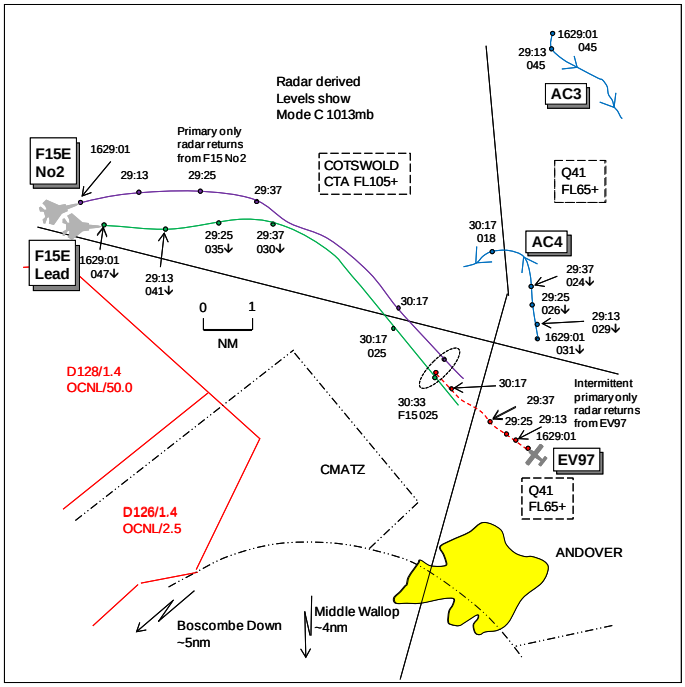
AIRPROX REPORT No 2011020

Date/Time:	14 Mar 2011 1630Z	
Position:	5117N 00130W (4nm N Andover)	
Airspace:	London FIR	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Evektor EV97 Eurostar	F15Ex2
Operator:	Civ Pte	Foreign Mil
Alt/FL:	2000ft (QNH 1016mb)	NR (QNH)
Weather:	VMC HZBC	VMC HAZE
Visibility:	10km	8km
Reported Separation:	50ft V/25m H	50-100ft V /300m H
Recorded Separation:	0·1nm/0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EVEKTOR EV97 EUROSTAR PILOT reports enroute from Goodwood to Clench Common VFR and listening out on Safety Common frequency 135·475MHz; no transponder was fitted. The visibility was 10km flying 1000ft below cloud in VMC and the ac was coloured silver/blue; no lighting was fitted. Heading 310° at 85kt and 2000ft QNH 1016mb he was surprised to see 2 small jet fighters 1nm ahead on a reciprocal course heading towards him before they passed either side of and above his ac, estimating 50ft vertical separation and 25m horizontal. At the time he felt that maintaining his heading was the best course of action. He did not feel he was in danger at the time but once the ac had passed he felt very shocked indeed. He assessed the risk as medium.

THE F15E LEAD PILOT reports, 5 weeks post incident, enroute to Boscombe Down for a Practice Diversion and under a TS from Boscombe LARS on 256·5MHz, squawking an assigned code with Mode C. The visibility was 8km in haze in VMC and the ac were coloured dark grey with anti-collision, nav and strobe lights switched on. They were flying clockwise around the SPTA in level flight when ATC gave them a traffic call on a light ac flying in the opposite direction closing within 5nm. Heading 170° at 300kt he initiated full radar track (~6nm) and IR pod track (~4nm) on the traffic and gained visual contact no later than 2nm away. His wingman, previously on the E flank manoeuvred W on to his opposite side so as to avoid the traffic, a low wing single engine ac coloured white, which passed 300m down their LHS about 50-100ft above. He did not perceive a conflict at the time, acknowledging the traffic and informing Boscombe that the formation was visual with the traffic. Limited manoeuvring room was available owing to their close proximity of the EGD124/125/126 complex and he had elected to maintain the Boscombe assigned altitude. He did not report any danger and no further comments were made to/from Boscombe ATC regarding the matter and he assessed the risk as medium.

THE BOSCOMBE DOWN LARS CONTROLLER reports he was working a pair of F15s from the Swindon Corridor, N of SPTA and then through the MATZ NE to SW. They descended to overfly Boscombe Down before he handed them over to Yeovilton. No mention of an Airprox was made.

HQ 1GP BM SM reports that the Airprox occurred between an EV97 Eurostar operating VFR and a pair of F15E Strike Eagles on a NAVEX towards Boscombe Down and Yeovilton, in receipt of an ATS from Boscombe Zone. Whilst the F15 pilot stated in Part 1 of his Airprox report that he was in receipt of a DS, in the narrative he stated that he was in receipt of a TS which is borne out by the tape transcript.

[UKAB Note (1): The F15 flight contacted Boscombe ZONE at 1625:29 approximately 7nm SSW of Lyneham tracking 220°, squawking Boscombe code 2651 and levelling at FL100. ZONE confirmed the flight was identified under a TS and then requested their intentions. It was established that the flight wanted to turn onto 090° to remain N of SPTA and then route clockwise around SPTA to pass O/H Boscombe Down towards Yeovilton. One minute later the F15 flight requested descent to the lowest level available and was cleared to FL50 initially before, at 1627:59, being cleared 2000ft QFE 999mb.]

At 1629:11 ZONE passed TI to the F15 flight on un-related traffic, AC3, to the ENE, *"(F15 c/s) traffic left eleven o'clock, six miles, crossing left right, indicating FL45"* (radar replay shows approximately 9nm lateral separation). ZONE then issued the F15 flight with a R turn onto 110° before at 1629:26, ZONE passed further TI on other un-related traffic, AC4, *"(F15 c/s) traffic east 3 miles, tracking north, indicating 2500ft"* (radar replay shows approximately 5nm lateral separation). Both of these pieces of TI are acknowledged by the F15s and at 1629:38 they declare, *"(F15 c/s) we got radar traffic.*" However, at this point what is believed to be the EV97 is approximately 6nm SE of the F15s manoeuvring. No SSR return is observed throughout the radar replay from the EV97. Moreover, ZONE does not provide TI that can be correlated to the position of the EV97 relative to the F15 flight.

Boscombe reported that the PSR and SSR were fully serviceable at the time of the occurrence.

ZONE then instructs the F15 flight to turn R onto heading 140°, which was not acknowledged. Over 30sec later at 1630:19 the F15s reported, *"140 (F15 c/s) is visual with radar traffic confirm you want us at 140*" which ZONE acknowledges. The F15 pilot's written report stated that they had radar lock at around 6nm, targeting pod acquisition at around 4nm and visual at around 2nm. Given the content of the F15 crew's report, that the radar contact relating to the second piece of TI was approximately 2nm NE of the F15s and that the EV97 is approximately 1·7nm in their 12 o'clock, it is clear that the F15s had locked onto and then sighted the EV97.

Although ZONE did not provide TI to the F15s on the EV97, the F15 crew's interpretation of TI on AC4 allowed them to obtain sensor and then visual acquisition of the EV97 and to avoid it by a margin that they deemed appropriate.

From an ATM perspective, the issue to be addressed is the lack of TI on the EV97 to the F15s. Given that ZONE passed TI on the other traffic that was relevant to the F15s an HF related cognitive failure or a deliberate decision not to pass TI can be discounted; therefore, it appears reasonable to argue that the EV97 either did not paint on the surveillance display due to the ac's size, construction or presenting aspect to the radar aerial, or was obscured by radar clutter. However, it has been impossible to determine exactly what occurred.

UKAB Note (2): The diagram was created using a combination of the Clee Hill, Heathrow 10cm and Pease Pottage radars. The EV97 is seen as an intermittent primary only radar return but exhibiting severe track jitter throughout and F15E No2 is showing as a primary only return displaced echelon port to the Lead ac. The radar recording shows the Airprox occurs at 1630:33, the EV97 appearing to pass between the 2xF15Es, the closest being F15E Lead on its LHS by 0·1nm with F15E No2 0·3nm on its R.

HQ 3AF comments that it appears that in complying with Boscombe ZONE's instructions, particularly the R turn to 140°, the formation was brought into confliction with the EV97 which, it is reasonably suggested above, was probably not painting on ZONE's display. Fortunately, the formation lead obtained radar contact on the EV97 in time to see and avoid.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were mindful of the disparate descriptions of the event from the reports submitted by both crews. The EV97 pilot had seen the F15Es pass either side of his ac whilst the lead F15E crew had reported that both of their ac had passed the ac they sighted on their L. The radar recording does not show the F15Es changing formation positions, the No2 always remaining in echelon port with the lead ac, and the EV97 probably passing between the formation. This geometry was thought to be the most likely, even taking into account the severe track jitter exhibited by the primary only return that is believed to be the EV97. The F15E pilot's report was submitted some 5 weeks after the Airprox which could have clouded his recollections of the scenario to some degree. Some Members questioned whether the ac that the F15E flight had acquired on radar and IR pod and then visually might have been AC4 as it was TI on this ac that preceded the F15E crew's call of 'radar contact'. The Board also noted that the range reported by the F15E crews for commencing radar tracking (6nm) was consistent with both the EV97 and AC4. However, AC4 had passed nearly 2nm away and 800ft below the F15E pair; both the F15E crew and EV97 pilot reported a much closer encounter. Pilot Members wondered whether the F15E's onboard equipment is capable of acquiring a very small ac of the EV97's size flying at 85kt head-on and presenting a very small target aspect. A military pilot Member opined that the F15E ac had a modern on-board radar system capable of detecting and tracking targets over a broad speed range and a large area around the ac; he believed the combination of radar and IR sensors had enabled the F15 crews to detect and then visually acquire the EV97. Members agreed that it would have been prudent for the EV97 pilot to have called Boscombe Down for a service as this would have given ZONE the 'heads-up' of the ac's presence; in the event ZONE did not see the EV97 on radar as he had vectored the F15Es towards the Boscombe O/H but unfortunately had placed the ac in conflict. One Member thought that perhaps the F15E lead pilot queried the heading assigned because he was concerned that he was heading towards the EV97 which he had just seen ahead. In his assessment of the 'miss distance', the EV97 pilot believed that the F15Es were small jet ac, which would create the impression that the ac were a lot closer than they actually were. Notwithstanding his underestimation of the 'miss distance', it was the proximity of the F15Es which caused the EV97 pilot concern and was the cause of the Airprox.

Turning to risk, one pilot Member expressed concern that, from the information available, he was not convinced that the F15E crews had seen the EV97 and that the ac had passed uncomfortably close with no action being taken by either crew such that a definite risk of collision had existed. This view was not shared by the other Members who believed that, on the balance of probability, the F15E crews had seen the EV97 in good time and were content with the separation but may have misjudged it due to the small size of the ac. Although the EV97 pilot had limited options for avoiding the 2 F15Es, he had elected to continue level and on track and watched them pass either side. These sightings by both crews were enough to persuade the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The F15E crews flew close enough to cause the EV97 pilot concern.

Degree of Risk: C.