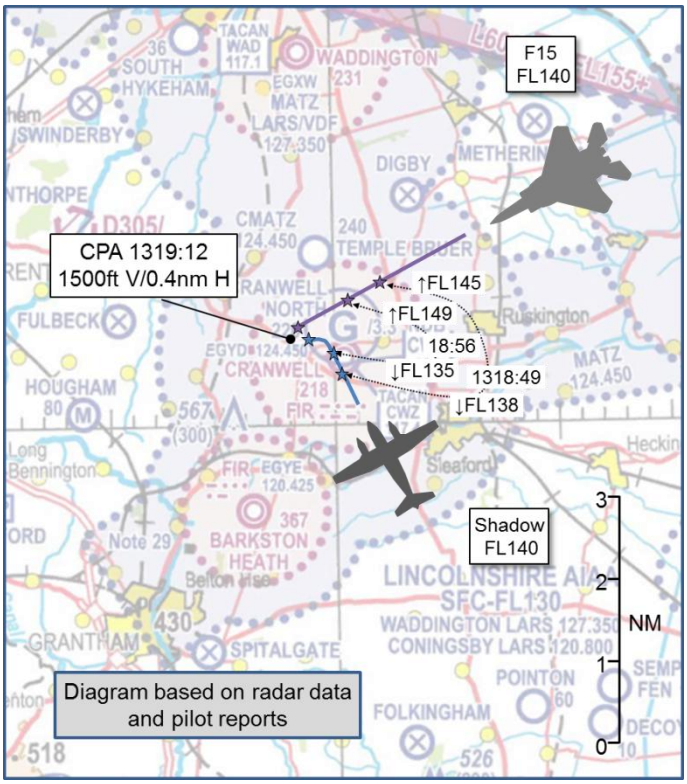
AIRPROX REPORT No 2014225

Date/Time: 8 Dec 2014 1319Z

Position: 5302N 00031W (Overhead Cranwell)

Airspace: Lincs AIAA (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	Shadow R1	2 x F15
Operator:	HQ Air (Ops)	Foreign Mil
Alt/FL:	FL140	FL140
Conditions:	VMC	VMC
Visibility:	>10km	>10km
Reported Separation:	500ft V/0ft H	500ft V/0ft H
Recorded Separation:	1500ft V/0.4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SHADOW R1 PILOT reports flying a grey aircraft with all lights illuminated and transponder selected with Modes 3A, C and S. The aircraft was fitted with TCAS. He was on task in the Cranwell overhead and receiving a Traffic Service from Cranwell ATC. Traffic Information was passed on traffic 3 o'clock, co-altitude and heading west. The controller then stated the traffic had disappeared into the radar overhead. Visual contact was established with a pair of F15s in the 2 o'clock position, and shortly afterwards the TCAS gave a TA, followed by an RA to descend to FL135, which was followed by the PF. The F15s flew directly overhead and appeared to maintain their height and course. Once cleared a climb was initiated back to FL140.

He assessed the risk of collision as 'Low'.

THE F15 PILOT reports flying in a formation of two dark-grey aircraft with navigational lights and strobes illuminated. The transponder was selected on with Mode 3A, C and S. The aircraft were not fitted with ACAS. They were transiting at FL140 following a sortie on Donna Nook range, and were receiving a Traffic Service from Swanwick (Mil). The controller passed Traffic Information about traffic on their nose at the same altitude, the controller asked if they were happy to remain at the same altitude, the pilot asked to climb to FL150 to avoid setting off the other aircraft's TCAS, but, he reported, didn't receive a climb directive. They had radar contact with the King Air at 15nm and were visual at 10nm. They observed the King Air descending and maintained the "see-and-avoid contract".

He assessed the risk of collision as 'Low'.

THE CRANWELL APPROACH CONTROLLER reports providing the Shadow with a Traffic Service at FL140 in the Cranwell overhead. Swanwick (Mil) called requesting the type of the aircraft squawking 2601, he informed him it was a Shadow and, after hanging up, gave Traffic Information to the Shadow pilot on traffic NE, tracking W at the same level. The Shadow pilot then manoeuvred through the Cranwell radar overhead and, when radar contact was lost, the service was downgraded to a Basic Service. The Shadow pilot then reported a TCAS RA and in a descent, once the confliction was clear he climbed back to FL140.

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

THE CRANWELL SUPERVISOR reports he was informed by the App controller that the Shadow aircraft had reported a TCAS RA against fast-moving aircraft at a similar level. The traffic had been called by the controller, but radar contact was lost due to the Shadow entering the radar overhead. The conflicting traffic was receiving a service from Swanwick (Mil) en-route the Lichfield corridor.

THE SWANWICK(MIL) CONTROLLER reports that the F15 formation free-called requesting a climb out of the range to FL140 to route through the Lichfield corridor. They were identified, placed under a Traffic Service, and the climb was initiated. There was a substantial amount of traffic around Cranwell, and an aircraft at FL140 was called to the F15s at a range of 15nm; it was called again at 12nm in range and bearing format, and the F15 crew called radar contact. The F15 pilot requested the aircraft type; Cranwell ATC were called and the information obtained. This was given to the F15 crew and they were asked whether they were happy to continue against the conflicting aircraft, to which they replied in the affirmative. They were then given own navigation to the corridor. When 3nm away, Traffic Information was passed again, and the F15 crew were asked to confirm whether they were visual with it. They elected to climb to FL150 to "avoid setting off TCAS" and were told to expedite climb to FL150; at the same time the Mode C of the other aircraft was seen to descend. Due to the climb of the F15s, and the descent of the other aircraft, there was a minimum of 500ft separation.

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

Factual Background

The weather at Cranwell was reported as:

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METAR EGYD 081250Z 27016KT 9999 FEW015 05/01 Q1016 BLU NOSIG
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Analysis and Investigation

Military ATM

The transcript below is between Swanwick Tac controller, Cranwell Approach and the aircraft:

From	To	Transcription	Time
Swanwick (Mil)	F15s	[F15 c/s], traffic left 11 o'clock, 15 miles tracking north east bound, manoeuvring at FL140.	13:16:55
F15s	Swanwick (Mil)	[F15 c/s] flt searching.	13:17:04
Swanwick (Mil)	F15s	That's BRA 220/12 miles in the left hand turn to track north west bound same altitude	13:17:14
F15S	Swanwick (Mil)	[F15 c/s], radar contact, do you have an Airbus 400 there?	13:17:21
Swanwick (Mil)	F15s	[F15 c/s], er, type of ac unknown.	13:17:27
Swanwick (Mil)	CWL APP	It's Swanwick, request traffic information your 2601. What type of aircraft is he?	13:17:40
CWL APP	Swanwick (Mil)	Errr, Shadow.	13:17:43
Swanwick (Mil)	CWL APP	Shadow? OK thank you.	13:17:45
Swanwick (Mil)	F15s	[F15 c/s] that ac will be a twin prop.	13:17:51
CWL APP	SHADOW	[Shadow c/s], traffic North East, 7 miles, tracking West, same flight level	13:17:52
SHADOW	CWL APP	Looking [Shadow c/s]	13:17:55
Swanwick (Mil)	F15s	[F15 c/s] are you happy to proceed against that traffic at the same altitude?	13:17:58
F15s	Swanwick (Mil)	[F15 c/s] affirmative.	13:18:04
Swanwick (Mil)	F15s	[F15 c/s] roger, own navigation to the Lichfield corridor.	13:18:07
CWL APP	SHADOW	[Shadow c/s], Basic Service, radar contact lost in the overhead. Previously reported traffic, North East, approximately 3 miles, tracking West, same	13:18:18

From	To	Transcription	Time
		flight level.	
Swanwick (Mil)	F15s	[F15 c/s] confirm you are visual with the traffic in your left 11 o'clock, er, 3 miles tracking northbound FL140?	13:18:25
SHADOW	CWL APP	[Shadow c/s], roger.	13:18.27
F15s	Swanwick (Mil)	Swanwick, [F15] flt would like to climb for that traffic.	13:18:36
Swanwick (Mil)	F15s	[F15 c/s] expedite climb FL150.	13;18:37
SHADOW	CWL APP	[Shadow c/s] descending TCAS RA.	13:18:40
SHADOW	CWL APP	[Shadow c/s] is visual traffic continuing descent.	13:18:43
CWL APP	SHADOW	[Shadow c/s] roger advise??? (word unintelligible).	13:18:48
F15s	Swanwick (Mil)	Swanwick visual won't be a factor we just wanna make sure we don't set off TCAS.	13:18:49
Swanwick (Mil)	F15s	[F15] flt once clear of that traffic descend FL140.	13:19:02

Following Traffic Information at 15nm, the Swanwick Tac controller updated at 1317:04 with "*BRA 220/12 miles in the left hand turn to track north west bound same altitude.*" (Figure 1)

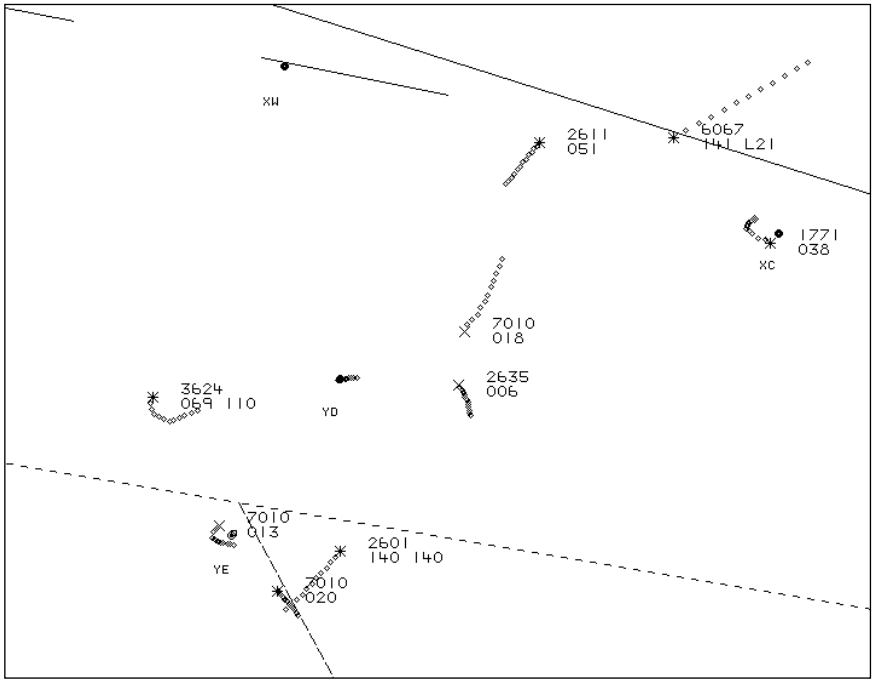

Figure 1: Traffic update at 1317:14 (F15 squawk 6067; Shadow 2601).

At 1317:40, Swanwick called Cranwell to confirm type of aircraft; Cranwell passed Traffic Information at 1317:52 (Figure 2) as, "*traffic North East, 7 miles, tracking West, same flight level*."

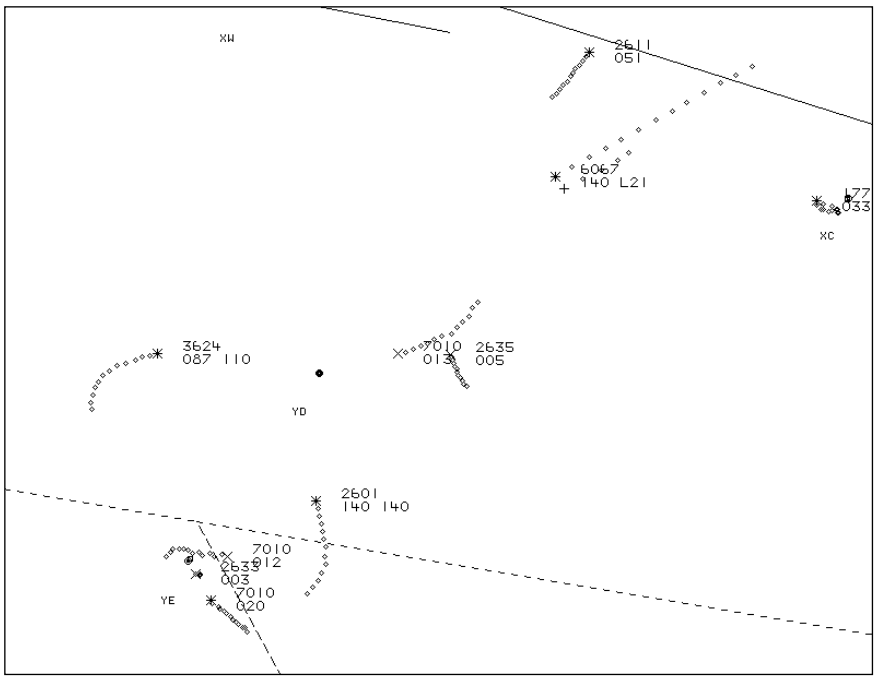

Figure 2: Cranwell Traffic Information at 1317:52.

At 1318:07, Swanwick provided 'own navigation' to the F15s and at 1318:18 (Figure 3) the Shadow entered the Cranwell radar overhead and the controller confirmed, "*Basic Service, radar contact lost in the overhead. Previously reported traffic, North East, approximately 3 miles, tracking West, same flight level*."

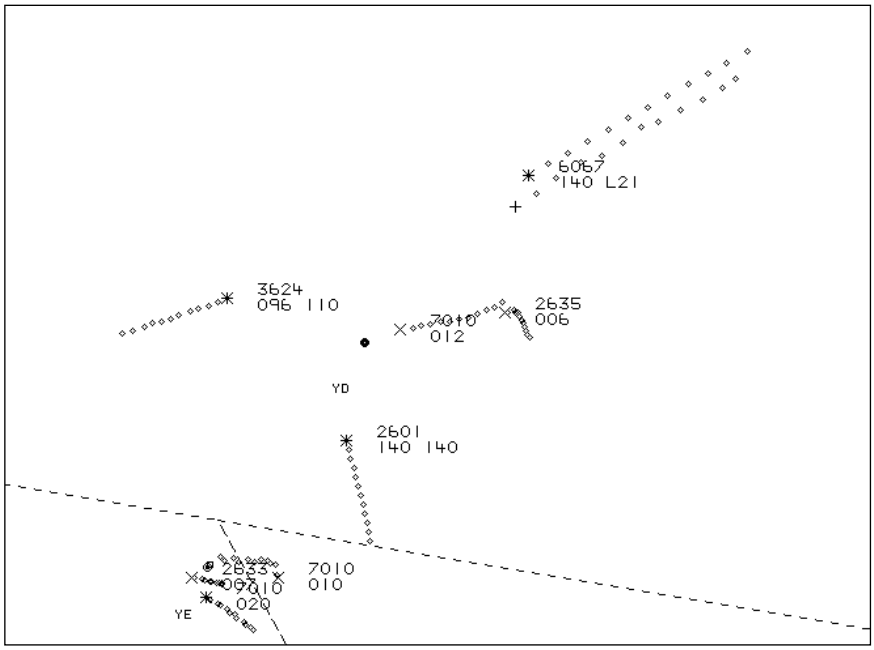

Figure 3: At 1318:18 as the Shadow entered the Cranwell radar overhead.

At 1316:25, Swanwick asked the F15s to confirm visual and at 1318:37, the F15s requested a climb at 1318:36 and at 1318:37 (Figure 4), the Swanwick controller confirmed "*expedite climb FL150."*

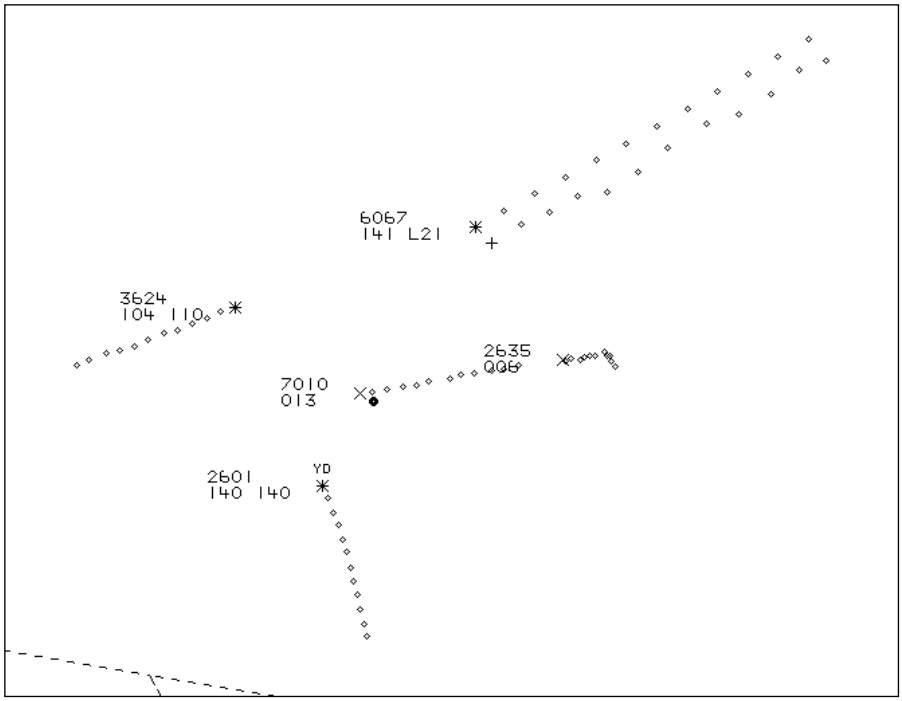

Figure 4: F15s expediting climb at 1318:37.

At 1318:57 (Figure 5), the F15s were in the climb passing FL148 and the Shadow was in the descent passing FL136.

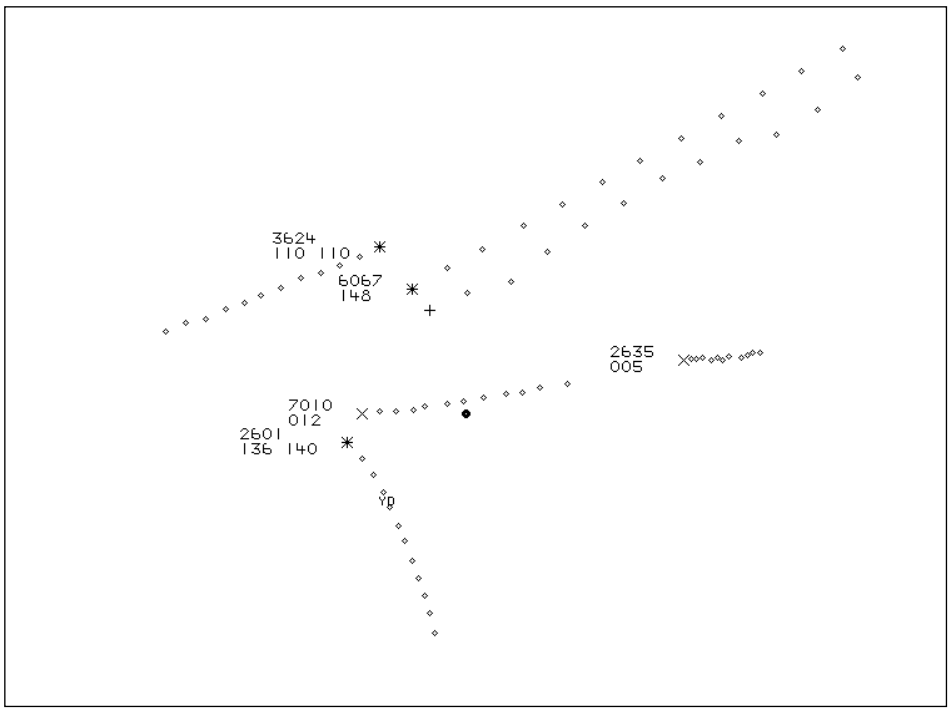

Figure 5: Aircraft geometry at 1318:57.

The CPA was estimated at 1319:04 with 0.4nm and 1500ft height separation.

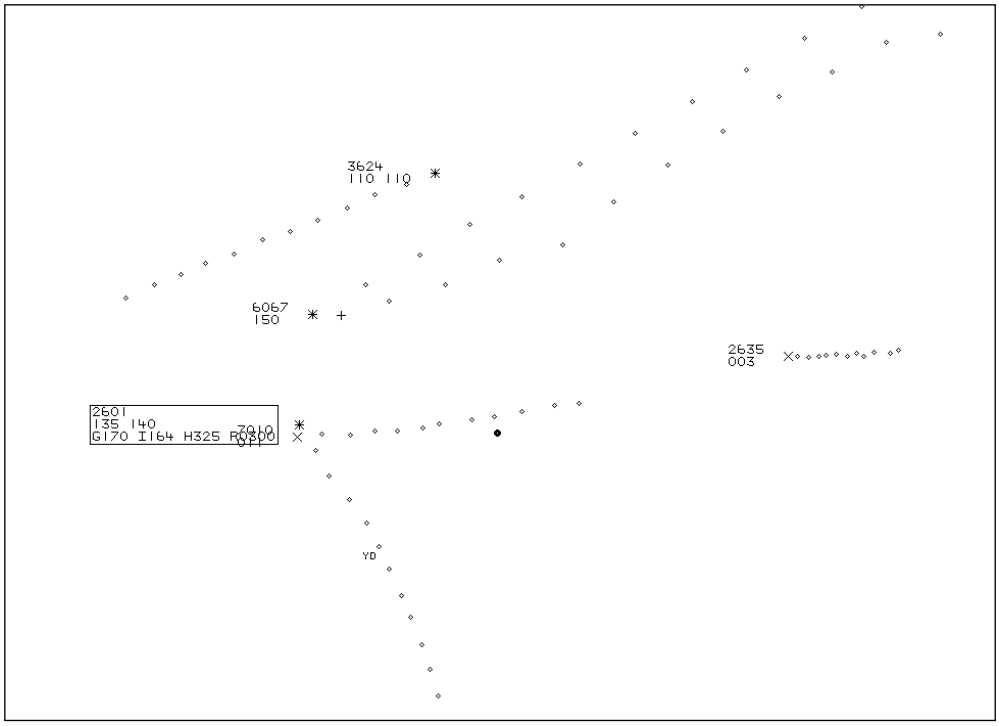

Figure 6: Geometry at 1319:06.

Both aircraft were under a Traffic Service in Class G airspace and were aware of their collision avoidance responsibilities. Both controllers had seen the confliction and had passed Traffic Information, as per the provision of a Traffic Service in UK Flight Information Services, CAP774, Ch 3. The Swanwick controller passed accurate information at ranges of 15, 12 and 3nm; the Cranwell Approach controller passed information using cardinal positions at ranges 7 and 3nm. The Swanwick controller had called Cranwell to request the aircraft type following a query from the F15 crew. As the Shadow entered the Cranwell radar overhead radar contact was lost and the controller provided a Basic Service approximately 46 seconds prior to CPA. The Shadow was under its own navigation flying an orbit in the area. Because radar contact was lost on the Shadow, Traffic Information was passed based upon the last known position of the track. The Shadow crew used the information to gain visual contact, prior to receiving the TCAS TA and subsequent RA. The Cranwell controller recalled advising the Shadow crew of the limitations of the radar in the overhead and the crew had requested to remain with Cranwell for a service.

The normal barriers to an incident of this kind would be Traffic Information from ATC, lookout and ACAS. Traffic Information was passed by both controllers. TCAS had provided information to the Shadow and eventually provided an RA descent instruction; the F15s had radar contact 1 min 50 secs prior to CPA and were visual at 10nm. The Shadow positioning meant that it was likely to drop out of radar cover in the Cranwell overhead and other agencies may have been able to provide a continuous radar-derived ATS. ATC had passed information when it was available, onboard sensors had supported the information, and the crews achieved 1500ft separation following a descent by the Shadow and a climb by the F15s.

UKAB Secretariat

Both 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]. The incident geometry is considered as converging so the Shadow pilot was required to give way to the F15s[2].

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

Comments

HQ Air Command

This incident occurred in the Cranwell radar overhead in the busy airspace of Lincolnshire. Although detailed information surrounding the location of the Shadow aircraft was not available due to its position within the radar overhead, a high level of TI was provided to both pilots by the relevant controlling agencies. Situational awareness was maintained by all aircraft involved, albeit the F15 formation elected to continue with its planned routing despite being given clearance for 'own navigation' and TI about a potential conflict in the Cranwell overhead. Although the pilot of the F15 should be commended that he recognised that his current vector had the potential to cause a TCAS alert, a climb was not initiated until shortly before an alarm was caused. On receiving TI regarding the F15 formation, the Shadow pilot had the opportunity to amend his operating altitude to avoid the potential conflict; albeit his focus was on achieving visual sighting of the approaching traffic. A few seconds after visual contact was established, the Shadow aircraft was forced to descend due to a TCAS RA. Overall, this incident highlights the importance of appropriate selection of ATS, passage and assimilation of TI and the benefit of TCAS to avoid a conflict. That being said, a lack of forward planning from the aircrew and absence of more robust direction from the controlling agencies resulted in an incident that was closer than necessary.

Summary

An Airprox was reported on 8th December 2014 at 1319 between a Shadow and 2 x F15s both at FL140. The Shadow pilot was receiving a Traffic Service from Cranwell approach and received Traffic Information on the F15s; however, the aircraft then went into the radar overhead and the controller downgraded the service to a Basic Service. The Shadow pilot received a TCAS RA instructing him to descend, which he complied with. The F15s were receiving a Traffic Service from Swanwick(Mil) and were given Traffic Information on the Shadow and could see it on their radar, at 3nm away they elected to climb to prevent triggering the Shadow's TCAS.

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 first looked at the actions of the F15 pilot. Notwithstanding that the Shadow pilot was required to give way to him, members opined that he had all the information he needed to prevent the situation from developing given that he had received Traffic Information from the controller on numerous occasions, had the other aircraft on radar, and then became visual with it. They noted that he had not initiated a climb until the last moment and in discussing why he had not climbed earlier, the Board noted that he was flying to the Lichfield corridor which required him to be at FL140 for the crossing. The Board opined that this had probably lulled him into remaining at the correct height for the corridor rather than deviate beforehand to avoid conflict. They also wondered whether the F15 pilot had felt unnecessarily constrained in changing altitude due to ATC Traffic Service considerations when the more pressing requirement was to avoid a collision. Although the requirements of a Traffic Service stipulate that ATC is informed before any change in altitude, this is always qualified by overriding safety requirements[3]. As was proven in the event, the aircraft was capable of a rapid climb and descent back to the necessary height, and an earlier execution of such a climb would have prevented the TCAS RA.

[3] CAP 774 (UK FIS) Ch 3 states that, under a Traffic Service, "Unless safety is likely to be compromised, a pilot shall not change level or level band without first advising and obtaining a response from the controller, as the aircraft may be co-ordinated against other airspace users without recourse to the pilot".

As for the Shadow pilot, the Board wondered why he had chosen to remain with an ATS from Cranwell given that his position took him through the radar overhead (which meant that his Traffic Service would need to be downgraded to a Basic Service once radar contact was lost). Furthermore, members opined that his chosen height of FL140 near the entrance to the Lichfield corridor (also at FL140), meant that he was almost inevitably at risk of conflicting with other airspace users. If that height had been essential for his tasking, the Board agreed that he would have been far better placed in asking for an ATS from Swanwick (Mil), who would have been providing a service to the users of the Lichfield corridor, and would have been able to maintain radar contact on the Shadow. The Board noted that, under SERA Rules of the Air, the Shadow pilot was required to give way to the F15, which, primarily as a result of his TCAS manoeuvre, he did. Notwithstanding, the Board felt that he could have made earlier efforts to give way and thus avoid the conflict.

The Board noted that, although both controllers had given their own aircraft very good Traffic Information, despite a phone call to establish the Shadow's aircraft type neither controller had given the other Traffic Information; members opined that a conversation establishing that both aircraft were remaining at the same height during this exchange might have prompted earlier deconfliction action. Notwithstanding, when assessing the cause and risk of the Airprox, the Board agreed that, with both pilots visual with the other aircraft, there was no real risk of collision, and that this was a TCAS sighting report with a Risk Category of E, normal safety standards had pertained.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A TCAS sighting report.

Degree of Risk: E.