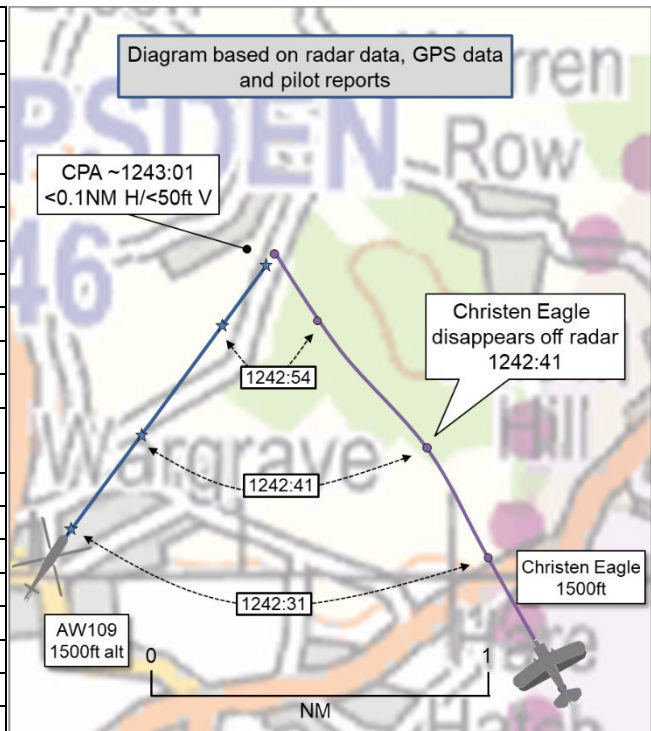


**AIRPROX REPORT No 2023111**

Date: 09 Jun 2023 Time: 1243Z Position: 5130N 00051W Location: 3NM NW of White Waltham

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	AW109	Christen Eagle
Operator	HQ Air (Trg)	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	AGCS
Provider	Northolt	White Waltham
Altitude/FL	1500ft	NK
Transponder	A, C, S+	None <sup>1</sup>
<b>Reported</b>		
Colours	White/Red Stripe	White and Blue
Lighting	Nav, Anti-coll, Taxy, Landing, Strobes	None
Conditions	VMC	VMC
Visibility	>10km	5-10km
Altitude/FL	NR	1800ft
Altimeter	QNH (1014hPa)	QNH
Heading	060°	350°
Speed	130kt	115kt
ACAS/TAS	TAS	SkyEcho
Alert	None	Information
<b>Separation at CPA</b>		
Reported	NR V/400m H	NR V/NR H
Recorded	<0.1NM H/<50ft V	



**THE AW109 PILOT** reports that, during the transit under a reduced Traffic Service (due to level), they had seen a biplane climbing out of White Waltham Aerodrome through their level in their 12 o'clock. The aircraft had been close enough to cause concern and they manoeuvred the aircraft to ensure safe separation. ATC did not give warning of the traffic and it did not show on the aircraft TAS or the [EWS equipment]. The AW109 pilot spoke to ATC to ascertain whether they had seen the aircraft but they had not; the AW109 pilot reported the Airprox to them. The other aircraft made no attempt to manoeuvre so they had assumed that they were unaware of the AW109's presence.

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

**THE CHRISTEN EAGLE PILOT** reports that they had been on a training flight from White Waltham. They had not debriefed for an Airprox. The pilot vaguely recalls having seen a helicopter, but could not be sure. They recall either having seen the helicopter and had not deemed it a risk, or that they had not seen the helicopter.

**THE NORTHOLT RADAR CONTROLLER** reports that they were band-boxed with Approach, Departures and Director. They had the NRMA (Northolt Radar Manoeuvring Area)<sup>2</sup> as they were expecting some outbounds and inbounds but don't [recall] that they had any other traffic on [frequency] at the time. The AW109 [callsign] pilot called-up; they had been on the programme as returning to Northolt at some point later in the afternoon, so had been expected and identified. The AW109 [callsign]

<sup>1</sup> The Christen Eagle pilot reports that the aircraft had been equipped with a Mode S transponder which had been serviceable at the time of the event, but no secondary response had been observed on radar replay.

<sup>2</sup> The NRMA is the northern portion of the CTR that extends from the Northolt ARP, on alignment of 283° to the CTR boundary, around to 084°. The vertical extent is 2000ft QNH. In order to facilitate expedition, vertical separation in the NRMA may be reduced to 500ft. Pilots will be advised of this reduction in segregation.

then asked for a Traffic Service to [destination aerodrome]. As the AW109 is station-based and the controller's traffic levels were low, they wanted to 'cut the corner' of the CTR, [and although Northolt is not a LARS unit] the controller obliged. The controller identified the AW109 and mentioned that they were responsible for their own terrain clearance. The controller then dealt with an aircraft departing Northolt on a SID, when the AW109 pilot queried some traffic in their vicinity, at time 1243. The controller reported that there had been nothing on radar and the AW109 pilot replied that it [had been] close, or words to that effect. The controller asked for further details and the AW109 pilot replied it had been a biplane, multi-coloured, blue, red and yellow with two POB. The AW109 pilot did not pass its position or declare it as an Airprox. Shortly afterwards, there had been a slow-moving contact northwest of their position that had not given any information [to indicate] it might have been the aircraft in question. The AW109 continued en-route without incident. On sending them to their next agency the controller queried if they required them to put in a report, to which they replied 'yes', but didn't state whether it had been an Airprox.

As the biplane had not been painting on radar, the Northolt controller had been unable to call it. If the biplane [pilot] had not been visual with the AW109, then there had potentially been a risk of collision.

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

**THE WHITE WALTHAM AIR GROUND OPERATOR** reports that they are A/G only and this incident had been outside their ATZ. There had been no log or radio operator involvement.

## **Factual Background**

The weather at London Heathrow was recorded as follows:

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METAR COR EGLL 091220Z AUTO 08011KT 040V110 9999 NCD 24/13 Q1013 NOSIG=  
METAR COR EGLL 091250Z AUTO 07011KT 9999 NCD 24/13 Q1013 NOSIG=
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## **Analysis and Investigation**

### **Military ATM**

Utilising occurrence reports and information from the local investigation, outlined below are the key events that preceded the Airprox. Where available they are supported by screenshots to indicate the positions of the relevant aircraft at each stage. The screenshots are taken from solely NATS radars due to the Northolt Radar controller being located within the Terminal Control area of Swanwick, NATS and hence utilising NATS radars.

The Northolt Radar controller had been responsible for Radar, Approach and Director operating in accordance with local orders for band-boxed operations. Traffic levels had been low with the AW109 and a Northolt departure into the TMA the only aircraft on, or expected on, frequency.

## Sequence of Events

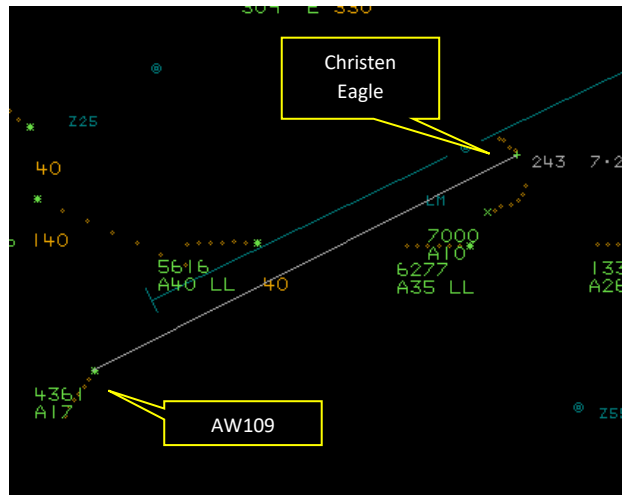


Figure 1 (1240:30): Traffic Service issued to the AW109 pilot by the Northolt Radar controller.  
(Separation: 7.2NM )

At 1240:30, the Northolt Radar controller identified the AW109 at an altitude of 1700ft and provided a Reduced Traffic Service due to operating below the Terrain Safe Level.

At 1241:37, the Northolt Radar controller confirmed the destination of the AW109 as the flying programme indicated the AW109 had been due to return to Northolt. The destination had been confirmed by the AW109 pilot as [redacted].

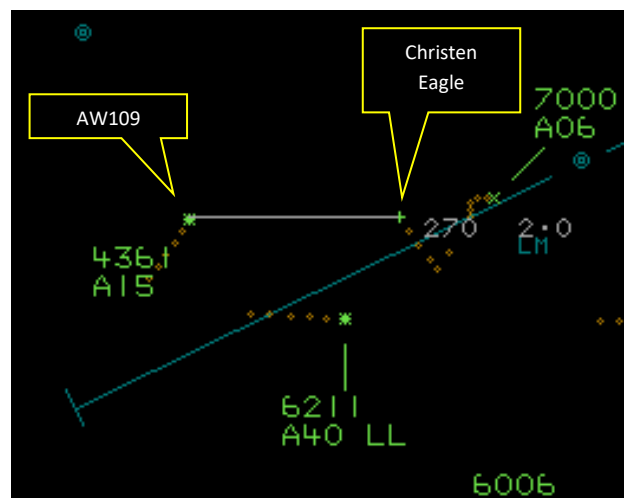


Figure 2 (1242:10): Northolt departure contacted the Northolt Radar controller.  
(Separation: 2.0NM)

At 1242:10, the Northolt departure contacted the Northolt Radar controller on climb-out, passing 3000ft and conducting the 6 Xray SID. The aircraft had been identified, cleared to proceed with the SID and issued Radar Control.

At 1242:23, the Northolt Radar controller received a landline call from Heathrow Radar pre-noting a rotary transit within the Heli Lanes. This landline call ended at 1242:40.

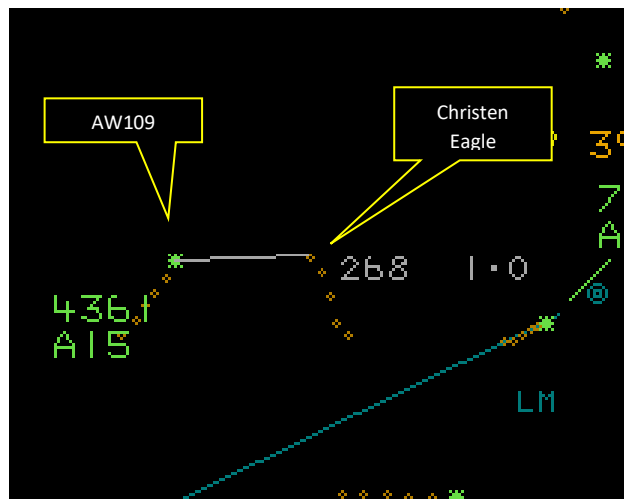


Figure 3 (1242:41): Radar contact lost on the Christen Eagle.  
(Separation: 1.0NM)

At 1242:41, the Christen Eagle no longer appeared on radar to the Northolt Radar controller.

At 1242:45, the Northolt departure had been transferred by the Northolt Radar controller to London control.

At 1243:07, the AW109 pilot asked the Northolt Radar controller regarding traffic out of White Waltham, to which the Northolt Radar controller replied, 'no aircraft seen on radar'. The AW109 pilot then reported sighting a biplane; however, the pilot did not declare an Airprox.

The CPA is unknown due to the Christen Eagle not displaying on radar throughout the Airprox period but estimated by the AW109 pilot to have been 0.2NM and 0ft separation.

### Local BM Investigation(s)

The local investigation conducted by 78 Sqn, RAF Swanwick<sup>3</sup> identified the cause of the Airprox as a loss of safe separation due to the Christen Eagle not displaying on radar through being a non-transponder aircraft. No BM-related causal/aggravating factors were identified that were believed to have contributed to the Airprox, with the Airprox occurring in Class G airspace where non-transponder operations are compliant.

### 2 Gp BM Analysis

The workload undertaken by the Northolt Radar controller, although band boxing three positions, had been of a suitable nature with just two aircraft on frequency and in accordance with local procedures. Whilst the Christen Eagle had initially displayed on radar, its profile had been that of an aircraft remaining in the vicinity of White Waltham and hence Traffic Information had not been required. The Northolt Radar controller correctly prioritised ATS provision to the Northolt departure on climb-out and it had been during this period that the Christen Eagle's radar return profile began to indicate a departure from the White Waltham vicinity. As the radar contact on the Christen Eagle had then been lost, the Northolt Radar controller had been unaware of the Christen Eagle's position and hence no Traffic Information had been passed.

<sup>3</sup> Northolt Radar due to its location falls within the 78 Sqn, Swanwick responsibility.

## UKAB Secretariat

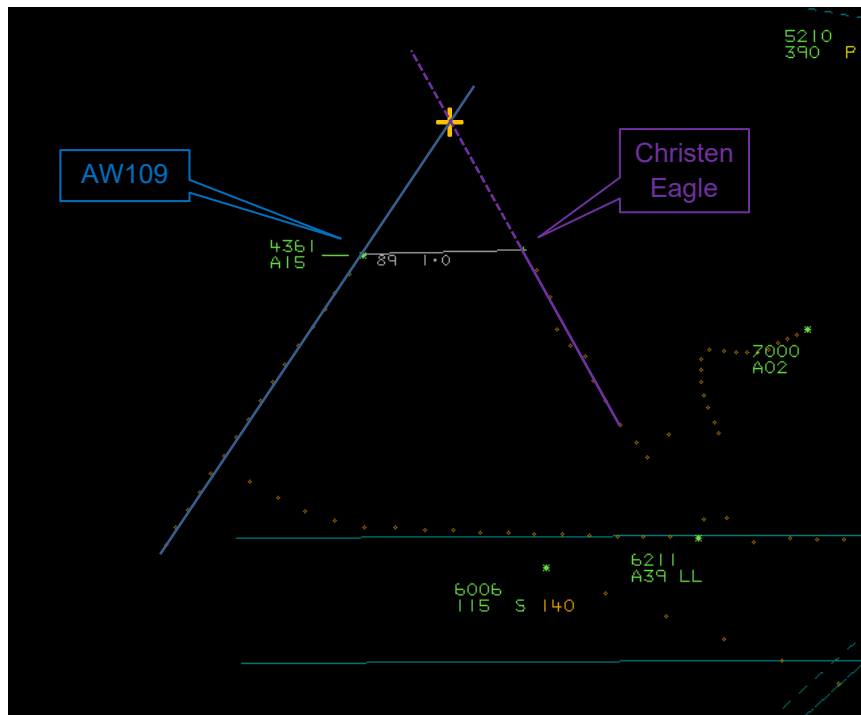


Figure 4: CPA marked with orange cross at 1243:01

Radar tracking had been examined for the period; the AW109 could be followed as a Mode S contact at 1500ft throughout on a constant north-easterly heading. A primary contact, presumed to be the Christen Eagle, appeared departing the White Waltham area at 1242:14 turning onto and maintaining a north-westerly heading. The primary contact disappeared at 1242:41 and reappeared at 1243:14. Using GPS data provided by the Christen Eagle pilot, it was possible to identify the CPA when overlaid to the primary contact trace. CPA occurred at 1243:01 and was measured as <0.1NM H and <50ft V as shown in Figure 4.

The AW109 and Christen Eagle 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>4</sup> If the incident geometry is considered as converging then the AW109 pilot was required to give way to the Christen Eagle.<sup>5</sup> An aircraft that is obliged [...] to keep out of the way of another shall avoid passing over, under or in front of the other, unless it passes well clear and takes into account the effect of aircraft wake turbulence”.<sup>6</sup>

## Comments

### HQ Air Command

It is clear from the local investigation into this occurrence that the military pilot and controller undertook what would be expected of them to mitigate mid-air collision. The AW109 pilot could only detect the Christen Eagle by a ‘see and avoid’ method in this instance. Despite having compatible electronic conspicuity devices, it would appear they did not [electronically] ‘see’ each other to augment pilot awareness in both cockpits. This highlights the residual risk of collision that exists in Class G airspace, and the need to maintain a thorough visual lookout.

<sup>4</sup> (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

<sup>5</sup> (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

<sup>6</sup> (UK) SERA.3210 Right-of-way (c). MAA RA 2307 paragraph 5.

## AOPA

This event demonstrates the importance of checking transponders are turned on before getting airborne. Also, until commonality of effective electronic conspicuity is achieved, effective lookout is the main barrier [in Class G airspace] to mid-air collision avoidance.

### Summary

An Airprox was reported when an AW109 and a Christen Eagle flew into proximity 3NM northwest of White Waltham at 1243Z on Friday 9<sup>th</sup> June 2023. Both pilots were operating under VFR in VMC, the AW109 pilot in receipt of a Traffic Service from Northolt Radar and the Christen Eagle pilot in receipt of an Air/Ground Service from White Waltham.

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

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS data, 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 AW109 pilot. Members commended the pilot for having selected a Traffic Service from Northolt in recognition of the busy nature of that particular area, although they questioned whether a transit at a slightly higher altitude might have enabled a full rather than a reduced service. Members noted that this area of Class G airspace is often utilised for aerobatic practice and strongly recommended an appropriate air traffic service, matched with a robust lookout and the use of electronic conspicuity equipment to facilitate situational awareness for all.

Members noted the Air/Ground service utilised by the Christen Eagle pilot, suggesting that, once away from the ATZ, it had been of limited value and, a surveillance-based LARS would have been preferable to increase situational awareness. Members also considered the lack of transponder output from the Christen Eagle, noting that the pilot had confirmed that their equipment had been serviceable and wondered whether a confirmatory check of its status had been carried out on departure from White Waltham. A serviceable (and operational) transponder in this case should have been detected by the TAS on board the AW109 and would likely have initiated an STCA warning for the Northolt controller, adding to the available situational awareness. The Board concluded, therefore, that the non-operational status of the Christen Eagle's transponder had been contributory to the Airprox (**CF2**).

Members were disappointed to note that, with both aircraft equipped with electronic warning systems, their apparent incompatibility (**CF4**) (due partly to the non-transponding Christen Eagle) had led to its use as a barrier in this event to be absent. Members once again urged pilots to equip, and take advantage of the CAA rebate scheme currently in place.<sup>7</sup> Ultimately, with no compatible EWS and no information from the Northolt Reduced Traffic Service on the Christen Eagle, the Board agreed that neither pilot had had situational awareness of the other (**CF3**).

On reviewing the tracks into the CPA and the reports of the two pilots, Board members noted that ultimate separation between the aircraft had been minimal. Although difficult to confirm exact separation due to the differing sources, they thought that the Christen Eagle pilot had probably not seen the AW109 (**CF6**) and that avoidance action had been performed by the AW109 pilot alone. Members postulated that perhaps an earlier action on the part of the helicopter pilot might have led to a more comfortable separation, and agreed that, according to the AW109 pilot's report, there had been sufficient time for them to have done so (**CF5**).

Members noted the Northolt Radar controller's role, accepting that without a secondary radar readout from the Christen Eagle, and with the primary-only return track ending approximately 20sec before the projected CPA, the controller had had no situational awareness of the Christen Eagle and there had

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<sup>7</sup>Information on the CAA electronic conspicuity rebate scheme available at: <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

been very little more that they could have done (**CF1**). A specialist Board member observed that, from the controller's perspective, the presentation available to them in that area is quite cluttered due to the number of boundaries and traffic flows in place, meaning that any effort to pick-out an intermittent primary track is extremely difficult, adding that they believed that the controller had done as much as had been possible in this scenario.

When assessing the risk, members considered the reports from both pilots, the radar replay, the GPS data provided by the Christen Eagle pilot and the military investigation report. They noted that the separation between the two aircraft had been much reduced. They also noted that the AW109 pilot described the risk of collision as 'Low', and that although they had initiated avoiding action, members thought that this had not been early enough to comfortably increase the separation and therefore assigned a Risk Category B to this Airprox (**CF7**).

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

### Contributory Factors:

2023111				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Ground Elements</b>				
<b>• Situational Awareness and Action</b>				
1	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>• Tactical Planning and Execution</b>				
2	Human Factors	• Transponder Selection and Usage	An event involving the selection and usage of transponders	
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
3	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>				
4	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>				
5	Contextual	• Loss of Separation	An event involving a loss of separation between aircraft	Pilot flew into conflict
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
<b>• Outcome Events</b>				
7	Contextual	• Near Airborne Collision with Aircraft	An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles	

Degree of Risk: B

### Safety Barrier Assessment<sup>8</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:**

<sup>8</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 Northolt Radar controller had only limited information on the Christen Eagle as it appeared on radar as a non-persistent primary-only contact.

**Flight Elements:**

**Tactical Planning and Execution** was assessed as **partially effective** because although the Christen Eagle declared the carriage of a serviceable transponder, the aircraft did not appear on secondary radar.

**Situational Awareness of the Conflicting Aircraft and Action** were assessed as **ineffective** because neither pilot had situational awareness of the presence of the other.

**Electronic Warning System Operation and Compliance** were assessed as **ineffective** because there was no interaction between the EC equipment carried by the two aircraft.

**See and Avoid** were assessed as **partially effective** because the AW109 pilot did not take action to increase separation as early as possible on the Christen Eagle, whose pilot had not sighted the AW109.

