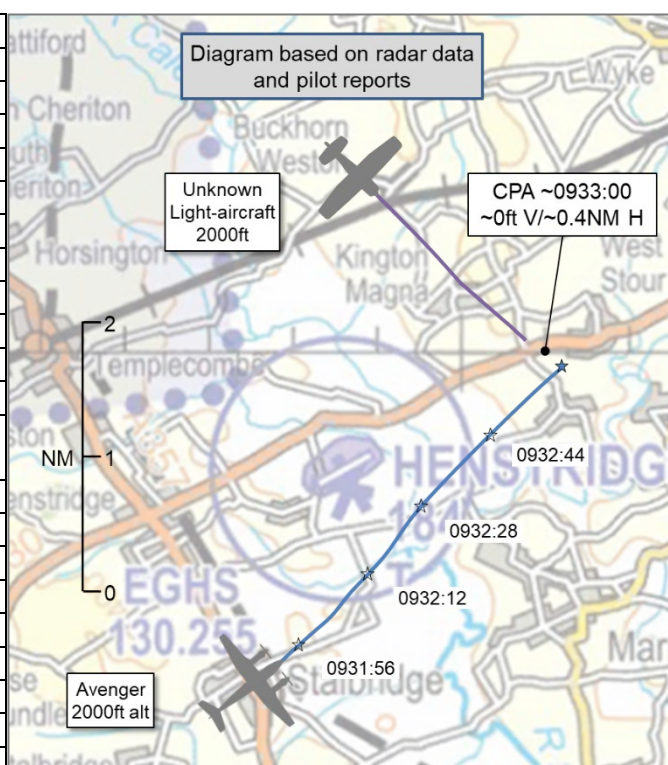


AIRPROX REPORT No 2022211

Date: 15 Sep 2022 Time: ~0933Z Position: 5100N 00219W Location: 1.5NM ENE Henstridge

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Avenger	Unk light-aircraft
Operator	RN	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	NK
Service	Traffic	NK
Provider	Yeovilton Radar	N/A
Altitude/FL	2000ft	~2000ft ¹
Transponder	A, C, S+	None
Reported		
Colours	White, Blue, Black	NK
Lighting	Nav, Strobe, Landing, Taxi	NK
Conditions	VMC	NK
Visibility	>10km	NK
Altitude/FL	2000ft	NK
Altimeter	QFE (1011hPa)	NK
Heading	040°	NK
Speed	150kt	NK
ACAS/TAS	TCAS I	Unknown
Alert	None	N/A
Separation at CPA		
Reported	NR V/0.25NM H	N/A
Recorded	~0ft V/~0.4NM H	



THE AVENGER PILOT reports that after initiating a practice Pan for training southwest of Yeovilton at FL50 they turned left heading 085° and requested a radar-vector'd ILS to low-approach from Yeovil Approach, 127.350MHz. Yeovilton was on RW26, blue conditions, with a light north-westerly wind. There was a layer of scattered cloud between 3000ft and 4000ft. They were handed over to Yeovil Approach UHF on 234.300MHz and given a new squawk. With this set, they were turned on to heading 040° (which took them in the vicinity of Henstridge aerodrome to position for the ILS runway RW26) and were told to descend to height 3000ft; as they levelled they were cleared to descend to height 2000ft. They were being passed Traffic Information on two contacts, one in the Henstridge circuit and one non-squawker beyond the first (their intruder).

The controller kept them on 040° to clear the Henstridge traffic which they achieved safely with it passing down their left side at about a mile. Still not visual with the non-squawker, they were looking for it in the 1130 position. They had no height information from it so they were concentrating their scan at their height. At about ½ a mile they saw the contact closing from the northeast, [they recalled that it was] head-on with them at the same level. They disengaged the autopilot and flew an avoiding turn to the right. Rolling out [they recall on a heading of] about 120° to get visual with the intruder aircraft. A split second after the avoiding turn ATC gave directions to turn easterly to avoid the non-squawking traffic.

Separation was achieved visually and, at the nearest point, was between ¼ and ½ a mile at the same height. They continued the ILS for the trainee's benefit and completed the sortie without further incident.

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

¹ Altitude as recorded by Yeovilton Precision Approach Radar (PAR).

THE UNKNOWN LIGHT-AIRCRAFT PILOT could not be traced.

THE YEOVILTON APPROACH CONTROLLER reports that they were vectoring [the Avenger] from the south at 2000ft for an ILS RW26. [The Avenger] was roughly 9NM on the 115° radial from Yeovilton. They noticed [an aircraft with a] 7000 squawk, indicating 2000ft, left of [the Avenger] in it's 10 o'clock 3NM crossing left-to-right. Traffic was called and [the Avenger pilot] was not visual. The Supervisor then pointed out a non-squawker in [the Avenger pilot's] left 10 o'clock, 4NM crossing left-to-right. Traffic was called and [the Avenger pilot] was not visual. [The Avenger] was heading 040° so [the controller] intended to keep [the Avenger pilot] on this heading and bring them around both conflictors for an 11NM final for RW26. The track of [the aircraft squawking] 7000 then started to turn into Henstridge and descend. [The Avenger] flew past the 7000 squawk and there was no confliction. [The controller] called the non-squawker again and it was left, 9 o'clock, 2NM crossing left-to-right, no height. They then asked the Talkdown controller to see if the non-squawker was painting on the PAR screen; it was. It was indicating 2000ft and this was passed to [the Avenger pilot]. The non-squawker tracked another 0.5NM and turned towards [the Avenger]. They turned [the Avenger] onto 060° and told [the pilot] they were vectoring them around the non-squawker. [The Avenger pilot] then called visual and said it was 0.5NM away at a similar level. [The Avenger pilot] informed [the controller] that they were going to file an Airprox. [The controller] continued to vector [the Avenger] around the non-squawker and they came inbound on an ILS with no further issues.

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

THE YEOVILTON SUPERVISOR reports [the Avenger] was initially controlled by LARS as part of their Navex south of the airfield. Upon calling a practice Pan they requested a practice diversion into Yeovilton via an IFR recovery. With a 7000 squawk in the vicinity of Henstridge, the Approach controller's plan was to keep [the Avenger] heading northeast to take it clear behind the 7000 squawk aircraft's track. They pointed out a non-squawking track to the Approach controller, which was heading north-to-south in the approach lane of RW26, in case they had not seen it as there were several aircraft on frequency under a Traffic Service. At this point [the Avenger's] heading would keep it clear of the non-squawker. They then spoke with the LARS controller to advise them to keep [a non-related aircraft] north of the approach to RW26 as [the Avenger] would be in ahead. The pilot of [the non-related aircraft] had previously called for an IFR recovery shortly after [the Avenger pilot] called their practice Pan. The non-squawker had since changed heading and was now heading towards the path of [the Avenger]. With the Talkdown controller stating they believed the conflicting track to also be at approximately 2000ft they [the Supervisor] told the Approach controller to turn [the Avenger] right as they believed if [the Avenger] had turned left they would have turned directly into the conflicting aircraft. Once clear of the non-squawker, [the Avenger pilot] called an Airprox and was turned inbound for their approach. The non-squawker disappeared and was believed to have flown into Henstridge. At no point did the 7000 squawking or the non-squawking aircraft contact Yeovilton on any frequency. The Supervisor tried contacting Henstridge airfield to obtain the identity of either aircraft but without success.

Factual Background

The weather at Yeovilton was recorded as follows:

```
METAR EGDY 150920Z 32010KT 9999 FEW014 ///040 17/09 Q1014 NOSIG RMK BLU
METAR EGDY 150950Z 31010KT 9999 FEW014 BKN040 16/09 Q1014 NOSIG RMK BLU BLU
```

Analysis and Investigation

Avenger operating organisation investigation summary

The Avenger operating organisation conducted an investigation, the output of which has been summarised below:

Whilst being radar-vectorred for an ILS under a Traffic Service the Avenger encountered an Airprox event with a non-squawking aircraft ahead of them. Avoiding action was taken by the pilot when they visually acquired the intruder, shortly after this ATC passed avoiding action. The Avenger pilot

had to take avoiding action when the other aircraft was visually acquired in front of them at quite a close range.

The lack of transponder on the intruder aircraft directly reduced the ability of ATC and the Avenger [onboard systems] to locate and avoid the aircraft. The lack of transponder was outside of service control.

Avenger crews always endeavour to operate under a Traffic Service as a minimum which, combined with the TCAS fit of the aircraft, provides a robust barrier to the MAC risk.

There was another aircraft in the vectoring area, in the vicinity of Henstridge, also at 2000ft, that [the Avenger pilot] was being routed around when the Airprox occurred. Whilst this was not the direct cause of the Airprox, it may have made it more likely by reducing the options the controller had left to take.

Busy airspace is a known risk to air safety but the use of Traffic Service as a minimum and the TCAS fit of the aircraft provides mitigation of this risk.

Yeovilton ATSU DDH/AM Comment summary

The aircrew detected conflicting traffic and took avoiding action, [the safety] barrier worked. [The crew displayed] good airmanship and lookout procedures, supported by an effective ATM Service, which allowed the pilot to see and avoid. ATM avoidance advice was also given simultaneously.

UKAB Secretariat

Extensive and exhaustive efforts have been made to trace the unknown light-aircraft, part of which involved contacting local airfields, including Henstridge, who were able to confirm that it did not land there.

An analysis of the NATS radar replay was undertaken and only the Avenger and the Henstridge circuit traffic were detected, the Airprox unknown light-aircraft was not. However, Yeovilton ATSU kindly supplied the UKAB Secretariat with a recording from their Precision Approach Radar (PAR) which did detect the unknown light aircraft as a primary-only contact and showed its position both horizontally and vertically. Although the PAR replay does not have a tool to accurately measure aircraft separation, it has been possible to use the range scales incorporated in the picture to measure an approximate altitude for the unknown light-aircraft and the separation between the aircraft, Figure 1.

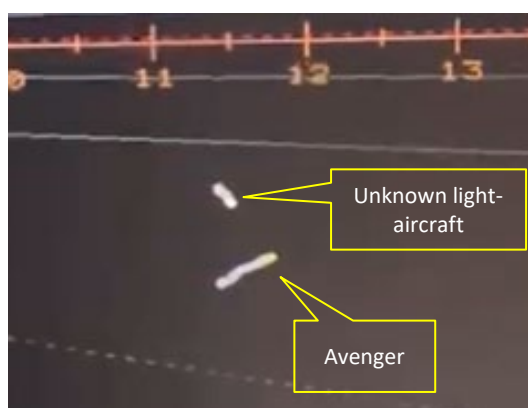


Figure 1 – PAR extract showing CPA.

The Avenger and unknown light-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.² If the incident

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

geometry is considered as converging then the unknown light-aircraft pilot was required to give way to the Avenger.³

Comments

Navy HQ

The Yeovilton Approach controller correctly discharged their duties under a Traffic Service which, coupled with effective aircrew lookout, enabled the Avenger crew to become visual with the light aircraft early enough to take effective avoiding action, demonstrating the appropriate level of service given the meteorological conditions. The Traffic Information was supplemented with the aid of the PAR equipment to provide further situational awareness.

Unfortunately, on this occasion, attempts to identify and contact the conflicting aircraft and pilot proved fruitless.

Although PAR display footage was provided, it is recommended that RN units retain all available radar display video for all declared Airprox reports to support subsequent investigations, which should include an ATC investigation.

Summary

An Airprox was reported when an Avenger and an unknown light-aircraft flew into proximity 1.5NM east-northeast of Henstridge at approximately 0933Z on Thursday 15th September 2022. The Avenger pilot was operating under IFR in VMC in receipt of a Traffic Service from Yeovil Radar, the light-aircraft pilot could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of a report from the Avenger pilot, radar photographs/video recordings, a report 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 discussed this event and were satisfied that the separation between the aircraft, the Traffic Information that had been passed by Yeovilton Approach controller and the actions taken by the Avenger pilot had been sufficient to ensure that there had been no risk of collision. Members had been encouraged by the Avenger pilot's use of EC equipment and appropriate ATS, in line with their SOPs, to help them to be more situationally aware of the traffic situation in the surrounding area, and also that the Yeovilton ATSU staff had utilised all available resources, including their PAR, to provide the Avenger pilot with the best possible information. The Board discussed that in class G airspace, no requirement exists for the pilots of aircraft to carry any form of EC equipment, or to be in receipt of an ATS, and agreed that when pilots operate without these, barriers to MAC can be impacted, often leaving only the see and avoid barrier intact. However, members were satisfied that normal safety standards and parameters had pertained and, as such, the Board assigned Risk Category E.

Members agreed on the following contributory factors:

- CF1.** The EC equipment fitted to the Avenger had been incompatible with any equipment carried on the non-squawking unknown light-aircraft as it had been unable to detect it.

³ (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2022211				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Electronic Warning System Operation and Compliance				
1	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

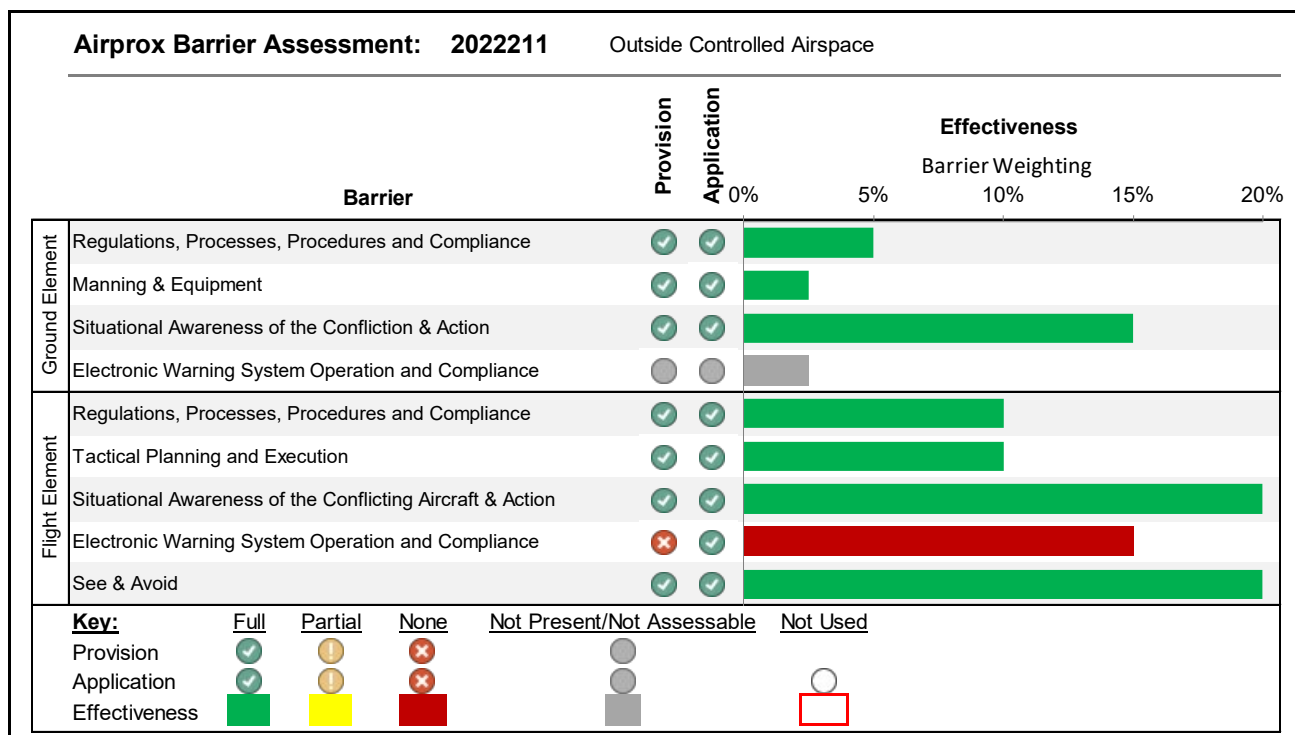
Degree of Risk: E

Safety Barrier Assessment⁴

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

Flight Elements:

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC equipment fitted to the Avenger had been unable to detect the unknown light-aircraft and had therefore been incompatible with any equipment its pilot had carried.



⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).