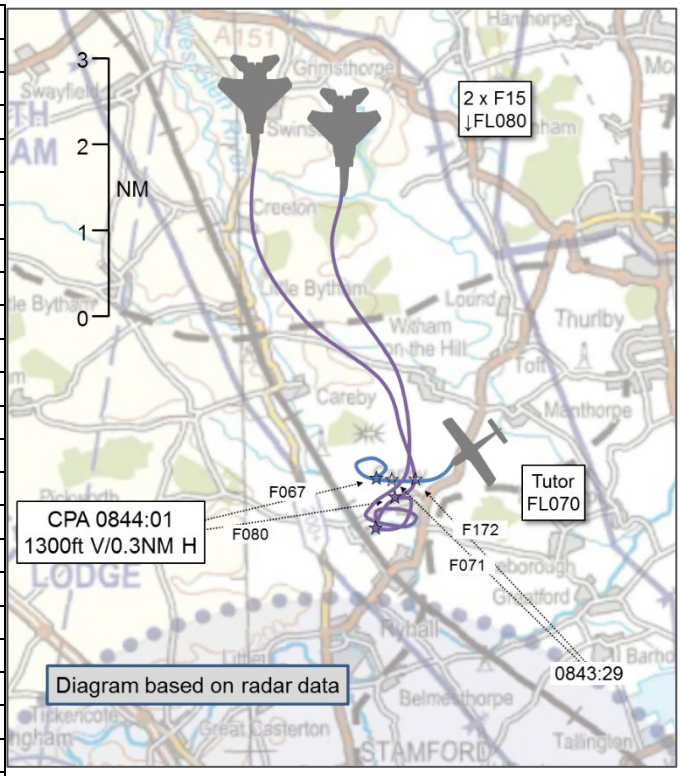
AIRPROX REPORT No 2020087

Date: 03 Aug 2020 Time: 0844Z Position: 5242N 00027W Location: 6NM N Wittering

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tutor	F15
Operator	HQ Air (Trg)	Foreign Mil
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Traffic
Provider	Wittering	Swanwick(Mil)
Altitude/FL	FL067	FL080
Transponder	A, C, S	A, C, S
Reported		
Colours	Blue, White	Grey
Lighting	HISLs	NK
Conditions	VMC	NK
Visibility	10KM	NK
Altitude/FL	6000ft	
Altimeter	RPS (1011hPa)	NK
Heading	060°	NK
Speed	NR	NK
ACAS/TAS	TAS	Not fitted
Alert	None	None
Separation		
Reported	500ft V/1NM H	NK
Recorded	1300ft V/0.3NM H	



THE TUTOR PILOT reports that after completing a top of climb check, the student was told to practise 60° AOB turns. The student conducted a full lookout before initiating the turn and started rolling to the right. Half way round the turn the aircrew spotted 2 F15s turning to the left. The lead was higher than the Tutor at 6000ft and the second dropped below the Tutor before starting a climb. The closer aircraft was approximately 500ft (6-9 o'clock) belly up in a left hand turn. The QFI took control and increased the speed, pointing away from the jets. The Tutor crew contacted Wittering Approach to notify them about the proximity but didn't use the prefix Airprox. Wittering Approach reported that they were 5NM away but in fact they were significantly closer (within 2 miles). The sortie was then continued normally with no further issues.

The pilot assessed the risk of collision as 'Medium'.

THE F15 PILOT reports that they were the lead pilot in a formation of 2 F15s. They recalled some SA was passed from Swanwick on slow moving aircraft operating in the vicinity of the formation, they specifically recalled four sets of Traffic Information from ATC (there may have been more). These were spread over the course of all 7 of the Basic Fighter Manoeuvre (BFM) sets. The first was pre-manoeuvring for BFM, an aircraft roughly 10NM away, not in their intended direction of travel, no height information, slow moving. They cleared for traffic and continued manoeuvring. The second was post BFM 'Terminate', both aircraft at 6000ft, descending as low as 5000ft with Traffic information out 5NM north of their position at roughly 3000ft, southbound. As they were flowing northwest and accelerating to climb above it, they initiated a gentle left turn away from the known traffic on the nose at a lower altitude. As they rolled out eastbound the lead pilot was able to get tally on a small fixed wing aircraft down below the cloud tops that were below their fight floor. The formation moved northbound for the next fight, believing the traffic would be no additional factor. ATC were advised that they were visual with traffic flowing southwest bound behind and below. They flowed north for the next set. The third Traffic Information was at BFM 'Terminate', a call from Swanwick identified traffic co-level, 3NM south.

This occurred simultaneously with the Terminate and as the defender they had not yet reversed the turn for Tac flow, but were in a right hand turn through southwest and No2 was in a right hand turn through roughly south. No2 F15 continued the right hand turn in trail of No1 and they adjusted the formation flow to climb through north, away from this conflict. Neither aircraft was able to pick up the tally on this stranger traffic. The lead pilot's radar sweeping in 'GUNS' picked up no traffic throughout this set (or any of the defensive sets). The final Traffic Information was during the middle of a BFM set with traffic west of their position, 5-10NM. The BFM fight was already flowing towards to east so they took no action to deconflict. They did not assess that there was one specific contact manoeuvring in a block within their area and assumed that the traffic conflict was below the block until the co-level call out. They chose to move the fight once more, rather than initiate a high fight floor after this Traffic Information.

The pilot noted that the F15s had flight planned to utilize overwater airspace that day. Their flight was denied by Tower prior to departure (believed to be because of a conflict from Swanwick) so they re-filed for East Anglia and split the MTA with the other formations. Their formation operated in the block from roughly abeam WIT ATC in East Anglia MTA and to the north from Peterborough, and to the west of Holbeach Range. They believed another formation was also operating in EAMTA.

The pilot did not assess the risk of collision.

THE WITTERING CONTROLLER reports that they were the relief controller for the Wittering Approach task, taking over from the previous controller at 0835Z. The task included provision of ATS for 2 GH Tutors and 2 Civil GA MATZ crossings on separate VHF/UHF channels. They were operating alone without support or direct Supervision, under COVID secure conditions; manning was limited to 4 controllers for the day. The Tutor was observed operating at approximately 5000ft within the briefed general handling block which was up to 7000ft Barnsley RPS, approximately 8NM to the NW of Wittering. The controller noted the presence of what appeared to be a pair of fast-moving contacts with a Swanwick East SSR code operating at approximately FL180, well outside of the Tutor's operating block, and considered whether Traffic Information would be appropriate. The controller decided not to provide any information at this time, as the pair of tracks were seen to maintain their levels as they entered the radar overhead. At 0846Z, the Tutor pilot remarked that a pair of F15s had passed by at co-level, (the Tutor's Mode C was indicating FL060), north to south, approximately 5NM north of Wittering. The controller confirmed at this point the position of the conflicting traffic, noting that they were the same aircraft as previously observed well above. No Traffic Information had been passed in relation to this track. Further Traffic Information was passed as required and the controller contacted Swanwick(Mil) East Supervisor for Traffic Information on the conflicting pair. The Supervisor advised that they were 2 F15s, manoeuvring in an altitude block 5000ft up to 24000ft Yarmouth RPS. When questioned if they were visual with the Tutor during the time of their report, the Supervisor confirmed that they were. The Tutor pilot continued their sortie without further incident and the task was handed over at 0855Z to the oncoming controller. The controller advised the ATCO IC of this incident, noting that no formal airborne report of Airprox was made, although they had collated all details should one have been filed upon landing.

The controller perceived the severity of the incident as 'Medium'.

THE WITTERING SUPERVISOR reports that they were the ATCO IC at the time of the occurrence. They had previously been the Approach controller who was relieved by the reporter, and as a result were taking a break. They were informed of the occurrence shortly after the event and were passed the details as reported.

THE SWANWICK(MIL) CONTROLLER reports that no Airprox was called on frequency so the report was written from memory. A pair of F15s were general handling in the western side of the EAMTA in the block 5000 to 23000ft on the relevant RPS at the time, under a Traffic Service. Conflicting traffic, roughly around 7000ft, was called to the pair of F15s multiple times and after the third traffic call, the pilot reported visual with the conflicting traffic and continued to general handle.

The controller perceived the severity of the incident as 'Low'.

THE SWANWICK(MIL) SUPERVISOR reports that at the time of the event and they had been taking multiple calls on the Sup phone. When going to check on the controllers in position, the landline rang from Wittering, it was the Wittering Approach controller asking for Traffic Information on a pair of Swanwick squawks. Information was passed that it was a pair of F15s operating in the block F050-240. The controller then asked if that traffic had been visual with the Tutor. The Supervisor had not witnessed the Swanwick controller calling the traffic to the F15s, however, upon asking them, the controller told the Supervisor they had, and that the F15 pilot had called visual.

Factual Background

The weather at Wittering was recorded as follows:

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METAR EGXT 030821Z 30008KT 9999 FEW019TCU BKN050 15/10 Q1015 RMK BLU=
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Analysis and Investigation

Military ATM

The Tutor pilot was in receipt of a Traffic Service from Wittering ATC operating up to 7000ft practicing AOB turns under VFR. The student pilot had conducted a full lookout before initiating the turn and around halfway around the turn they spotted 2 F15s turning to the left. The lead was reported as higher than the Tutor whereby the second dropped below before starting to climb. The Instructor took control, increased speed and manoeuvred away from the F15s. They assessed that separation was 500ft above and within 1NM from the nearest F15. They did not report receiving Traffic Information or a TAS/FLARM alert.

The formation of 2 F15s were in receipt of a Traffic Service from Swanwick(Mil) operating in the block from 5000ft to 24000ft in unknown flight conditions. The formation had been restricted in their operating area, limited to “no further East” than their current location (roughly abeam D207, Holbeach Range) due to other traffic. Although they were advised that they were clear of traffic they were not specifically released from the ‘no further East’ restriction. The F15s flew a racetrack profile from approximately 8-13NM to the NE of Wittering and through the Wittering radar overhead. The F15s reported that they had been passed various amounts of Traffic Information from Swanwick on conflicting tracks and took actions to deconflict if required. However, on review of the radar replay and tape transcripts it was evident that there had been no Traffic Information passed on the Tutor until after CPA.

The Wittering controller was controlling 3 other aircraft and it was reported that they were operating solo without support or direct supervision under COVID secure measures. The controller observed the F15 formation general handling approximately 8nm NE at FL180. They reported that they considered passing Traffic Information however, it was decided against due to the F15s operating well outside of the Tutors operating block. Traffic Information was only sought from the Swanwick(Mil) Supervisor after the Tutor reported the close proximity of the F15s. The minute prior to CPA the tape transcript identified that there were no RT calls on the Tutor frequency or landline calls made. No Traffic Information on the F15s was passed to the Tutor pilot until after CPA.

The Swanwick(Mil) controller was controlling 2 other formations with a planner in support. Traffic Information was passed on other conflicting traffic however, no Traffic Information was passed on the Tutor until after CPA. The controller reported that they did not pass Traffic Information as they had 10,000ft separation at the time and they thought that it was the right course of action to not overload the F15 formation with constant Traffic Information. Their intention was to monitor the F15s and pass Traffic Information if they began to descend. Immediately prior to CPA the controller called Lakenheath to provide a prenote on another formation recovery. The controller did not request Traffic Information from Wittering at any point. Traffic Information on the Tutor was passed 57 seconds after CPA which the F15s reported tally.

The Swanwick(Mil) Planner was supporting an additional TAC controller at the time of the incident. They reported that the other TAC had been operating at a high workload for a period of time and was winding down to a medium to low workload at the time of the incident. They assessed that the F15s' controller's workload was deemed at an appropriate level due to the nature of the task and the levels of ambient traffic in East Anglia. At the time of the Airprox they were on a landline taking a prenote and preparing the Electronic Flight Strips for an aircraft entering the FIR.

Figures 1-5 show the positions of the F15s and the Tutor at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the NATS radars, which are not utilised by Wittering therefore, may not be entirely representative of the picture available to the Wittering Controller.

The F15s had been operating to the NE and N of Wittering prior to altering their flight profile to transit towards the Wittering overhead. This was the second observed racetrack profile flow by the F15 formation. The Tutor had begun to track in a SW direction. Separation at this point was 5.1NM and 10,000ft.

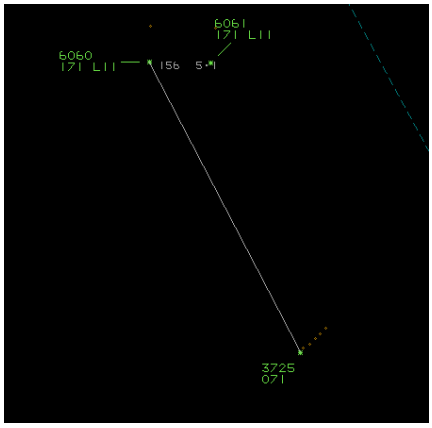

Figure 1:
Separation and flight profile of F15s and the Tutor.

During the transit the Mode C on the No1 F15 dropped off the radar replay, which is normally associated with a rapid climb or descent. Separation at this point had decreased to 3.8NM.

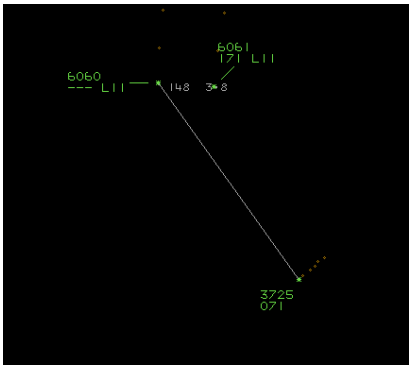

Figure 2:
No1 F15 loss of Mode C data.

Seventeen seconds after the Mode C data had dropped out on No1 F15, it reappeared displaying FL169. Separation decreased to 1.7NM.

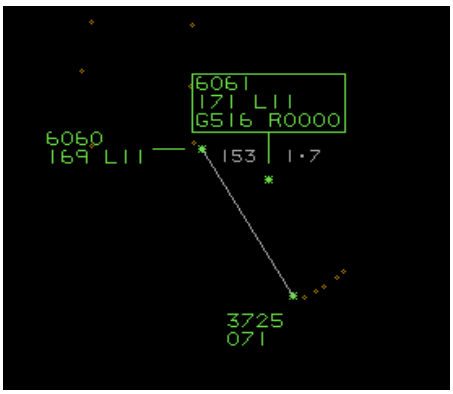

Figure 3:
No1 F15 Mode C data reappears.

A further eighteen seconds elapsed before the No1 F15 Mode C data dropped out again. Of note this was one second after the controller engaged in a landline conversation with Lakenheath. Separation decreased to 0.8NM.

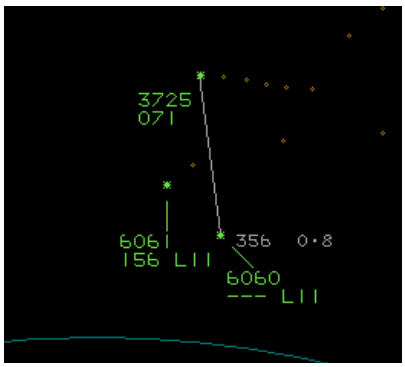

Figure 4:
No1 F15 Mode C data disappears again.

The Mode C data dropped out on No2 F15 13 seconds after No1 F15. Separation to the closest F15 remained at 0.8NM. Twelve seconds later CPA occurred. CPA was measured at 0.3NM and unknown height between No1 F15 and 0.5NM and 2500ft between No2 F15.

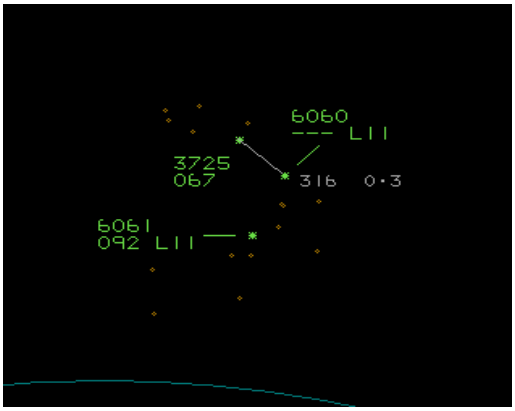

Figure 5: CPA.

Traffic Information was not passed by either controller prior to CPA and whilst both were controlling other tracks it does appear that there was adequate time to pass Traffic Information. Additionally, neither controllers requested Traffic Information from the other agency to aid situational awareness. It is noted that the Wittering controller was working alone whereby the Swanwick(Mil) controller was supported by a Planner, although the Planner's focus was primarily on the busier other Tac controller. It is unknown what the Wittering controller was doing in the gaps in RT transmissions. The Swanwick(Mil) controller should have made better use of the Planner by requesting the Planner

conduct the Pre-Note, however, it is not an entirely unexpected action as the Planner was already engaged in another call. It is unfortunate that both controllers opted not to provide Traffic Information and monitor the traffic situation as there had been previous occasions where the F15s had descended to a level which would have conflicted with the Tutor, albeit in a different location. It was noted that the F15s had been proactive in amending their flight profile based on the given Traffic Information. Additionally, not removing the geographical restriction placed on the F15s meant the F15s were operating in a location they weren't initially expecting. That said, the pilots could have challenged the restriction once advised that they were clear of traffic.

UKAB Secretariat

Although the Swanwick 'all radar' setting did not display a height on the F15s, by interrogating a single radar source it was intermittently possible to see a height on the F15s for the purposes of assessing the Airprox. The Swanwick(Mil) controller was unlikely to be operating on a single radar source and so the Mode C data would not have been available to them. Figure 6 is taken from the Clee Hill radar at CPA and shows 0.3NM and 1300ft between the two aircraft. The Cromer radar 10sec later shows the two aircraft 0.7NM apart at the same level.

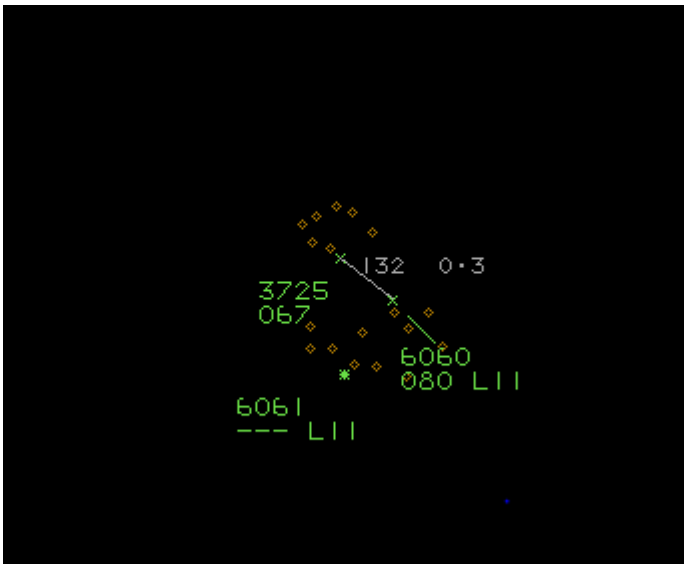

Figure 6: 0844:01 (Clee Hill radar)

Figure 7: 0844:11 (Cromer radar)

The Tutor 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.[1] If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[2]

Occurrence Investigation

Swanwick(Mil)

A Swanwick(Mil) investigation found that the controller offered the F15s "no further east" than roughly abeam D207/Holbeach Range to allow an aircraft to route without interfering with the F15s. Although the F15s were reported as being "clear of traffic" from this transit traffic, they were not given a larger area to work in, and gradually trended to the west. Traffic Information was generally good while inside EAMTA, however, the F15s proceeded to operate outside, in the vicinity of Wittering, where three tracks were manoeuvring. While dealing with other tracks on frequency, the F15s (FL170) merge with the Tutor (FL070) at 0843, but Traffic Information is not given. As the F15s descend through FL100 at 0844, Traffic Information on the Tutor is given as "previously called traffic". The F15 pilots do not call visual, and continue to descend, the confliction occurring at 08:44:12, with the Tutor at FL061, the No1 F15 at FL061 [descending] and F15 No2 no Mode-C, all

[1] MAA RA 2307 paragraphs 1 and 2.
[2] MAA RA 2307 paragraph 13.

within 1NM of each other. At 08:45:15, Traffic Information is given on the Tutor again, with the F15 pilot calling “tally traffic”.

Comments

HQ Air Command

This Airprox was subject to a Local Investigation, that identified three Causal Factors. The learning points from the Swanwick investigation were raised in a Unit Standards Bulletin, highlighting the importance of passing Traffic Information on conflicts operating within the block of general handling airspace. A media recording of the event, as displayed on the radar screen, has also been created and has been used in multiple flight safety briefs on Unit to increase awareness to other controllers of the need to pass accurate Traffic Information. Unit Instructors have also been reminded to stress the importance of timely and accurate Traffic Information during training, especially to the ab-initio controllers. The investigation made an observation, that the East Anglia MTA was relatively empty once another formation had departed to the south. The F15s could have been offered an area free of conflictions and should have been made aware of the clearer airspace to the West.

Communication was of the upmost importance during this occurrence; not only between all the Air Systems (AS), but also between Wittering and Swanwick. All of which broke down and serves as a pertinent reminder to keep all lines of communication open to build situational awareness and to pass all Traffic Information on aircraft that enter an allocated block, as one would have to assume that a fast mover will want to utilise the whole block.

The 6 FTS DDH review states that: in this event all the barriers except lookout failed. It is worth highlighting that all electronic collision avoidance systems are designed for aircraft flying predicable and relatively stable flight profiles and do not cope well with high performance manoeuvres. The Lincolnshire and East Anglian Airspace Users Group is looking at closer liaison with USAFE units and I would also encourage the use of CADS to help plan deconfliction from, and increase awareness of, other airspace users prior to flight.

The crew of the Tutor are to be commended for their lookout and the subsequent avoiding actions, meaning that the risk of collision was low.

USAFE

With regards to the event itself, there is little to add to the excellent analysis and investigation already carried out. However, it is worthwhile addressing two potential factors, if only for wider understanding. This report observes that ‘the pilots could have challenged the restriction once advised that they were clear of traffic’. While this is entirely valid, USAF aviators operating in the UK FIRs will be naturally disinclined to challenge the restrictions placed upon them by Swanwick (Mil). They are very aware of the complexity of the UK’s airspace and the high number of airspace users in it, as such our aviators will comply with ATC instructions or restrictions whenever possible and safe to do so. It is also worth highlighting that, by choice, activities of this nature would be conducted in segregated airspace, usually D323. Routinely, only when this is unavailable, either due to booking conflictions, a lack of controllers, or excessive sea states will our crews select to carry out fighter manoeuvre training over land. The USAFE is working closely with the MOD to come up with solutions to the increasing demand on air combat training airspace, especially in the North Sea.

Summary

An Airprox was reported when a Tutor and a pair of F15s flew into proximity 6NM north of Wittering at 0844Z on Monday 3rd August 2020. Both pilots were operating under VFR in VMC, the Tutor pilot in receipt of a Traffic Service from Wittering and the F15 pilots in receipt of a Traffic Service from Swanwick(Mil).

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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first looked at the actions of the Tutor pilot. They were operating in a block of airspace and receiving a Traffic Service from Wittering ATC, and could have correctly assumed that they would have been passed Traffic Information on the F15s. In fact, the Wittering controller did not pass Traffic Information and so the first time the Tutor pilot knew about the F15s was when they saw them at a similar level (**CF6**). The TAS in the Tutor did not alert as would have been expected and members thought this was probably because of the high energy manoeuvres by the F15s, the fast rate of descent was probably filtered out by the TAS algorithm (**CF7**). Without situational awareness from either ATC or from the TAS, see-and-avoid was the final barrier available, fortuitously, the Tutor pilot saw the F15s in time to take avoiding action and turn away. The Board noted that although the Tutor pilot reported seeing the F15s to ATC, they did not use the term 'Airprox' on the RT at the time and they urged pilots to consider reporting Airprox at the time of occurrence to prevent the loss of vital data.

For their part, the F15 pilots were receiving a Traffic Service from Swanwick(Mil) whilst operating in a block of airspace 5000-24000ft. The Board was told that the F15s would not normally want to conduct high energy manoeuvres over the land and ideally would seek to use segregated airspace in the D323 complex, but that the demands on the airspace from both USAFE and RAF aircraft were great and so frequently they had to operate elsewhere. On this particular occasion, not only were they required to operate over land, they were further restricted due to transiting aircraft, which pushed their operating area towards Wittering, an area where they would not normally operate. Some members opined that once they were told that the transit traffic was clear, the pilots could have asked the controller whether they could revert to their requested airspace. However, the USAFE representative told the Board that as visitors to the UK airspace, the pilots culturally did not like to challenge UK controllers. When some members wondered whether more education was required for the USAFE crews, they were told that a Swanwick(Mil) controller went monthly to Lakenheath to brief crews and at recent visits had specifically briefed that under current circumstances Swanwick(Mil) controllers were frequently very busy and it became easy to forget to lift a restriction, and so crews were encouraged to challenge controllers when deemed appropriate. The Board were heartened to hear this, but accepted that it was difficult to change cultural norms. The F15s were not fitted with any form of CWS and members wondered whether there were any plans for this to change. They were told that there was indeed an aspiration to upgrade the F15s to retro-fit a CWS, but that as yet there was no set timeline to do so. Whilst operating in their block of airspace the F15s pilots were conducting high energy manoeuvres that required a high cockpit workload as each pilot conducted their BFM, members thought that this high workload had been an understandable distraction that prevented the level of look-out that would be present in straight-and-level flight (**CF8**). The ATS was in mitigation for the reduced look-out and the pilots could have expected that they would have received timely Traffic Information on the Tutor from the controller. In the event, they received late Traffic Information, and without any CWS, the F15s pilot were denied any early situational awareness on the Tutor (**CF6**), and subsequently became visual at, or shortly after, CPA (**CF9**).

The Board then discussed the role that the controllers had to play. They noted that the Wittering controller was alone in the radar room, with several frequencies band-boxed and opined that it had become a common theme over summer 2020 that due to COVID restrictions, controllers had been expected to take on more responsibility than would normally be the case (**CF2**). In this incident the controller hadn't reported being overloaded, however, although they had seen the F15s when high-level, they had not expected them to become a problem for the Tutor and elected not to give Traffic Information at that point. However, they then did not notice when the F15s descended rapidly in the

vicinity of the Tutor (**CF3**), resulting in Traffic Information not being given to the Tutor pilot (**CF1**, **CF3, CF5**). Similarly, the Swanwick(Mil) controller also elected not to give Traffic Information to the F15 pilots on the Tutor, despite the fact that the Tutor could be seen at a level that was within the block of airspace the F15s were known to be using, and that the F15s had descended down to 6000ft (the Tutor's level) previously (**CF1, CF4**). Just prior to the Airprox the controller had received a prenote from another ATC agency on the landline, which had undoubtedly taken their attention away from the F15s. Some members wondered whether a better use of resources would have been for the Swanwick(Mil) Planner to have received the prenote, allowing the controller to fully concentrate on their aircraft. However, they were told that the Planner was providing assistance to the other controller on the sector, who had been busier and was therefore judged to have the greater need. By the time Traffic Information was provided to the F15 pilots the aircraft were already close to CPA (**CF5**). The Board were heartened to hear that in order to effectively learn the lessons from this Airprox, Swanwick(Mil) had taken this incident to be used as an example for controller training purposes.

In determining the risk, the Board agreed that although neither pilot had been given timely Traffic Information, and that there had been an element of providence that the F15s were above the Tutor when at the closest point laterally, the Tutor pilot had taken timely and effective avoiding action to remove the risk of collision; Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020087		
CF	**Factor**	**Description**	**Amplification**
	Ground Elements		
	• Regulations, Processes, Procedures and Compliance		
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not complied with
	• Manning and Equipment		
2	Organisational	• ATM Staffing and Scheduling	Sub-Optimal establishment or scheduling of staff
	• Situational Awareness and Action		
3	Human Factors	• Conflict Detection - Not Detected	
4	Human Factors	• Conflict Detection - Detected Late	
5	Human Factors	• ANS Traffic Information Provision	TI not provided, inaccurate, inadequate, or late
	Flight Elements		
	• Situational Awareness of the Conflicting Aircraft and Action		
6	Contextual	• Situational Awareness and Sensory Events	Pilot had no, late or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance		
7	Technical	• Interpretation of Automation or Flight Deck Information	CWS alert expected but none reported
	• See and Avoid		
8	Human Factors	• Distraction - Job Related	Pilot looking elsewhere
9	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

Safety Barrier Assessment[3]

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

[3] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website.

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because Traffic Information was provided late, or not at all.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the Wittering controller did not pass Traffic Information on the F15s to the Tutor pilot, and the Swanwick(Mil) controller passed late Traffic Information to the F15 pilots.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Tutor pilot did not have any prior situational awareness about the F15s.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the Tutor's TAS did not give any indications on the F15s.