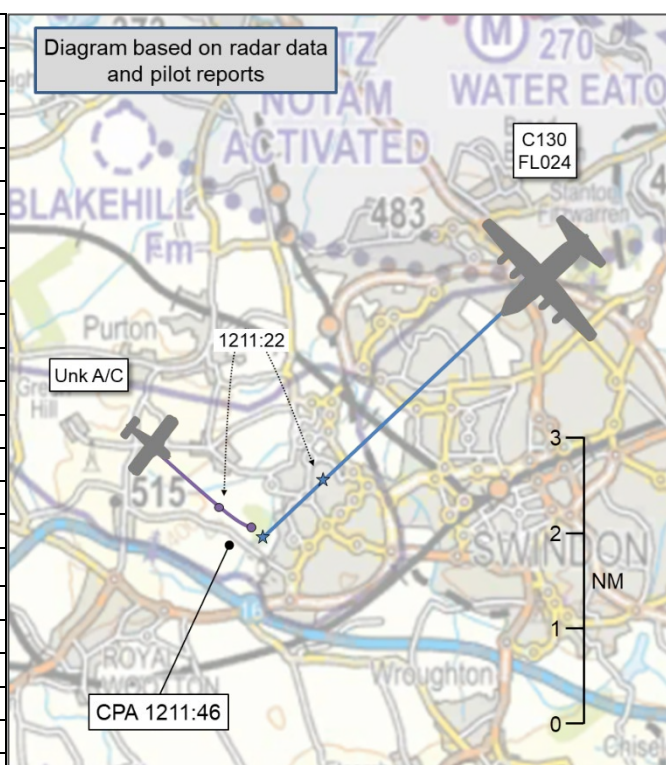


## AIRPROX REPORT No 2022057

Date: 25 Apr 2022 Time: 1211Z Position: 5133N 00151W Location: IVO Swindon

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C130	Unk AC
Operator	HQ Air (Ops)	Unknown
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	NK
Service	Traffic	Unknown
Provider	Brize	
Altitude/FL	FL024	NK
Transponder	A, C	None
<b>Reported</b>		
Colours	Green	White, Red
Lighting	Strobes	NK
Conditions	VMC	NK
Visibility	5-10km	NK
Altitude/FL	2500ft	NK
Altimeter	QNH (1014hPa)	NK
Heading	210°	NK
Speed	230kt	NK
ACAS/TAS	TCAS II	Unknown
Alert	None	Unknown
<b>Separation at CPA</b>		
Reported	NK	NK
Recorded	NK	



**THE C130 PILOT** reports they were transiting to Poole, receiving a reduced Traffic Service from Brize ATC owing to the primary radar being declared unserviceable. The aircraft was levelled at 2500ft on the Brize Norton QNH to remain clear of a layer of broken clouds and accelerated to 230kts. Approximately 5min after departure, just to the west of Swindon, the LHS handling pilot noticed a low-winged single-engine aircraft in a left-hand avoiding turn in the C130's 9 o'clock<sup>1</sup>. Whilst difficult to assess the distance, the aircraft was close enough that there was insufficient time for the crew to take any avoiding action before losing sight of the light aircraft as it passed behind the wing of the C130. No indications had been seen on TCAS prior to the visual acquisition. Although a late spot by the crew, it appeared that the GA traffic was already taking avoiding action. The crew marked the position, informed air traffic control, and continued with the sortie.

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

**THE PILOT OF THE UNKNOWN AIRCRAFT** could not be traced.

**THE BRIZE CONTROLLER** reports they were the Approach controller. The C130 had departed Brize VFR to the SW at 3000ft. On leaving the BZN CTR they applied a Traffic Service and reduced the service as BZN was operating SSR-alone. Shortly after leaving the CTR, the C130 pilot requested a descent to alt 2500ft, which was approved. Not long after this request the pilot informed the controller that they were going to report an Airprox as a light aircraft had passed approximately 200ft to the west of them, the controller acknowledged the message and made a note of the approximate position. Operating SSR-alone meant that the radar picture was very 'clean' and there were no transpondering aircraft displaying on the radar screen that would affect the C130's transit to Poole. They handed the C130 to Boscombe without further incident.

<sup>1</sup> Although the pilot reported the aircraft was in the 9 o'clock, on the RT they reported the aircraft was to the west.

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

**THE BRIZE SUPERVISOR** reports that the RA controller alerted them to the Airprox call from the C130 pilot immediately after they had reported it to them. As they were working SSR-alone ops, the non-squawking aircraft could not be seen and was not passed as Traffic Information.

## Factual Background

The weather at Brize was recorded as follows:

METAR EGVN 251150Z 10007KT 9999 BKN030 12/04 Q1016 NOSIG RMK BLU BLU=

## Analysis and Investigation

### Military ATM

The Brize Approach controller was providing a Traffic Service to the C130 pilot which had been reduced as the Primary radar was unserviceable. Operating SSR-alone is a known and approved method of operating and the C130 pilot was notified of their reduced service upon leaving the CTR on departure. No Traffic Information was passed as the other aircraft was not believed to be squawking, it was not detected on SSR or the C130 TCAS. The Approach controller had not been made aware of any non-transponding aircraft transiting in the vicinity of Brize Norton.

Figures 1-2 show the positions of the C130 and unknown aircraft at relevant times during the Airprox. The screenshots are taken from a replay using the NATS radars which are not utilised by the Brize controller, therefore, may not be entirely representative of the picture available.

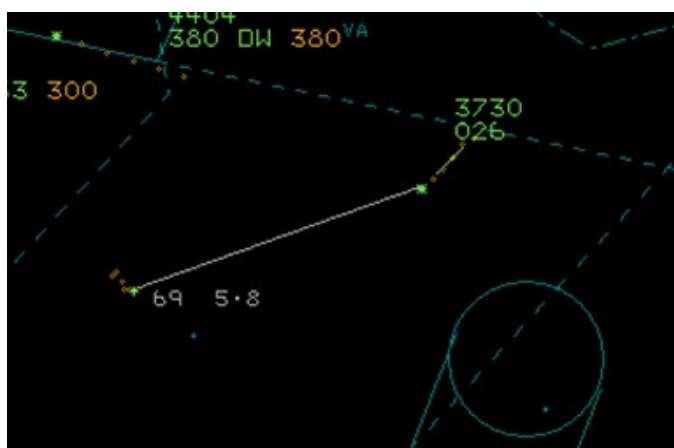


Figure 1: C130 departed the Brize CTR.

After departing the Brize CTR the Brize Approach controller applied a reduced Traffic Service. The unknown aircraft was presenting in Primary radar only. Separation was measured as 5.8NM.

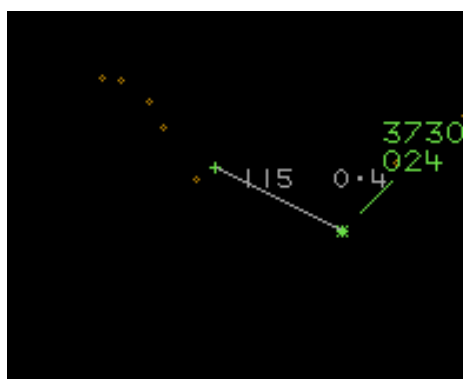


Figure 2: Radar CPA.

The radar replay showed the unknown aircraft to turn to route behind the C130, as detailed in the C130 pilot's report. Separation was measured as 0.4NM, however this did decrease to 0.3NM in the next radar sweep although the unknown aircraft was positioned behind the C130.

## ANALYSIS

Due to the unserviceability of the Primary radar, the Brize Norton Approach controller was limited in what information could be provided to the C130 pilot. The controller reduced the Traffic Service as required and could not see the non-transponding aircraft, therefore, no Traffic Information was possible. As the unknown aircraft was not transponding, nothing was displayed to the C130 pilot on TCAS and there had been no notification from other agencies of an aircraft operating in the vicinity of Brize Norton without a transponder.

### UKAB Secretariat

The C130 and unknown aircraft pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.<sup>2</sup> If the incident geometry is considered as converging then the C130 pilot was required to give way to the unknown aircraft.

## Comments

### HQ Air Command

It is unfortunate that the GA aircraft was not squawking, making it neither visible to ATC (operating SSR-alone on this occasion) nor the Hercules TCAS. Lookout, and therefore 'see and avoid', was the only mitigation available. The Hercules crew saw the other aircraft late but it appears, from their account and the radar replay, that the [pilot of the] GA aircraft had seen the Hercules and had taken avoiding action themselves, thus increasing the CPA. This incident highlights that the most important, and often final, barrier to MAC is lookout; whilst electronic conspicuity provides useful situational awareness it may be unreliable or absent as in this instance. This incident has been publicised to the wider squadron to reinforce this message.

## Summary

An Airprox was reported when a C130 and an unknown light aircraft flew into proximity in the vicinity of Swindon at 1211Z on Monday 25<sup>th</sup> April 2022. The C130 pilot was operating under VFR in VMC, and in receipt of a reduced Traffic Service from Brize. The light aircraft could not be traced.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from the C130 pilot, radar photographs/video recordings, reports from the air traffic controller 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 discussed the role of ATC; the Watchman radar at Brize was not in use and the controllers were operating SSR-alone (**CF1**). This had been briefed to station-based aircraft and the controller had stated on the frequency that the Traffic Service had been reduced due to working SSR-alone, so the C130 pilot had been aware of the reduced service. The SSR could not have detected the primary-only light aircraft and so the Brize controller had not been aware of its presence (**CF2**) and therefore could not have passed Traffic Information to the C130 pilot (**CF3**).

Turning to the C130 crew, they had not received any Traffic Information from ATC (because the controller could not detect the light aircraft on the radar). Furthermore, the TCAS in the C130 could not have detected the non-transponding aircraft either (**CF5**); consequently, prior to seeing it, the pilot had not had any situational awareness that the other aircraft had been in the vicinity (**CF4**). The C130 crew

<sup>2</sup> (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

had seen the light aircraft too late to take any avoiding action (**CF6**). However, they reported that it appeared that the other pilot had taken avoiding action to remain clear of the C130. Without knowing for sure whether the other pilot had been visual or not, the Board felt that they could not assess the see and avoid safety barrier which would have been assessed as fully effective (green) if the other pilot had been visual, or ineffective (red) if the turn had been coincidental.

In assessing the risk, the Board considered the reports from the C130 pilot and the controller, together with the radar data. It was unfortunate that the light aircraft pilot could not be traced because, without their report, it was impossible for the Board to know whether the pilot had seen the C130 and taken avoiding action, or whether the apparent turn away was purely coincidental. Members also thought that it was likely that the radar return for the light aircraft was subject to some radar processing and 'jitter' and may not accurately reflect the distance from the C130. Nevertheless, members thought that the report from the C130 crew described a situation where, although safety had been reduced, there had been no risk of collision; Risk Category C.

## **PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**

### Contributory Factors:

2022057				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Manning and Equipment</b>				
1	Technical	• Radar Coverage	Radar Coverage	Non-functional or unavailable
<b>• Situational Awareness and Action</b>				
2	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
3	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
<b>Flight Elements</b>				
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
4	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
<b>• Electronic Warning System Operation and Compliance</b>				
5	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
<b>• See and Avoid</b>				
6	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: C.

### Safety Barrier Assessment<sup>3</sup>

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

#### **Ground Elements:**

**Manning and Equipment** were assessed as **partially effective** because Brize was operating SSR-alone.

<sup>3</sup> 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 Confliction and Action** were assessed as **ineffective** because the controller could not see the non-squawking aircraft on their radar and so could not provide Traffic Information to the C130 pilot.

**Flight Elements:**

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because the C130 pilot did not have any Traffic Information from the controller, or any information from their TCAS, regarding the presence of the light aircraft.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because the TCAS in the C130 could not detect the non-squawking aircraft.

**See and Avoid** were assessed as not assessable because, although it was reported that the light aircraft pilot took avoiding action, this was not known definitively.

Airprox Barrier Assessment: 2022057		Outside Controlled Airspace					
Barrier	Provision	Application	Effectiveness				
			Barrier Weighting				
			0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]			
	Manning & Equipment	⚠	⚠	[Yellow bar to 5%]			
	Situational Awareness of the Confliction & Action	✗	✗	[Red bar to 15%]			
	Electronic Warning System Operation and Compliance	○	○	[Grey bar to 5%]			
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 10%]			
	Tactical Planning and Execution	✓	✓	[Green bar to 10%]			
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓	[Red bar to 20%]			
	Electronic Warning System Operation and Compliance	✗	✓	[Red bar to 15%]			
	See & Avoid	○	○	[Grey bar to 20%]			
<b>Key:</b>							
	Full	Partial	None	Not Present/Not Assessable	Not Used		
Provision	✓	⚠	✗	○			
Application	✓	⚠	✗	○	○		
Effectiveness	■	■	■	■	□		