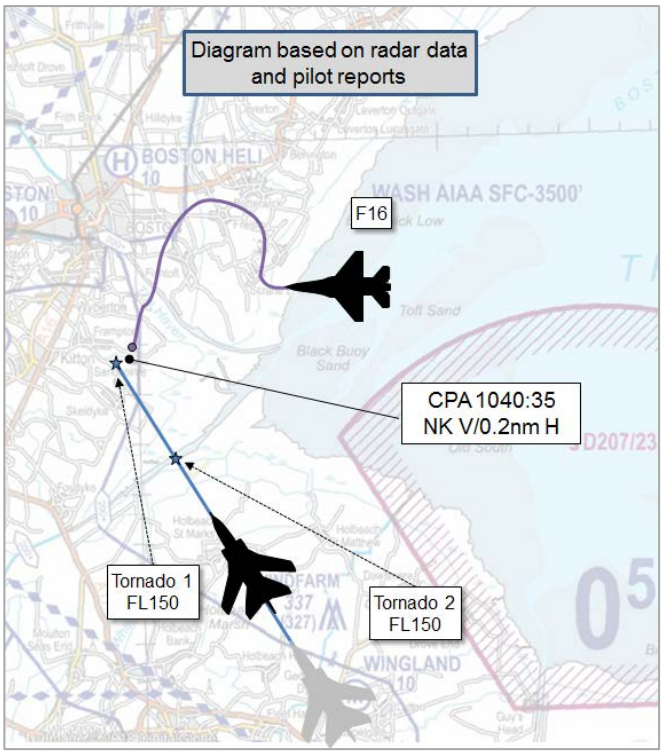
AIRPROX REPORT No 2018183

Date: 23 Jul 2018 Time: 1040Z Position: 5255N 00038W Location: 6nm NW Holbeach Range

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tornado	F16
Operator	HQ Air (Ops)	Foreign Mil
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Coningsby	Holbeach
Altitude/FL	FL150	NK
Transponder	A, C, S	PSR only
Reported		
Colours	Grey	Grey
Lighting	Not reported	Strobe, Nav
Conditions	VMC	VMC
Visibility	>10km	10km
Altitude/FL	FL150	FL145
Altimeter	QNH (1013hPa)	QNH (29.88inHG)
Heading	340°	180°
Speed	300kt	350kt
ACAS/TAS	TCAS II	TCAS I
Alert	None	None
Separation		
Reported	500ft/200ft[1] V/0.5nm H	Not seen
Recorded	NK V/0.2nm H	



THE TORNADO PILOT reports that they had been handed over to Coningsby Approach with a Traffic Service due to Swanwick Mil being unable to accept them for control. He was at FL150, west-abeam Holbeach Range, with his No2 about 2nm in trail. He observed a datalink track outside of Holbeach Range displaying an altitude of about 15000ft. The number 2 Tornado's datalink did not display the datalink track at any time. Within 30 secs, he became visual with an F16 which passed right-to-left across his nose within 500ft of the formation, 6nm to the NW of Holbeach overhead Boston. His No2 descended 1500ft to remain visual with the F16 and VMC, and he came right to avoid; the F16 passed down the left-hand side of both aircraft, then continuing to the south. He immediately contacted Coningsby Approach who were initially unaware of the F16 but then identified that the aircraft had been working inside Holbeach Range but had 'spilled out' to the NW. The F16 was not squawking throughout and as a result no TCAS information was generated. Post-landing it was ascertained that the F16 traffic was not working Marham or Coningsby ATC. Swanwick were contacted to check their tapes and radar feed.

He assessed the risk of collision as 'Medium'.

THE F16 PILOT reports that he was flying a training sortie as part of a unit training deployment to the UK. Although he had received a detailed briefing on flying in UK airspace, he commented that he had misunderstood the requirements for working on a UK range and flowing in and out of the defined range boundaries. During this portion of the sortie he was in communication with the range but was not under an Air Traffic Service when operating outside of the range boundaries. Upon reviewing his recorded data, he identified when the incident occurred. He was preparing for his simulated attack on a target in the range and was looking down into the cockpit at some of his displays when the incident occurred.

[1] The Tornado pilot reported vertical separation as 500ft on the radio and, subsequently, 200ft on the DASOR.

He was squawking 7002 for the range (he thought) and did not receive any traffic information on the Tornados. This, combined with his in-cockpit cross-check at the time resulted in him not observing the traffic conflict and therefore he did not take any corrective action. He was notified of the incident the next day. The squadron has been thoroughly debriefed on the incident and the lessons learnt to ensure a repeat will not recur.

THE CONINGSBY CONTROLLER reports that he had just taken over the position and, during the handover, he was made aware that Swanwick Military were unable to accept a pair of Tornados for a transit north to OTA E. He had also been informed that a pair of fast-jets, believed to be F15s [actually F16s][2] were operating within Holbeach Range and one of them was non-squawking. The Tornados track took them about 8-10nm west of Holbeach Range, so he was content that the F16's shouldn't have been a factor. Looking at the radar picture, he was satisfied that at the time the Tornados were in clear airspace, so he started looking through the en-route documents that are kept above the Supervisors console to obtain a telephone number for RAF Leeming ATC, because they were his next planned agency to hand the Tornados to. Whilst checking the documents he glanced at the radar screen and the non-squawking F16 had disappeared. It was at this point that the Tornado leader informed him an F16 had just passed 500ft above him. When looking at the radar screen, the F16 was not seen, this was possibly due to the fact is was directly above the Tornados and their primary returns had merged, and because the F16 was not squawking it was harder to see. At this point, the Tornado lead did not take any further action. He informed the ATC Supervisor immediately after the Tornado leader had reported the F16. His intentions were to speak with the crew of the Tornados upon completion of their sortie, but he was made aware by the ATC Supervisor that the crew of the Tornados had phoned and spoken to him about the incident and said that they were going to raise either a DASOR or file an Airprox, but as yet were undecided.

He perceived the severity of the incident as 'Medium'.

THE CONINGSBY SUPERVISOR reports that he was aware that the Tornados had been handed over for their transit to OTA E and, content that the RA controller had a low workload at the time, he accepted a telephone call on the back desk which resulted in him being slightly removed from the Supervisor's console but still able to observe the radar screen and hear transmissions on the speaker. As he finished the call and moved back to the Supervisor's console, he heard the Tornados ask the controller if they were aware of an F16, 500ft above. On his first look he could not see the non-squawking F16 on radar because its primary return was hidden by that of the Tornado. Shortly afterwards he observed the primary contact was re-entering the range. The Tornado pilot did not declare a TCAS RA or an Airprox at the time, so he was content to take no further action. Later in the day he received a call informing him that the Tornado crew were planning to submit either a DASOR or an Airprox report.

Factual Background

The weather at Coningsby was recorded as follows:

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METAR EGXC 231050Z 21004KT 9999 FEW040 SCT045 28/16 Q1015 BLU NOSIG
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Analysis and Investigation

Military ATM

The F16 was on a training sortie from an overseas airbase and was conducting simulated attacks on a target within Holbeach Range under the control of a JTAC. The Tornados were on a training sortie to Operational Training Area E (OTA E). Due to capacity issues at RAF(U) Swanwick, the Tornados had been handed over to Coningsby Approach from Marham, anticipating an onward handover for further transit. The Coningsby Approach Controller had just taken over the position

[2] UKAB Note: Both the Coningsby Controller and Supervisor believed the F16s to be F15s and referred to them as F15s in their reports. For consistency their reports have been changed from F15 to F16.

and had been briefed about the presence of fast-jets (he believed they were F15s) operating in Holbeach range, and that one of the aircraft was not squawking.

Having confirmed that the Tornados were going to transit to the west of Holbeach range (by approx. 10nm) and believing that the F16s were staying within the confines of the range, the Coningsby Approach Controller consulted the en-route documents to obtain the telephone number for Leeming because handovers to Leeming are not routine and so there was no direct landline established between the two units. The Supervisor reported that he was content that the Approach Controller's workload was low and therefore turned his attention to answering a telephone call. The Airprox occurred whilst the controller was 'heads-down' in the documents.

The JTAC was using the standard Holbeach Range frequency which was also being monitored by the Holbeach Range Controller. The Airprox was not reported on frequency nor was there any landline communication from Coningsby to Holbeach about the incident. As a result, the Holbeach Range Controller was not notified of the event until sometime later and, because he was not controlling the F16, no DASOR was filed.

Figures 1-3 show the positions of the Tornados and F16 at relevant times in the lead up to and during the Airprox. The screenshots are taken from a replay using Swanwick radars, which are not utilised by Coningsby Approach and therefore are not representative of the picture available to the controller.

Figure 1, timed at 1038:35, shows the point at which the Tornados were handed over from Marham to Coningsby. The non-squawking return, believed to be the F16, is approx 8nm from the Tornados but no mention of this traffic was made during the handover. The rest of the F16 formation were northwest of Holbeach range squawking 7002.

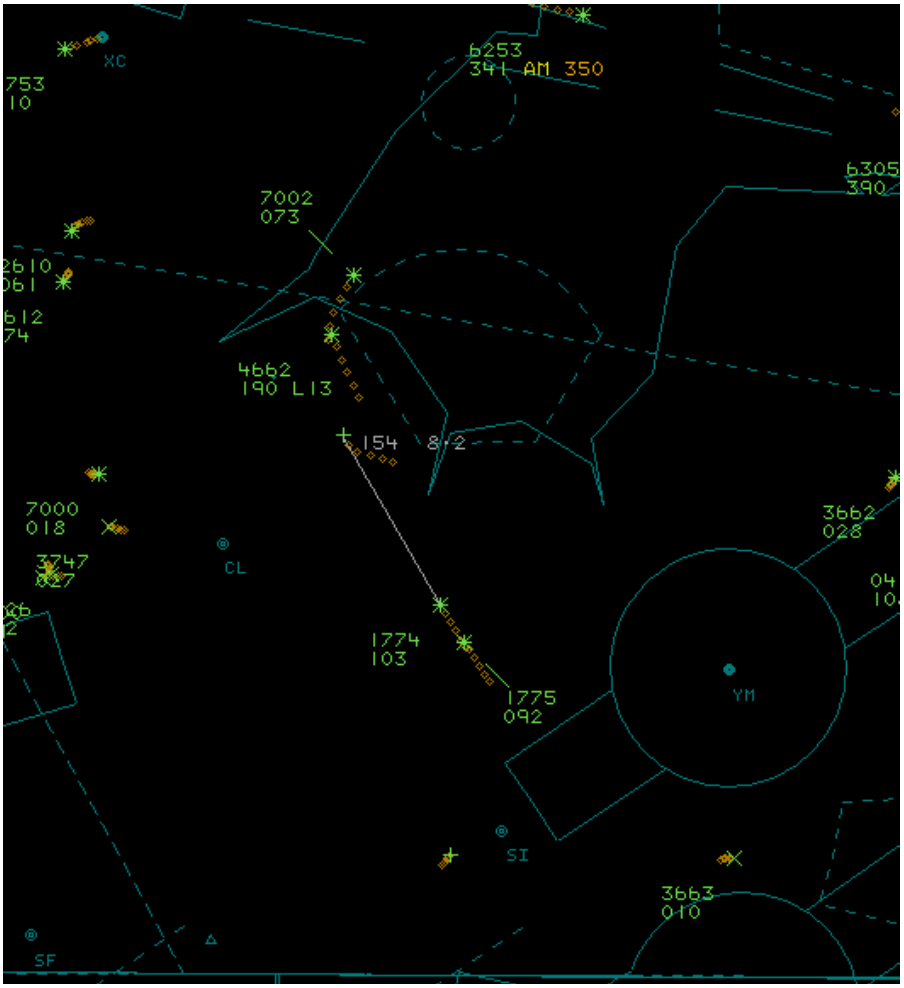

Figure 1

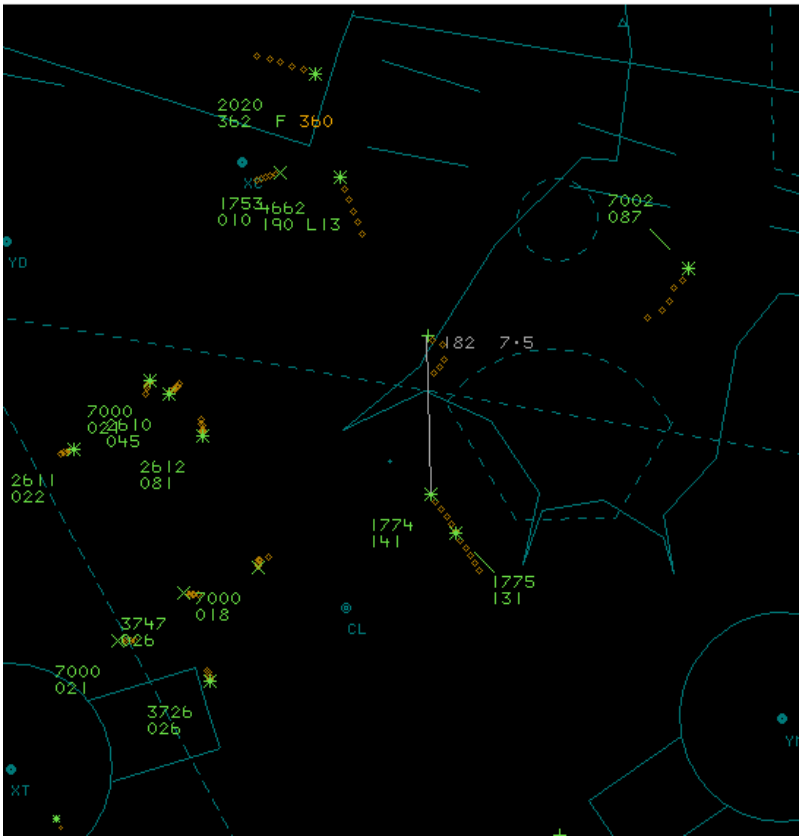

Figure 2

At 1039:07 (Figure 2), the F16 began manoeuvring in a westerly direction whilst the pilot reported being heads down in the cockpit preparing his aircraft systems for a simulated attack on a target within Holbeach Range.

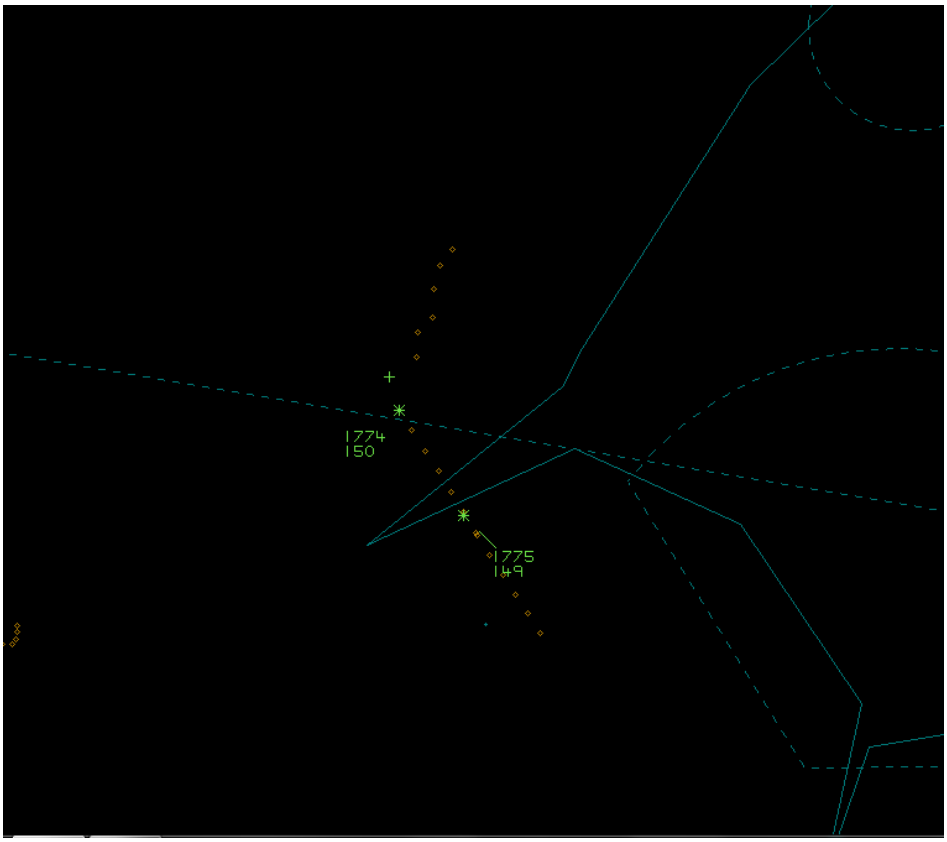

Figure 3. CPA timed at 1040:35

CPA occurred at 1040:35 coincident with the Tornados reporting the presence of the F16 to Coningsby Approach. CPA was measured as 0.2nm, no radar-derived estimate of vertical separation was possible because the F16 was not squawking. The Tornados reported the vertical separation as within 500ft.

Because Holbeach range does not have any form of principal or slave radar display it was not possible for the Holbeach Range Controller to be aware of the developing situation or intervene to prevent it occurring.

At the point the Tornados were handed over to the Coningsby Approach Controller there was less than 10nm separation between the aircraft and it would therefore have been likely that, if the radar return was visible, it would have been called at this point. Prior to going 'heads-in' to look for a contact number for Leeming, the Coningsby Approach Controller reported conducting a check to ensure that the Tornados were clear of confliction. Given that no traffic information was passed, the MIL ATRM opinion is that the non-squawking F16 was not showing on the Coningsby Approach Controller's radar display thereby denying him the opportunity to pass Traffic Information to the Tornados.

UKAB Secretariat

The Tornado and F16 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[3]. If the incident geometry is considered as converging then the Tornado pilot was required to give way to the F16[4].

Comments

HQ Air Command

The barriers to MAC that were available in this Airprox were: plan to avoid; a surveillance-based Air Traffic Service; electronic conspicuity; lookout, and (somewhat uncommonly) datalink. The Tornado crews had planned their transit to be no closer than 6-8nm from the boundary of the Air Weapons Range, mindful of the possibility of traffic positioning outside the Range Danger Area; it would be expected that this would serve as sufficient margin to avoid most traffic using the Range. However, this cannot be guaranteed and so the Tornado crews also agreed a Traffic Service with ATC. Unfortunately, the lack of SSR response from the F16 defeated both the ATS and electronic conspicuity barriers as the controller did not issue TI and the TCAS II on the Tornado did not detect a threat aircraft. It may be that the F16's SSR was unserviceable or that the F16 pilot mistakenly believed that he was squawking.

Unusually, both aircraft involved in this encounter were equipped with Link 16 (L16) and it was the appearance of an L16 track that first alerted the Tornado crew to the presence of the F16. This then cued their lookout into the vicinity of the F-16 whereupon they gained visual with the aircraft and manoeuvred to increase separation. Although it is rare that 2 aircraft involved in an Airprox would both be on L16, the major lesson from this incident is that crews should use any and all means of building situational awareness and act on the information. Whilst the crew involved in this incident used the L16 picture to cue their lookout, if the information is available at greater range then an early change of heading to ensure separation is usually better than waiting until visual with the threat aircraft.

USAFE

USAFE-UK commented that the F16 pilot was part of a deployment to UK and had received a comprehensive airspace and range brief. It is not unusual for aircraft using Holbeach AWR to spill out on occasions; regrettably, Holbeach is not equipped with an air picture which would enable

[3] SERA.3205 Proximity.
[4] SERA.3210 Right-of-way (c)(2) Converging.

Range Controllers to maintain accurate situational awareness on the positions of their users and, more importantly, to pass advice on unknown traffic either adjacent to or within the range. In this case, the F16 was VMC in Class G airspace although it was unfortunate that the F16's transponder was apparently not working. Perhaps had the pilot been more familiar with the area he might have contacted either Marham or Coningsby for an ATS but, then again, he thought he was receiving one from Holbeach although clearly, had misunderstood the limitations of a Basic Service. The F16 pilot was head-down immediately prior to the Airprox and, from his narrative, was relying on the Range Controller, rather than any on-board system, to warn him of traffic.

Summary

An Airprox was reported when a Tornado and an F16 flew into proximity near Holbeach range at 1040hrs on Monday 23rd July 2018. Both pilots were operating under VFR in VMC, the Tornado pilot in receipt of a Traffic Service from Coningsby and the F16 pilot in receipt of a Basic Service from Holbeach.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board began by looking at the actions of the F16 pilot. The USAFE advisor commented that the F16 pilot believed he was under a higher level of ATS from Holbeach than he was. Holbeach does not have radar and therefore can only provide a Basic Service to aircraft pilots using the range. Normally, crews operating in Holbeach range will also seek a service from an adjacent military radar unit to ensure they receive Traffic Information on other aircraft in their area. This was not the case for the F16 pilot and the Board were heartened to hear that the Holbeach range orders have since been amended to include reference to seeking a service from an appropriate radar unit. Some members wondered whether the brief given to the visiting USAFE crews prior to operating in UK airspace had been sufficiently detailed and whether it appropriately emphasised the nuances of UK FIS ATS; it was clear to the Board that the F16 pilot believed he was receiving greater protection than was in fact the case, and that he had based his decision to look inside the cockpit on that flawed understanding. The Board noted that the F16 was not transponding until after the Airprox occurred, and members with military fast-jet experience opined that this may have been as a result of the F16 pilot initially operating as a subordinate element within a pair of aircraft in close proximity, for which he would likely have selected his transponder to standby. Once he had split from his leader, standard procedures were then to take the transponder out of standby and squawk the range SSR code; given that a squawk from this aircraft was observed later on in the sortie (which indicated that the system was serviceable), members surmised that the F16 pilot had probably forgotten to reset his transponder whilst on the range once split from his leader. Unfortunately, it was the associated lack of SSR from his aircraft that denied the Tornado crews any information that would have been available from their TCAS equipment. Finally, noting that the Tornado crew had observed the F16 on datalink, members wondered whether the F16 pilot might also have observed the Tornado using the same system. However, not being familiar with the F16 datalink integration, it was not possible to determine whether the system was displaying at the time.

The Board then turned to the actions of the Tornado crews. The military member advised the Board that the Tornado routing was one that would regularly be taken and would be expected to provide an adequate separation from aircraft that use Holbeach range, even allowing for aircraft that occasionally 'spill out'. The military member went on to explain that although the datalink was a useful tool, the accuracy and latency within the displayed information meant that it was not always usable for collision avoidance purposes; the fact that the F16 only registered on one of the Tornados' datalink displays demonstrated that the information received was not always robust, and that the Tornado pilots would not routinely take avoiding action based on this system unless they had corroborating information from another source. Noting that the Coningsby controller had not provided Traffic Information on the F16, and that his No2 had not received any datalink display, the military member opined that it was not

unreasonable for the Tornado pilot to have simply redoubled his lookout efforts rather than take pre-emptive action to avoid the F16 even given that the Tornado pilot was notionally required to give way. The Board accepted these comments, although some members opined that it was a fine judgement between taking action anyway without waiting for other corroborating information.

The Board then looked at the actions of the Coningsby controller. The military ATM advisor said that although the F16 displayed on the Swanwick radar, he believed that it was not displaying on the Coningsby radar, and that this was why the controller did not pass Traffic Information to the Tornado pilots on the F16. Some members were surprised that an aircraft the size of an F16 would not paint as a primary return on the radar at such close range and at medium altitude but, unfortunately, there were no recordings of the Coningsby radar and so the actual display could not be confirmed. Given that the radar recording showed that the F16 was displaying on the Swanwick radar as a primary return, the Board were unanimous in their disappointment that Swanwick had been unable to offer a service to the Tornados in the first place due to capacity issues. A discussion then ensued about the fact that, irrespective, the Coningsby controller had been aware of the F16 operating in the Holbeach range, and whether he may have subconsciously assumed that it would remain in the range confines and could therefore be discounted. Although this might have persuaded him that he could divert his attention to looking up a phone number rather than maintaining his focus on the Tornados, controller members commented that his first priority should have been to ensure the provision of the Traffic Service, and that they were surprised that there was no assistant available to conduct the phone-number search and associated coordination.

Turning to the cause and risk, the Board quickly agreed that the Tornado pilot had only seen the F16 as it crossed in front or just before, and that the F16 pilot had not seen the Tornado. Accepting that the Tornado pilot had turned his attention to looking for the F16 as a result of the datalink information, it was unfortunate that he had not seen it until late. Notwithstanding the provision of an ATS or lack of, members noted that it ultimately remained for the pilots to ensure collision avoidance in Class G airspace and so the cause was determined to be a late sighting by the Tornado pilot and a non-sighting by the F16 pilot. Turning to the risk, the Board noted that the Tornado pilot had turned to avoid the F16 when visual, and that the aircraft were within 200-500ft vertically of each other as they passed. Some members thought that with the lower figure in mind, the relative speeds and trajectories of the 2 aircraft meant that safety had been much reduced below the norm; risk Category B. Others argued that, even so, the combined vertical and lateral separation was such that there had been no risk of collision anyway. The debate ebbed and flowed, but, in the end, the majority agreed that although safety had been degraded there had been no risk of collision; risk Category C.

During the debate, the Board noted that the military were currently looking to increase the boundaries of the Holbeach range area with the aim of providing a greater level of protection for aircraft using the range facility.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Tornado pilot and a non-sighting by the F16 pilot.

Contributory Factor(s):
1. The F16 was not squawking.
2. The F16 pilot assumed a higher level of service than was the case.

Degree of Risk: C.

Safety Barrier Assessment[5]

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

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

ANSP:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Coningsby controller was distracted from his primary role through admin tasks and did not effectively monitor the Tornados.

Situational Awareness and Action were assessed as **ineffective** because the Coningsby controller either did not, or could not, recognise the conflict depending on whether the F16 was displayed on his radar or not.

Flight Crew:

Regulations, Processes, Procedures, Instructions and Compliance were assessed as **partially effective** because the F16 pilot was not transponding.

Tactical Planning was assessed as **partially effective** because the F16 pilot misunderstood the briefing on operations in UK airspace relating to the type and limitations of service.

Situational Awareness and Action were assessed as **partially effective** because the Tornado crew had SA on the F16 through datalink information, but this information was insufficient for them to act to adjust their track.

Warning System Operation and Compliance were assessed as **ineffective** because the Tornado had TCAS but the F16 was not transponding which meant the system could not detect it.