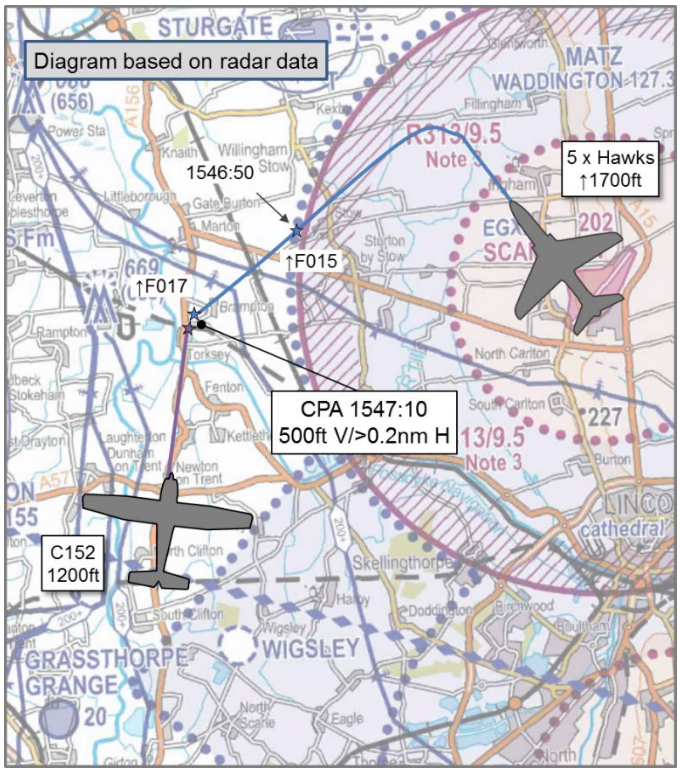
AIRPROX REPORT No 2018020

Date: 07 Feb 2018 Time: 1547Z Position: 5317N 00043W Location: W Scampton

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk	C152
Operator	HQ Air (Ops)	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Listening Out
Provider	Waddington	Gamston
Altitude/FL	FL017	FL012
Transponder	A, C	A, C
Reported		
Colours	Red	White, Red
Lighting	Nose Light, Strobes	Nav, Strobes
Conditions	VMC	VMC
Visibility	55km	CAVOK
Altitude/FL	2000ft	1700ft
Altimeter	QFE	QNH (1022hPa)
Heading	221°	005°
Speed	310kt	90kt
ACAS/TAS	Not fitted	Not fitted
Separation		
Reported	300ft V	300-500ft V 300m H
Recorded	500ft V/>0.2nm H	



THE HAWK PILOT reports that he was in a formation of 5 Hawks that were repositioning for a vertical break using Scampton ATC Tower as their datum. Waddington ATC were operating from Cranwell because the Waddington radar was on maintenance. The Waddington controller called 'pop-up' traffic in a position roughly co-incident with the formation's position; the formation were about to commence a left-hand turn at the edge of R313, but delayed the turn to listen to the traffic call. Verbally initiating the left-hand turn whilst processing the traffic call, it became evident that the conflicting traffic was very close. On looking to the left and slightly below the formation, a light aircraft was spotted 300ft beneath. Given that the traffic was a conflict at the time of the ATC call, and that it was 300ft below and potentially climbing, an Airprox was declared. He commented that at the time of the conflict the formation were just outside the MATZ boundary and R313 radius.

He assessed the risk of collision as 'Medium'.

THE C152 PILOT reports that he was on a cross-country exercise with a student. Abeam the Cottam power station the student alerted him to traffic in the 2 o'clock position, he looked and saw the Red Arrows slightly above, they seemed to be in a slow left turn, he presumed to return to their designated practice area. After about 10 secs they passed above, somewhere between 200-500ft. He felt they couldn't take evasive action because he didn't know what their next manoeuvre would be, particularly because he wasn't sure that they had seen him; instead he chose to maintain track and altitude.

He assessed the risk of collision as 'Low'.

THE WADDINGTON DIRECTOR reports that he was operating from Cranwell because the Waddington Watchman Radar was off for servicing. At the time of the incident he was using the Cranwell Watchman and SSR and a frequency that was accessed via a standby radio. He was

controlling a formation of RAFAT Hawks under a Traffic Service. He had noticed an intermittent contact with a 7000 squawk at around 1400ft approx. 10nm SW Scampton. The aircraft faded in and out of radar contact as it tracked north. The Hawks were in a left turn and had left the confines of R313 when the intermittent contact appeared in the vicinity of Cottam power station. He gave Traffic Information to the Hawks and their radar return appeared to pass slightly west of the contact, southbound, with Mode C indicating a similar altitude. The Hawks continued their left turn onto a north-easterly heading. Although the Hawks asked the controller to track the aircraft to its destination, he lost contact with it 5nm north of Kirton in Lindsey.

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

Factual Background

The weather at Scampton was recorded as follows:

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METAR EGXP 071450Z 29007KT CAVOK 03/M04 Q1020 BLU=
METAR EGXP 071550Z 29007KT CAVOK 02/M04 Q1019 BLU=
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An extract from the UK AIP provides the following information on R313:

UNITED KINGDOM AIP **ENR 5.1-37**

29 Mar 2018

ENR 5.1 PROHIBITED, RESTRICTED AND DANGER AREAS (continued)

Identification and Name Lateral Limits	Upper Limit Lower Limit	Remarks (time of activity, type of restriction, nature of hazard, risk of interception)
1	2	3
EG R313 SCAMPTON A circle, 5 nm radius centred at 531828N 0003303W	Upper limit: 9500 ft ALT Lower limit: SFC	**Hours:** Restrictions are in force Mon-Fri 0830-1700 (0730-1600) and when otherwise notified by NOTAM whenever the Red Arrows are carrying out formation aerobatic and display training. **Contact:** Information on the Red Arrows training may be obtained from ATC Scampton, Tel: 01522-733055, or by radio to Waddington Zone on 127.350 MHz/249.850 MHz. Non-radio aircraft may be able to obtain a pre-flight clearance by telephone to ATC Waddington 01522-727451 / 727452. SI 2016/14.

Analysis and Investigation

Military ATM

Data is taken from tape transcripts and radar replays from NATS radars, which are not available at Cranwell ATC and therefore are not representative of the picture available to the controller at the time.

At 15:46:10 (Figure 1), the Hawk formation (squawk 7003) began a turn toward the west, the C152 (squawk 7000/A012) was approx 7nm SW of Scampton outside of R313. At this time, no Traffic Information was passed to the Hawks (the Waddington Director did note an intermittent contact on his display approx 10nm to the SW of Scampton which subsequently faded from radar).

At 15:46:25 (Figure 2), the Hawk formation was heading SW toward the C152. Distance between the aircraft was 4.8nm. No Traffic Information was passed by the Waddington Director but it is not known if the C152 was showing on the controller's radar screen.

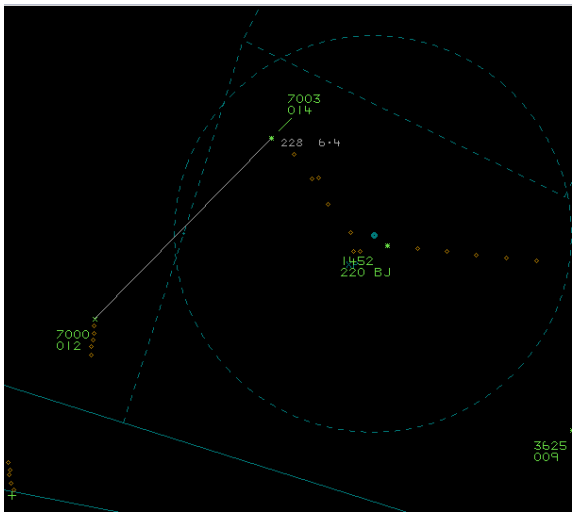

Figure 1: 15:46:10

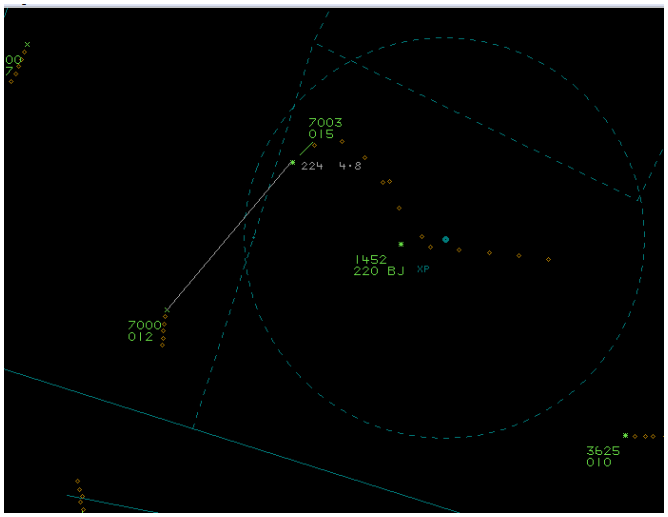

Figure 2: 15:46:25

At 15:47:01 (Figure 3), the Waddington Director passed Traffic Information on the C152 stating that it was 'Scampton west 7 miles northbound indicating 500ft below.' Although this Traffic Information is not CAP 413 compliant, there is an agreement between Waddington and Scampton which states that Traffic Information shall be passed in this format.

At 15:47:12 (Figure 4), the Hawk formation fades from radar. Closest CPA is shown as 0.2nm. When questioned by the Hawk formation leader, the Waddington Director reported that the C152 was 'pop-up traffic.'

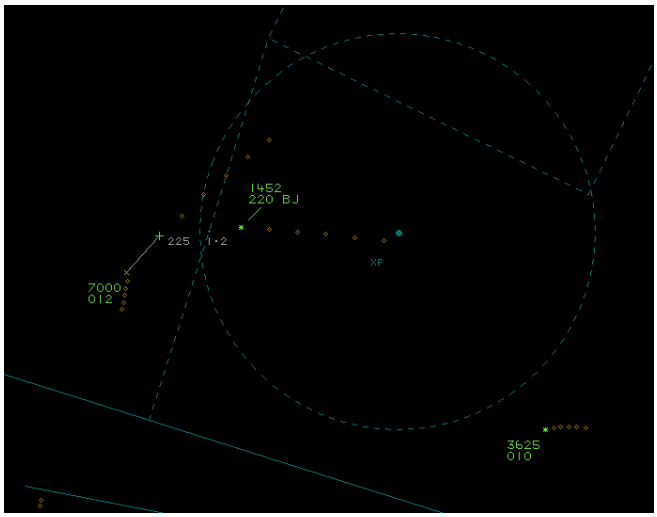

Figure 3: 15:47:01

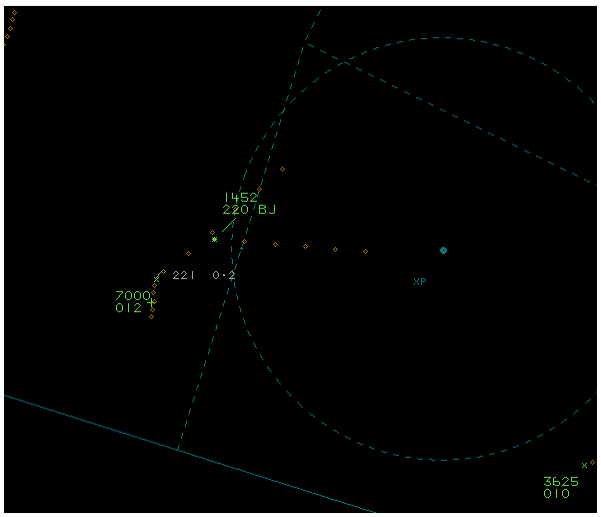

Figure 4: Geometry at CPA

At the time of the incident, the Waddington Director was in-situ at Cranwell because the Waddington radar was unserviceable due to scheduled maintenance. The Waddington Director was therefore utilising Cranwell primary and secondary radar sources which are some 10 miles south of the Waddington radars. The Waddington Director noted that the C152 was observed 10nm SE of Scampton but subsequently faded from radar.

At 15:47:01 the Waddington Director passed Traffic Information to the Hawk formation on the C152. At this point, there was 1.2nm lateral separation between the aircraft and the Waddington Director reported the C152 as 'pop-up traffic.' Having assimilated this Traffic Information, the Hawk formation leader became visual with the C152 below their formation by approx 300ft. Although the Traffic Information was passed as soon as the C152 was observed on radar, it was not in sufficient time, given the speed of the Hawk formation, for them to avoid the C152.

UKAB Secretariat

The Hawk and C152 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 converging then the C152 pilot was required to give way to the Hawks[2].

Occurrence Investigation

An RAF investigation reported that the Hawks were practising a new manoeuvre and therefore needed as much 'settling time' as possible between each practice, consequently they were moving out to the western edge of R313 prior to running in over the runway. It is usual for the formation to be listening out on two frequencies, one internal UHF frequency, for the formation leader to communicate on, and also Waddington ATC on VHF, with the No4 pilot communicating to ATC on behalf of the formation. As the formation were nearing the edge of R313 and the leader was about to call the turn, ATC called the pop-up Traffic Information. So that he didn't transmit over the VHF call, the formation leader delayed the call for the turn. He then realised there was the potential for a confliction as the formation exited R313 in the vicinity of the traffic. The leader therefore started a climb whilst in the left-hand turn to keep the formation above the other traffic. He noted that the sun was relatively low-lying behind the edge of a bank of clouds and that it took time for his eyes to adjust to the glare, but that he spotted the aircraft left and slightly below the formation and instructed the No4 to report an Airprox to ATC.

The investigation noted that the Waddington Watchman radar was being serviced and Waddington DIR was operating at Cranwell. The Cranwell base of radar cover is higher in the Waddington area, leading to the conflicting aircraft showing on radar later that it would have on the Waddington radar. However, the Waddington bolthole procedure is rarely used and a LARS service using SSR only was still being provided by Waddington. They noted that although he had done nothing wrong, if the light aircraft pilot had called Waddington LARS the controller may have been able to pass Traffic Information to the controller based at Cranwell with an earlier call given to the Hawks.

Comments

HQ Air Command

The barriers available to potentially prevent this Airprox were a surveillance-based Air Traffic Service (ATS) and lookout – electronic conspicuity was unavailable as neither aircraft was fitted with an ACAS. The ATS barrier was weakened because, due to scheduled maintenance of the Waddington radar, the Waddington controller was using the radar at Cranwell which is approximately 10nm further south and will therefore have a higher base of radar cover in the area of interest for this encounter. Consequently, it seems that the C152 appeared on the controller's screen at reasonably close range to the Hawks (1.2nm) at which point the controller issued Traffic Information (TI). Not wishing to transmit over the ATC frequency, the lead Hawk pilot delayed his turn and this inadvertently reduced the separation between the Hawks and the C152. The lead Hawk pilot commenced a climbing left-hand turn to increase separation from the reported position of the traffic and it was at this point that he sighted the C152.

The controller passed TI as soon as he was able to see the contact on his radar; however, had the C152 pilot elected to request a LARS from Waddington whilst in the area this may have led to earlier TI being passed (Waddington LARS was working SSR only but could have passed on TI to the Waddington Director controller). Furthermore, after having sighted the Hawk formation it may have been prudent for the C152 pilot to attempt to increase separation by turning away from where he knew the practise area to be.

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

Summary

An Airprox was reported when a formation of Hawks and a C152 flew into proximity just outside EG R313 at 1547hrs on Wednesday 7th February 2018. All pilots were operating under VFR in VMC, the Hawk pilots in receipt of a Traffic Service from Waddington and the C152 pilot not in receipt of an ATS.

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 Hawk pilots. They were told by military members that when the Red Arrows were practising their display in the early stages of the season it was common for them to spill out of R313 because they needed more time between manoeuvres to re-group and conduct longer run-ins. However, being Class G airspace, this was not a problem and they ensured that they had a radar service from Waddington to mitigate any increased risk. Some members wondered whether the base height of the display should have been raised if operating outside R313 with a degraded radar service (from Cranwell rather than Waddington) so that other aircraft that might be a threat would be above the base of Cranwell radar coverage; however, the HQ Air Command representative informed them that the Red Arrows work-up schedule meant that it was imperative that the pilots practised at certain heights in order to familiarise and prepare them for actual display conditions. Some members then wondered whether temporary restricted airspace (RA(T)) should be set up, effectively extending R313, in order to allow the Red Arrows to operate beyond the normal R313 limits during the initial stages of their work-up. There was much debate over whether the CAA would approve such airspace restrictions and whether to do so would unnecessarily restrict GA flying in the already congested Lincs AIAA. As a compromise, members thought that a NOTAM might be useful that warned GA pilots that the Hawks were likely to temporarily spill out of R313 during the early stages of the display season, and also to serve as a reminder to GA pilots transiting through the area of the value of calling Waddington LARS. The Board resolved to make a recommendation to HQ Air Command to investigate this possibility.

Members then discussed the geometry when the Hawks pilots were given the Traffic Information. It was unfortunate that the timing of the ATC call coincided with the point at which the lead pilot was intending to initiate the turn, and in understandably delaying the turn to listen to the Traffic Information, he had unwittingly exacerbated the situation. That said, if he had not delayed the turn then there was no evidence to suggest that the conflict would have been much less severe. Some members wondered whether he should have turned at all until he was visual with the C152, albeit they acknowledged that he had climbed as he turned in an attempt to increase separation against the as then unsighted traffic.

Turning to the C152 pilot, GA members opined that they thought that he would have been better served both by choosing a route further away from R313 and to have called Waddington LARS for a service. Had he called them, the controller may well have been able to pass Traffic Information to the Waddington DIR, who in turn could have passed earlier Traffic Information to the Hawk pilots. Noting that this was a training flight, and although the Board had sympathy with the notion that sometimes when instructing the addition of ATC in the background can be distracting, the GA members thought that he should have set a better example by calling Waddington. Furthermore, by flying only 1.5nm from the edge of the restricted airspace, he left little room for manoeuvre when the Hawks left the restricted airspace and headed towards him. He reported seeing the Hawks in a slow left turn towards but, although not knowing what they would do next (and therefore electing not to do anything himself), he was still required to give way to the aircraft on his right. Some members opined that even a slight left turn of 10° or 20° would have enabled him to keep the Hawks in sight, whilst increasing the separation. Others thought that had the geometry been such that there was an imminent danger of collision, the C152 pilot would undoubtedly have taken action. Although this was acknowledged, the dynamics of the situation were such that the Board felt that things could have deteriorated very quickly to the extent that he might have been left with very few options indeed had the Hawk pilot not been aware of him and chosen to descend or remain level in the turn.

Finally, the Board looked at the role ATC had to play in the Airprox. In order to mitigate the problem of providing a Traffic Service to the Hawks whilst the Waddington Radar was on maintenance, Waddington had a letter of Agreement with Cranwell that a Waddington Controller (who would be validated in the Waddington DIR position) would travel to Cranwell in order to use a console at the Cranwell radar. The Board agreed that this was a better situation than remaining at Waddington and providing a service using SSR only; however, because of its position further south than Waddington, the base of radar coverage in the Scampton vicinity was higher than that provided by the Waddington radar. The Hawks were aware of the limited service, but the Board wondered whether anyone at Waddington had considered rescheduling the radar maintenance to a time when the Hawks were not early in their display season and therefore more likely to leave R313. Although the Cranwell radar wasn't recorded, it was thought that calling the C152 as 'pop-up' traffic indicated that the controller had only just seen the conflictor on his radar screen. Without a call from the C152 pilot, the Waddington LARS controller therefore did not have any information that he could pass to the Waddington DIR and the first that the Waddington DIR would know about it was when it appeared in close proximity to the Hawks.

When determining the cause of the Airprox the Board quickly agreed that although this had the potential to be a much more serious incident, the Hawk pilot's climb had meant that there had been no actual risk of collision. As a result, they agreed that the incident was probably best described as the Hawk pilot being concerned by the proximity of the C152, with a contributory factor that the C152 instructor was not in contact with Waddington LARS whilst routing close to the edge of R313. When debating the risk, a few members thought that the achieved 500ft height separation and about 0.2nm lateral separation meant that this might represent a benign incident within normal safety standards. However, the majority disagreed and felt that this incident contained more risk than that given the closing speeds and unpredictability of the aircraft. As a result a vote was taken by the Chair, with the vast majority agreeing that although there had been no risk of collision because the C152 pilot was visual with the Hawks at an early stage, safety had been degraded to the extent that the incident should be assessed as risk Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilot was concerned by the proximity of the C152.

Contributory Factor: The C152 instructor was not in contact with Waddington LARS whilst routeing close to EG R313.

Degree of Risk: C.

Recommendation: A NOTAM is issued to remind airspace users of the advantage of contacting Waddington LARS when operating in the vicinity of EG R313.

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:

ANSP:

Manning and Equipment were assessed as partially available because the Waddington controlling task was being conducted from Cranwell, with a higher base of radar cover.

Situational Awareness and Action were assessed as **partially effective** because Traffic Information on the C152 was provided late.

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

Flight Crew:

Tactical Planning was assessed as **partially effective** because the C152 pilot routed close to R313 and did not call Waddington LARS for an ATS.

Situational Awareness and Action were assessed as **partially available** because the Hawks received Traffic Information at a late stage.

Warning System Operation and Compliance were assessed as **not used** because neither aircraft was fitted with a CWS.

See and Avoid were assessed as effective because the C152 pilot saw the Hawks but assessed that he didn't need to take avoiding action.