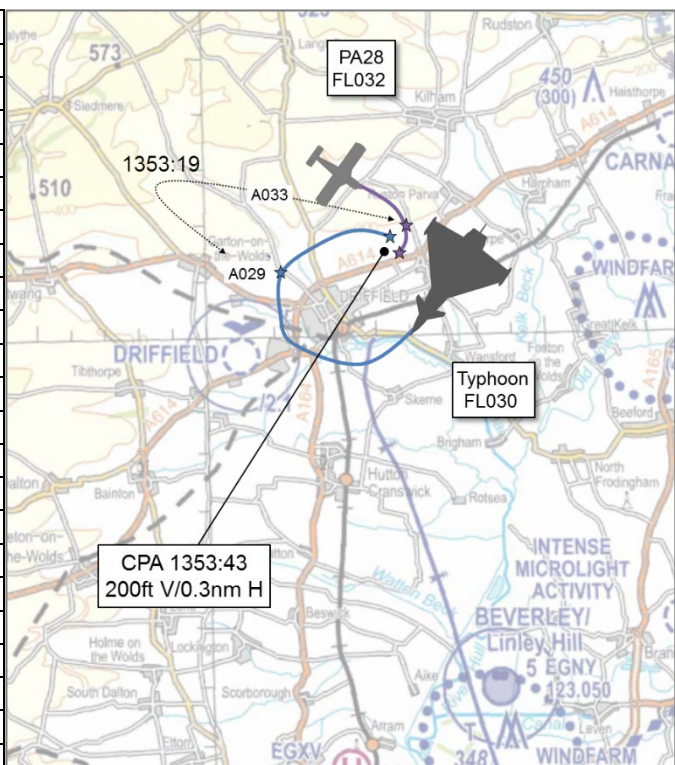


AIRPROX REPORT No 2019136

Date: 05 Jun 2019 Time: 1353Z Position: 5400N 00025W Location: Driffield

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------------|-----------------|-------------------|
| Aircraft | Typhoon | PA28 |
| Operator | HQ Air (Ops) | Civ FW |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | VFR | VFR |
| Service | Traffic | Basic |
| Provider | Linton | Linton |
| Altitude/FL | FL030 | FL032 |
| Transponder | A, C | A, C, S |
| Reported | | |
| Colours | Grey | White |
| Lighting | NR | Beacon |
| Conditions | VMC | VMC |
| Visibility | 10km | |
| Altitude/FL | 2500ft | ~2500ft |
| Altimeter | RPS (999hPa) | NK |
| Heading | 135° | 240° |
| Speed | 300kt | 100kt |
| ACAS/TAS | Not fitted | Not fitted |
| Separation | | |
| Reported | 100ft V/100m H | 'below' V/0.5nm H |
| Recorded | 200ft V/0.3nm H | |



THE TYPHOON PILOT reports they were taking part in a CAS exercise centred on Driffield. A NOTAM had been submitted detailing the exercise activity (SFC-15,000ft, 1300-1500Z) and exercise staff had liaised with operators at Beverley Airfield to arrange deconfliction: Beverley traffic agreed to operate east and south of their airfield. The Typhoon and other participating aircraft were in receipt of a Traffic Service from Linton Zone on a discreet frequency. The Typhoon was established at 3000ft below a cloud base of about 4000ft. At 1349hrs, Traffic Information was received regarding 2 aircraft, one to the north-west at 5nm routing east; and one to the south-east routing north-west; both within 500ft of their level. At 1350hrs, and after JTAC comm transmitted over Traffic Information, the Typhoon pilot informed the JTAC that deconfliction was now the priority and the JTAC ceased further transmissions. Further Traffic Information was requested and, at 1351:45, the Typhoon pilot became visual with a light-aircraft to the north, routing east, with no assessed conflict. He then turned to the south-east in an attempt to gain radar or visual SA on the other traffic, which was now at 8nm still routing north-west. He did not gain either radar or visual SA by 4nm, so turned west and requested an update on the northern traffic whilst descending to 2500ft to be below both. He then turned east to regain visual on the northern traffic, expecting it to be further north-east of the previous position. Traffic information between 1353:10 and 1353:30 updated the traffic from 2nm east, routing east, to 0.5nm east, routing east, at which point he commenced a hard turn south. During the turn, looking out to the right he gained visual on a light-aircraft now heading west over Driffield, approximately 100ft above and 100ft displaced. He was able to identify the aircraft type as a PA28 and note the colour pattern(white with orange and yellow markings). He continued the right turn, circling around the aircraft in order to maintain clear of the southern traffic, before pointing north climbing with a clear lane from ATC. An Airprox was reported to Linton ATC. After landing, Linton ATC confirmed that the light-aircraft was being controlled by Linton on another frequency, and had been given Traffic Information on the Typhoon.

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

THE PA28 PILOT reports that he was on a nav-ex and turned overhead Driffield for Selby. ATC informed him about traffic and he saw a Typhoon in front of him travelling left-to-right. He reported visual with it. The Typhoon continued turning right and it looked like it was turning towards him, but then routed behind, it was below him so no avoiding action was necessary.

[UKAB Secretariat Note: the PA28 was not operating out of Beverley]

The pilot assessed the risk of collision as 'None'.

THE LINTON ZONE CONTROLLER reports that on coming onto console he was given a discrete frequency and briefed about an exercise involving 3 Typhoons from Coningsby, which were to be joined by two further Typhoons later. The aircraft had been cleared into area 323J and K by Swanwick and handovers were taken directly from Coningsby. Once on frequency, the Typhoons were identified, given a Traffic Service and cleared into a general handling block surface-18,500ft, with responsibility for their own terrain separation. They were further briefed that if they entered the 323 fillets J and K, the service would become a Basic Service and were asked whether they required Traffic Information to be passed to all elements involved in the detail. Shortly after the Typhoons had taken up orbits (at different levels with the Airprox Typhoon indicating FL035 on Mode C, the others at FL135 and FL175), conflicting traffic was called to the Airprox Typhoon. The first traffic (AC1) called was on a Basic Service with Linton App and indicating FL032 to the north-west tracking east, the second (AC2) was working Humberside Radar under a Basic Service at FL035 to the south-east tracking north-west. He recalled that he started calling AC1 at 6nm and AC2 at 10nm. At times there was no response from the Typhoon, so transmissions were repeated, with occasional updates requested from the pilot. When about 1-2nm away, the Typhoon pilot reported visual with AC1 and at this time AC2 was 5nm south-east. The Typhoon pilot appeared to continue his orbit away from the traffic, so the controller focussed on updating the position of AC2. At some point AC1 changed heading and took up a west-southwest track so he called the traffic to the Typhoon pilot again, updating as much as possible (he recalled the last call being 0.5nm). The pilot called visual and informed the controller that he had passed within 75-100m of AC1 and requested a climb to 13,000ft. The climb was approved and the pilot declared an Airprox shortly afterwards.

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

THE LINTON SUPERVISOR reports the Linton LARS task had been split because of the traffic loading that the unit was about to undertake. The UHF element with the Typhoons was controlled by the Zone controller and the VHF task by the RA controller. Both controllers were working between medium to high capacity. Both controllers had been calling each other's tracks to the aircraft on frequency and he believed both pilots concerned had been visual with each other immediately prior to the Airprox being declared. He therefore considered that both controllers had been providing the correct provision of service within Traffic Service and Basic Service.

Factual Background

The weather at Linton was recorded as follows:

METAR EGXU 051521Z 20011KT 9999 FEW035 BKN045 OVC250 15/07 Q1005 NOSIG RMK BLU BLU=

The text of the Typhoon NOTAM was as follows:

A) EGTT B) 1906051300 C) 1906051500
 E) Air Exer. MULTIPLE FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES IN SUPPORT OF GROUND OPS WI 5NM RADIUS 535943N 0002858W (DRIFFIELD, EAST RIDING OF YORKSHIRE). PROFILES MAY INVOLVE DYNAMIC LATERAL AND VERTICAL MANOEUVRING OF AIRCRAFT AT SPEEDS OF UP TO 450 KNOTS IAS. ACFT MAY BE UNABLE TO COMPLY WITH RAC. FOR FURTHER INFO AIC Y056/2017 REFERS. OPS CTC 07493 159227. 2019-06-0574/AS4
 F) SFC G) 15000FT AMSL)

Analysis and Investigation

Military ATM

The Typhoon was part of a package of aircraft conducting a CAS exercise. The exercise was the subject of a NOTAM and the Typhoon operators had conducted liaison with Hull Aero Club (Beverley, Linley Hill) to try and deconflict their respective activities. Realising that traffic levels were likely to increase; the Linton Supervisor had split out the task into Zone (UHF traffic) and LARS (VHF traffic) to decrease controller workload.

Figures 1-6 show the positions of the Typhoon and the PA28 at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the Claxby Radar, which is not utilised by Linton, therefore is not representative of the picture available to the controllers.

After reaching Castle Howard, the PA28 pilot took up a south-easterly heading (toward the exercise area). The Linton LARS Controller was working five aircraft at the time of the incident (analysis of the radar replay shows 4x Basic Service and 1x Traffic Service) and intensity has been assessed as medium to high due to almost constant R/T transmissions in the 8mins prior to this incident. The Linton Zone Controller was working three aircraft (all taking part in the exercise) and assessed their workload as medium but with a low complexity. At this point, separation between the aircraft was 17.5nm and 300ft (Figure 1).

The Zone Controller passed Traffic Information to the Typhoon pilot on the PA28 at 1349:02. At the same time, the Linton LARS Controller was ascertaining the intentions of another aircraft on frequency which was operating 50nm north west of the incident location. Separation at this point was 8nm and 400ft (Figure 2).

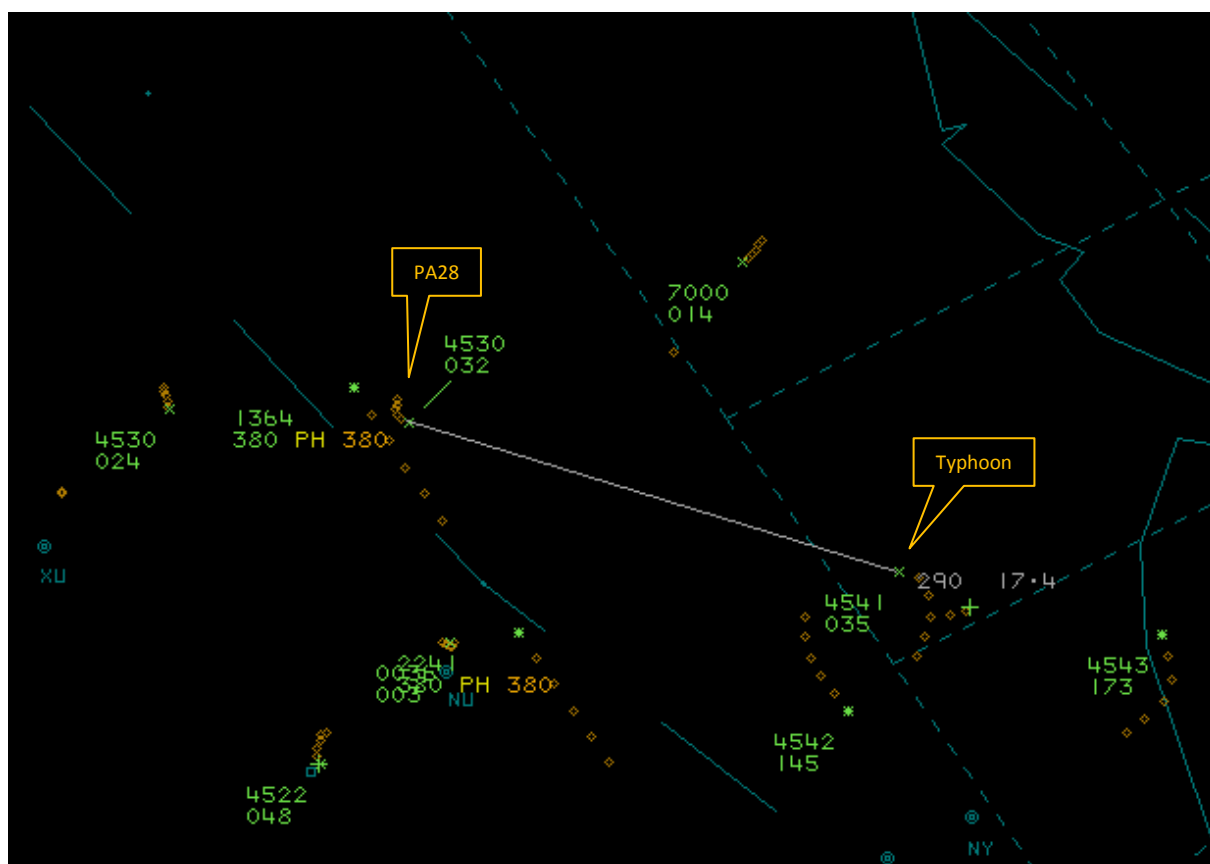


Figure 1

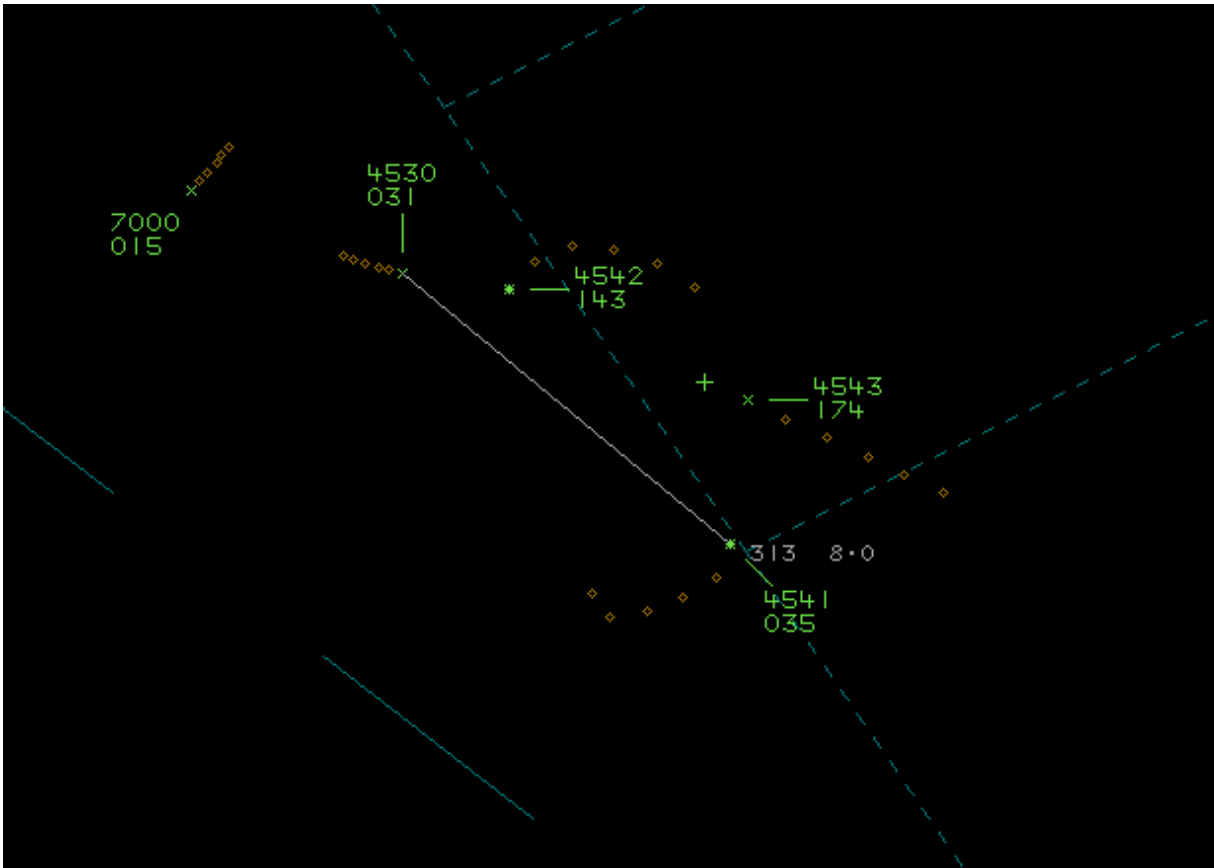


Figure 2

Traffic Information was passed to the Typhoon pilot for a second time at 1350:11 and, after some clarification, the pilot acknowledged the call. Separation at this point had decreased to 5nm and 500ft. (Figure 3).

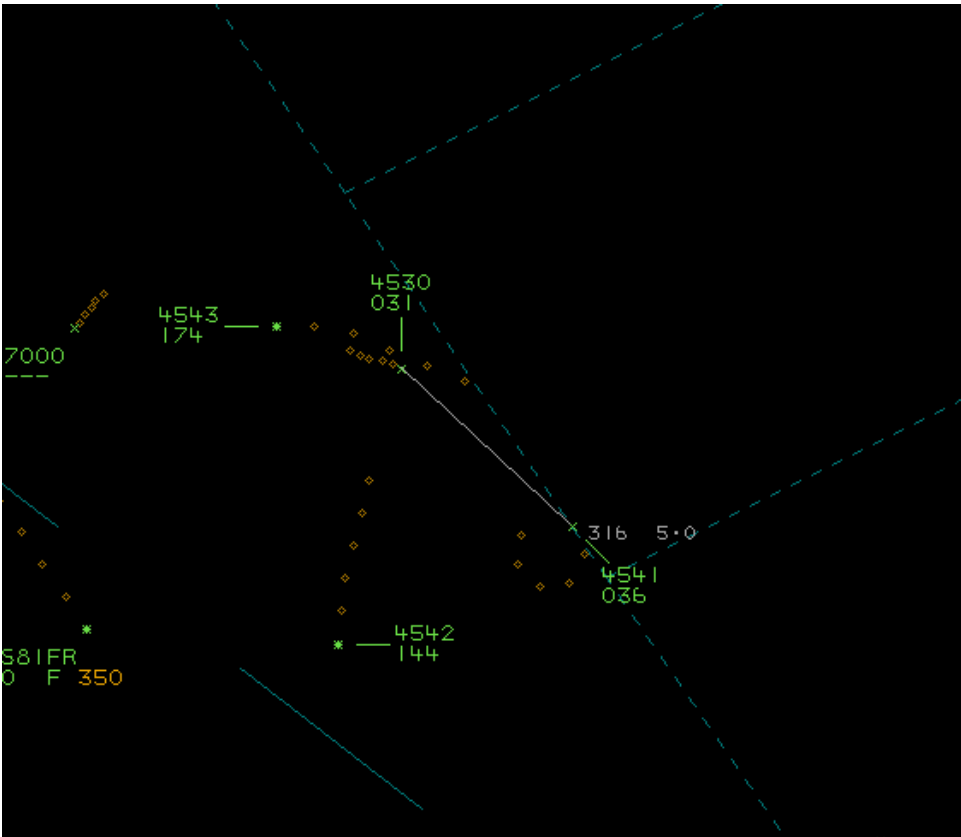


Figure 3

Traffic Information was passed to the Typhoon pilot for a third time at 1350:31 (Figure 4). As the Typhoon was in a left-hand orbit, separation remained almost constant and at this point was 4.4nm and 600ft.

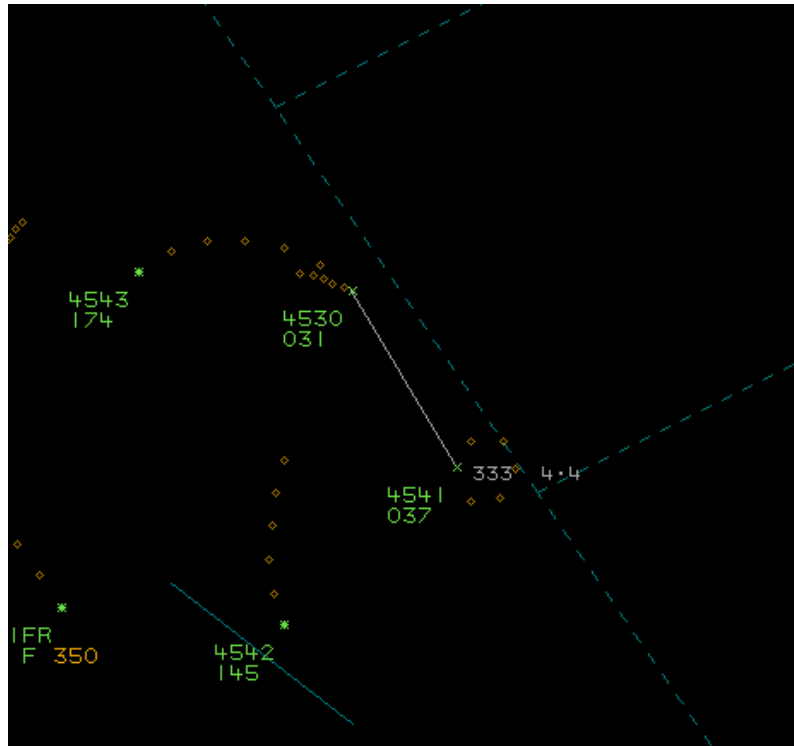


Figure 4

The Typhoon pilot requested an update on the Traffic Information at 1351:38 (Figure 5), and this was concurrent with the Linton LARS Controller passing a warning to the PA28 about the fast-jet activity. At this point both the PA28 and Typhoon pilots reported visual with each other. Separation had increased to 5.5nm and 200ft.

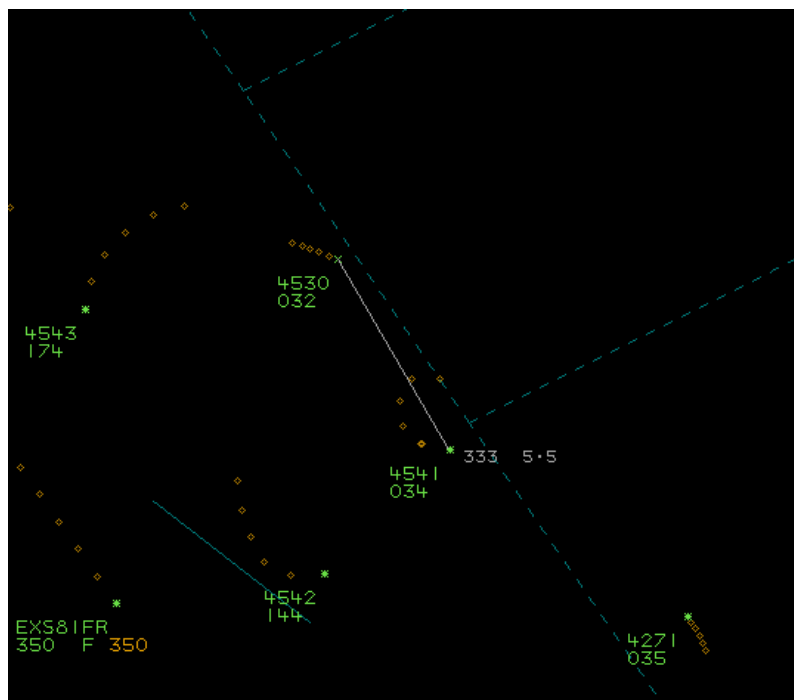


Figure 5

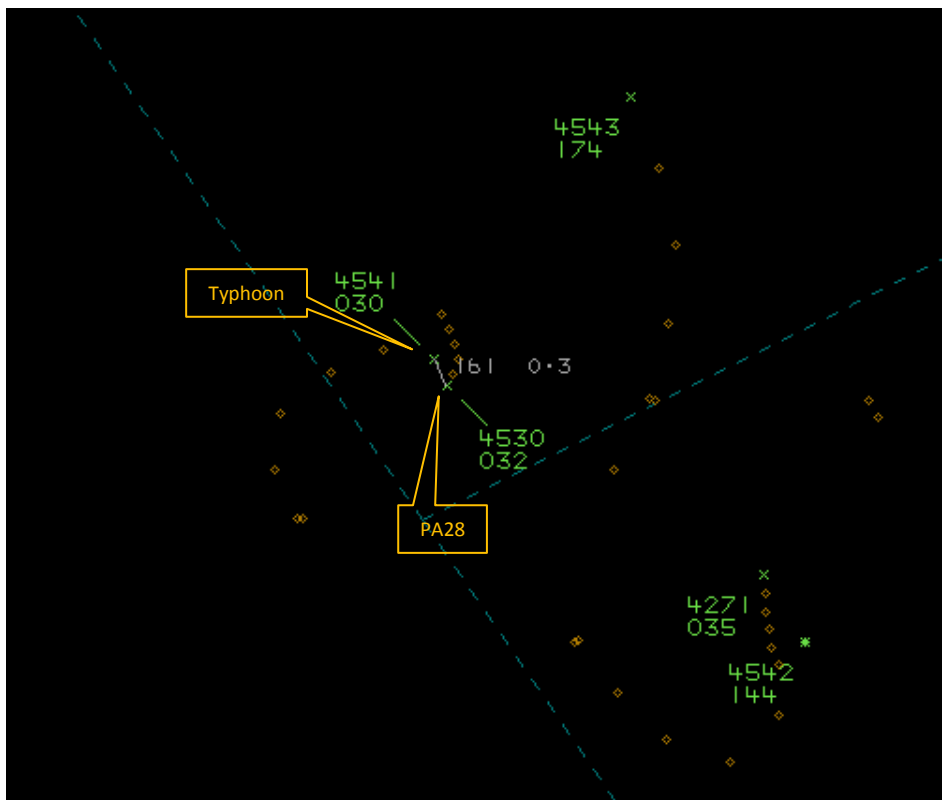


Figure 6 - CPA

The Typhoon pilot reversed his turn and commenced a right-hand orbit and, at 1353:03, again requested an update on the position of the PA28 which was provided by the Linton Zone Controller. Over the next 40secs the Linton Zone Controller provided two further updates on the position of the PA28 and the Typhoon reported visual again following the second. Traffic Information was passed on a conflictor 5nm south east and this was concurrent with CPA and the Typhoon reporting that it had come within an estimated 75-100m of the PA28. CPA occurred at 1353:43 and was measured at 0.3nm and 200ft.

The decision by the Linton Supervisor to split out tasking was sound and allowed the Linton Zone Controller the capacity to pass timely Traffic Information to the Typhoon on seven occasions during which the Typhoon pilot reported visual with the PA28 twice. The Linton LARS Controller passed generic Traffic Information to the PA28 pilot once which was enough for the PA28 pilot to become visual with the Typhoon. Given these circumstances, the actions of the controllers involved were appropriate.

UKAB Secretariat

The Typhoon and PA28 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

During the planning for this Exercise, staff made efforts to inform airspace users and co-ordinate activity to decrease the risk of a loss of safe separation incident. A NOTAM had been issued warning of the exercise with a contact number for further information. In addition to this, staff had contacted Beverley Airfield and arranged to deconflict activity. The Airprox Typhoon was operating under a

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.

high workload within the exercise scenario and had selected a Traffic Service to improve situational awareness of potential conflicts. When it became apparent that two possible conflicts existed within their vicinity, the Typhoon pilot correctly prioritised deconfliction over the exercise scenario and requested repeated updates from Linton Zone to enhance their situational awareness.

The Typhoon pilot visually acquired the Airprox PA28 and turned away to increase separation and lookout for the other contact in the vicinity. Utilising lookout and attempting to utilise on-board radar, the Typhoon made numerous horizontal manoeuvres in an attempt to increase separation with this traffic and also descended to increase vertical separation from both contacts. The pilot states that they were operating just below the cloud base and maintaining VMC criteria – to have climbed would have jeopardised the exercise and potentially reduced the SA that had already been built. Upon turning north to increase separation from the unseen contact, the Typhoon pilot was surprised to see that the PA28 had turned south, towards his position and the centre of the NOTAM'd area. The Typhoon currently has no CWS but the provision of a suitable solution remains a high priority. After the Airprox, as traffic density in the area continued to increase, a decision was made to remain above the conflicting traffic until the levels of traffic in the area subsided.

This Airprox serves as a reminder that in a dynamic scenario, situational awareness can only be maintained by continually updating the information available. Linton controllers discharged their duties well. The Typhoon pilot's efforts to maintain SA and prioritising their actions accordingly were sound, but they were caught out when a previously sighted aircraft (the PA28) made an unexpected manoeuvre. Even having made plans to notify activity, deconflict with known airspace users and with the benefit of Traffic Information, a good lookout is key to the avoidance of MAC.

Summary

An Airprox was reported when a Typhoon and a PA28 flew into proximity in the overhead Driffield at 1353hrs on Wednesday 5th June 2019. Both pilots were operating under VFR in VMC, the Typhoon pilot in receipt of a Traffic Service from Linton Zone and the PA28 pilot in receipt of a Basic Service from Linton RA.

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. 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 involved in a CAS exercise which had been NOTAM'd and, although the pilots knew that that didn't mean that the area was segregated for them, the intention was to warn other pilots from transiting through if possible. Exercise planners had also liaised with local clubs likely to transit through the area to pre-warn them about the Typhoons. Members noted that the Typhoon pilot was receiving a Traffic Service from Linton and the controller had called the PA28 to him. Concerned about its proximity the Typhoon pilot called off the exercise, for which the Board commended him. Members with military fast-jet experience acknowledged that he wouldn't want to climb to get out of the way of the traffic because that would have put him in cloud which would have made resuming the exercise more complicated. Instead, he chose to descend slightly for separation and, once visual with the PA28, turned onto north and then further onto east to use his radar to try to become visual with the southerly track. Unfortunately, he lost sight of the PA28, only regaining it when the PA28 pilot also turned onto south and the Airprox occurred (**CF3**). Depending on the weather conditions, members wondered whether a better option for the Typhoon pilot might have been to have remained below cloud but temporarily transit away from the area until the traffic had passed through, rather than orbit in a location where other traffic was known to be converging. Because he was orbiting, the Board agreed that even if the PA28 had not turned onto south, it was likely that the Typhoon would have caught it up with it and conflicted anyway (**CF2**).

Turning to the PA28 pilot, members wondered whether he was aware of the NOTAM detailing the Typhoons' activity and, if he had, they agreed that he should have assimilated that there might be a problem for his planned routing over Driffield. Although he was not required to remain clear of the area, the NOTAM stated that the Typhoons were conducting dynamic vertical and lateral manoeuvring at high speed, and only for a two-hour window, so members thought he would have been wise to have either delayed or planned to avoid this location (**CF1**). Furthermore, although he was receiving only a Basic Service from Linton, he had been given Traffic Information about the Typhoon at 5.5nm range and had called visual with it, even more reason to avoid its operating area if he could. As it was, the PA28 pilot perceived that there was no conflict (**CF4**), although he could not be certain that the Typhoon pilot had seen him, and members thought that he probably would not have been able to take effective avoiding action if the Typhoon had got any closer. Some members thought that he had perhaps based this assessment that there was no conflict on the mistaken belief that the Typhoon pilot was avoiding his aircraft.

Finally, the Board looked at the role that ATC had played. They noted that the Linton LARS controller gave Traffic Information to the PA28 pilot even though he was only a Basic Service. Some members wondered whether he could also have told the Zone controller that the PA28 was planning on turning at Driffield although, given that his workload was assessed as medium-to-high and there had been near constant RT transmissions in the 8mins leading up to the incident, it was acknowledged that he may not have had time to pass such information. For his part, the Zone controller was also quite busy, but was solely providing a service to the exercise Typhoons. Given that he passed the Typhoon pilot Traffic Information 7 times on the PA28, the Board thought that there was little more he could have done.

The Board then discussed the risk. Given the dynamics of the situation, some members thought that there was an element of collision risk involved, especially because the Typhoon pilot had lost sight of the PA28 and had unknowingly turned 'blind' towards it. However, following a prolonged discussion, it was agreed that although safety had been degraded, the Typhoon pilot had previously suitably increased the vertical separation when he became aware of the other aircraft and, albeit only 200ft below, this had been enough to ensure that there had been no risk of collision. Accordingly, the risk was assessed as Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| 2019136 | | | |
|---------|---|--|--|
| CF | Factor | Description | Amplification |
| | Flight Elements | | |
| | • Tactical Planning and Execution | | |
| 1 | Human Factors | • No Decision/Plan | Inadequate planning |
| | • Situational Awareness of the Conflicting Aircraft and Action | | |
| 2 | Contextual | • Situational Awareness and Sensory Events | Generic, late, no or incorrect Situational Awareness |
| | • See and Avoid | | |
| 3 | Human Factors | • Monitoring of Other Aircraft | Late-sighting by one or both pilots |
| 4 | Human Factors | • Perception of Visual Information | Pilot perceived there was no conflict |

Degree of Risk: C.

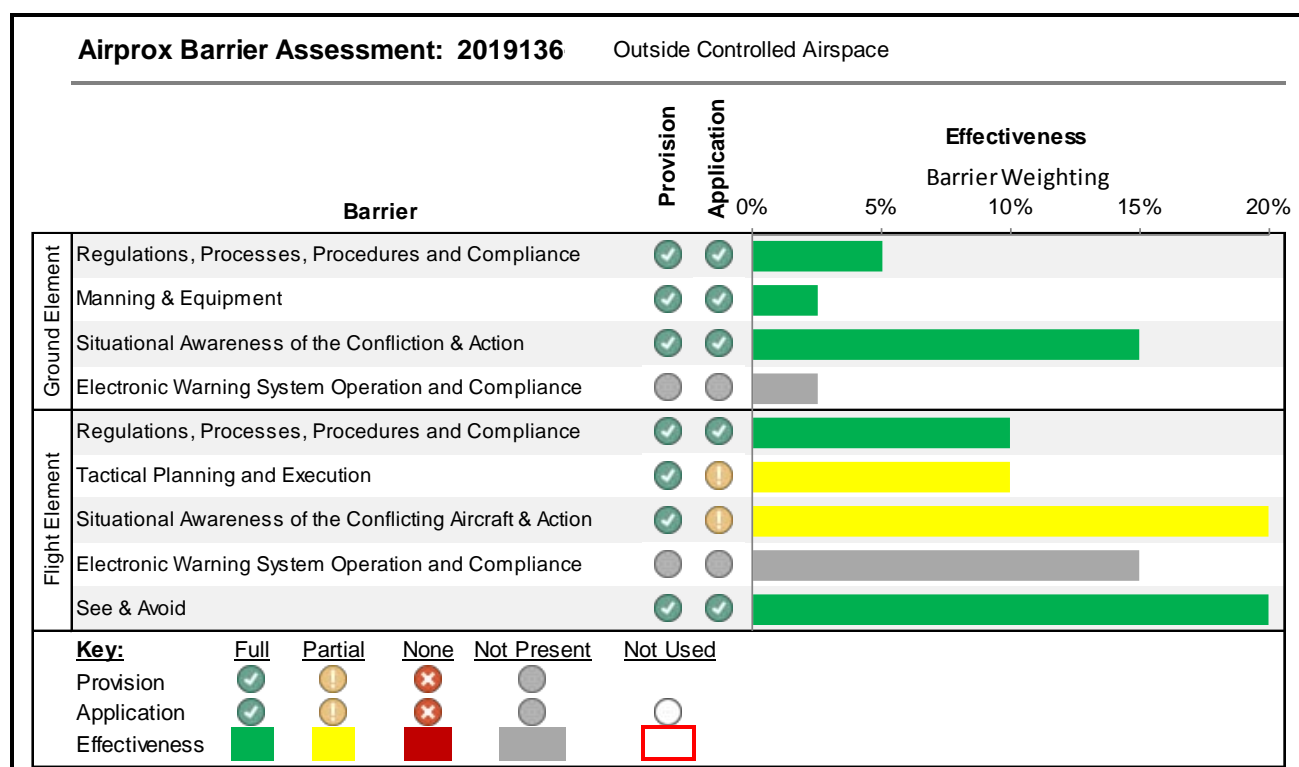
Safety Barrier Assessment³

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

Flight Elements:

Tactical Planning and Execution were assessed as **partially effective** because the PA28 pilot did not appear to have heeded the NOTAM about the Typhoons operating in the vicinity.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Typhoon pilot could have moved to an area well away from the PA28 until it had passed through his exercise area.



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