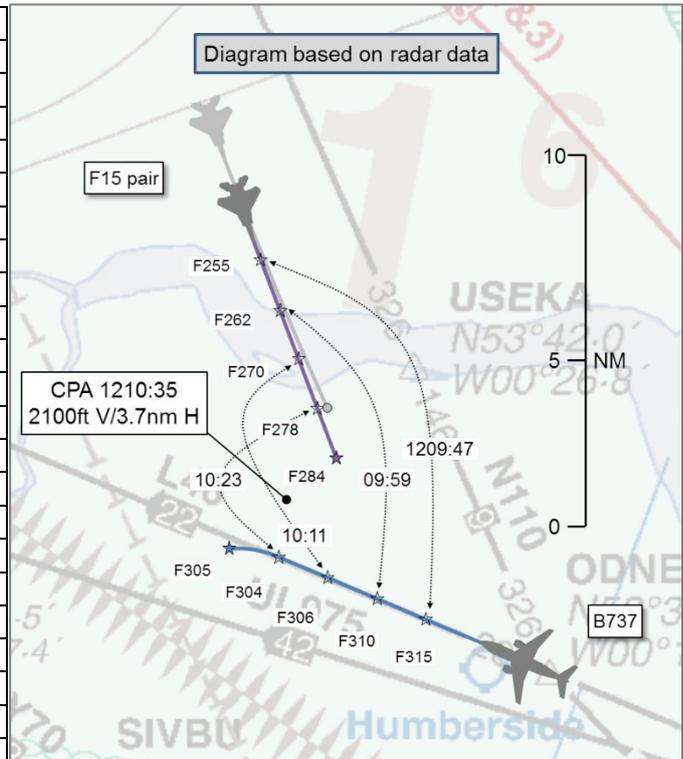


**AIRPROX REPORT No 2018280**

Date: 11 Oct 2018 Time: 1210Z Position: 5338N 00031W Location: ivo Doncaster

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	B737	F15E
Operator	CAT	Foreign Mil
Airspace	UAR	UIR
Class	C	C
Rules	IFR	VFR
Service	Radar Control	Traffic <sup>1</sup>
Provider	Prestwick Centre	Swanwick Mil
Altitude/FL	FL305	FL283
Transponder	A,C,S	A,C
Reported		
Colours	Company	
Lighting	Strobes, nav	NK
Conditions	VMC	VMC
Visibility	NK	8000km
Altitude/FL	FL305	FL280
Heading	270°	SW
Speed	280kt	300kt
ACAS/TAS	TCAS II	Not fitted
Alert	TA	N/A
Separation		
Reported	Not seen	Not seen
Recorded	2200ft V/3.9nm H	



**THE BOEING 737 PILOT** reports that he was approximately over the Doncaster area in a descent to his destination, working with Scottish ATC. They had already received a re-route because Swanwick Mil was unable to accept them on their filed route. London Control had cleared them to descend to be at FL290 30nm before RIMTO. ATC called and told them that they had military traffic showing on radar climbing rapidly toward them and to stop descent at FL305, which they complied with. At about the same time, a TA alert occurred showing traffic over 4000ft below and climbing. The radar controller then gave them a left 30° heading, which shortly became an avoiding action turn onto heading 240°. He selected 30° of bank. He had no visual contact with traffic, which appeared to go behind their aircraft within approximately 5nm and about 1500ft below (which would have been at their cleared level).

**THE F15E PILOT** reports he was in a 2-ship of F15Es in the Vale of York operating area. RAF Lakenheath went "Black" due to a barrier engagement, which shut the airfield for 45mins to 1hr. The two F15s re-joined to within 1nm and co-level at FL110. He asked Swanwick Mil for an immediate climb to FL280 direct to Lakenheath to conserve fuel so that they did not have to divert to a diversion airfield. They remained VMC and were not aware of any conflict at the time. They then reached the East Anglia area and held at FL280 to conserve fuel within 30nm of Lakenheath while RAF Lakenheath was "Black".

**THE SWANWICK MIL TAC LEFT CONTROLLER** reports that there was only one pair of aircraft on frequency. The F15 flight had been general handling in the Vale of York and had asked for transit back to Lakenheath. They requested to climb to FL290 and then to hold at FL290 in the Lakenheath area for 20-25 minutes (this was due to another aircraft having taken the cable at Lakenheath, resulting in the airfield being 'Black'). She instructed them to climb to FL290 then, after scanning the area of their intended track, she instructed them to stop their climb at FL240 because she had noticed the B737, which would affect the F15s' transit. The B737 was indicating FL360, but with Mode S indicating a

<sup>1</sup> Traffic Service reported by Swanwick Mil and the F15 pilots. In Class C airspace ATC will provide a Radar Control Service. RA3223(1). Provision of ATS inside CAS.

cleared level of FL290. On further scanning she spotted no further conflicts and monitored the B737 in case it was given further descent. She decided not to coordinate at this time because she anticipated maintaining 5000ft vertical separation. Having liaised with the Tac Right controller she decided she would offer the F15s the option of holding at FL280 near Lakenheath because this would keep them within the EAMTA (East Anglia Military Training Area). They accepted this. She continued to monitor the B737 although she did not pay enough attention to the F15's Mode C to notice that it had climbed through FL240. The Prestwick Centre East controller telephoned to enquire about the F15s. She started to state that they were climbing to FL240 then realised that they were indicating approximately FL265 and climbing into conflict with the B737. The controllers started to coordinate the F15s not above FL280 against the B737 not below FL290 when the F15 Mode C indicated FL284. She immediately instructed the F15 pilot to descend to FL280 and the Prestwick controller gave the B737 pilot avoiding action. She thought it possible that when she asked the F15 pilots if they could accept FL280 in the vicinity of Lakenheath they had misconstrued this as an instruction to climb to FL280.

She perceived the severity of the incident as 'Low'.

**THE SWANWICK MIL SUPERVISOR** reports that he did not witness the event due to other supervisor tasks. The controller informed him ASAP of the incident and they collated the information. The incident was logged and a radar replay was requested. He viewed this with the BM FSO and this confirmed the summary of events.

**THE PRESTWICK CENTRE EAST CONTROLLER** reports that the un-coordinated F15 was observed off-route climbing through FL250 and tracking towards the B737 which was inside controlled airspace and descending to FL290. Given the predicted future proximity of the climbing F15 to the B737, he stopped the B737's descent at FL305, turned them left 30°, issued Traffic Information and advised that if the F15 continued to climb he would give them avoiding action. As this was happening, the East Planner was conversing with Swanwick Mil. He overheard the East Planner read back that the F15 was stopping climb at FL280. He tried to ascertain if that was a fact from East Planner whilst they were still on the phone to Swanwick Mil. However, the F15 was then observed climbing above FL280 and at that point he gave avoiding action to the B737 pilot.

## Analysis and Investigation

### Military ATM

The B737 was on a scheduled CAT flight descending to FL290. The F15s had completed a training serial in the Vale of York and were returning to Lakenheath. The F15 pilots had requested FL290 and direct route to Lakenheath because the airfield was 'Black' with a cable engagement and they wished to conserve fuel.

Although initially given a climb to FL290 by the Swanwick East Military Controller, this instruction was amended to FL240 as the Controller noted the B737. This instruction to stop climb at FL240 was acknowledged by the F15 pilots. [UKAB note: in fact, the acknowledgement of the controller's call did not use the correct terminology and could be construed as the F15 pilots merely noting that they were passing through FL240]. The Swanwick East Controller confirmed the intentions of the F15s and asked if they could accept FL280 for the transit, although no instruction to climb was given. Shortly afterwards, the Prestwick Planner requested the intentions of the F15s, and during this conversation it became evident the F15s had climbed above their assigned level.

Figures 1-5 show the positions of B737 and F15s at relevant times in the lead up to and during the Airprox. The screen shots were taken from a replay using the Great Dun Fell Radar, which is utilised by RAF(U) Swanwick, therefore is representative of the picture available to the controller.

At 1205:19 (Figure 1), the Swanwick East controller instructed the F15 pilots to climb to FL290. At the time, there was 68nm separation. Having noted that the B737 had been cleared to FL290, at 1206:19 (Figure 2), the controller instructed the lead F15 pilot to "*stop climb Flight Level 240 initially*". The pilot replied "*240 in the climb [F15 C/S]*". At this point, there was still 57nm separation.

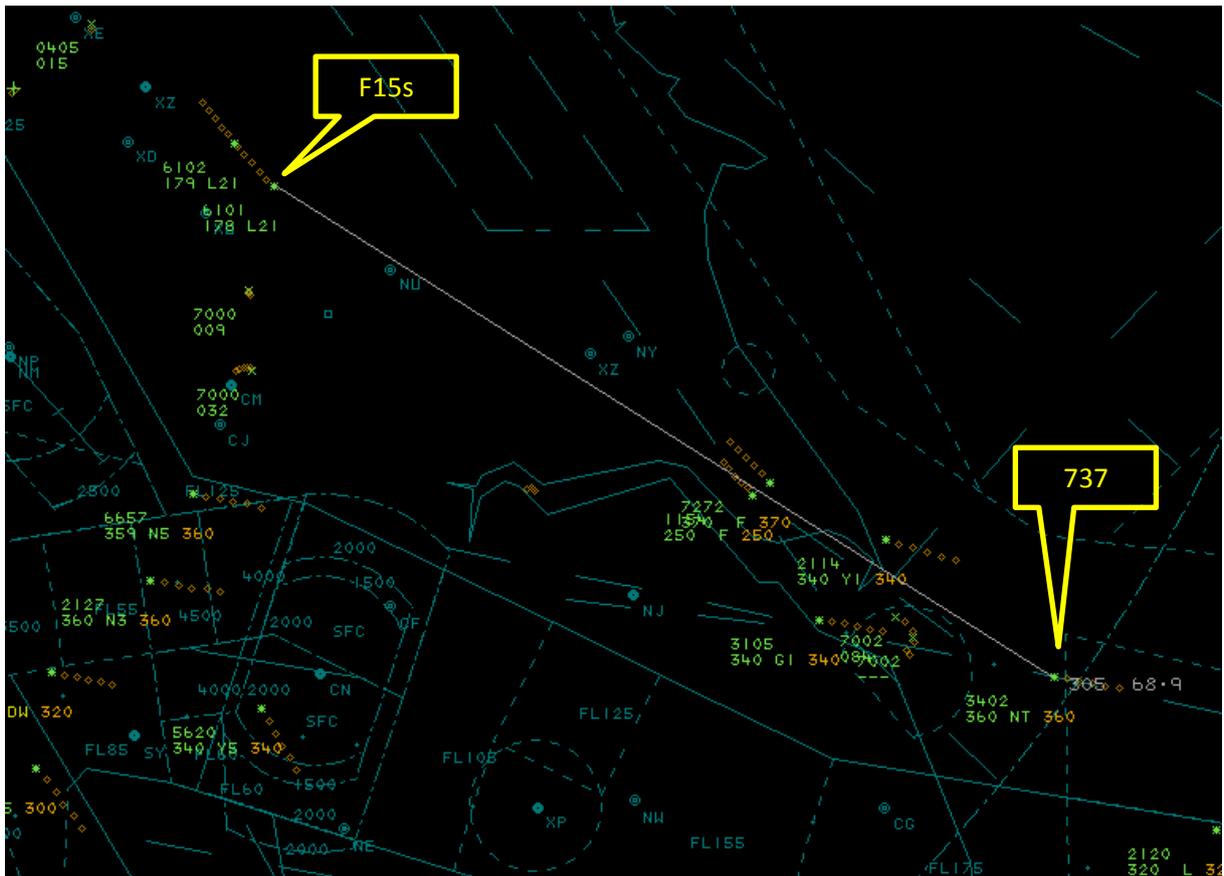


Figure 1.

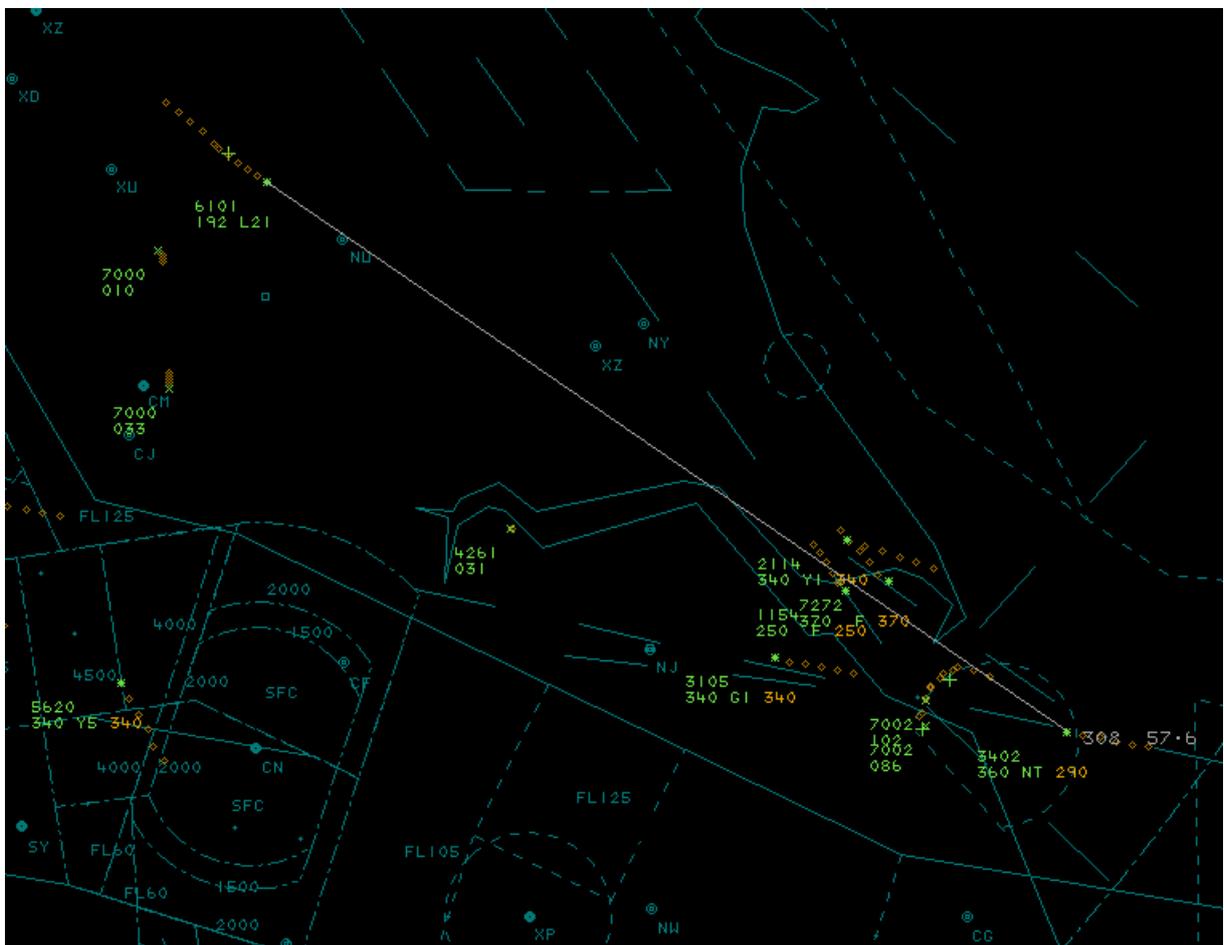


Figure 2.

Some 45sec later, the Swanwick East Controller confirmed the intentions of the F15 pilots and, at 1209:04 (Figure 3), asked “[Lead F15 C/S] will you be able to accept Flight Level 280 for your hold”. The pilot responded “Affirm [F15 C/S] can accept Flight Level 280”. No climb instruction to that level was issued. At this point, the F15s were indicating FL233 with a rate of climb of 1400fpm and the B737 was descending through FL335 for FL290. Lateral separation was 22nm.

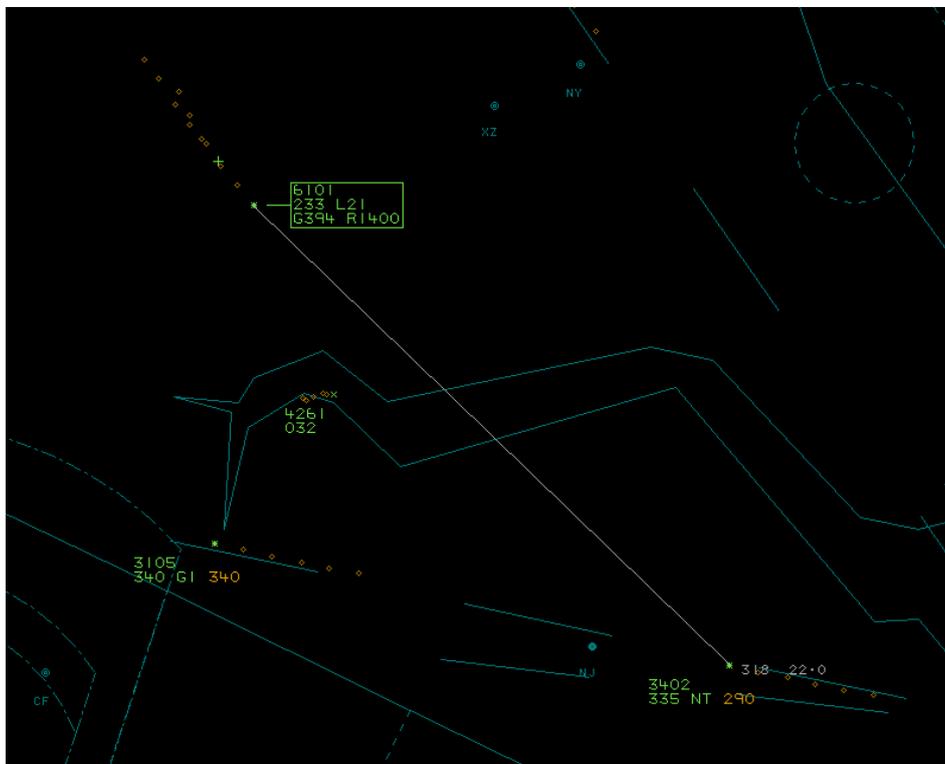


Figure 3.

25sec after this exchange (Figure 4), the F15s climbed above their assigned level. Lateral separation at this point was 15nm.

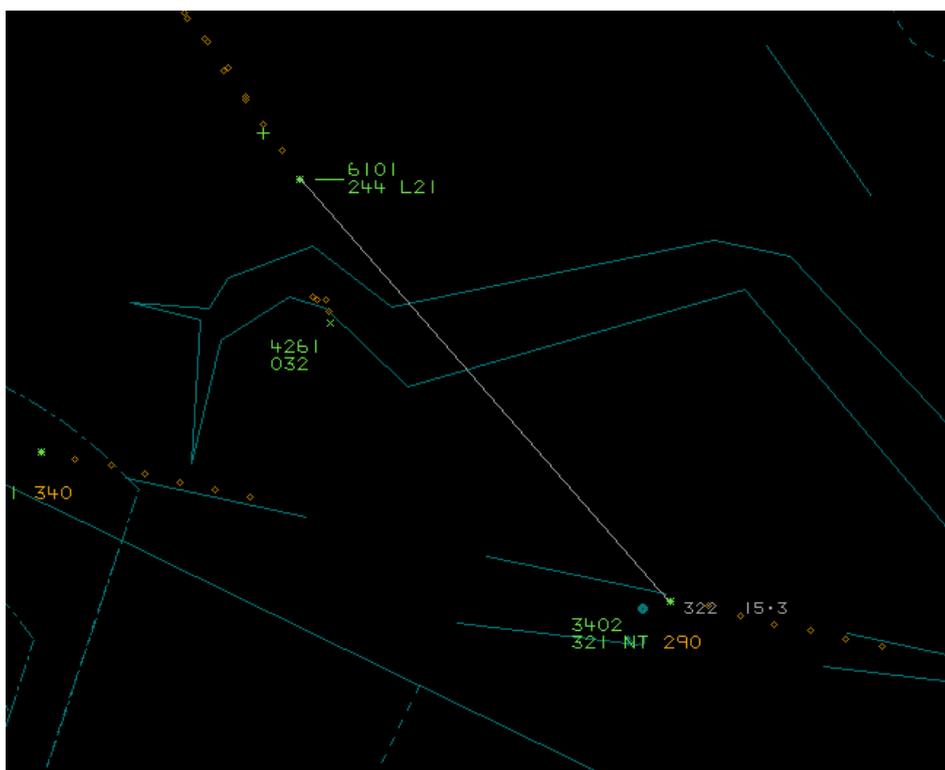


Figure 4.

Approximately 50sec later, the Prestwick Planner began to question the Swanwick East Controller about the intentions of the F15s. It was at this point the Swanwick East Controller realised the F15s had climbed above their assigned altitude. During this timeframe, the Prestwick Controller stopped the B737's descent at FL305 and then issued an avoiding action turn to increase separation. CPA occurred during this conversation and was measured at 3.9nm lateral and 2200ft vertical separation (Figure 5).

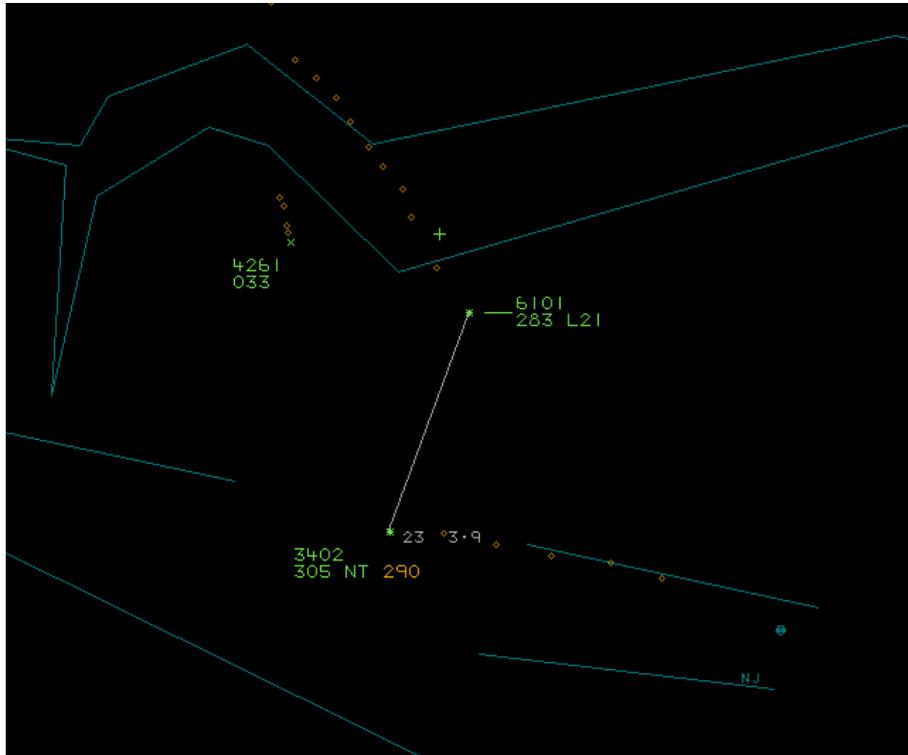


Figure 5 – CPA.

The F15s had been correctly identified and issued with a climb to their requested transit level. Having noticed a potential conflict with the B737, the Swanwick East Controller correctly allocated a level which would achieve standard separation. It is possible that during the conversation about intentions and the ability to accept FL280, the F15 pilots mistook this as a clearance to climb but no formal climb instruction was given by the controller. Although their workload was low and the F15s were the only aircraft on frequency, the level bust was not noticed by the Swanwick East Controller and it would have been reasonable to expect them to have been monitoring these aircraft. Thankfully, the Prestwick controller noticed the growing conflict and took positive steps to remedy the situation.

### UKAB Secretariat

The B737 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>2</sup>. If the incident geometry is considered as converging then the B737 pilot was required to give way to the F15s<sup>3</sup>.

In Class C airspace, whether operating under IFR or VFR, pilots are required to obtain an ATC clearance before entry and are to comply with ATC instructions. ATC are required to: separate IFR flights from other IFR and VFR flights; separate VFR flights from IFR flights; pass Traffic Information to VFR flights on other VFR flights and give traffic avoidance if requested.

<sup>2</sup> SERA 3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

<sup>3</sup> SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

In Class C airspace if radar derived, or other information, indicates that an aircraft is making an unauthorised penetration of the airspace, is lost, or has experienced radio failure IFR flights shall be given traffic avoidance advice and traffic information shall be passed.

Because co-ordination had not been effected between Swanwick Mil and the Scottish East Sector, the F15s were unknown traffic to the civil controllers.

The Manual of Air Traffic Services (MATS) Part 1 (CAP 493)<sup>4</sup> states that if the intentions of Mode C transponding aircraft are not known, the required separation is 5000ft vertically or alternative approved minima as within the MATS Part 2. The NATS advisor confirmed to the Board that it has been agreed with the CAA that alternative minima had been approved, and that the required vertical separation concerned with this incident was 3000ft.

## Comments

### USAFE

The F15s' crews knowledge that circumstances at their base would require them to conserve fuel resulted in their request for an immediate climb. After Swanwick Mil's initial restriction to FL240, the F15 crews mistakenly took the offer of FL280 as a clearance to continue the climb. At no time were they aware that their route conflicted with other traffic, and nor did they see that traffic.

## Summary

An Airprox was reported when a B737 and 2 F15s flew into proximity at 1210hrs on Thursday 11<sup>th</sup> October 2018. The B737 pilot was operating under IFR in VMC and the F15 pilots were operating under VFR in VMC. The B737 pilot was in receipt of a Radar Control Service from Prestwick Centre and the F15 pilots were in receipt of a Radar Control Service from Swanwick Mil.

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

Information available included reports from the pilots and controllers concerned, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board first turned their attention to the actions of the F15 pilots. The Board noted that they had been operating in the Vale of York and, having completed their training serial, they had requested to return to Lakenheath at FL290 so that they could conserve fuel due to the temporary closure of Lakenheath airfield. They were in receipt of a Radar Control Service from Swanwick Mil, operating under VFR, and, when the F15 pilots were initially cleared to climb to FL290 they were 68nm from the B737, which was maintaining FL360 at the time. The F15 pilots acknowledged the climb clearance transmitting "290". Approximately 1min later, the Swanwick controller instructed the F15 pilots to "stop climb Flight Level 240 initially" having noticed that the 737 was now descending. The F15 pilots replied "roger 240 in the climb". The Board considered that this was not a complete readback of the clearance because no mention was made by the F15 pilots about stopping climb at FL240. The Board noted that this incomplete readback was not detected by the Swanwick controller, and this was considered to be a contributory factor to the Airprox. At the time, the F15s were indicating on radar that they were climbing through FL192. Shortly afterwards, as they were passing FL233 at a climb rate of 1400fpm, the F15 lead pilot was asked by the controller "will you be able to accept Flight Level 280 for your hold?"; this was to allow them to hold within the East Anglia Military Training Area. The F15 pilot responded "affirm [F15 C/S] can accept Flight Level 280". Controller members noted that although no climb instruction had been issued at this time, the controller's call could be construed as somewhat ambiguous because it did not give a specific instruction not to climb at that time, and could be interpreted as a request for the F15s to climb at that point in order to route to their hold at FL280 rather than to climb once they were in the vicinity of their hold. Within 25sec, the F15s had climbed through FL240, their cleared level, presumably because they had interpreted the call about FL280 as a

<sup>4</sup> Section 1, Chapter 6, ATS Surveillance Systems, Page 13, Paragraph 10A.4.

clearance. Controller members opined that to ensure there had been no ambiguity in the controller's transmission, she should have reiterated that their cleared level was FL240 but to expect further climb later. This was a recognised way of ensuring any ambiguity of ATC instructions was removed. The Radar recording shows that the aircraft were now 15.3nm apart, with the F15s climbing through FL244 and the B737 descending through FL321. Ultimately, the combination of incorrect, foreshortened readbacks by the F15 pilots; the lack of challenge of these readbacks by the controller; and somewhat ambiguous controller transmissions had conspired to set the conditions for the F15 level bust.

Meanwhile, the Prestwick Centre East controller had been providing a Radar Control Service to the B737 pilot, who was operating under IFR. He noted an F15 climbing through FL250, tracking towards the B737, which was descending to FL290. Realising there was a predicted future proximity of the F15s to the B737, he stopped the latter's descent at FL305, issued a turn away from the F15s and passed Traffic Information to the B737's pilot, advising that he would issue an avoiding action turn if required. The Sector Planner telephoned the Swanwick Mil controller to ascertain what was happening to the F15s, and it was only then that the Swanwick Mil controller had realised that they had climbed through their level. The HQ BM Safety advisor commented that with only the F15s on frequency it was not unreasonable to expect the controller to have more closely monitored their flight and to have detected the level bust at an earlier stage; the fact that the Swanwick controller did not assimilate the F15's level bust was considered to be a contributory factor to the Airprox. The military and civil controllers attempted to arrange for the F15s to stop climb at FL280, and the B737 at FL290, but were not able to do so before the F15s had climbed through FL280. In view of the continued climb of the F15s, the Prestwick controller issued avoiding action to the B737 pilot. The Board commended the actions of the Prestwick controllers in realising the situation and taking prompt action to increase the distance between the aircraft.

Turning to the cause and risk, the Board quickly agreed that the cause was that the F15 crews had climbed above their cleared level. Contributory to this had been the F15 pilots incomplete readback of their clearance, which was not detected by the controller, and the fact that the controller had not assimilated their level bust. Turning to the risk, the Board noted that, despite none of the pilots involved having seen the other aircraft and the B737 pilot receiving a TCAS TA, the aircraft were separated by 2200ft vertically and 3.9nm horizontally at CPA. Accordingly, it was decided that there had been no risk of a collision. Notwithstanding, because there had been a level bust and the necessity for avoiding action to be issued, this could not be interpreted as normal procedures having pertained (Category E) and so the incident was categorised as risk Category C.

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

Cause: The F15 crews climbed above their cleared level.

Degree of Risk: C.

Contributory Factors:

- 1) The Swanwick controller did not assimilate the F15 level bust.
- 2) The incomplete F15 readback was not detected by the Swanwick controller.

### **Safety Barrier Assessment<sup>5</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>5</sup> The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

**ANSP:**

**Situational Awareness and Action** was assessed as **partially effective** because the Swanwick Mil controller was not aware that the F15s had climbed through their cleared level until advised by the Prestwick controller.

**Warning System Operation and Compliance** was assessed as **not used** because although the Swanwick controllers had access to these warning systems it was military policy not to use them.

**Flight Crew:**

**Regulations, Processes, Procedures, Instructions and Compliance** was assessed as **ineffective** because the F15 pilots did not comply with their ATC clearance.

**Tactical Planning** was assessed as **partially effective** because the F15 pilots did not execute their ATC clearance, believing they had been re-cleared to a higher level.

**Situational Awareness and Action** was assessed as **partially effective** because only the B737 pilot had situational awareness of the other aircraft.

**Warning System Operation and Compliance** were assessed as **partially available** because only the B737 was equipped with an electronic warning system.

**See and Avoid** was assessed as **not used** because the incident occurred at a range at which visual sighting and actions therefrom were not relevant.

