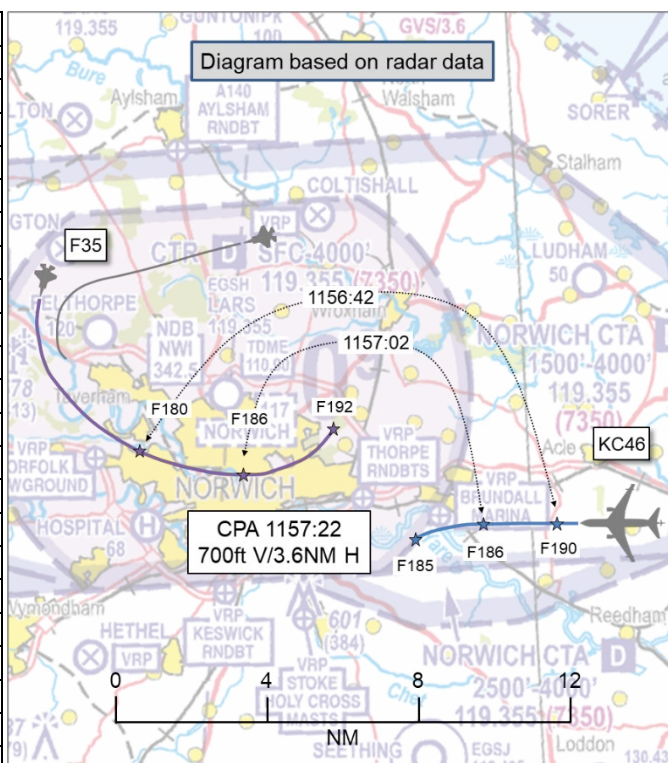


**AIRPROX REPORT No 2025076**

Date: 14 Apr 2025 Time: 1157Z Position: 5238N 00123E Location: IVO Norwich

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

| Recorded                 | Aircraft 1      | Aircraft 2       |
|--------------------------|-----------------|------------------|
| Aircraft                 | KC46            | F35              |
| Operator                 | Foreign Mil     | Foreign Mil      |
| Airspace                 | London FIR      | London FIR       |
| Class                    | G               | G                |
| Rules                    | IFR             | VFR              |
| Service                  | Traffic         | Traffic          |
| Provider                 | Swanwick Mil.   | Lakenheath Appr. |
| Altitude/FL              | FL185           | FL192            |
| Transponder              | A, C, S+        | A, C             |
| Reported                 |                 |                  |
| Colours                  | Grey            | Grey             |
| Lighting                 | Nav             | Nav, anti-col    |
| Conditions               | VMC             | VMC              |
| Visibility               | NR              | NR               |
| Altitude/FL              | FL190           | NR               |
| Altimeter                | NR              | NR               |
| Heading                  | 270°            | NR               |
| Speed                    | NR              | NR               |
| ACAS/TAS                 | TCAS II         | None             |
| Alert                    | RA              | N/A              |
| <b>Separation at CPA</b> |                 |                  |
| Reported                 | NR              | NR               |
| Recorded                 | 700ft V/3.6NM H |                  |



**THE KC46 PILOT** reports that they were heading from NAVPI to [their destination] with Swanwick Military ATC. The requested Deconfliction Service was granted but later downgraded due to a Traffic Service only being available. While descending through FL190 to their working altitude of FL120, they were waiting for a clearance [to fly] north into the Air to Air Refuelling Area 8 (AARA8) track (it was a late descent from the cruise due to the airspace boundary with the Netherlands, and a Multi-Role Tanker Transport had the higher block).

The controller gave them a traffic call, “12 o’clock, 10 miles, co-altitude, manoeuvring” and they saw the proximate target on TCAS at the same time. They were issued a left turn but, simultaneously, got a TCAS RA to level-off. They elected not to turn because it could have invalidated or delayed the RA. They saw one fighter turning to the north (left-to-right) about a mile away so the left turn probably made sense, it just was not going to happen quickly enough to help. Manoeuvring fighters are liable to acquire visually and may show up on TCAS suddenly (and close by).

They were not familiar with that Military Operations Area or the rules for entry and participation. As the pilot of a ‘heavy’, it is not possible to visually acquire and see-and-avoid sharply manoeuvring fighters, especially without being in radio contact with them. It was unclear why the Deconfliction Service was downgraded to a Traffic Service (the change was not requested).

**THE F35 PILOT** reports that they do not recall anything significant from the day. Regularly, when operating in East Anglia, they receive Traffic Information, and avoid traffic, whilst tactically manoeuvring. With multiple agencies providing services in the same airspace, they sometimes do not have full situational awareness of [the] other pilot’s intentions.

**THE SWANWICK MILITARY CONTROLLER** reports that, at 1150, [the KC46] crossed the FIR boundary at NAVPI at FL320 tracking west, directly to [their destination]. Their intention was to go to AARA8 and were given a descent, initially to FL250, to deconflict against general handling (GH) traffic

in the Lakes ATA. [That traffic] called 'complete' and returned to their base. [The pilot of the KC46] was then given a further descent to FL100 once the traffic was not a factor, and given a Traffic Service once below FL245. At 1156, two aircraft with Lakenheath squawks, general handling in East Anglia, were abeam Norwich Airport. Traffic was called at 10NM, followed by a further call 5sec later. At 1157, the Lakenheath traffic was then approximately 3NM and co-level at FL187. Avoiding action was given to [the pilot of the KC46] to turn left onto heading 180°. [The KC46 pilot] was then clear of traffic and continued to [their destination] and AARA8. An Airprox was declared 25min later, once [the pilot of the KC46] was set up in AARA8.

The controller assessed the risk of collision as 'Low'.

**THE SWANWICK MILITARY SUPERVISOR** reports that they were the Supervisor at the time of the occurrence, having taken-over from the off-going Supervisor approximately 2min before the event. Still in the midst of a handover, both they and the off-going Supervisor looked at the Supervisor's radar and noticed a red STCA flashing around [the KC46]. They immediately walked over to the Tac R controller to ensure that they had called the traffic and instruct further if necessary.

In their experience, some foreign pilots tend to be unsure of the type of service required. They believe that the [KC46] pilot was really looking for a Deconfliction Service or deconfliction advice in the form of headings to avoid other general traffic. The Tac R controller provided a Traffic Service as per the guidelines, however, this was imposed on the pilot when leaving controlled airspace due to the Tac R controller not asking "*what service type do you require upon leaving CAS?*". The pilot seemed to expect headings to avoid the traffic rather than taking their own separation against the called traffic. Had the Tac R controller asked prior to them leaving CAS, a contract could have been set to confirm the expectation on both sides. The Tac R controller was subsequently debriefed via a standards session to ascertain best effort and duty of care with reference to 'heavy' aircraft and their inability to avoid traffic at short notice.

## Factual Background

The weather at Norwich was recorded as follows:

METAR EGSN 141150Z 17009KT 110V230 9999 FEW017 15/06 Q1005

## Analysis and Investigation

### Military ATM

#### Background

The KC46 pilot was conducting a standard FIR boundary crossing via NAVPI with an onward routeing for MAM (Marham). That routeing prevents interaction with the controlled airspace to the north and south. On crossing the FIR boundary, Swanwick Mil controllers are permitted to turn aircraft from the assigned route at any stage providing they are not subject to co-ordination.

Within Temporary Reserved Area 3 there are recognised operating areas utilised by military aircrew to aid with internal deconfliction. One being the Lakes ATA established on the FIR boundary over the sea with a upper level of FL245.

Air to Air Refuelling Area 8 was booked for dual tanking operations, with a Voyager establishing and utilising the block from FL140 to FL170, whilst the KC46 had been assigned FL100 to FL130 and, therefore, needed to enter the area level at FL120.

#### Sequence of Events

At 1149, the KC46 crossed the FIR boundary at FL320, tracking direct MAM. The Swanwick Military controller issued a Radar Control Service and instructed an initial descent to FL250. This ensured vertical separation from the Typhoon formation operating below, within the Lakes ATA.

At 1151, a further descent to FL110 was then given upon the Typhoon formation calling complete and departing the area to the west.

At 1154, on passing FL245 and entering Temporary Reserved Area 3, the Swanwick Military controller issued a Traffic Service which the KC46 aircrew acknowledged.

At 1157, Traffic Information was provided by the Swanwick Military controller regarding traffic under Lakenheath control operating to 10NM west of the KC46 at co-altitude. This was followed by avoiding action that instructed the KC46 to turn left on to 180°.

CPA occurred at 1157:22 with 3.6NM horizontal separation.

#### Local Investigation

The Swanwick Military investigation identified the following ATS-related causal and aggravating factors:

- a. Traffic Information was provided late to the KC46 regarding the co-altitude F35s.
- b. The continued routing from NAVPI to MAM meant that the KC46 transited through the operating area of multiple Fast Jets. An early northwest turn towards Air to Air Refuelling Area 8 would have decreased the likelihood of interaction with Fast Jet manoeuvring traffic.
- c. A Traffic Service was imposed by the Swanwick Military controller rather than requesting from the KC46 pilot what was required.

#### 2 Gp BM Analysis

Transits of Heavy aircraft such as the KC46 through Temporary Reserved Area 3 during periods of Fast Jet activity require a significant amount of proactive planning. Onwards routing flights that remain level are routinely managed through the establishment of vertical separation as was applied for the KC46 versus the Lakes ATA traffic. However, as the KC46 required a descent in order to enter Air to Air Refuelling Area 8 within the FL100 – FL130 operating block, vertical separation alone was not a viable option.

Had the Swanwick Military controller asked the KC46 pilot for the Type of Service required it is expected that a Deconfliction Service would have been required. This would have triggered the Swanwick Military controller to agree co-ordination with Lakenheath ATC to facilitate a descent whilst providing the required separation. As a Traffic Service was imposed, incorrectly, no separation minima existed and therefore there was no trigger for the Swanwick Military controller.

Whilst Traffic Information was provided, it was late and did not recognise the lack of manoeuvrability of the KC46 to position against Fast Jet traffic. Given the position of the Fast Jet traffic, a proactive northwest turn towards enter Air to Air Refuelling Area 8 was required to limit interaction between the KC46 and F35s.

#### RAF Lakenheath (RAPCON) Investigation

An investigation was completed by the RAF Lakenheath (RAPCON) Assistant Chief Controller who interviewed the Watch Supervisor and line controllers that were working during the times noted on the [incident report] form. The controller's workload was light with routine complexity. Weather did not appear to be a factor. The controller issued appropriate Traffic Information on observed traffic, determined later to have been [the KC46], and provided all necessary requirements in accordance with the Traffic Service agreed upon.

At the time of the reported incident, a formation of two F35 aircraft were general-handling under a Traffic Service in the block FL060 to FL240 utilising Temporary Reserved Area 003 (TRA003). [The F35 formation] was issued an initial traffic call on [the KC46] when [the KC46] was at FL220 and at 7NM range, and again when it was observed they were descending and [F35 C/S-02 (leading the formation)] was manoeuvring eastbound and changing altitudes.

The RAPCON investigation was closed with a determination that [...] Traffic Information was provided in accordance with the Air Traffic Service agreed upon with [the F35 formation] and the closest that the aircraft came was 5NM at co-altitude and [F35 C/S-02] was able to manoeuvre to avoid. No collision alerts occurred on the Lakenheath radar. This scenario does however highlight that, when Lakenheath Approach is providing a service in TRA003, the notified agencies should make efforts to advise Lakenheath if they have traffic requiring transit as was the case in this instance. Lakenheath controllers will be reminded that they too have the ability, and duty, to request Traffic Information from other control agencies when it can aid safer aviation for all parties concerned, as may have been the case in this scenario.

#### Timeline:

1154:22 Approach Control: "[F35 C/S-01] traffic, ten to eleven o'clock, seven miles, north-west bound. Altitude indicates Flight Level two two zero".

1156:57 Approach Control: "[F35 C/S-02] traffic, twelve o'clock, five miles, westbound. Altitude indicates Flight Level one eight six".

1157:02 F35 C/S-02: "[F35 C/S-02]".

1157:07 F35 C/S-02: "[F35 C/S-02]. Manoeuvring north, we're sensor contact here".

#### UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the KC46 could be positively identified from Mode S data (Figure 1). The F35 formation could be positively identified from the Lakenheath radar replay (Figure 2).

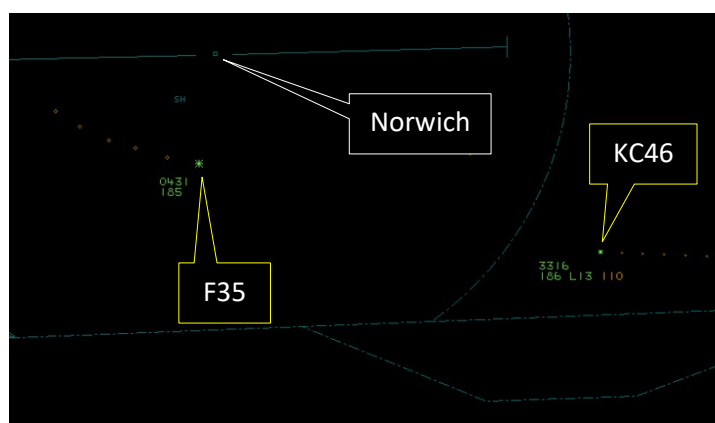


Figure 1 – 1157 (NATS radar)



Figure 2 – 1157 (Lakenheath radar)

The diagram was constructed and the separation at CPA determined from the radar data.

The KC46 and F35 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>1</sup>

## Comments

### USAFE

The crew of the KC46 had filed routeings on multiple days to AARA8, direct from the Netherlands FIR boundary, specifically to avoid the busy operating area of East Anglia. Despite their attempts, their flightplan routing was amended by Eurocontrol to route NAVPI – MAM – AARA8. There was opportunity for ATC to have tactically re-routed the KC46 direct to AARA8 instead of maintaining the longer track through East Anglia where there were numerous fast-jets operating. Pilots of non-UK-based USAF aircraft routinely expect a Deconfliction Service outside controlled airspace when transiting as they are not as familiar with the operating environment as the pilots of based aircraft are who are content with a Traffic Service. Where able, the default service provided to pilots of transient US military aircraft should be a Deconfliction Service, with a Traffic Service given if requested or agreed by the crews.

Aside from service selection, an ATS was provided as expected from the controllers at Swanwick Military and RAF Lakenheath. As noted in the Lakenheath Unit investigation, it may have benefitted the situational awareness of both agencies for either to have requested Traffic Information on the other's traffic in the vicinity via landline. It would appear that the TCAS worked as expected and was triggered as the F35 was momentarily pointed at the KC46 during a high energy manoeuvre.

## Summary

An Airprox was reported when a KC46 and an F35 flew into proximity in the vicinity of Norwich at 1157Z on Monday 14<sup>th</sup> April 2025. The KC46 pilot was operating under IFR in VMC in receipt of a Traffic Service from Swanwick Military. The F35 pilot was operating under VFR in VMC in receipt of a Traffic Service from Lakenheath Approach.

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

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate 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 considered the actions of the pilot of the KC46. Members noted that they had described in their narrative report that they had not been familiar with the Military Operations Area through which they had been transiting, or the rules for entry and participation. Further, that they had considered that *"it was not possible to see-and-avoid sharply manoeuvring fighters"*. As such, members were in agreement that a Traffic Service may not have been the most appropriate ATS for their requirements. Members noted that the pilot of the KC46 had initially planned their route to have avoided the busy airspace of East Anglia but their route had been subsequently re-directed. Notwithstanding, some members wondered whether the pilot of the KC46, operating in unfamiliar airspace, had considered their requirements in the event of such a change to their route and to have been prepared to have requested a Deconfliction Service if one had not been offered. Nevertheless, members noted that the pilot of the KC46 had carefully considered the TCAS RA that had triggered in response to the proximity of the F35 and that they had elected to not follow the left turn that had been issued by the Swanwick Military controller. Members noted that the pilot of the KC46 had subsequently visually acquired the lead F35 at distance.

Members next turned their attention to the actions of the Swanwick Military controller and noted that they had not requested the intentions of the pilot of the KC46 upon leaving CAS but had reverted to the provision of a Traffic Service. This, members noted, had also been identified by the Swanwick Military

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<sup>1</sup> MAA RA 2307 paragraphs 1 and 2.

investigation as a causal and aggravating factor in this incident. Members noted that Traffic Information on the F35s had been passed to the pilot of the KC46 when the separation had been 10NM and passed again at 3NM. Given the lack of manoeuvrability of the KC46 and the high airspeed of the F35s, some members wondered whether the Traffic Information had been available to the pilot of the KC46 sufficiently early for them to have taken avoiding action if it had been required. Members were in agreement that liaison between the Lakenheath and Swanwick Military units via telephone may have been mutually beneficial to the situational awareness of both agencies.

Members next considered the actions of the Lakenheath controller and noted that they had passed Traffic Information on the KC46 to the F35 pilots on two occasions; once when the separation had been 7NM and again when the separation had been 5NM. Members were in agreement that the information passed had enabled the pilots of the F35 formation to have manoeuvred to have ensured significant separation from the KC46.

Concluding their discussion, members were satisfied that the actions taken by each involved party had ensured that no risk of collision had existed. Whilst acknowledging that the pilot of the KC46 had been concerned by the encounter, members were in agreement that normal safety margins had pertained.

The Board assigned Risk Category E to this event and members agreed on the following contributory factors:

**CF1.** The STCA in use at the Swanwick Military position had provided an alert to a potential conflict between the KC46 and the F35.

**CF2.** The pilot of the KC46 had been concerned by the proximity of the F35.

**CF3.** The TCAS equipment fitted to the KC46 had provided a Resolution Advisory pertaining to the proximity of the F35.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

|    | 2025076                                                               |                      |                                                                                                                                                     |                                                            |
|----|-----------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| CF | Factor                                                                | Description          | ECCAIRS Amplification                                                                                                                               | UKAB Amplification                                         |
|    | <b>Ground Elements</b>                                                |                      |                                                                                                                                                     |                                                            |
|    | <b>• Electronic Warning System Operation and Compliance</b>           |                      |                                                                                                                                                     |                                                            |
| 1  | Technical                                                             | • STCA Warning       | An event involving the triggering of a Short Term Conflict Alert (STCA) Warning                                                                     |                                                            |
|    | <b>Flight Elements</b>                                                |                      |                                                                                                                                                     |                                                            |
|    | <b>• Situational Awareness of the Conflicting Aircraft and Action</b> |                      |                                                                                                                                                     |                                                            |
| 2  | Human Factors                                                         | • Unnecessary Action | Events involving flight crew performing an action that was not required                                                                             | Pilot was concerned by the proximity of the other aircraft |
|    | <b>• Electronic Warning System Operation and Compliance</b>           |                      |                                                                                                                                                     |                                                            |
| 3  | Contextual                                                            | • ACAS/TCAS RA       | An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered |                                                            |

Degree of Risk: E.

### Safety Barrier Assessment<sup>2</sup>

The Board concluded that the safety barriers associated with this incident had been fully effective.

<sup>2</sup> 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: 2025076 |                                                            | Outside Controlled Airspace |             |                        |                            |             |
|-------------------------------------|------------------------------------------------------------|-----------------------------|-------------|------------------------|----------------------------|-------------|
| Barrier                             |                                                            | Provision                   | Application | Effectiveness          |                            |             |
|                                     |                                                            |                             |             | Barrier Weighting      |                            |             |
|                                     |                                                            |                             |             | 0%                     | 5%                         | 10% 15% 20% |
| Ground Element                      | Regulations, Processes, Procedures and Compliance          | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Manning & Equipment                                        | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Situational Awareness of the Confliction & Action          | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Electronic Warning System Operation and Compliance         | ✓                           | ✓           | <div><div></div></div> |                            |             |
| Flight Element                      | Regulations, Processes, Procedures and Compliance          | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Tactical Planning and Execution                            | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Situational Awareness of the Conflicting Aircraft & Action | ✓                           | ✓           | <div><div></div></div> |                            |             |
|                                     | Electronic Warning System Operation and Compliance         | ⚠                           | ✓           | <div><div></div></div> |                            |             |
|                                     | See & Avoid                                                | ✓                           | ✓           | <div><div></div></div> |                            |             |
| <b>Key:</b>                         |                                                            | Full                        | Partial     | None                   | Not Present/Not Assessable | Not Used    |
| Provision                           |                                                            | ✓                           | ⚠           | ✗                      | ●                          | ○           |
| Application                         |                                                            | ✓                           | ⚠           | ✗                      | ●                          | ○           |
| Effectiveness                       |                                                            | ■                           | ■           | ■                      | ■                          | □           |