

**AIRPROX REPORT No 2013030**

Date/Time: 2 May 2013 1129Z

Position: 5247N 0046E  
(10.5nm NE Marham)

Airspace: LFIR (Class: G)

Reporter: Norwich APP

1st Ac 2nd Ac  
Type: BE300 Typhoon

Operator: Civ Comm HQ Air (Ops)

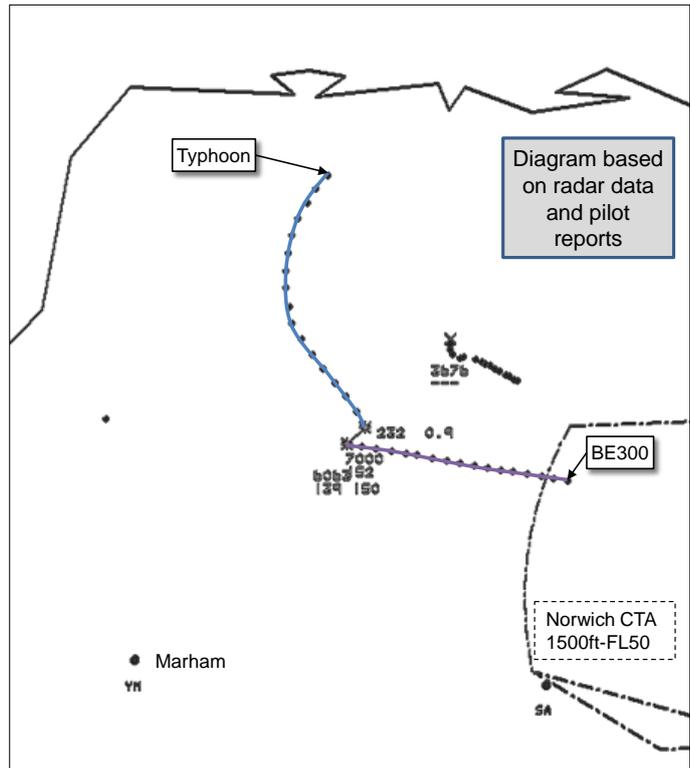
Alt/FL: FL150 FL150  
SAS (1013hPA) SAS (1013hPa)

Weather: VMC CAVOK VMC CAVOK

Visibility: >40km 20km

Reported Separation:  
400ft V/NR H NR V/NR H

Recorded Separation:  
1100ft V/0.9nm H



**CONTROLLER REPORTED**

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

**THE NORWICH APP CONTROLLER** reports providing a TS to the BE300 which was on track from Norwich to TRENT at FL150. He observed a fast moving track squawking Mode 3/A 7000 and he noted that its Mode C was indicating various levels. He passed TI to the BE300 pilot at a range of around 12nm and updated it at 5nm; shortly after acknowledging the 5nm TI the BE300 pilot reported descending to FL140 in response to his TCAS. Norwich APP acknowledged the descent and then the BE300 pilot reported visual contact with a single Typhoon and that he was climbing back to FL150. Norwich APP observed the Typhoon depart to the S in a descent and handed the BE300 over to 'London Mil'.

**THE BE300 PILOT** reports cruising under IFR in VMC at 230kt and FL150, heading 280°. The ac was brown and cream with HISLs and navigation lights on, squawking mode 3/A 6063 with mode S selected. He received a TCAS RA descent and complied, descending his ac to FL140 when the 1<sup>st</sup> Officer reported visual with the Typhoon. He did not receive any further warnings and continued his flight.

He assessed the risk of collision as 'none'.

[UKAB Note 1: An excerpt of the RT transcript is below:

From	To	Transcribed Speech	Time
Norwich APP	BE300	[BE300 C/S] traffic in your right one o'clock range of ten miles currently in a left hand turn indicating three hundred feet below you er military fast jet unverified	1127:40
BE300	Norwich APP	looking out er [BE300 C/S]	1127:50

From	To	Transcribed Speech	Time
Norwich APP	BE300	[BE300 C/S] that previously called traffic now in your right one o'clock four miles opposite direction is still in a lefthand turn indicating same level	1128:40
BE300	Norwich APP	and [BE300 C/S] TCAS descent	
Norwich APP	BE300	Roger	1128:50
BE300	Norwich APP	[BE300 C/S] now levelling er just below one four zero er traffic in sight, Typhoon	1129:00]

**THE TYPHOON PILOT** reports heading SW at FL150 in his grey ac squawking mode 3/A 7000 with modes C and S selected. He was conducting Close Air Support (CAS) under the control of a ground agency and in receipt of a BS from Marham APP.

The CAS exercise was covered by the following NOTAM, which was valid at the time of the Airprox:

'FORWARD AIR CTL EXER. FAST JET AND ROTARY ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI 5NM RADIUS 523223N 0004723E (STANFORD TRAINING AREA, NORFOLK). ACFT MAY OPR OUTSIDE GIVEN AREA AND MAY BE UNABLE TO COMPLY WITH THE RULES OF THE AIR. MAJORITY ACT 2000FT AMSL AND BLW. CREWS WISHING TO TRANSIT THE AREA SHOULD CTC LEGEND CTL ON 284.475MHZ OR 267.500MHZ. OPS CTC 07577 477411. 13-04-0448/AS3 LOWER: SFC UPPER: 15000FT AMSL SCHEDULE: 0900-2230'

The pilot reports receiving TI on a light ac and on the BE300 'Left 11 o'clock, left to right FL 150, 4nm'. A few seconds later he received updated TI 'previous called traffic 12 o'clock, 2 miles, left to right, below'. At that time he intended to turn NE and descend to low level and responded 'descending low level in 30 sec'. He received further TI 'left 1 o'clock FL140' and at that time he was turning on to NW, he thought. He did not achieve visual or radar contact with the BE300.

He assessed the risk as 'low'.

**MARHAM SUPERVISOR** reports (based on the RT transcripts) that the Typhoon was under a BS from Marham APP whilst carrying out CAS tasking at Sculthorpe under the control of a ground agency on another frequency. The pilot was offered the Chatham and Barnsley RPS and he selected the Chatham of 1018hPa. After around 10 minutes under a BS Marham APP tried unsuccessfully to contact the Typhoon pilot and transmitted TI blind on a light ac and at 200ft and shortly afterwards passed further TI on the BE300 in the Typhoon's 'left, 11 o'clock, 4 miles crossing left to right at FL150'. Shortly afterwards Marham APP updated the TI, informing the Typhoon pilot that the BE300 was in his '12 o'clock, 2 miles, crossing left to right now 500' below'. The pilot responded that he was looking for the traffic and intended to descend to low level in 30secs. Marham APP responded with updated TI.

He perceived the severity of the occurrence as 'medium'.

**ATSI reports:**

Background:

The BE300 had departed Norwich on an IFR flight in VMC to Hawarden and was in receipt of a TS from Norwich APP. The BE300 was transponding Mode 3/A code 6063.

The Typhoon had departed RAF Coningsby and was conducting exercises in VMC as a singleton and reported receiving a BS from Marham APP. The Typhoon was squawking mode 3/A 7000.

Norwich APP was providing an Approach Control Service and services outside controlled airspace with the use of primary and secondary radar. There were no reported unserviceabilities or distractions and the controller had been in position for 29 minutes.

ATSI had access to the reports of both pilots and the Norwich APP controller, recorded area surveillance, transcription of frequency 119.350MHz and recordings of the Radar telephone line.

Factual History:

Norwich APP pre-noted the BE300 to London Military (Lon Mil) at 1117:20. It was agreed that the BE300 would be handed over to Lon Mil at FL150 on track to TRENT.

The BE300 called Norwich APP at 1121:10 having departed RW27 on rwy heading and climbing to FL150. A TS was requested and agreed. Norwich APP instructed the BE300 to resume own navigation direct TNT.

At 1127:40 Norwich APP informed the BE300, "...traffic in your right one o'clock range of ten miles currently in a left hand turn indicating three hundred feet below you er military fast jet unverified." The BE300 reported, "...looking out". See Figure 1 below.

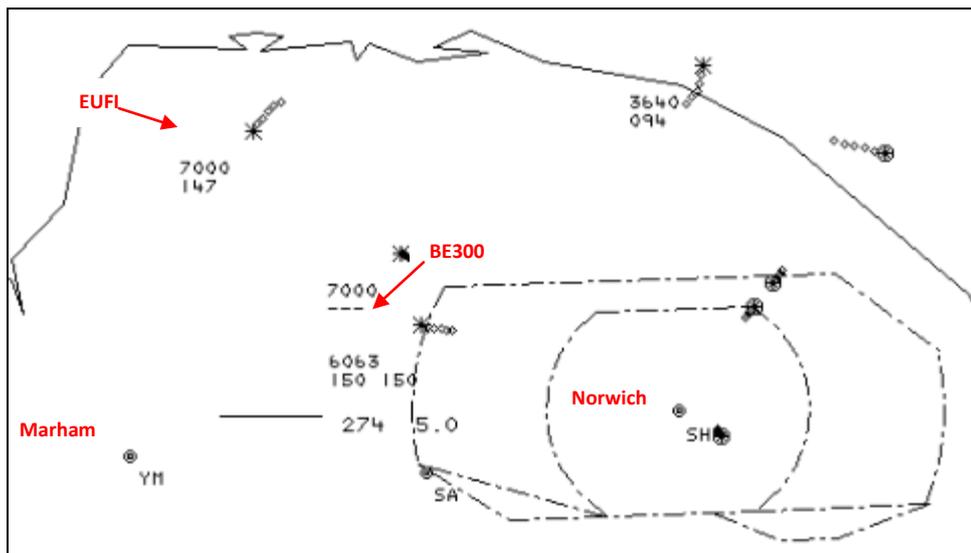


Figure 1: Area Multi-Radar Tracking (MRT) at 1127:40 UTC.  
Note 5nm scale depicted.

Norwich APP passed updated TI at 1128:32, "...that previously called traffic now in your right one o'clock four miles opposite direction is still in a left hand turn indicating same level." The BE300 responded immediately afterwards at 1128:44 (Figure 2) with, "...TCAS descent." This was acknowledged by the controller.

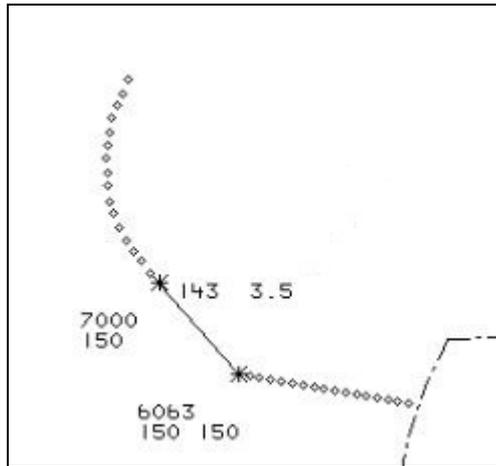


Figure 2: Area MRT 1128:44 UTC  
– BE300 calls TCAS descent.

The Typhoon pilot reported that Marham APP passed TI on the BE300 twice, initially in his 11 o'clock position, L to R, at 4nm at FL150, and then in his 12 o'clock, L to R, 2nm and below his level. This appears to correspond with the Typhoon rolling-out of its LH turn and passing down the RH side of the BE300.

The CPA occurred at 1129:02 as the Typhoon pass down the RH side of the BE300 at a range of 0.9nm and 1100ft above (Figure 3). [UKAB Note 2: The ac to ac distance at this time was calculated by ATSI as 0.92nm.] The Typhoon climbed to FL166 and the BE300 descended to FL138. The Typhoon pilot subsequently reported not acquiring the BE300 visually.

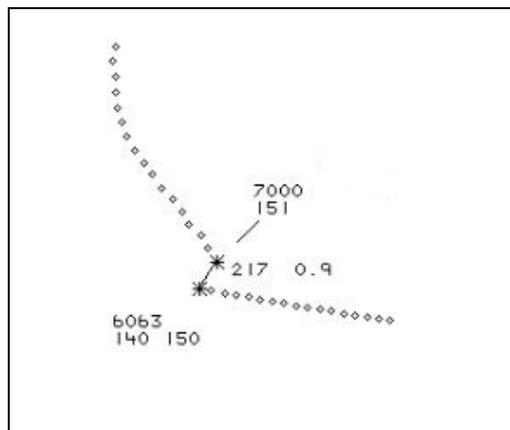


Figure 3: Area MRT 1129:02  
– Closest Point of Approach

At 1129:04 the BE300 reported, "... now levelling er just below one four zero er traffic in sight Typhoon." The controller requested that the BE300 report ready to return to its cleared level, to which the pilot reported that they were climbing back to FL150 on track TNT.

Norwich APP transferred the BE300 to London Military at 1130:14.

Analysis:

Both ac were operating in Class G uncontrolled airspace where the responsibility for collision avoidance ultimately rests with the pilot. The Typhoon reported being under a BS and the BE300 was in receipt of a TS.

Pilots under a BS should not expect any form of TI; however, if a controller with access to surveillance-derived information considers that a definite risk of collision exists a warning may be

passed to the pilot. Similarly, controllers providing a TS will pass TI on relevant traffic, which will be updated if the traffic continues to constitute a definite hazard. Subsequent to the provision of such TI a pilot may request an upgrade to a DS.

Based on the Norwich APP RTF and the Typhoon pilot's report the controllers concerned provided appropriate TI of traffic as required. The BE300 pilot did not request a change of service. Ultimately the BE300 responded to a TCAS command.

**Conclusion:**

An Airprox occurred 20nm WNW of Norwich Airport. A BE300 and a Typhoon came into proximity at FL150. The BE300 was on a W'ly track maintaining FL150 and had been warned of the presence of the Typhoon. The Typhoon executed a LH turn at FL150 towards the BE300 resulting in the BE300 executing a TCAS descent. Minimum ac to ac distance was 0.92nm (0.9nm laterally and 1100ft vertically).

Both ac were in receipt of an ATSOCAS and received appropriate TI and warnings from their respective controllers.

**BM SAFETY POLICY AND ASSURANCE** reports that the incident sequence commenced at 1128:12 as Marham APP attempted to contact the Typhoon. At this point the Typhoon was in a LH turn 8.7nm NW of the BE300 indicating FL148; the BE300 was tracking WNW'ly at FL150. Having waited 5-secs for a response from the Typhoon, Marham APP transmitted 'blind' to the Typhoon, passing TI on unrelated GA traffic. Immediately after, at 1128:36 as the Typhoon had steadied on a SE'ly track, Marham APP passed accurate TI on the BE300 stating, "[Typhoon c/s] transmitting blind, traffic left eleven o'clock, four miles, crossing left right at Flight Level 1-5-0"; the TI was not acknowledged. Figure 1 depicts the incident geometry at this point; the ac squawking Mode 3/A 7000 is the Typhoon, the ac squawking Mode 3/A 6063 is the BE300.

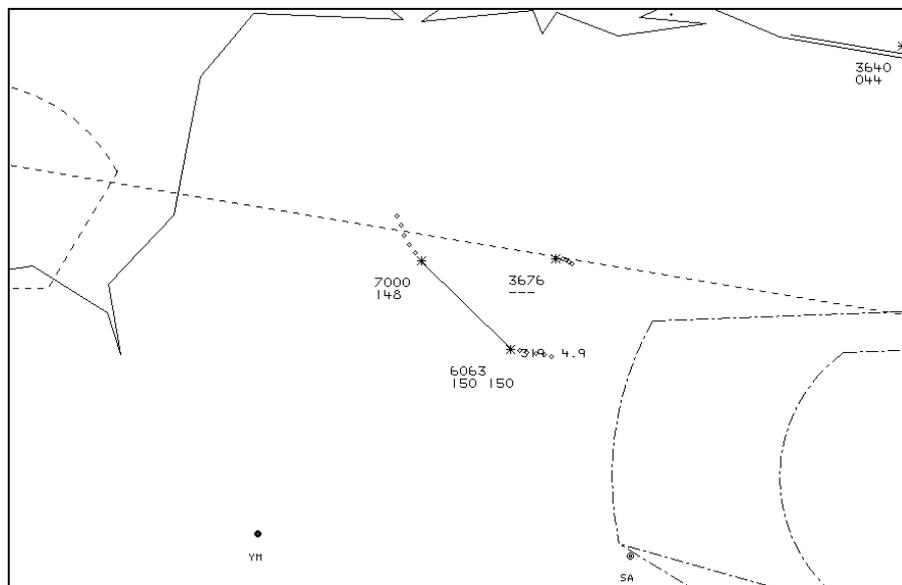


Figure 1: Incident Geometry at 1128:36.

At 1128:50, Marham APP accurately updated the TI to the Typhoon on the BE300 stating that the, "...previously called traffic twelve o'clock, 2 miles, left right, now five hundred feet below."; a raised tone was evident in the controller's voice. Figure 2 depicts the incident geometry at this point and this also reflects the point at which it became evident that the BE300 pilot had initiated a descent, arguably in response to a TCAS RA. The pilot of the Typhoon acknowledged this TI, advising that they would be, "...descending low level in 30 seconds."

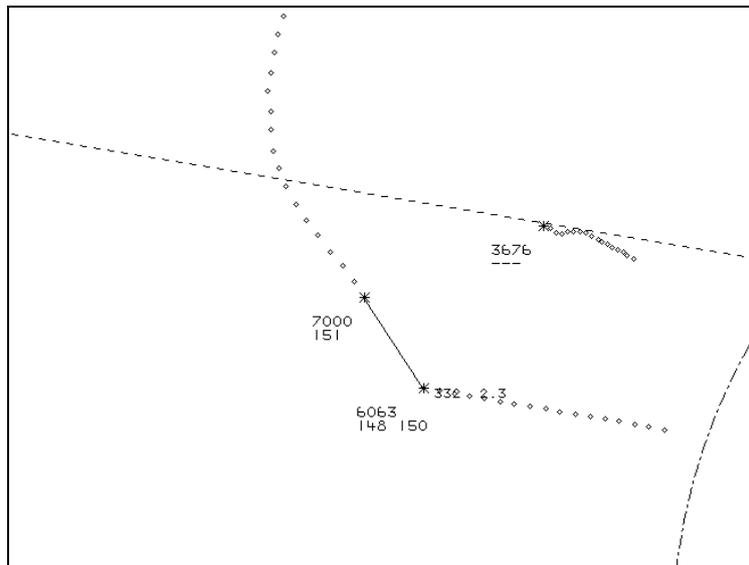


Figure 2: Incident Geometry at 1128:50.

Marham APP replied by updating the TI again advising, “...that previously called traffic now at your left, one o'clock, uh tracking away at Flight Level 1-4-0” which was acknowledged. The CPA occurred during this transmission from Marham APP at 1129:03, as the Typhoon passed 0.9nm NE of and behind the BE300 indicating FL151; the BE300 was indicating descent through FL140. Figure 3 depicts the incident geometry at the CPA.

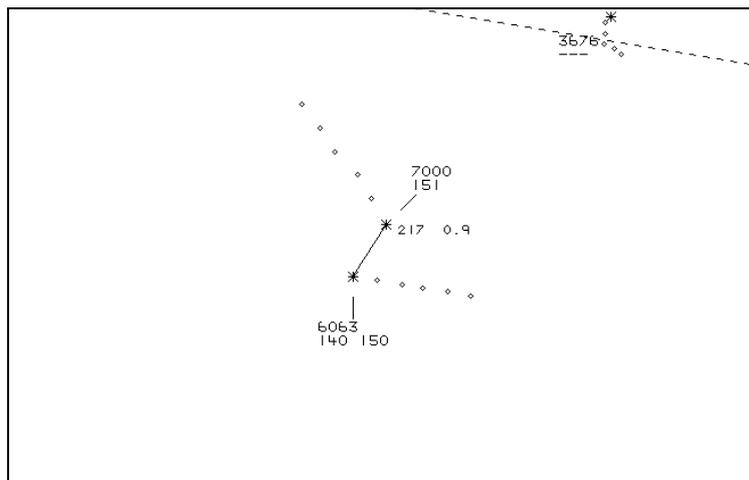


Figure 3: Incident Geometry at the CPA, 1129:03.

From an ATM perspective, Marham APP exceeded their Duty of Care requirements under a BS in providing accurate and timely TI to the Typhoon and updating that TI until the conflict had passed.

**HQ AIR (OPS)** comments that following discussion with the Typhoon pilot, it was apparent that the TI had not been completely assimilated. The final call of ‘left 1 o'clock’ was assimilated as part of an erroneous impression that the other traffic was actually to the left, clear of his intended turn to the right, and arguably hindered visual acquisition. This is contrary to the otherwise credible ATSI suggestion that the pilot rolled out to pass behind the traffic. The pilot expressed surprise that CAT traffic was operating in class G airspace without a DS given their sensitivity to the presence of other traffic. The squadron SOP has been changed since this incident to mandate the use of a TS for similar exercises. Whilst this change would not have improved the service provided by Marham, it would have enabled Norwich APP to identify the Typhoon’s controlling agency from their transponder code, although coordination would only normally have been attempted if the BE300 had been on a DS.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available to the Board consisted of reports from the pilots and the controllers as well as radar recordings and the RT transcripts.

The Board agreed that Norwich APP had passed accurate TI improving the BE300 crew's chance of seeing the Typhoon. It was not clear why the BE300 crew did not see the Typhoon earlier and it was unfortunate that the BE300 crew did not alter their course in response to the TI while conducting their visual search. An early alteration of course by a few degrees would forestall many of the Airprox incidents assessed by the Board.

The Typhoon was receiving a BS from Marham and was squawking Mode 3/A 7000 but the Marham APP controller could not recall the reason he had assigned that code. The Board agreed it would have been more helpful to other agencies, including Norwich APP, if the ac had been assigned a Marham squawk. Members also agreed that the Marham APP controller had made a good decision to pass TI on the BE300 to the Typhoon pilot even though this was not required under a BS. The Typhoon pilot had the impression that the BE300 was on his left and had not realised it was crossing his flight path; pilot Members considered it was likely that the Typhoon pilot, under the high workloads generated by his CAS tasking, had not fully assimilated the TI. It was agreed that a TS would have been a more appropriate service for this type of activity but the additional TI passed by Marham APP meant that a TS would not have changed the outcome of this Airprox. The HQ Air Members reported that the Typhoon Force has changed its policy so that pilots will seek a TS for CAS sorties in the future.

Several Members opined that the Typhoon may have been better served by seeking a service from LATCC(Mil) but the Military ATC Area Member explained that it may not have been appropriate if the sortie involved flying at lower levels as the NOTAM suggests.

The Board discussed the content of the NOTAM as the Typhoon was operating outside of the area described. It was agreed that if NOTAMs are to enable effective pre-flight planning it is essential that they describe the activity as accurately as possible.

The SARG Airspace Advisor informed the Board that the CAA has a legal obligation to notify unusual aerial activity and there is work ongoing to improve the effectiveness of the NOTAM system; as part of this work it has been recognised that the accuracy of the data contained in NOTAMs needs to be improved but that it is sometimes difficult to obtain accurate information describing specific activities and areas from military crews. The Military Low Flying Ops Advisor explained that the Low Flying Booking Cell staff is actively encouraging crews to include more accurate information as well as courses of action they would recommend other airspace users to take.

The Board made a Recommendation that the RAF should review the NOTAM process with the objective of ensuring that NOTAMs accurately describe the planned activity and the cooperation required from other airspace users.

The crews of both ac had a responsibility to see and avoid each other. The Typhoon pilot did not see the BE300 and the Typhoon was seen only by the co-pilot of the BE300 after they had reacted correctly to the TCAS RA and too late to take further action; the Board decided that the cause of the Airprox was a non-sighting by the Typhoon pilot and effectively a non-sighting by the BE300 crew. Due to the horizontal separation of 0.9nm at the CPA and the BE300 crew's response to the RA ensuring vertical separation of 1100ft the Board agreed that any risk of collision had been effectively removed: Risk Category C.

The Board agreed that the safety barriers pertinent to this Airprox were ATC and aircrew rules and procedures, visual sightings, controller and aircrew action, and situational awareness gained from RT, on-board systems and ACAS as well as compliance with a TCAS RA. It was agreed that overall these barriers had a 'limited' effect and the Airprox was allocated a score of 21 on the Event Risk Classification Matrix.

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

Cause: A non-sighting by the Typhoon pilot and effectively a non-sighting by the BE300 crew.

Recommendation: HQ Air Cmd is recommended to ensure that NOTAMs accurately describe the planned activity and the cooperation required from other airspace users.

Degree of Risk: C.

ERC Score: 21.