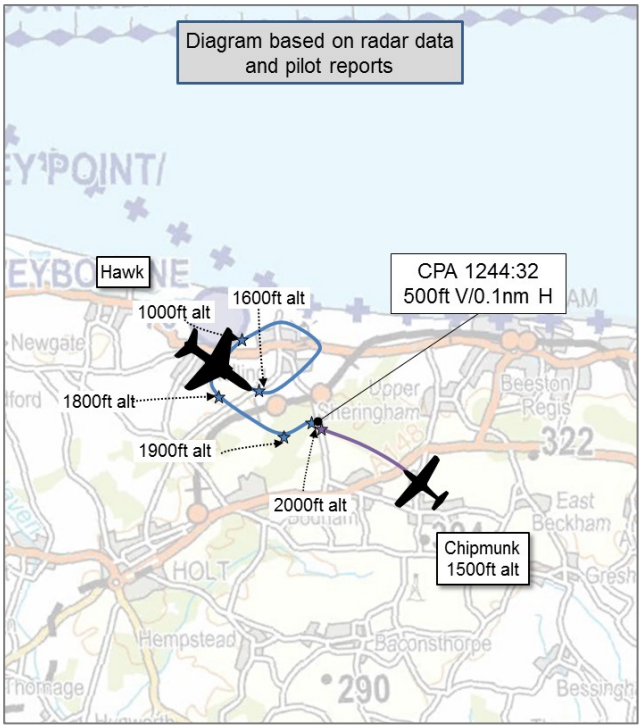
AIRPROX REPORT No 2019003

Date: 14 Jan 2019 Time: 1244Z Position: 5255N 00108E Location: Muckleborough

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk	Chipmunk
Operator	HQ Air (Ops)	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Marham	Norwich
Altitude/FL	2000ft	1500ft
Transponder	A, C, S	A, C
Reported		
Colours	Black	Red, White
Lighting	Anti-Col, Nav, Landing	None
Conditions	VMC	VMC
Visibility	10km	10km
Altitude/FL	2000ft	1800ft
Altimeter	RPS (1012hPa)	QNH (1019hPa)
Heading	090°	270°
Speed	300kt	85kt
ACAS/TAS	Not fitted	Not fitted
Separation		
Reported	200-300ft V/0nm H	500ft V/0nm H
Recorded	500ft V/0.1nm H	



THE HAWK PILOT reports that he was tasked to provide Close Air support (CAS) for an exercise at Muckleborough. A 5nm NOTAM (AFP2555 100838 - H0090/19) was established around the centre point of the mission from surface to FL150. The NOTAM included the information that fast-jet aircraft would be conducting high-energy, dynamic lateral and vertical manoeuvres. Whilst conducting CAS within the NOTAM he was heads-in writing down a task-line when he received Traffic Information from Marham on conflicting traffic. He both descended and manoeuvred to ensure height and lateral separation were maintained. In a left-hand turn through North East, he observed a red and white Chipmunk aircraft 200-300ft directly underneath flying westbound; he carried out a clearing-turn to the north with the traffic directly below him. This aircraft was within the confines of the NOTAM. He declared an Airprox on the Marham frequency and continued to track away from the traffic. He then observed the Chipmunk turn around and fly back towards the NOTAM airspace. At this point he descended and recovered to Marham without further incident.

He assessed the risk of collision as 'Medium'.

THE CHIPMUNK PILOT reports that since the Airprox he has learnt the other aircraft was a Hawk. He sighted it manoeuvring over the sea abeam Weybourne, North Norfolk. He turned onto a westerly track about 1.5 to 2nm south of the coast. He informed Norwich that he was visual with the jet. The jet turned inland and, when in approximately the 12 o'clock position and slightly above him, it turned to the left placing it on a roughly reciprocal heading towards him. He at this point he reduced power and lowered the nose, descending by approximately 500-600ft before the Hawk passed diagonally overhead and behind, it was then unsighted.

He assessed the risk of collision as 'Medium'.

THE NORWICH CONTROLLER reports that the Chipmunk was on a Basic Service, general handling to the north of Norwich flying northwest towards Weybourne where, as per a NOTAM, multiple fast-jets were operating. The Chipmunk pilot was warned to 'keep a good look out' with regard to the jets at around 6 or 7nm south-east of Weybourne but continued towards them. One fast-jet was indicating around 2000ft Mode C, the same level as the Chipmunk. This was again called to the Chipmunk pilot who reported visual and proceeded to fly overhead Weybourne. The controller rang Marham and advised that the Chipmunk pilot had been warned about the jet activity and had reported visual with it, the Marham controller reported that the pilot of the Hawk was filing an Airprox and asked that the pilot of the Chipmunk be advised to keep away from Weybourne whilst the jets were active. Both messages were passed to the pilot of the Chipmunk.

THE MARHAM CONTROLLER reports that she was the approach controller at the time of the incident under examination conditions during an annual standards check. She was handed a Hawk operating on the north Norfolk coast around Muckleborough, operating between 2000 and 3000ft on the Yarmouth QNH. The responsibility for the Hawk pilot's own terrain clearance had been passed. A track squawking 7367 became a factor to the Hawk and she passed Traffic Information to the pilot. She believed the track to be routing south to north to operate feet wet over the sea, possibly a rotary routing to the oil rigs. The track was slow moving but was indicating around 500ft, separated by about 5nm from the Hawk initially. As the Hawk was performing high-energy manoeuvres she continued to pass Traffic Information to the pilot, as required under a Traffic Service. The Hawk then stated he would route north and west to avoid but, as he turned back easterly, the light-aircraft appeared to alter course towards the Hawk once again. During this time, a GR4 climbed out of Marham on her other frequency but she prioritised the traffic update to the Hawk because, due to the speed of the Hawk, the two tracks were now within 1nm of each other indicating a similar level. She spoke with Norwich who were working this traffic and they confirmed it was a Chipmunk who had been informed of the Hawk and was visual with it. She asked that they track south to give the Hawk room to operate but by this time the Hawk had decided to RTB and had declared on frequency his intention to file an Airprox report.

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

THE MARHAM SUPERVISOR reports that as the traffic was low, with one aircraft on frequency conducting CAS at Mucklebrough, he was carrying out admin tasks within the approach room but away from the console and did not witness the incident, although he heard Traffic Information passed on several occasions. He was made aware of the Airprox immediately by the Local Examining Officer (LEO) and made a note of the relevant information. He impounded the relevant tapes and informed SATCO on his return to ATC.

Factual Background

The weather at Norwich was recorded as follows:

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METAR COR EGSH 141250Z 29008KT 9999 VCSH FEW020 BKN025 06/04 Q1019 NOSIG
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A NOTAM was issued covering the Hawk's profile as follows:

Q) EGTT/QWELW/IV/BO/W/000/150/5257N00108E005
AIR EXER. MULTIPLE FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES IN SUPPORT OF GROUND OPS WI 5NM RADIUS 525642N 0010745E (MUCKLEBURGH, NORFOLK). PROFILES MAY INVOLVE DYNAMIC LATERAL AND VERTICAL MANOEUVRING OF AIRCRAFT AT SPEEDS OF UP TO 450 KNOTS IAS. ACFT MAY BE UNABLE TO COMPLY WITH RAC. FOR FURTHER INFO AIC Y056/2017 REFERS. OPS CTC 07493 159227. 2019-01-0133/AS3
LOWER: Surface, UPPER: FL150
FROM: 14 Jan 2019 11:00 GMT TO: 18 Jan 2019 21:00 GMT SCHEDULE: 14 18 1100-2100 EXPIRED: 18 Jan 2019 21:05 GMT

Analysis and Investigation

CAA ATSI

At 1234:40, the Chipmunk established communications with the Norwich Radar Controller. The pilot reported that they were currently at 1,000ft on QNH 1019. A Basic Service was agreed.

At 1238:20 (Figure 1), the controller warned the Chipmunk pilot to keep a good look out due to there being quite a lot of military activity around Muckleburgh, with one believed to be a Hawk to the north of them by about 4nm, at the same level and going considerably faster. The Chipmunk pilot responded that they had copied the traffic.

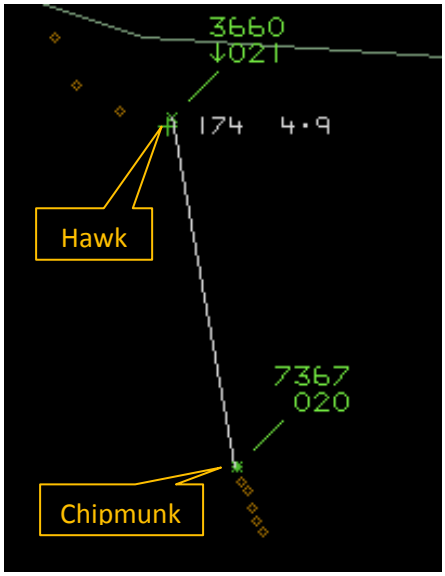

Figure 1-1238:20

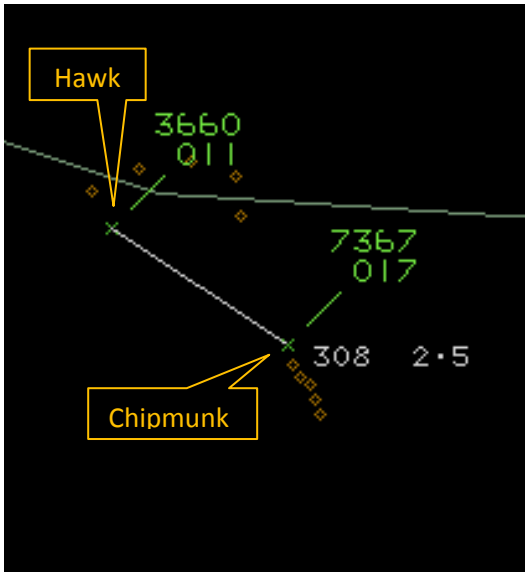

Figure 2-1243:20

At 1243:20 (Figure 2), the controller updated the traffic information, advising that the previously mentioned fast jet traffic was northwest of them by two and a half miles, eastbound, indicating 700 or 800ft below. The Chipmunk pilot responded that they were visual with the traffic and that it was just over the coast. (Figure 2).

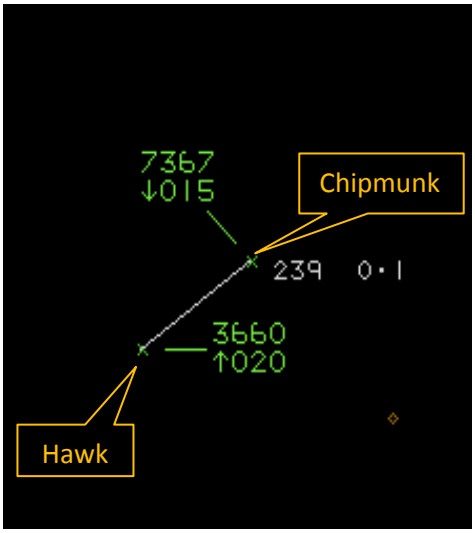

Figure 3-1244:32

At 1244:32 CPA occurred, with the aircraft separated by 0.1nm laterally and 500ft vertically (Figure 3).

At 1247:20 The controller advised the Chipmunk pilot that the Hawk had filed an Airprox. The pilot responded that this was copied and that they were visual with the traffic the whole time and that the Hawk had passed over them.

At the time of the Airprox the Chipmunk was receiving a Basic Service from the Norwich Radar Controller who was also providing radar vectors to inbound aircraft.

Under the terms of a Basic Service CAP 774 states:

> *"The provider of a Basic Service is not required to monitor the flight, pilots should not expect any form of traffic information from a controller/FISO."*
>
> *"If a controller/ FISO considers that a definite risk of collision exists, a warning shall be issued to the pilot (SERA.9005(b)(2) and GM1 SERA.9005(b)(2))."*
>
> *"Whether traffic information has been provided or not, the pilot remains responsible for collision avoidance without assistance from the controller."*

The controller passed traffic information to the Chipmunk pilot on two occasions despite there being no requirement for them to do so. On the second occasion the Chipmunk pilot reported visual with the Hawk. The controller could reasonably expect that no further Traffic Information was required after this point.

The Airprox took place in Class G airspace under a Basic Service, where separation between aircraft is ultimately the responsibility of the pilot.

Military ATM

The Hawk was conducting a Close Air Support (CAS) task as part of Ex Gangsters Paradise and was operating in a block of airspace with a NOTAM in effect to warn other airspace users of the activity. The Chipmunk was conducting a general handling flight from and to Felthorpe. The Chipmunk was passed Traffic Information on the Hawk and reported being visual with it at a range of 1.5-2nm. The Hawk was passed Traffic Information on 4 occasions, but the pilot did not become visual with the Chipmunk until it was directly underneath his aircraft with an estimated vertical separation of 2-300ft.

Having established a Traffic Service with Marham Zone, the Hawk confirmed the operating block required (2-3000ft) but noted that it may go below this level (the NOTAM issued was surface to FL150), that it would be on task for approx. 20 mins and would return to Leeming at FL150 via Gamston. Separation between the Hawk and Chipmunk was 7nm and 100ft at the start of this conversation (Figure 4).

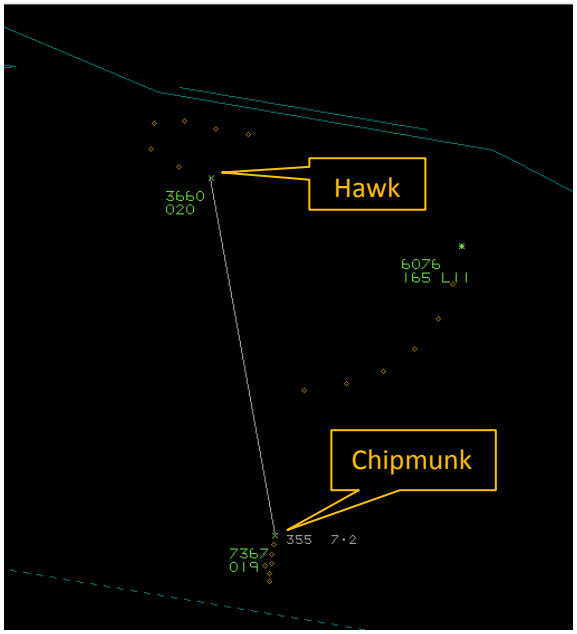

Figure 4

Some 4 mins after the above R/T exchange, Marham Zone passed Traffic Information on the Chipmunk for the first time. During this period, with both aircraft manoeuvring, separation had varied between 8-5nm. Following the Traffic Information, the Hawk pilot requested clarification that the conflicting traffic was to the south of his position (Figure 5).

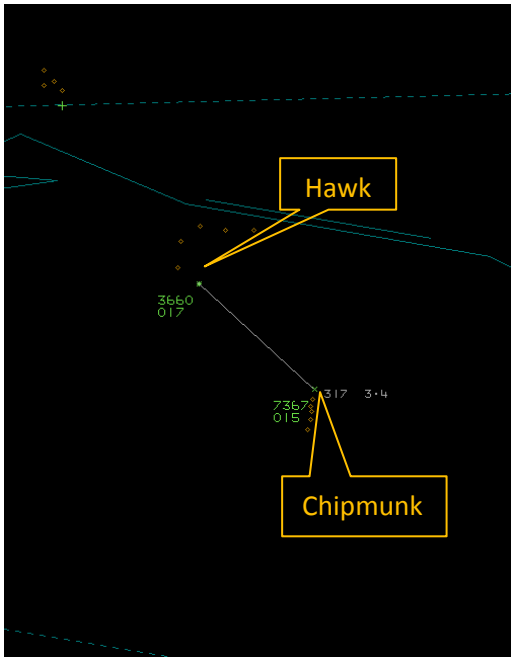

Figure 5

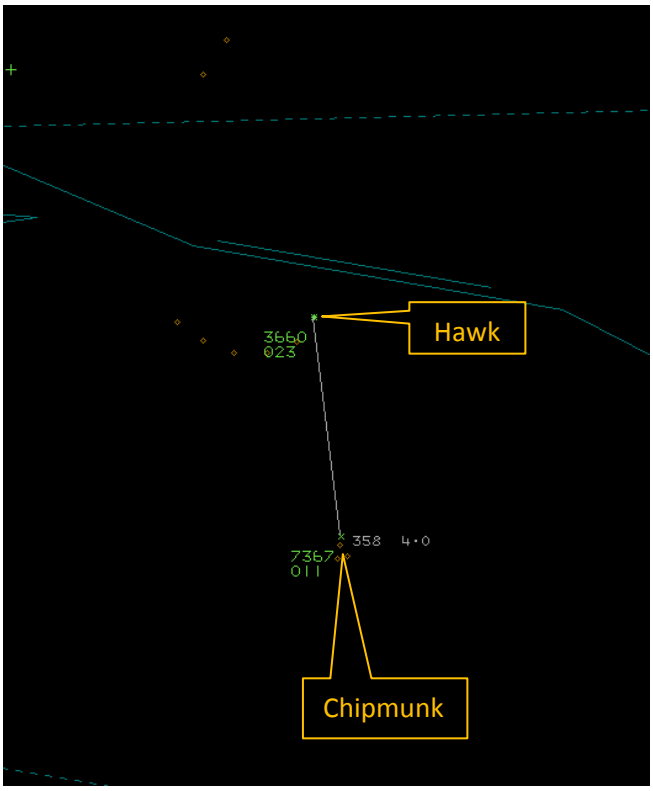

Figure 6

Marham Zone updated the Traffic Information 50 secs later noting that the Chipmunk had now climbed to a similar level as the Hawk (Figure 6).

Traffic Information was passed for a third time 15 secs later. The controller stated that this conflicting traffic was possibly rotary wing aircraft (Figure 7).

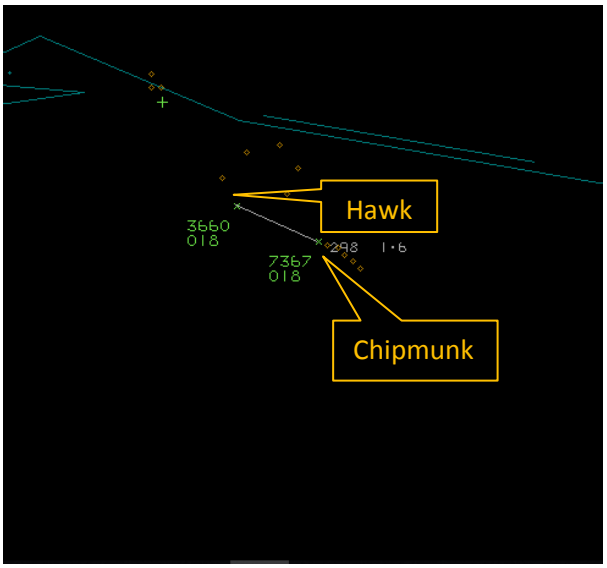

Figure 7

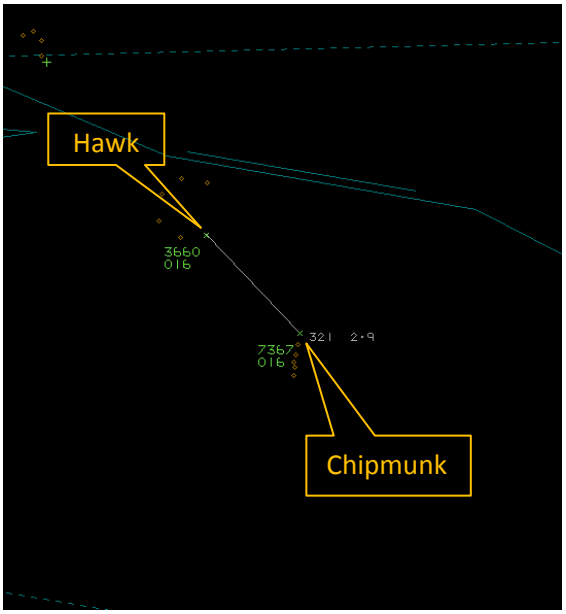

Figure 8

Traffic Information was passed for a final time about 2 mins later during which time another aircraft called Marham Zone, had been identified and placed under a service (Figure 8). Following clarification of the range of the conflicting traffic, the Hawk pilot reported the Airprox to Marham Zone.

CPA occurred 15 secs after this final piece of Traffic Information and was measured at 0.1nm and 500ft (Figure 9).

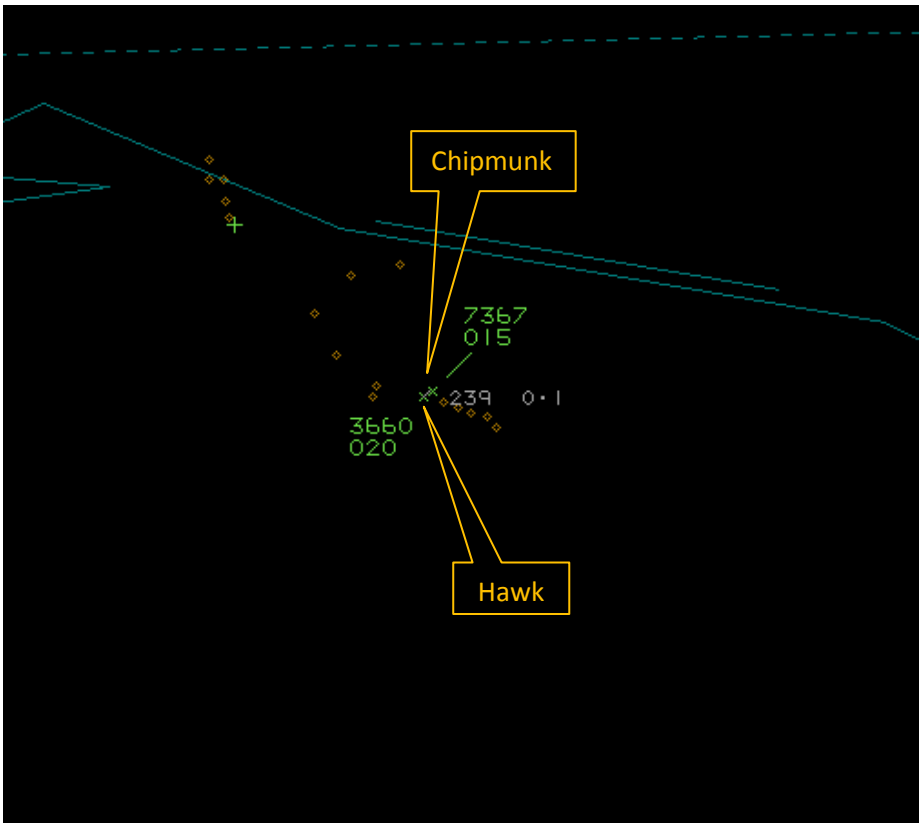

Figure 9 - CPA

The Marham Zone controller was faced with a fast-jet conducting high energy manoeuvres and a slow-moving conflicting aircraft. Traffic Information was passed on 4 occasions and, in order to help the Hawk pilot get visual with the conflicting aircraft, this Traffic Information was passed using cardinal headings and using the clock-code method.

UKAB Secretariat

The Hawk and Chipmunk 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

Norwich Investigation

The Chipmunk was under a Basic Service and routed from Felthorpe to the North Norfolk coast via Weybourne where there was a NOTAM for fast jet activity. At 1238, about 6nm south of Weybourne, the pilot was issued with a general warning of fast jet activity. At 1243, specific Traffic Information was given on a Hawk aircraft (wearing a Marham squawk) and the pilot reported visual. The Chipmunk continued to manoeuvre in the Weybourne area and at 1246, Marham were given Traffic Information to explain that the pilot was visual with their traffic. At this point, the Marham controller explained that, although they had given Traffic Information to the Hawk, the pilot was filing an Airprox. At 1247, the pilot of the Chipmunk was informed that the pilot of the other aircraft was filing an Airprox whereupon he confirmed that he was visual with the other aircraft throughout and saw it pass above him. The controller concerned went above and beyond his responsibilities whilst

[1] SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

providing a Basic Service and ensured that the pilot was visual with the fast jet. He then informed Marham to ensure that they were aware that the pilot was visual. The NOTAM was a warning and not an avoid, therefore, it was up to the Captain of the Chipmunk as to whether it was sensible to fly in the Weybourne area.

Comments

HQ Air Command

This incident was the subject of a detailed safety investigation which made 5 recommendations intended to minimise the likelihood of recurrence.

The plan-to-avoid barrier was available but not used because the Chipmunk pilot, whilst aware of the NOTAM, chose to route through the airspace (there is no requirement for the pilot of the Chipmunk to avoid the area defined by the NOTAM). Furthermore, a contact telephone number was provided in the NOTAM for other pilots to call and glean information on the activity – this was not used either.

Both aircraft were in receipt of an Air Traffic Service (ATS) – the Hawk pilot under a TS from Marham and the Chipmunk pilot under a BS from Norwich. Both pilots were informed of the presence of the other aircraft but the Hawk pilot, under high mission workload, did not fully appreciate the significance of the 'slow mover' call and therefore judged that it would clear the area more quickly than it actually did. Whilst requesting updated TI (the range call was inaudible due to a transmission on the other radio), he became visual with the Chipmunk, 200-300ft below and too late to effect any meaningful increase in separation. For his part, the Chipmunk pilot (with the aid of TI from the Norwich controller) became visual with the Hawk at a range of approximately 3 miles and, assessing it to be over the sea (which it was not), turned more westbound to maintain separation. On seeing the Hawk continue its turn inland, the Chipmunk pilot descended to gain vertical separation as the lateral separation decreased.

Of the 5 recommendations made, 2 pertain to the issuing of NOTAMs for activities such as those in which the Hawk pilot was engaged. These relate to more detailed 'encouragement' for pilots to use the contact details provided and the inclusion of a VHF frequency whenever possible. There is no doubt that both pilots knew exactly what the NOTAM did and did not provide (in terms of protection of the activity) but there may not have been a full appreciation – on the part of the Chipmunk pilot – of what the activity actually entailed and therefore the wisdom of flying close to the area.

Summary

An Airprox was reported when a Hawk and a Chipmunk flew into proximity near Muckleborough at 1244hrs on Monday the 14th of January 2019. Both pilots were operating under VFR in VMC, the Hawk pilot in receipt of a Traffic Service from Marham and the Chipmunk pilot in receipt of a Basic Service from Norwich.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board began by examining the NOTAM for the military exercise to see what information was available to pilots about the aerial activity being conducted. The military Board member commented that, although being perfectly normal for this type of activity, the NOTAM could perhaps have been enhanced through the provision of an operating frequency in addition to the telephone number to encourage pilots to contact the appropriate operating authority.

Turning then to the actions of the Hawk pilot, the Board noted that he had been passed TI by Marham on the Chipmunk entering his area but had not fully assimilated that the traffic was slow moving and would therefore remain a threat longer than he anticipated. Members also noted that he was heads-down in the cockpit when he received the first TI and, although he had manoeuvred on this situational awareness to increase separation before he saw the Chipmunk, there had been an opportunity to increase both lateral or vertical separation to a greater extent rather than turn back towards the Chipmunk **(CF2)**.

For his part, the Board noted that the Chipmunk pilot was fully aware of the NOTAM activity, both through his pre-flight planning and the TI passed by Norwich. Although members accepted that a NOTAM is for information only and does not preclude a pilot flying through the associated area, the Board agreed that the Chipmunk pilot would have been better served by making a small change to his route (preferably at the planning stage) to keep him outside of the area **(CF1)**. Furthermore, despite the TI from Norwich, the Chipmunk pilot had continued to route towards the Hawk and members agreed that even basic threat and error management would suggest that it was unwise to fly so close to a fast-jet carrying out high-energy manoeuvres whilst flying a small and slow aircraft **(CF2 & 3)**.

The Board then looked at the risk. Although the Hawk pilot did not see the Chipmunk until CPA, they agreed that his manoeuvre had removed the risk of collision although the fact that the Chipmunk pilot had continued to fly towards the Hawk meant that this could not be assured. Accordingly, they agreed that safety had been degraded and assessed the risk as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Contributory Factors:

CF	Factor	Description	Amplification
	Flight Elements		
	• Tactical Planning and Execution		
1	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
	• Situational Awareness of the Conflicting Aircraft and Action		
2	Human Factors	• Lack of Action	Pilot flew close enough to cause concern despite Situational Awareness
	• See and Avoid		
3	Human Factors	• Lack of Individual Risk Perception	Pilot flew close enough to cause the other pilot concern

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:

Flight Element(s):

Tactical Planning was assessed as **partially effective** because, although the Chipmunk pilot was entitled to fly within the NOTAM area, he would have been better advised to have remained clear of the fast-jet aircraft carrying out high-energy manoeuvres.

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

Situational Awareness of the Conflicting Aircraft and Action was assessed as **partially effective** because the Chipmunk pilot flew close enough to the Hawk to cause its pilot concern even though the Chipmunk pilot had enough situational awareness to avoid the Hawk (and was visual with it).