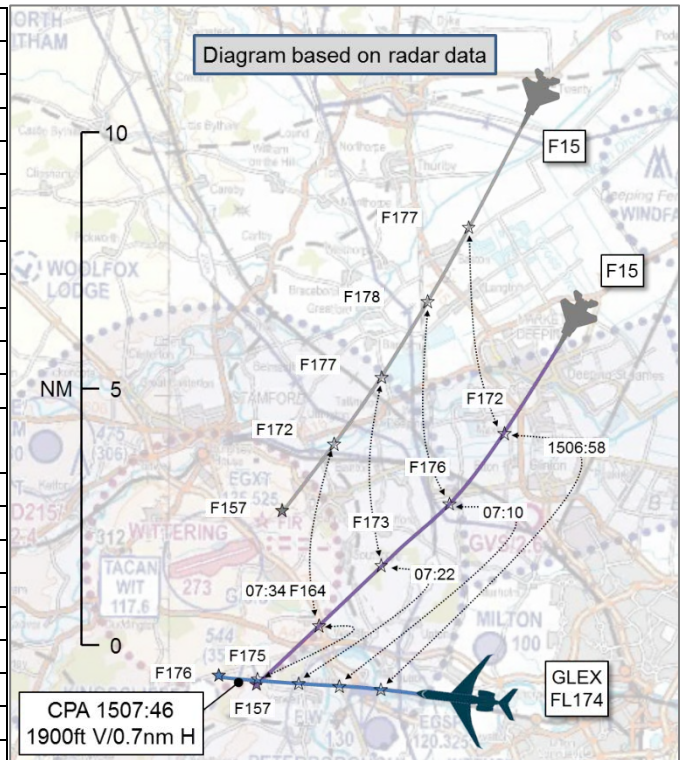


**AIRPROX REPORT No 2018037**

Date: 14 Mar 2018 Time: 1508Z Position: 5234N 00028W Location: 2nm S Wittering

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Global Express	F15
Operator	Civ Comm	Foreign Mil
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Traffic
Provider	Marham	Swanwick Mil
Altitude/FL	FL176	FL157
Transponder	A, C, S	A, C, S off
Reported		
Colours	Silver, green	Grey
Lighting	Strobe, HISLs, nav	NK
Conditions	VMC	VMC
Visibility	>10km	'Unrestricted'
Altitude/FL	FL150	15000ft
Altimeter	SPS	NK
Heading	260°	NK
Speed	240kt	400kt
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation		
Reported	0ft V/2nm H	NK
Recorded	1900ft V/0.7nm H	



**THE GLOBAL EXPRESS PILOT** reports conducting a test flight, operating in the East Anglia region, having requested the block from FL100 to FL150 from ATC. A number of F15 aircraft had frequently flown close to their aircraft, causing the tests to be halted. On advice from Marham ATC, they moved to the west of Marham; however, they were followed across by the same group of F15 aircraft, causing 3 Traffic Advisories to be generated. While trying to recommence a stall-test, a target was reported by ATC as closing to their position at a similar level from the northeast at a distance of 15nm. This was confirmed on TCAS and the Global Express pilot turned away from the reported traffic to set up for the next test point. The intruder continued to close so they delayed starting the test point whilst maintaining a steady heading. The intruder continued to close at the same altitude and triggered a Traffic Advisory and then a Resolution Advisory on the TCAS system. The TCAS initially indicated a descent but before this was able to be actioned, the manoeuvring 'intruder' caused the TCAS to change to climb and then to maintain level. It was not possible to follow the TCAS instructions due to manoeuvring of the 'intruder' aircraft. The TCAS reported clear of conflict when the 'intruder' aircraft changed its direction of flight away from the Global Express. Throughout the rest of the flight the group of F15s continued to harass them, despite the best efforts of ATC to find a clear area to continue the test. The flight was discontinued due to the F15 activity and a safe recovery to base was completed.

He assessed the risk of collision as 'Medium'.

**THE F15 PILOT** reports leading a pair, operating in congested airspace in the East Anglia MTR with multiple fighter formations and other aircraft. The F15 pilot was informed after the flight that the F15 formation had interrupted a test flight for the Global Express. He commented that there was no intent to interrupt the test or to follow the Global Express in the airspace. The F15 formation were simply trying to find a location to setup 'maneuvers'. They assimilated Traffic Information from Swanwick Mil and apparently crossed near the Global Express's flight path. None of the F15 formation crews

perceived a conflict with the traffic or a collision hazard. The F15 pilot re-emphasised that there was no intent to harass or follow the Global Express and that the formation was avoiding other fighter formations in congested airspace in order to find a place to start 'maneuvers'.

He assessed the risk of collision as 'Low'.

**THE MARHAM ZONE CONTROLLER** reports working the Global Express in the block FL100-FL150, mainly staying at FL140, under a Traffic Service. Because a number of tracks were operating in the same airspace, the Global Express pilot was advised to work to the west of the Marham overhead for clearer airspace. Later, the Global Express was 35nm to the west of Marham, heading west in the block FL130-FL180, level at FL142. Traffic Information was given on two tracks, 10nm northeast tracking directly towards it, 1000ft above descending. Traffic Information was given a subsequent two times to the Global Express pilot, at about 6nm, 500ft above descending, and 3nm, 200ft above descending. The Global Express pilot declared a TCAS RA, at which point there appeared to be a separation of approximately 2nm and 200ft above, between the tracks. The Global Express climbed and turned away whilst the other track entered a steep descent and turned away. The Global Express cleared his TCAS RA and the service was continued.

**THE MARHAM SUPERVISOR** reports that at the time of the TCAS RA the unit workload was low with traffic being controlled in the LARS position individually with the Radar and Director control positions banded. In the first instance, where the traffic operating under the control of Swanwick Mil got close to the Global Express under the control of the Marham LARS controller, he witnessed the scenario. He called Swanwick Mil whilst the controller was calling the traffic and asked them for Traffic Information. He was told that the traffic was a formation of F15s conducting GH in the block from FL50 to FL240. As they seemed to be around the same area [as the Global Express] he told the Swanwick Mil controller that they would attempt to move the aircraft under their control to the west for cleared airspace. He enquired whether Swanwick Mil had called the traffic [to the F15s] or restricted the height block and they confirmed that Traffic Information had been passed. For the second instance, he again called Swanwick Mil and asked for Traffic Information on what the conflicting F15s were doing. He was unable to get through to the controller he recalled, and went through to the Swanwick Mil Supervisor. Again, he was informed that Traffic Information had been passed. As the Global Express pilot declared a TCAS RA, the Supervisor was listening to the succinct and concise Traffic Information that had been passed by the Marham LARS controller and ensured that the confliction had passed before calling the Swanwick Mil East Bank Supervisor to inform him that the Global Express pilot had declared a TCAS RA. The LARS controller was then relieved to have a break and write up his version of events for the potential report. About an hour afterwards, the Swanwick Mil Supervisor called to inform the Marham Supervisor that he had watched and listened to the replay of the event and that Traffic Information had been passed to the [F15s] at around 3000ft and 10nm. More Traffic Information was passed over the next 44sec which another formation, operating about 70nm east over Norwich, acknowledge but this was not the callsign of the F15s in confliction. Following the Global Express landing at Cambridge having cut short the airstest, the pilot called to talk to him about what had happened. He stated that he would be filing a TCAS RA report. The Supervisor asked if he had attempted to conduct his airstest under the control of Swanwick Mil and was told he did not ask them to control him as previous requests had been refused. The pilot called the following morning to inform him that having written up the report, he would be filing an Airprox. The Supervisor commented that as an experienced terminal and area examiner this was an uncomfortable situation to sit and watch even though Traffic Information was being passed from Marham to the airstest aircraft.

**THE SWANWICK MIL CONTROLLER** reports being in position on East Overload Tac Left. On frequency were 4 F15s, numbers 1,2 3 and 4 of the same formation callsign, operating as two separate pairs. Numbers 1 and 2 were operating in the east of East Anglia, whilst 3 and 4, who appeared to be working together, were west of Marham. East Anglia had been quite crowded that day resulting in the F15s receiving a reasonably high number of traffic calls; particularly due to their large working area as well as [another F15 formation] having been on the same discrete frequency prior to the incident for about 40min. Numbers 3 and 4 were operating in the block FL050-FL240 and, on their turn onto southwest, were showing FL174. Approximately 10nm southwest of their position was an aircraft tracking west indicating FL175 [the Global Express]. The controller called the traffic to the F15 pair who

did not initially acknowledge the call, however, this had happened on a few occasions previously due to the combination of a long GH session, aircraft in different parts of East Anglia, and a medium density of unknown traffic. The F15 pair continued to track southwest at FL174 towards the Global Express (indicating FL175). The controller passed Traffic Information again at approximately 4nm, the F15 pair did acknowledge the call and almost immediately the controller passed Traffic Information again at approximately 2.5 to 3nm. At this point one of the F15 pilots called 'Tally traffic' and immediately descended. The controller asked the F15 pilot if he was visual with the traffic. The F15 pilot did not respond but the aircraft was now indicating FL160 in the descent and turning away from the conflicting traffic. The controller monitored the situation but could see any potential confliction had been resolved and so did not repeat his request to the F15 pilot.

**THE SWANWICK MIL SUPERVISOR** reports that he had just taken over the Sup position following a busy spell on console. Traffic levels had spiked, meaning E/NE was fully manned (Tac L, Tac R and Co-ord), as well as an Overload Tac L and Tac R. He was working round the different consoles to fully appreciate the traffic and was liaising with the Co-ord on how they could load the traffic to see if they could stand some controllers down in order to facilitate controller breaks (at least 2 controllers had spent in excess of 90 minutes on console). Whilst doing this, he answered a call from the Marham Sup requesting Traffic Information on a pair of F15s near Wittering. He passed that they were not below FL050 as per their requested block and when requested he stated the block in full (FL050-FL240). The Marham Sup asked if Swanwick Mil had put a restriction on their traffic as a Marham squawk was operating in the same piece of airspace. He replied that they had not, as the F15s were conducting GH under a Traffic Service in Class G airspace. The Swanwick Sup requested Traffic Information on the Marham traffic and was informed that the aircraft was under a Traffic Service, also conducting GH and in the block FL100-FL170. As the Swanwick Sup was making his way over to the Tac console in question, the Marham Sup phoned again to indicate their aircraft had received a TCAS RA against the lead aircraft of the F15 pair. The Swanwick Sup asked the Tac controller if he had called the traffic, to which he responded "several times", and communicated this to the Marham Sup. He also informed the controller that the Marham aircraft had experienced a TCAS RA. The Swanwick Sup commented that on viewing the radar replay, the narrative that the Tac controller had provided in his report was an accurate description of events. The Swanwick Sup became aware of the submission of an Airprox report mid-afternoon the next day, so some details may not be as accurate as they could have been.

## **Factual Background**

The weather at Wittering was recorded as follows:

METAR EGXT 141450Z AUTO 14014G26KT 9999 BKN190/// 11/04 Q0999=

## **Analysis and Investigation**

### **Military ATM**

Data is taken from tape transcripts and radar replays from NATS radars, which are not available at Marham ATC and therefore are not representative of the picture available to the Marham Zone Controller at the time.

At 15:06:34 (Figure 1), the Swanwick East Overload Controller passed Traffic Information to the F15s on the Global Express, the F15s reported 'searching for the traffic'. Almost co-incidentally (15:06:38), the Marham Zone controller passed Traffic Information to the Global Express about F15s using a cardinal direction (northeast) giving the range as 10nm. The Global Express pilot reported looking for the traffic.

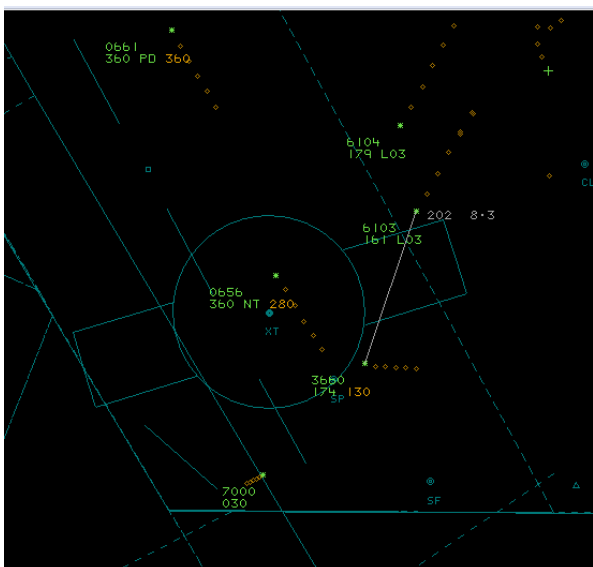


Figure 1: 15:06:34

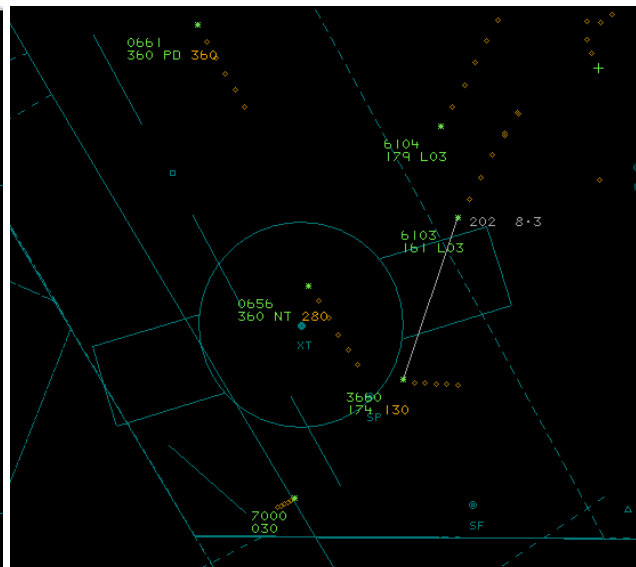


Figure 2: 15:07:08

(Global Express 3660, F15 No3 6103, No4 6104)

At 15:07:08 (Figure 2), the Marham Zone controller updated the Traffic Information to the Global Express pilot stating the F15s were 4nm away and 200ft above, climbing. The Global Express pilot reported a TCAS RA to Marham at 15:07:17. Almost co-incidentally (15:07:15), the Swanwick East Overload controller updated the Traffic Information to the F15s who reported visual at 15:07:22.

As soon as they reported visual, the F15s begin a rapid descent. At 15:07:48 (Figure 3), the CPA occurs by which time the aircraft were laterally separated by 0.7nm with 1900ft vertical separation indicated.

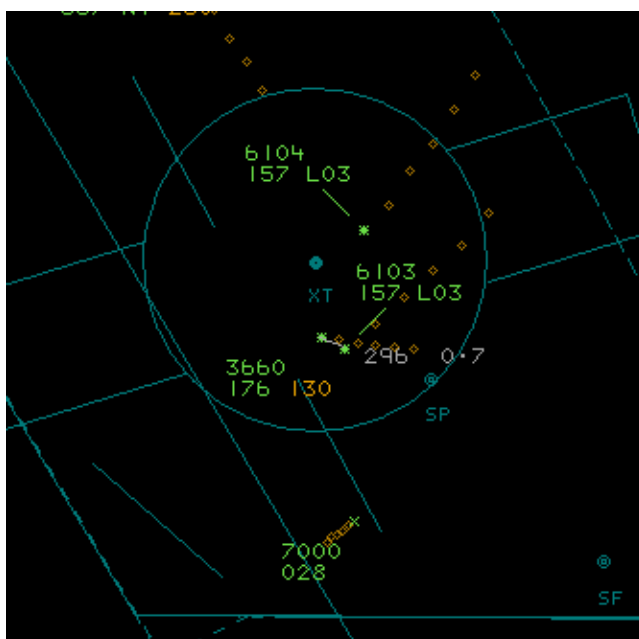


Figure 3: 15:07:48

The Global Express pilot was conducting an airtest in the block FL130-FL180 in East Anglia. However, the airspace in East Anglia was extremely congested so the Marham Zone controller, in conjunction with the Supervisor, had suggested that the Global Express operate west of Marham for clearer airspace. The Global Express was the only aircraft on Marham's frequency and the controller reported their workload as low. Traffic Information was passed to the Global Express twice, once at 10nm and finally at 4nm. The Global Express TCAS was triggered some 9sec after this final Traffic Information.

The F15s were conducting manoeuvres between altitude 5000ft and 24,000ft originally in East Anglia. To facilitate inbound civil traffic to Norwich, the F15s were asked to manoeuvre to the west of Marham. Swanwick East Sector was working at or close to capacity with all consoles open as well as two overload consoles in operation. The Swanwick Supervisor reported the traffic intensity as having 'spiked.' Traffic Information on the Global Express was passed at 7nm and updated at 3nm. This final piece of Traffic Information allowed the F15s to gain visual contact with the Global Express albeit too late to stop the Global Express from receiving a TCAS RA.

### **UKAB Secretariat**

The Global Express and F15 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>. If the incident geometry is considered as converging then the Global Express pilot was required to give way to the F15s<sup>2</sup>.

### **Occurrence Investigation**

The Global Express was under the control of Marham ATC while the F15s were under control of Swanwick due to capacity to supply a service. This resulted in Swanwick not being aware of the stage of the air test that the Global Express was undertaking. The specific portion of the air test that was being attempted during this occurrence was a stall test. Had Swanwick been aware of this portion of the test, the F15s could have been asked if they were willing to laterally avoid to allow that portion to be completed. However, this is non-segregated airspace. The Swanwick controller fulfilled the rules of a Traffic Service and both called and updated the traffic to the F15s which allowed them to acquire visual contact and safely manoeuvre around the Global Express.

The East Anglia Military Training Area (EAMTA) is a congested piece of airspace in Class G and is non-segregated. While a Traffic Service does not require the controller to separate air systems, the controller can make the crew aware of 'free airspace' to prevent possible conflicts and lower the work rate of both the controller, calling traffic, and the air crew, looking for the called traffic. It appears that the Global Express aircrew believed they would be segregated from all other airspace users within EAMTA which is not within the terms of a Traffic Service.

### **Summary**

An Airprox was reported when a Global Express and a pair of F15s flew into proximity over East Anglia at 1508hrs on Wednesday 14<sup>th</sup> March 2018. All pilots were operating under VFR in VMC in receipt of a Traffic Service, the Global Express pilot from Marham and the F15 pilots from Swanwick Mil.

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

Information available consisted of reports from both pilots, a transcript of a relevant R/T frequency, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members first discussed the circumstances of the Airprox and agreed that although the Global Express pilot had been concerned by the proximity of the F15s, no doubt reinforced by the consequent TCAS RA, Traffic Information to, and subsequent visual acquisition by the F15 crews had resulted in them remaining clear of the Global Express; there had not been a risk of collision. Members also re-iterated that although a TCAS RA should not be considered 'normal', the parameters of TCAS algorithms were such that an encounter with one or both pilots operating under VFR could generate an alert even when adequate visual separation had been achieved, as was the case here.

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<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3210 Right-of-way (c)(2) Converging.

The Board appreciated that the Global Express pilot was experiencing frustration in trying to complete his test flight and some felt that this frustration had manifested itself in his belief that the F15s 'continued to harass them' when this had not been the case. Members noted that all the pilots were entitled users of the airspace and had elected to operate under VFR in VMC in Class G airspace. As such, they had implicitly accepted that the ultimate barrier to mid-air collision was see-and-avoid. It was incumbent upon all airspace users to observe the provisions of SERA (or in the case of the F15s, Military Flying Regulations) irrespective of their activity, which on this occasion required the Global Express pilot to give way to the F15s approaching from his right side.

The Global Express pilot undoubtedly required 'clear airspace' to complete his stall test-point and although ATC could assist it was not for them to find it for them. Rather it was for the Global Express pilot to plan his sortie such that it was conducted away from a known area of intense aerial activity, or with the knowledge that such intense aerial activity could well prolong the duration of the sortie if conducted within it. Some members wondered whether there might have been better areas for the airtest to be conducted rather than East Anglia, but acknowledged that this was subject to conditions prevailing at the time and so it might not have been viable to operate elsewhere.

Turning to ATC provision, members noted that with Swanwick Mil working at capacity, it was probably not possible for them to accept the Global Express pilot on frequency. Consequently, the F15 and Global Express pilots were operating with different agencies and the opportunity to achieve some level of coordination or mutual situational awareness had been lost. Members agreed that this had been contributory to the Airprox. Members also discussed the airspace structure in East Anglia and observed that it appeared to be somewhat crowded and likely to get more so as more military aircraft were soon to be located there. Members wondered whether the airspace could be sub-divided into discrete operating areas to afford some degree of separation between users. A military ATC advisor stated that whilst this may be possible, formations currently used such a volume of airspace that sub-division may not be practical, especially since future combat aircraft may require even larger volumes of airspace.

Members agreed that because the F15 pilots had been visual with the Global Express well before CPA there had been no risk of collision. However, they debated whether the risk should be classified as 'C' (aircraft proximity in which no risk of collision has existed, or risk was averted), or 'E' (normal procedures, safety standards and parameters pertained). The key event was the generation of the TCAS RA. Whilst it could be argued that risk was averted by the F15 crews taking effective avoiding action and the Global Express pilot following the TCAS RA, after some discussion, members agreed that in the 'Class G VFR' environment the actions of the F15 crews represented normal procedures, it had simply been that their flight vector had caused the TCAS RA as they visually manoeuvred clear of the Global Express. Although cognisant of the peril of diminishing the importance of TCAS RAs, in the circumstances that pertained, the Board agreed that the event was best classified as risk Category E.

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

Cause: The Global Express pilot was concerned by the proximity of the F15s.

Contributory Factors: The Global Express and F15 crews were operating with different agencies in the same airspace.

Degree of Risk: E.

#### **Safety Barrier Assessment<sup>3</sup>**

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

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

**ANSP:**

**Manning and Equipment** were assessed as **effective** overall but **partially available** because Swanwick were not able to take the Global Express on frequency.

**Flight Crew:**

**Warning System Operation and Compliance** were assessed as **effective** overall but **partially available** because the F15s were not equipped with a TAS.

