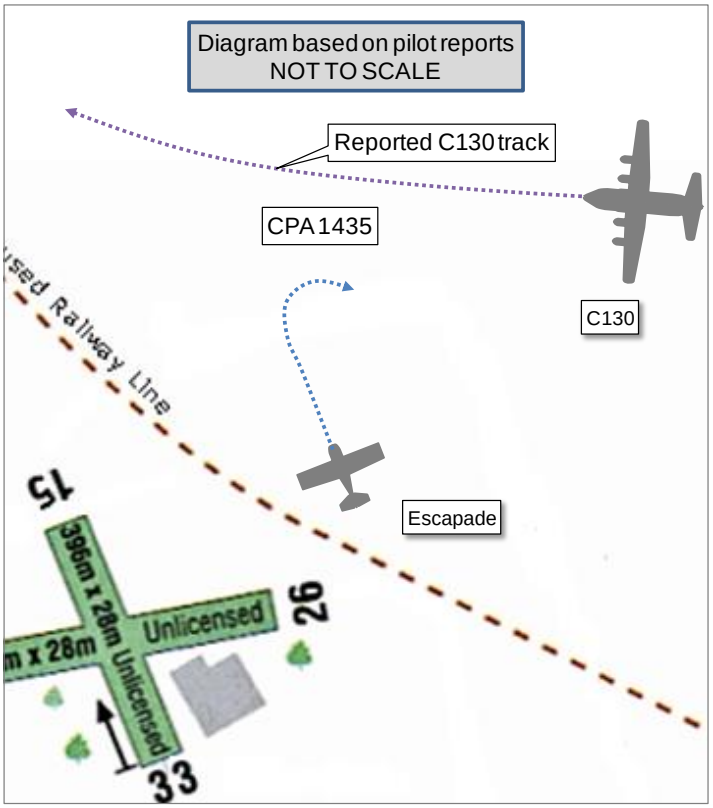
AIRPROX REPORT No 2013093

Date/Time:	1 Aug 2013 1435Z	
Position:	5123N 00144W (10nm south of Swindon)	
Airspace:	Lon FIR (*Class*: G)	LFA 1 (*Class*: G)
	Reporting Ac	*Reported Ac*
Type:	Escapade Microlight	C130 Hercules
Operator:	Civ Pte	HQ Air (Ops)
Alt/FL:	500ft QFE (990hPa)	250ft msd QNH (1013hPa)
Weather:	VMC CLNC	VMC CLBC
Visibility:	>40km	10km
Reported Separation:	50ft V/90m H	Not Seen
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ESCAPADE PILOT reports approaching the end of the downwind leg at his home airfield, about to turn left-base. The silver, white and blue aircraft was not fitted with lights or an ACAS. The SSR transponder was selected on, with Modes A, C and S. The pilot was operating under VFR in VMC, listening out and making circuit RT calls on VHF 'Safety Common'. He had just selected 1st stage flap, heading 330° at 500ft and 50kt, and was about to turn onto left base when his passenger called "Hercules ahead". The pilot reported that he saw the Hercules at a range of 300-400m, that it appeared lower than him, on the right, and that it was 'perfectly camouflaged' against a background forest. He was forced to make a sharp, banking right turn away from the circuit to avoid a collision and wake turbulence. He noted that the incident occurred at a time of increased workload in the circuit, and stated that although his subsequent landing was 'OK', he started shaking after exiting the aircraft. He notified an Airprox after landing, by phone, to Gatwick[1].

He assessed the risk of collision as 'High'.

THE HERCULES PILOT reports conducting a low-level training flight. The green-camouflaged aircraft had navigation lights and 'top and bottom strobes' selected on, as was the SSR transponder with Modes A, C and S. The aircraft was fitted with TCAS II. The pilot was operating under VFR in VMC, listening out on the low-level common (LLC) UHF frequency. He stated that the crew looked for the microlight site and didn't observe any traffic. They flew their planned route, heading 269° at 210kt and 250ft msd, just to the north of the microlight site, and focused their attention on avoiding a notified low-level avoid (a stud farm) 3nm further west. No aircraft was observed in the vicinity of the microlight site, no TCAS 'traffic alerts' were received, and no 'evasive action' was taken.

[1] The UK Airprox Board website, www.airproxboard.org.uk, also contains information to assist with filing an Airprox.

Factual Background

The weather at Boscombe Down was recorded as follows:

```
METAR EGDM 011350Z 14013KT CAVOK 29/18 Q1007 BLU NOSIG
METAR EGDM 011450Z 14014KT CAVOK 28/18 Q1006 BLU NOSIG
```

The weather at Brize Norton was recorded as follows:

```
METAR EGVN 011350Z 17011KT CAVOK 30/17 Q1006 BLU NOSIG
METAR EGVN 011450Z 16009KT CAVOK 30/17 Q1006 BLU NOSIG
```

Analysis and Investigation

UKAB Secretariat

With regard to overall military flying operations, the C130 crew were permitted to depart from the Rules of the Air to the extent necessary to comply with Military Flying Regulations[2]. Nevertheless:

Military Aviation Authority (MAA) Regulatory Article (RA) 2307 (Rules of the Air) states that:

> 'It is MOD policy that military regulations in relation to the Rules of the Air and Avoidance of Aerial Collisions should conform to the civilian rules. The civilian rules are contained in the ANO Section 2; the contents of which are reflected in this Regulation.'

Specifically, MAA Regulation 2307(1) (Avoidance of Collisions) states that:

> 'The Aircraft Commander or handling pilot **shall** take all possible measures to ensure that his aircraft does not collide with other aircraft irrespective of whether a flight is being made with air traffic control clearance.'

The associated Guidance Material[3] to paragraph 16 (Flight in the Vicinity of an Aerodrome) states that:

> **'**A flying machine, glider or airship while flying in the vicinity of what the Aircraft Commander knows, or ought reasonably to know, to be an aerodrome or whilst moving on an aerodrome, will, unless in the case of an aerodrome having an air traffic control unit that otherwise authorizes, adopt the following procedures:
>
> a. Conform to the pattern of traffic formed by other aircraft intending to land at that aerodrome, or keep clear of the airspace in which the pattern is formed.
>
> b. Make all turns to the left unless ground signals otherwise indicate.

Furthermore, MAA Regulation 2302(1) (Responsibilities in the Air) states that:

> 'All aircrew **shall** ensure that the mission, sortie or task, for which they have been authorized, is executed in a manner that minimizes the risks and hazards to the aircraft, its occupants, ground crew, other airspace users or general public over which such aircraft are flown.'

This incident occurred outside area surveillance coverage and hence the precise geometry is not known. Both pilots were equally responsible for collision avoidance[4]. Given that the site was marked as a microlight site on the low-flying map (and within the Low-Flying Handbook), even

[2] The Air Navigation Order 2009, Part 22, Article 160 (Rules of the Air) and 252 (Application of the Order to military aircraft).
[3] Guidance Material is not explicitly defined as mandatory.
[4] MAA Regulations as stated and Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).

though it was not a specific 'avoid' at the time of the Airprox, the C130 crew should reasonably have known that it was there and were therefore required to either 'conform to the pattern of traffic intending to land at the site, or keep clear of the airspace in which the pattern was formed'.

It would appear from the microlight pilot's report that the aircraft were close enough to have theoretically generated a TCAS event in the C130. However, TCAS is designed such that all RAs are inhibited below 1000ft agl, and all aural annunciations are inhibited below 500ft agl. If the C130 pilot was flying below 500ft agl, transponding proximate traffic would only have appeared visually on the TCAS display, without aural annunciation.

At the time of the incident the microlight site was not listed in the UK Military Low Flying Handbook as a location 'to be avoided', by 1nm laterally or 2000ft vertically. The site has subsequently been listed as such.

Comments

HQ Air Command

As the microlight site was not a mandatory avoid at the time of the incident, the C130 crew proceeded having visually cleared their flight path. Without a radar picture of the incident, the precise geometry and location are unavailable and there may also have been an element of subjectivity to the pilots' accounts. Overall, this case serves to remind us that thorough lookout remains a vital element of the flying work-cycle.

Summary

An Escapade microlight and C130 flew into proximity at about 1435 on 1st August 2013. Both pilots were operating under VFR in VMC, the Escapade pilot in the visual circuit and the Hercules pilot conducting low-flying training. The Escapade pilot took avoiding action and the C130 crew did not observe the microlight.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both ac.

The Board first considered the actions of the Escapade pilot. He was at a stage of increased workload in the visual circuit when his passenger saw the Hercules and warned him. Although late sightings are often associated with an underestimate of separation range, the Escapade pilot was concerned to such a degree that he took avoiding action, both for the Hercules and for its associated wake turbulence. Turning to the Hercules, the pilot was flying a low-level training sortie, planning to route 'just to the north' of the microlight site. The crew had looked for conflicting traffic in the area of the microlight site and, having not seen any, continued their planned route whilst focussing their attention on another avoid to the west. Military members observed that this particular microlight site was well known to local military crews as a busy location and that the Hercules crew were no doubt sensitive to that fact. It was noted that the Hercules pilot had remarked that he had not received any TCAS 'traffic alerts'; in fact, his altitude would probably have precluded any TCAS RAs or aural annunciations anyway, and members observed that it was important that the crews of all TCAS equipped aircraft operating at low-level should understand the limitations of TCAS in that environment: this was especially relevant considering the planned future embodiment of an ACAS on the Tornado fleet, which would also often be operating largely at low-level, below 500ft agl.

When considering the cause and risk, the Board were faced with a situation in which there was no recorded track data for the aircraft. Without knowing exactly where the aircraft flew it was not possible to assess conclusively whether the Hercules pilot had given the microlight site sufficient margin, or the degree to which the Escapade pilot's assessment of range was affected by his late sighting. Nevertheless, without prejudice to the C130 crew's actual track on the day, the Board was unanimous in agreeing that the cause of the Airprox was that the Escapade pilot had made a late sighting of the

Hercules, whilst the Hercules crew had not seen the Escapade microlight at all. With regard to the risk assessment, after considerable discussion over the pitfalls of relying on a single-source estimation of miss distance during what was undoubtedly an alarming event for the pilot concerned, the Board concluded that, on balance, the Escapade pilot's close estimate of CPA, his report of taking sharp avoiding action and fearing wake turbulence, and the fact that he was considerably shaken up by the event, carried sufficient weight for an assessment to be made of Risk B; safety margins were much reduced.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Escapade pilot and a non-sighting by the C130 crew.

Degree of Risk: B.

ERC Score[5]: 21

[5] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.