

AIRPROX REPORT No 2010022

Date/Time: 18 Mar 0935

Position: 5336N 00004E (9nm SE OTR)

Airspace: TRA006/UL90 (Class: C)

Reporter: ScACC E Sector RC

Type: Typhoon SB2000

Operator: HQ AIR (OPS) CAT

Alt/FL: ↑FL240 ↓FL250

Weather: VMC CLOC VMC NR

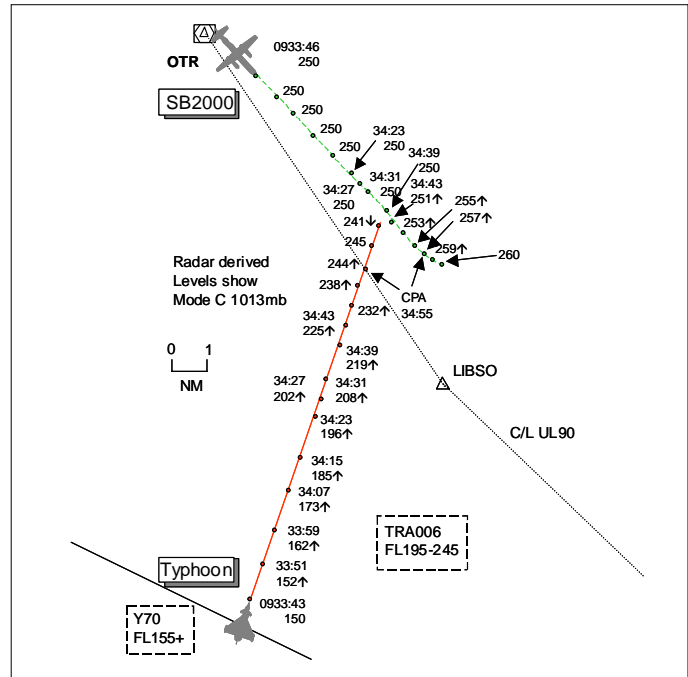
Visibility: 20km NR

Reported Separation:

1800ft V/3.5nm H NR

Recorded Separation:

1300ft V/1.7nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SCACC E SECTOR RADAR CONTROLLER reports that the SB2000 was inbound to Norwich in the area of OTR at FL250. A military squawk [the subject Typhoon] was seen crossing under airway Y70 NE'bound at FL150 and then it commenced a climb at a high rate so he asked the Planner to call London Mil Console 15 to coordinate. The Console 15 controller said that he would stop-off the Typhoon at a lower level but as the Typhoon was passing FL200 the SB2000 crew received a TCAS RA and climbed to FL260. As the crew were already responding to the RA and the Typhoon's track was taking it behind the SB2000 it was deemed unnecessary to give avoiding action. Instead he gave TI to assist the crew in locating the traffic. The Typhoon continued with its high ROC and was observed at FL246 with 1.6nm lateral separation against the SB2000. He commented that this had been the 3rd time a civil ac under his control had had to respond to a TCAS RA against fast climbing military traffic.

THE TYPHOON PILOT reports flying a student convex GH sortie from Coningsby following a SID 2 to FL150 on departure. Following handover to London heading 023° and when cleared to FL240 under a RCS the student pilot, on his 3rd sortie on type, maintained the climb profile but allowed the ac to accelerate to 420kt leading to a ROC assessed to be slightly above 8000fpm. The QFI warned the student of the impending level-off at 2000ft and 1000ft to go and although the student initiated a -3G bunt manoeuvre to achieve the correct level, the ac apexed at FL246, 600ft high for several seconds before the QFI was able to take control and establish the ac at the correct level. During this sequence of events they had radar contact on traffic 20nm ahead and watched a low-wing twin-engine ac pass 1800ft above and 3.5nm laterally to their R. He assessed the risk as low.

THE SB2000 PILOT reports Scottish cleared them to descend from FL270 to FL250 at OTR. Before levelling-off they received a TCAS TA against traffic climbing at a high rate. After they levelled-off they then received a TCAS RA 'climb' which they actioned against traffic in a rapid climb to their R and informed ATC. Once clear of conflict they were recleared to FL250 and Scottish was then able to coordinate the traffic with London Mil.

HQ AIR BM SAFETY MANAGEMENT reports that the Typhoon was conducting a student convex general handling sortie NE of RAF Coningsby, routing to the D323 complex. Whilst under a DS, cleared

to FL240, the Typhoon climbed to FL246 and into conflict with a SB2000 inbound to Norwich cruising at FL250.

The Typhoon was handed to LATCC Mil LMARS Console 15 controller shortly after departing RAF Coningsby. ATC RAF Coningsby instructed the Typhoon pilot to climb FL150 and handed over the flight without incident under a TS. On initial contact with LATCC Mil at 0932Z the Typhoon pilot reported, *"London Mil Typhoon c/s with you in the climb flight level one five zero"*. LATCC Mil identified the ac and applied a TS. Shortly after initial contact the Typhoon pilot asked and was given a DS. The controller was aware the requested level was FL360; however, the controller correctly identified conflicting traffic transiting the UAR at FL250 and instructed the Typhoon pilot to climb FL240 IAW standing coordination rules as laid down in MATS Pt 2. At 0933 Console 15 controller informed the Typhoon pilot *"Typhoon c/s traffic left eleven o'clock fifteen miles crossing left right coordinated above"*. The pilot responded, *"Typhoon c/s looking"*. At 0934Z conversations took place between the Typhoon pilot and Console 15 about his onward tactical frequency for his sortie. Shortly after 0934Z Scottish East controller called Console 15 by landline and said, *"Hi East just er friendly coordination the Typhoon c/s just watch the rate of climb against our SB2000 c/s"*. Control frequency chatter then occurred as Console 15 reiterated the Typhoon onward frequency at the same time as continuing the conversation with Scottish East. Console 15 stated, *"he's on normal rate but ill stop him slightly lower"*; this statement was based on the controller not instructing the Typhoon to operate outside normal ROC. (There are no electronic indicators available to the controller at LATCC (Mil) which display ROC at the console.) This is not SOP but can be considered a valid decision if the controller considers 'defensive' controlling is required. Scottish East replied, *"Ok can you stop him off the SB2000 c/s just got an RA"*. Console 15 controller transmitted, *"Typhoon c/s stop climb flight level two three zero"*. From the subsequent conversation between controller and aircrew it is considered that this instruction was never assimilated within the cockpit. At 0935Z Console 15 controller asked, *"Typhoon c/s confirm level passing"* the pilot replied *"Typhoon c/s is er confirm level height two three zero"*, and then Console 15 reiterated *"Roger your initial cleared level was two four zero and I asked you to stop at two three"*. Console 15 then asked, *"Can you confirm what level you climb up to it was showing two four six"*, the pilot responded, *"affirm it was an over shoot to two four six many apologies"*. [CPA at 0934:55 is shown as 1.7nm as the Typhoon indicates FL244 and the SB2000 is climbing in accordance with a TCAS RA passing FL257.]

In summary, the Typhoon was on a standard and familiar route into a designated training area (D323) to conduct a pilot training sortie. Although the pilot reported being under a RCS (above FL240 within Class C) this was never applied by the controller due to the time frame the ac was above FL245. At the time of the incident the Typhoon was within an active TRA and as such, IAW CAP 493, was provided with a service on the basis of ac operating outside CAS. The Typhoon was given instructions to stop at FL240 against the SB2000 at FL250 IAW standard deeming conventions, which were acknowledged by the aircrew. The call from Scottish East controller to apply 2000ft separation due to the potential hazard of ROC is not SOP. It is evident from the pilots report that cockpit workload was high due to the nature of the training sortie. The indications that the ac would not level off were not assimilated in time to prevent the situation developing into an incident. Console15 applied a TS then a DS correctly and identified the requirement to use standard coordination against an ac on a published UAR indicating FL250. The controller was not aware that the Typhoon was climbing in excess of 8000fpm and was therefore unable to offer advice to the crew. HQ AIR ATM considers this Airprox to be a result of a breakdown in CRMS and a reduction in external SA by the crew of the Typhoon.

ATSI reports that the Airprox occurred with the SB2000 at FL250 in Class C CAS SE of OTR.

The SB2000 was routing to EGSB and was inbound UMBEL [24nm NW OTR] at FL270 when it called the ScACC E Sector on 133-800 MHz at 0924. The E controller instructed the flight to route UMBEL – NORWICH, a track that approximated airway UL90.

At 0931 as the SB2000 was 10nm NW of OTR the E controller instructed the SB2000 to *'descend flight level two five zero'*. The clearance was read back correctly and the Mode S SFL of the SB2000 was observed to change on the situation display.

The SB2000 passed OTR at 0933:32 having attained its new cleared level of FL250. At this time a Typhoon under the control of London Military E (Console 15) was 20nm S of OTR and tracking N at FL150 underneath airway Y70 in uncontrolled airspace. As the Typhoon passed the N edge of Y70 it was observed to commence a steep climb. The SB2000 was 14nm N of the Typhoon.

Due to the high ROC of the Typhoon many radar sources were unable to maintain continuous reporting of the Mode C. However, the St. Annes radar recorded continuous Mode C data during the Typhoon's climb. The ac climbed at GSs between 536 and 577kt. Average climb rate between 0933:50 and 0934:52 was calculated as 8017 fpm; however the instant climb rate as depicted by Mode C on the situation display ranged from between 3429fpm to 13333fpm. The highest ROC was seen as the Typhoon approached its cleared level (0934:43 FL218, 0934:52 FL238 equivalent to 13333 fpm).

At 0934:20 the E controller informs the SB2000 pilot, *"SB2000 c/s there is er fast climbing jet traffic currently in your two o'clock range of eight miles er through flight level two hundred at this time we're just on the military now to coordinate"*. The pilot of the SB2000 responded, *"Yeah got er high climbing tac [sic] on TCAS and we've now got a er R-A SB2000 c/s"*. In accordance with CAP493 Manual of Air Traffic Services Part 1 procedures the controller did not attempt to modify the ac's flight path. The E controller responded to the SB2000 pilot by stating, *"SB2000 c/s follow the R-A"*. [The recorded radar data shows the Typhoon passing FL202 at 0934:27].

At the same time as the TCAS RA RT exchange was taking place the E Sector Planner had called the military controller (Console 15) associated with the Typhoon and requested that the military controller, *"watch the rate of climb against our SB2000 c/s"*. The telephone exchange between the two controllers was concluded with the military controller stating, *"I'll stop [the Typhoon] at two three zero"*.

The time taken from the Typhoon leaving FL150 (0933:51) to the activation of the TCAS RA (as notified on frequency by the SB2000 pilot) was 30sec.

During the encounter the required separation standard of 5NM laterally or 1000ft vertically was never infringed: at the CPA 1334:55 (8.6nm SE of OTR) the distance between the 2 ac was 1.7nm and 1300ft.

The SB2000 crew reported, *"clear of conflict"* at 0935:20, by which time it had climbed 1000ft from its cleared level to FL260. Once returned to FL250 the SB2000's flight to Norwich continued uneventfully.

There are considered to be no implications for civil air traffic as a consequence of this Airprox.

HQ AIR (OPS) comments that this was a busy CONVEX sortie and the student pilot had misjudged the required airspace for the level off. The climb performance of the Typhoon is well known and earlier or more positive intervention by the QFI could have prevented the minor level bust and TCAS RA. Prompt adherence to TCAS RA procedures by the SB2000 ensured that separation was not degraded to a dangerous degree. Additionally the Typhoon had RADAR contact and then Visual contact with the traffic and no risk of collision existed.

UKAB Note (1): Whereas the St Annes radar recording shows the Typhoon's Mode C throughout the incident, the Great Dun Fell (GDF) and Claxby both display NMC for the Typhoon after it commences its climb from FL150, the GDF showing only one height readout as the ac passes FL200.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board identified that there were 2 separate but related aspects to this Airprox: first, the Typhoon's flight path and ROC induced a TCAS RA in the SB2000 and, second, the Typhoon subsequently climbed above its cleared level.

Considering the TCAS RA first, Members recognised that after the Typhoon commenced its climb from FL150 in Class G airspace it entered the active TRA at FL195 so the maximum ROC/ROD restrictions did not apply [Mil AIP ENR 1-1-1]. The critical factor in this incident was the flightpath flown by the Typhoon crew as the ac was effectively pointing at the TCAS equipped SB2000 with a high ROC, and this had breached the TCAS safety 'bubble' and generated the RA. The Board noted that the RA was generated while the Typhoon was still approximately 4000ft below the SB2000; even if the Typhoon had been subject to the 8000fpm ROC restriction, it would likely still have induced an RA slightly later. In order to avoid 'spooking' the SB2000's TCAS, the Board considered that a much lower ROC was necessary, and/or a change of vector to increase the nose-tail separation between the fighter and airliner.

Turning to the 'level-bust', the Board noted that despite the lack of continuous Mode C reporting good coordination had been effected between ScACC and Lon Mil, after ScACC noted the Typhoon's ROC but neither controller could anticipate the 'level-bust'. Noting the inexperience of the Typhoon front-seater, the HQ AIR OPS Member opined that the steep climb profile required earlier intervention by the instructor to avert a 'level-bust' by bunting the ac, well before 2000ft to go. A more aggressive 'roll upside-down and pull' manoeuvre would have been more appropriate to ensure compliance with the level-off restriction. The Board also noted that the Typhoon crew did not appear to assimilate the instruction to level off 1000ft earlier than initially cleared, at FL230.

In determining the cause of the Airprox, Members considered the inducement of the TCAS RA and the 'level-bust'. Although the RA on its own might have resulted in the declaration of an Airprox, the 'level-bust' would have put the Typhoon within 400ft and 1.7nm of the Saab, had the latter not followed its TCAS RA demand and climbed to FL257 at the CPA. As it was, the SB2000 crew had been given the 'heads-up' with a TCAS TA and had then reacted promptly to the RA, flying the avoidance manoeuvre until 'clear of conflict' had been received. The Typhoon crew had been issued with TI on the SB2000, located it on radar and then seen it pass above and to their R whilst attempting to level-off. Therefore the Board agreed that the combined actions taken by all parties had ensured that safety margins had not been eroded even though the Typhoon crew climbed above their assigned level, the cause of the Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Typhoon crew climbed above their assigned level.

Degree of Risk: C.