figure 6, at 0917:04, depicts the point at which the Typhoon lead changed squawk to Leeming (0403). Separation at this point was 1.5nm horizontally and 1800ft vertically indicated on Mode C.

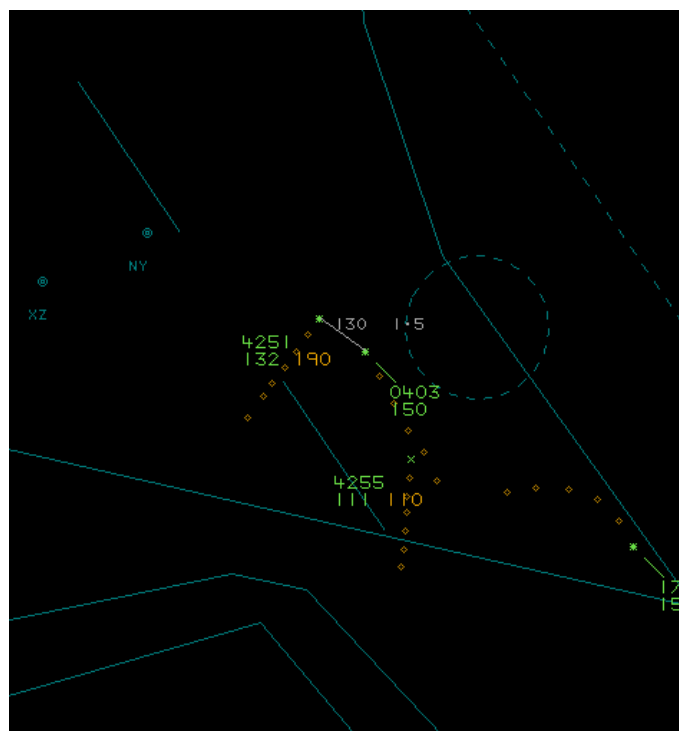


Figure 6-0917:04.

At 0917:12 (Figure 7), the Leeming Zone controller identified the Typhoon and passed Traffic Information on the A400M. This Traffic Information reported the A400M as 'North, ½ a mile, crossing left-to-right, indicating 1600ft below, climbing'. The Typhoon pilot reported 'looking' and then reported the Airprox.

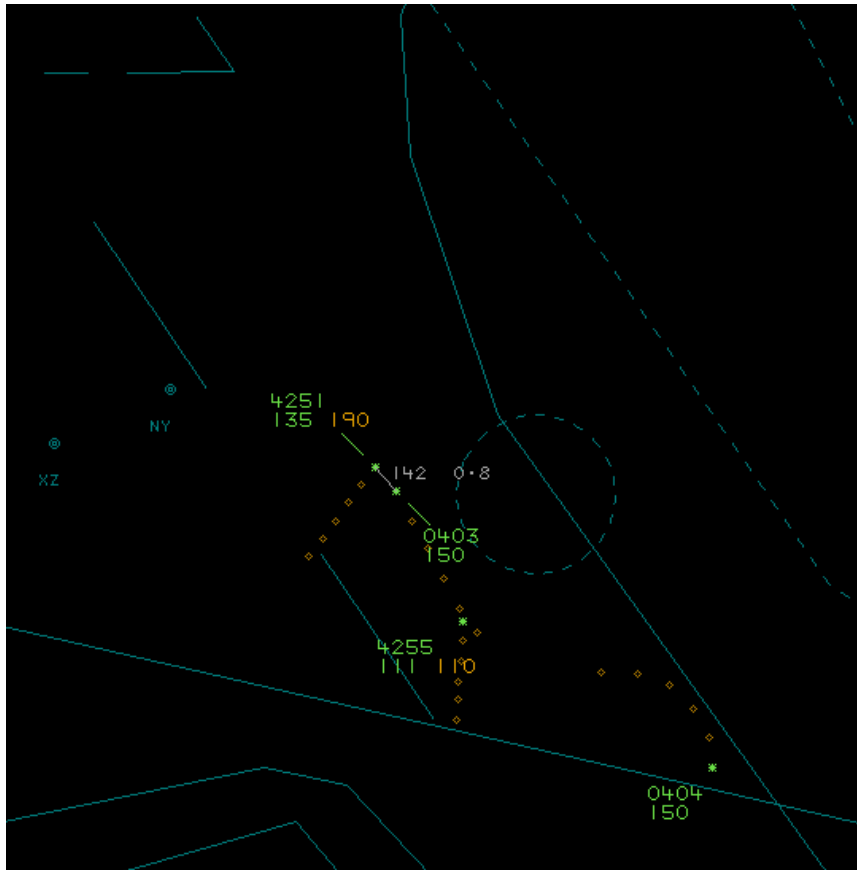


Figure 7-0917:12.

CPA occurred at 0917:19 (Figure 8), and was recorded as 0.3nm horizontally and 1300ft vertically indicated on Mode C.

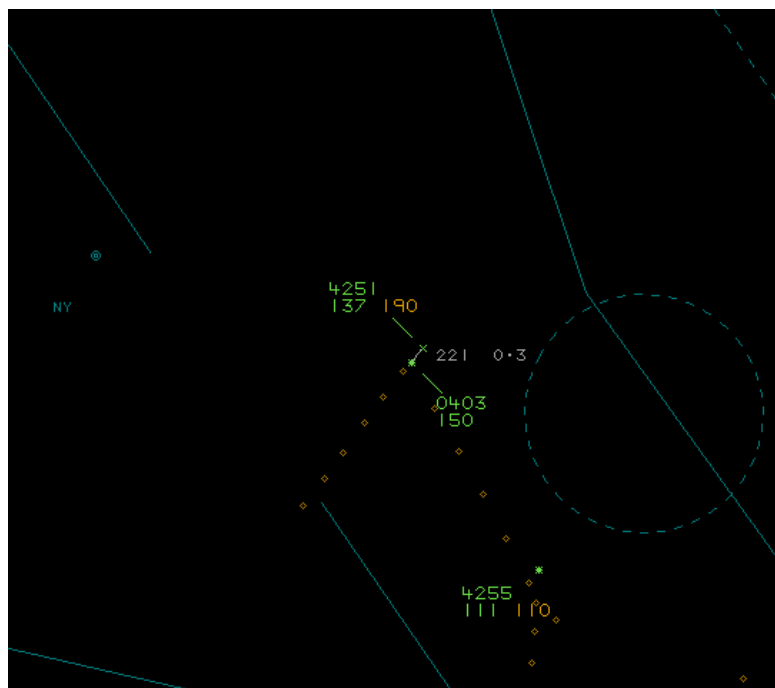


Figure 8 – CPA-0917:19.

The Airprox occurred at the end of a long sequence of events. The lack of capacity at Swanwick (Mil) is well-known and understood by military operators although in this case Swanwick (Mil) could take the Typhoons approximately 2mins prior to the Airprox occurring. It is possible that had the handover commenced at this point, the Swanwick (Mil) controller may well have spotted the growing conflict which was occurring outside Coningsby's radar coverage. However, this handover was not initiated because a plan had been put in place with Leeming and the Typhoons had indicated they were VFR and happy to free-call Leeming.

The plan to hand the Typhoons to Humberside was sound and would have placed all aircraft involved in this Airprox on the same frequency. However, when asked by ATC if they were 8.33KHz compliant, the Typhoons responded that they were not. This was not correct, and was highlighted in the Coningsby safety investigation following this incident.

The Linton communication problems had begun on 18 Jul 18 and were the subject of 2 NOTAMs and a Duty Holder Advice Note (DHAN). As a result, there was a severely restricted flying program in place at Linton and the unit was unable to act as a diversion airfield, was not accepting practice diversions, and was not conducting the LARS task.

The Leeming Zone Controller was placed in the unenviable position of having an aircraft free-call when in conflict. Once both the Typhoon and the conflict were identified, the Leeming Zone Controller immediately passed Traffic Information which allowed the Typhoon lead to visually acquire the A400M, albeit at a much closer range than the pilot was comfortable with. Having been placed in this situation, the Leeming Zone controller discharged their duties correctly.

UKAB Secretariat

The Typhoon and A400M pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard².

Occurrence Investigation

The RAF Coningsby Safety Cell reported that Tranche 2 Typhoons would always be 8.33KHz capable whilst Tranche 1 aircraft may not be, but could be, if the requirement was stated to the engineers and the correct radios were available and then fitted. In this incident, the aircraft in the formation were in fact 8.33KHz capable but, due to the complexities of the embodiment, the pilots were not sure about the state of their aircraft because the question was asked at a very late stage and a handover to Humberside was not a routine option for Coningsby departures. The pilots chose the conservative option to request a handover to Linton rather than attempt a handover to Humberside, which they believed may not have worked. Once the plan had been formulated on the ground, it would be unreasonable to expect them to choose to request a handover to Humberside once it became apparent that the Linton handover was not possible. Given the circumstances and the speed of travel, a decision to accept a handover to Leeming was understandable. Further information revealed that the No2 aircraft's radar was being recycled due to a momentary failure, then was in Passive Mode (as is SOP for an aircraft flying as a subordinate element of an Arrow formation). The lead aircraft's radar displayed a momentary contact believed to be the A400M then reverted to a level/look-up scan, which caused the A400M track to fade.

The Humberside ATSU investigation concluded that the Humberside controller called the traffic to the pilot of the A400M, who reported visual. The aircraft was in Class G airspace and under a Traffic Service, so the Humberside controller had fulfilled his obligations.

² MAA RA 2307 – Rules of the Air, paragraphs 1 and 2, Avoidance of Collisions.

Comments

HQ Air Command

This Airprox took place in a relatively busy piece of Class G airspace. The Typhoon pilot had planned to establish a surveillance-based ATS; due to capacity issues at the area radar unit a plan was formulated to 'leapfrog' via 2 terminal radar units. Unfortunately, one of these radar units was experiencing equipment issues and, by the time the area radar unit was able to offer an ATS to the Typhoon formation, the transfer to the most northerly terminal unit was almost complete. With no radar coverage at the time of the transfer, the Coningsby controller was unable to see the developing conflict. When radio contact was established with Leeming, the 2 aircraft were in conflict and the Leeming controller is to be applauded in passing Traffic Information at the earliest possible opportunity. The Typhoon is not yet equipped with a CWS, but the first element of a bespoke system is expected to be delivered in late 2019. This will go some way to mitigating the MAC risk but further work continues to deliver a more robust capability.

Lookout, as the final barrier in this encounter, was effective for the A400M crew as they were receiving timely and accurate Traffic Information from the Humberside controller and were content with the separation. When the Typhoon pilot received reciprocal Traffic Information from the Leeming controller and then became visual with the A400M he was uncomfortable with the situation and so filed an Airprox. It is likely that the 'sudden' appearance of the A400M led the Typhoon pilot to judge that, at that moment, the aircraft were closer to each other than was subsequently found to be the case and so he declared an Airprox on frequency.

The plan to utilise terminal units for an ATS was sound but, sadly, this concentrated on military units as the Typhoon pilots believed that their radios would not permit them to contact Humberside (the unit delivering a Traffic Service to the A400M). This was not the case and the unit has addressed corporate understanding of Typhoon radio capabilities; it is possible that, had all aircraft been receiving an ATS from the same unit then this Airprox may not have occurred. With the current pressure on the capacity of the area radar unit consideration needs to be given, at the planning stage, to other ATS providers and this should include civilian as well as military units.

Summary

An Airprox was reported when a Typhoon and an A400M flew into proximity near OTR at 0917hrs on Friday 3rd August 2018. The Typhoon and A400M pilots were operating under VFR in VMC. The Typhoon pilot was in the process of establishing contact with Leeming for a Traffic Service and the A400M pilot was in receipt of a Traffic Service from Humberside.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots and controllers concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board noted that the Typhoon pilots had departed from Coningsby to conduct general handling in the Vale of York, and that prior to departure they had been advised that Swanwick (Mil) were unable to provide an ATS Service to the Typhoons due to manning and high workload. The Mil Advisor commented that this lack of capacity was not unusual under current resource constraints and was well known by UK military pilots. Because of this the Coningsby controller, who was providing a Traffic Service to the Typhoons, intended to transfer the aircraft to Humberside. However, the Typhoon pilots reported, erroneously, that the aircraft were not 8.33kHz compliant. The HQ Military member explained that Typhoons had been supplied to the RAF in different tranches, the earliest of which was not routinely equipped with 8.33kHz radios but could be if the requirement was stated to the engineers. As it happened, the Typhoons were in fact equipped with 8.33kHz radios and the Board were concerned that this was not evident to the pilots who, thinking that a transfer to Humberside would not be possible, had agreed instead to a handover to Linton. Some members thought that the lack of understanding of the radio capabilities of their aircraft was a contributory factor in the incident because it caused the

Typhoon pilots to discard an ATC barrier that would have been available with Humberside who were providing a Traffic Service to the A400M pilot and consequently would have put both flights in receipt of a service from the same controller. Other members thought that this was not germane because, although the barrier had been removed, the incident did not hinge solely on the lack of Traffic Information that Humberside could have provided because the encounter was in fact benign. The debate flowed back and forth but, on balance, the Board could not come to an agreement that the Typhoon pilots' lack of understanding of their radio capabilities was a contributory factor.

Turning to the ATC aspects, members noted that Linton were unable to provide a service to the Typhoon pilots because of communication problems. In fact Linton had NOTAM'd some two weeks previously that they were not accepting practice diversions and were not conducting the LARS task, but it was not known if the Coningsby controller was aware of this NOTAM. Controller members commented that it would probably be unusual for Coningsby to handover traffic to Linton, and so the controller may not have assimilated the NOTAM. As it happened, just as Coningsby were in contact with Leeming, Swanwick (Mil) reported that they could now accept the Typhoons but the controller decided that because details had already been passed to Leeming and the Typhoon pilots had accepted that they would continue VFR, it was a better option to continue with the Leeming plan. This was a finely balanced decision which, in hindsight, may have been better served through Swanwick (Mil) but the Board agreed that, with the circumstances pertaining at the time, it was understandable that the controller chose to continue with the Leeming option.

For their part, Leeming were contacted by Coningsby and advised that the Typhoon pilots had agreed to continue VFR and would free-call Leeming (a radar handover could not take place because Leeming does not have overlapping radar coverage with Coningsby). After initial contact with Leeming the controller quickly identified the Typhoons and then issued Traffic Information about the A400M. The pilot acknowledged the information and reported contact with the aircraft. The Board commented that the controller had been placed in the unenviable situation of receiving an aircraft that was in conflict, and praised their prompt actions in informing the Typhoon pilot about the presence of the A400M.

Meanwhile, the Humberside controller issued the A400M crew with Traffic Information about the Typhoons at about 3-4nm separation when he noticed them display on the radar screen. Although later than desirable, this Traffic Information was sufficient to enable the A400M pilot to report visual contact with the Typhoons who he considered were not a risk.

Turning to the cause and risk, the Board could understand why the Typhoon pilot had filed the Airprox given that it was apparent that he had been surprised to suddenly see the A400M following unexpected Traffic Information immediately after contacting Leeming. Some members wondered whether he had fully assimilated that he had not been in radar coverage before that point, and that he could therefore not receive collision avoidance advice, in accordance with VFR criteria. Notwithstanding, members noted that at CPA the aircraft were separated by 1300ft vertically, with both crews being visual, and so the Board considered that although there had been peripheral ATC complications, normal safety standards and procedures had pertained overall. The Board therefore agreed that this was a sighting report with no risk of collision; risk Category E.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A sighting report.

Degree of Risk: E.

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:

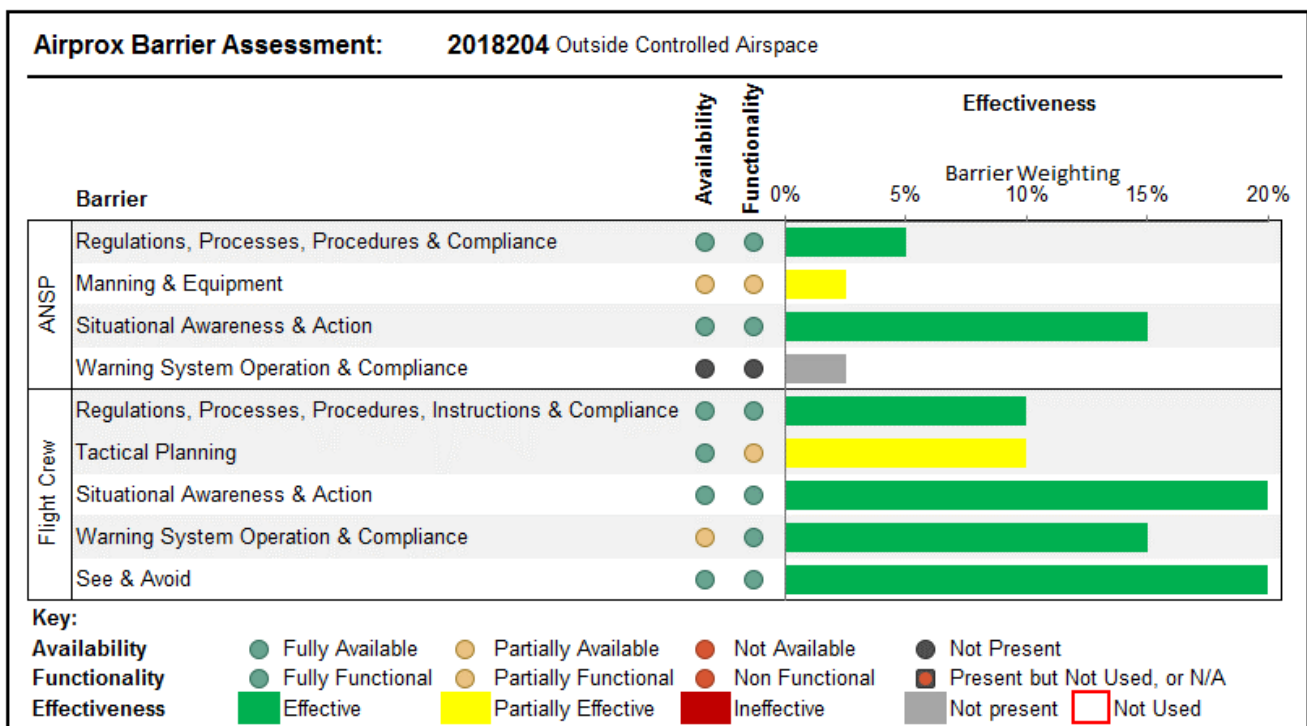
ANSP:

Manning and Equipment were assessed as **partially effective** because Swanwick (Mil) did not initially have the capability of providing a Radar Service to the Typhoon pilots. Also, Linton-on-Ouse had NOTAM'd equipment issues that meant they were unable to provide a Radar Service to the Typhoon pilots.

Flight Crew:

Tactical Planning was assessed as **partially effective** because the Typhoon pilots were unaware of the 8.33kHz capability of the communication equipment in their aircraft and believed they were unable to contact Humberside ATC.

Warning System Operation & Compliance was assessed as **partially available** but **effective** because only the A400M was equipped with an electronic warning system that was able to detect the Typhoon, albeit it did not indicate an RA or a TA because the Typhoons were outside alerting range.



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