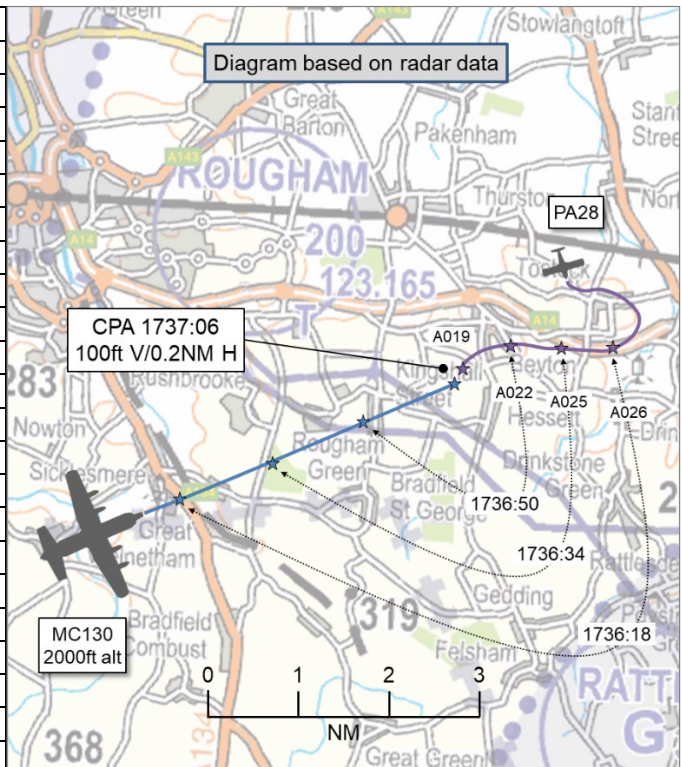


AIRPROX REPORT No 2023059

Date: 17 Apr 2023 Time: 1737Z Position: 5213N 00049E Location: 3NM SE Rougham

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	MC130	PA28
Operator	Foreign Mil	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Listening Out
Provider	Lakenheath Radar	Rougham Radio
Altitude/FL	2000ft	1900ft
Transponder	A, C	A, C
Reported		
Colours	Grey	Red, white
Lighting	Nav	Strobes, beacon
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	2000ft
Altimeter	QNH (NK hPa)	QNH (NK hPa)
Heading	066°	260°
Speed	NK	105kt
ACAS/TAS	TCAS II	SkyEcho
Alert	None	None
Separation at CPA		
Reported	300ft V/0NM H	350ft V/0.75NM H
Recorded	100ft V/0.2NM H	



THE MC130 PILOT reports that [they had been] conducting a training sortie and were transiting east of Mildenhall towards an overwater area commonly used for training. They had been under a Traffic Service from Lakenheath Approach. [They were] at 2000ft AMSL in the vicinity of Great Ashfield airport when Lakenheath Approach called traffic [in the MC130 pilot's] 12 o'clock. The traffic was unverified and co-altitude. At approximately 2NM, the aircraft was visually acquired heading northbound. The [other] aircraft then began a left turn onto the approximate reciprocal of [the MC130]. It was quickly identified that the aircraft was a factor causing the co-pilot (who was flying) to climb. At approximately 1NM, the aircraft appeared to have visually acquired [the MC130] and made a right descending turn. [The pilot of the MC130] was operating the [aircraft identification system] in accordance with [applicable] directives. [The MC130] and the other aircraft were between 300-400ft from each other when the general aviation aircraft passed under [the MC130].

The pilot assessed the risk of collision as 'Medium'.

THE PA28 PILOT reports that, after a short flight for general handling to the east of Rougham Airfield, they were returning to join the circuit downwind for RW09 with a right-hand circuit. As they were positioning to join the circuit they saw the C130 ahead of them, slightly to their left and slightly high. They made a right turn of approximately 20° and continued their descent to avoid the oncoming traffic and keep it visible to their left with the sky as the background. They didn't see the C130 heading or angle of bank change and, once passed, [the PA28 pilot] resumed their course onto the downwind leg. The weather was fine and visibility was good, with some light broken hazy cloud at around 3000ft. Although heading towards the sun, [the PA28 pilot] was below this light cloud layer at the time of the incident, and the sun above it, so this wasn't adversely affecting their vision at the time.

The pilot assessed the risk of collision as 'Low'.

THE LAKENHEATH CONTROLLER reports that [the pilot of the MC130] was [conducting] their own navigation under a Traffic Service just after departure [from departure airfield]. While transiting outside the CMATZ, they issued Traffic Information on an unknown aircraft at 027°. The [pilot of the MC130] did not have the aircraft in sight at the time of the [first] traffic call. Eventually, the [pilot of the MC130] was able to get the light, fixed-wing (LFW) in sight after the controller issued another traffic call. The LFW descended through the MC130's altitude and the pilot informed them they were going to file an Airprox.

[The UKAB Secretariat has received confirmation that Traffic Information had been passed twice before the MC130 pilot reported visually acquiring the PA28. The STCA, which does not filter out 7000 squawks, alerted after the crew had called having made visual contact.]

The controller perceived the severity of the incident as 'Medium'.

THE ROUGHAM AIR/GROUND RADIO OPERATOR reports that they were not made aware by the pilot at any time of an air-miss and believe that they had been closed at the time of the incident.

Factual Background

The weather at Mildenhall was recorded as follows:

METAR COR EGUW 171750Z 07009KT 9999 BKN014 09/06 Q1028 TEMPO BKN006 RMK GRN TEMPO YL01

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. Both aircraft could be identified from their squawks and by reference to each pilot's narrative report. The aircraft were observed on radar to be at Flight Levels and an appropriate conversion factor was used to calculate their respective altitudes. The diagram was constructed and the separation at CPA determined from the radar data.

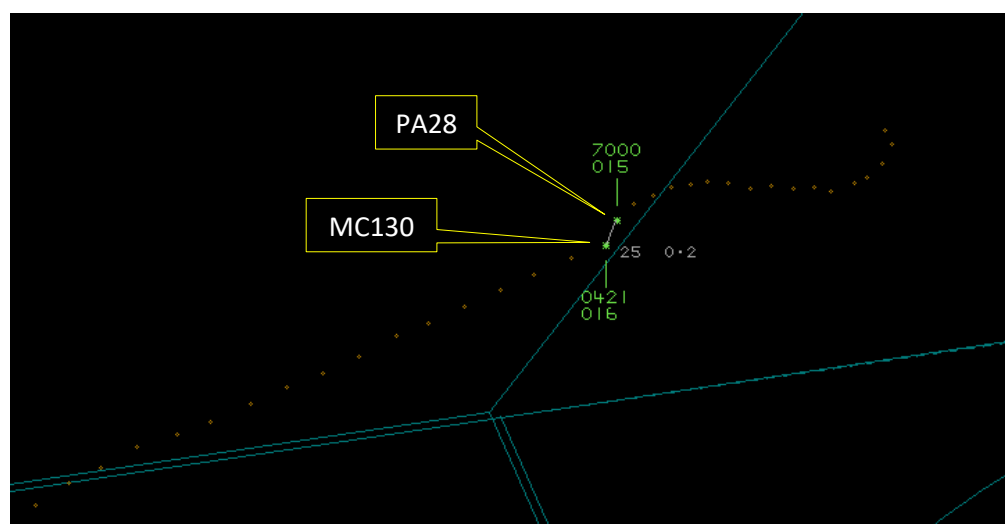


Figure 1 – CPA at 1737:06

The MC130 and PA28 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 An aircraft

¹ (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.

operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.³

Comments

USAFE

The pilot of the MC130 was following a standard VFR departure procedure from [their departure airfield]. This departure routing is via Risby (5NM W of Rougham airfield). On passing Risby, crews avoid Bury St Edmunds and Rougham airfield. Eastbound crews will position approximately halfway between Bury St Edmunds and Wattisham MATZ to provide equal spacing between Rougham and the Rattlesden Glider site. It would appear that, when sighted, the MC130 crew initially perceived that [the PA28 pilot] was on a diverging course (having reported seeing them 'northbound'). When [the PA28 pilot] turned towards them on a converging course, the crew quickly recognised the conflict and took avoiding action by initiating a climb.

The Lakenheath controller correctly identified the confliction to [the pilot of the MC130] under a Traffic Service and operating under their own navigation, and issued Traffic Information (TI) at 6NM. The controller continued to update the information until the crew reported visual with the traffic. This Traffic Information enabled the crew to visually acquire [the PA28] and take action as necessary. Had the crew not reported visual at the 2NM call, the controller had been prepared to issue deconfliction advice. The crew of [the MC130] was clearly thankful for the TI given and expressed this on the RT as they proceeded en-route.

RAF Lakenheath ATC is happy to provide Flight Information Services to any pilot that wishes to call Lakenheath Radar within 20NM radius of RAF Lakenheath, although they are not a LARS provider. Both RAF Mildenhall and Lakenheath are extremely busy military aerodromes with complex and diverse traffic types that includes; low-level transits to training areas, heavy cargo aircraft and fast-jet operations. RAF Mildenhall and RAF Lakenheath maintain a 'Mid-air collision avoidance programme' for the local area. Publications with details of patterns of traffic may be found online.⁴

AOPA

This occurrence shows how useful a Traffic Service can be when flying VFR below 3000ft. In this case, it gave the [military] pilot information that they then used to spot the light-aircraft quickly. It also highlights that, if possible, it may enhance everyone's Situational Awareness if airfields can be called on a second radio if flying in the vicinity.

Summary

An Airprox was reported when an MC130 and a PA28 flew into proximity 3NM southeast of Rougham at 1737Z on Monday 17th April 2023. Both pilots were operating under VFR in VMC, the MC130 pilot in receipt of a Traffic Service from Lakenheath Radar and the PA28 pilot not in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate 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 first considered the actions of the pilot of the MC130. Members noted that there had been careful consideration of the chosen route to provide separation from both Rougham airfield and Rattlesden gliding site. The pilot of the MC130, whilst under their own navigation as they transited the area, had been in receipt of a Traffic Service from Lakenheath Radar. Through the timely passage of

³ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome. MAA RA 2307 paragraph 17.

⁴ <https://www.mildenhall.af.mil/Contact-Us/Mid-Air-Collision-Avoidance/>

Traffic Information, the pilot of the MC130 had acquired situational awareness that the PA28 had been approximately 6NM ahead of them. Updated Traffic Information, when approximately 2NM away, had enabled the crew to visually acquire the PA28 in plenty of time. Members noted that the pilot of the MC130 had assessed that the PA28 pilot had manoeuvred to increase separation and, therefore, had subsequently decided that to have maintained their own course had been the most appropriate action.

Members next considered the EC equipment fitted to each aircraft and agreed that the EC device fitted to the PA28 would not have been expected to have detected the presence of the MC130. Similarly, the EC equipment fitted to the MC130 that had been in operation at that time would not have been expected to have detected the presence of the PA28.

Members turned their attention to the actions of the pilot of the PA28. It was noted that the pilot had tuned their radio to the Rougham Radio frequency and, drawing upon their conclusion that the EC equipment fitted to the PA28 would not have provided an alert to the presence of the MC130, members were in agreement that they had not had any situational awareness that the MC130 had been in the vicinity. Members were heartened that the pilot of the PA28 had visually acquired the MC130 in plenty of time to have made an adjustment to their course to increase separation.

In consideration of the actions of the Lakenheath Radar controller, members noted that they had passed timely and accurate Traffic Information to the MC130 pilot which had enabled visual acquisition of the PA28. It was also noted that the STCA had provided an alert to the proximity of the two aircraft. Members were heartened that the STCA system had been configured such that an aircraft with a 7000 squawk was included in the select-frame.

Concluding their deliberations, members agreed that both pilots had seen the other in plenty of time, and were satisfied that the separation had been such that there had been no risk of collision. Normal safety standards for VFR operations in Class G airspace had pertained and, as such, members assigned Risk Category E to this event and agreed on the following contributory factors:

- CF1.** The STCA at the Lakenheath Radar position had alerted the controller to the proximity of the MC130 and PA28.
- CF2.** The pilot of the PA28 had not had any situational awareness of the presence of the MC130 until it had been visually acquired.
- CF3.** The EC equipment fitted to each aircraft would not have been expected to have detected the presence of the other aircraft.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2023059				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Electronic Warning System Operation and Compliance				
1	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
Flight Elements				
• Situational Awareness of the Conflicting Aircraft and Action				
2	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
3	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment

Degree of Risk: E.

Safety Barrier Assessment⁵

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the PA28 had not had situational awareness of the presence of the MC130 until it had been visually acquired.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC equipment fitted to each aircraft would not have been expected to have detected the presence of the other aircraft.

Airprox Barrier Assessment: 2023059		Outside Controlled Airspace					
Barrier	Provision	Application	Effectiveness				
			Barrier Weighting				
			0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓				
	Manning & Equipment	✓	✓				
	Situational Awareness of the Confliction & Action	✓	✓				
	Electronic Warning System Operation and Compliance	✓	✓				
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓				
	Tactical Planning and Execution	✓	✓				
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓				
	Electronic Warning System Operation and Compliance	✗	✓				
	See & Avoid	✓	✓				
Key:							
	Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision							
Application							
Effectiveness							

⁵ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).