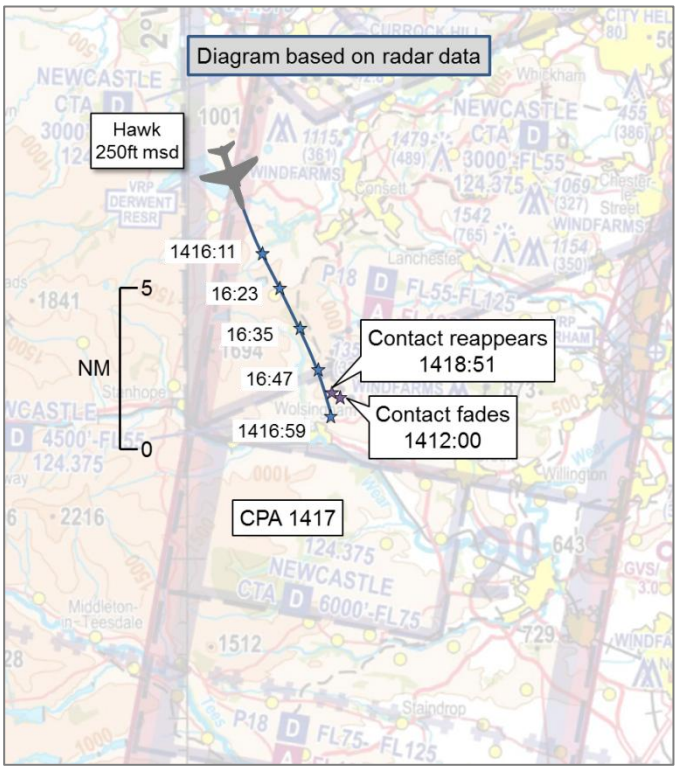
AIRPROX REPORT No 2014120

Date/Time:	29 Jul 2014 1417Z	
Position:	5444N 00153W (Wolsingham)	
Airspace:	LFA 12 London FIR	(*Class*: G)
	Aircraft 1	*Aircraft 2*
Type:	Hawk T1	AS350
Operator:	HQ Air (Ops)	Civ Comm
Alt/FL:	300ft agl (1012hPa)	900ft QNH (1014hPa)
Conditions:	VMC	VMC
Visibility:	10km	>10km
Reported Separation:	20ft V/0.25nm H	20ft V/75m H
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK PILOT reports conducting a low-level sortie as the rear-seat, non-handling, captain. The black aircraft had HISLs selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with an ACAS or TAS. The pilot was operating under VFR in VMC, not in receipt of an Air Traffic Service but listening out on the UHF low-level common frequency. Whilst at low-level, heading 160° at 420kt, he saw a burgundy coloured civilian helicopter in the 9 o'clock position at a range of 0.25nm (460m). The helicopter appeared to be in a right turn and slightly lower, seemingly taking avoiding action. By the time the helicopter was seen by the Hawk captain it was too late to take evasive action, though none was required to avoid collision because the helicopter pilot had already done so; had the helicopter pilot not taken his avoiding action the risk of collision would have been high. It was only possible for the captain to see the helicopter as the Hawk crossed over a ridge-line and descended into a valley; the front-seat pilot did not see the helicopter. The captain noted that he had received a Basic Service from Newcastle and had just left the frequency 'on route'. The helicopter was not called by Newcastle, presumably as it was operating below the radar horizon. A call was then made on the military UHF low-level common frequency before moving to Leeming Approach. The Airprox happened before Leeming ATC could be contacted. The Hawk pilot was subsequently contacted by the AS350 pilot who stated he was normally able to check CADS[1] (but not input into it due to RAF policy) but that on this occasion he did not have the ability to do so due to the limitations of CADS at the time. The Hawk pilot's route was entered on CADS.

He assessed the risk of collision as 'High'.

THE AS350 PILOT reports conducting a visual power-line inspection. The burgundy aircraft had the following lighting selected on: a red anti-collision light on top of the vertical fin; a white strobe light under the aircraft belly; a white High Intensity Strobe light on top of the engine cowl; a white landing light at the nose and 3 x standard aircraft navigation lights. The helicopter was also fitted with high conspicuity rotor blades. The SSR transponder was selected on with Modes A, C and S. The aircraft was not fitted with an ACAS or TAS. The pilot was operating under VFR in VMC, not in receipt of an ATS. He was flying out of Newcastle City heliport, operating with Newcastle's awareness but not on

[1] Centralised Aviation Data Service, a web based advisory system designed to highlight potential conflictions in planned routes.

their frequency at the time due to the position of his inspection because he assessed that he was too low to achieve RT contact. PINS[2] for his flight had been filed and notified as active. The pilot was seated in the right front seat with one observer in the left front seat. They had inspected a line of 11kV power poles, running approximately west to east, situated 1nm mile east of Wolsingham, county Durham. At the end of the line of poles, the crew were then to inspect a single 11kV power pole which was located behind them, nearly one mile away; the pilot made a 180° turn to the right. Nearing the single power-pole, heading 320° at 40kt, the pilot saw a dark-coloured fast-jet crossing the terrain horizon in his 1 o'clock position, at the same altitude, about 200m away, heading directly towards overhead the single power-pole the helicopter pilot was also flying towards. The helicopter pilot called "Fast Jet!" to the observer and simultaneously banked the helicopter 'very hard right' to avoid the oncoming aircraft. The Hawk passed to the left of the helicopter, totally unseen by the helicopter pilot due to the helicopter's 'belly-up' attitude in the avoiding manoeuvre. The helicopter pilot continued his turn to see the Hawk flying away 'almost straight and level'. He reported the Airprox to Newcastle ATC by telephone after landing.

In subsequent UKAB conversation with the AS350 pilot, it was established that a typical operating height of about 50ft agl would be used when inspecting 11kV power lines, but that this height could be as large as several hundred feet agl, when operating in the vicinity of population centres and noise sensitive areas such as stud farms.

The pilot noted that PINS notification was filed for this flight but that PINS covers a very large area; being able to notify smaller 'patrol areas' onto CADS would be a significant improvement but with a restricted CADS account he could only see what had been input by the military. This was limiting, but he had used it successfully on more than one occasion to avoid an Airprox between himself and passing military traffic. He noted that CADS was not compatible with the 'Apple iOS' so, on this occasion, he could not look for potential military conflict on his iPad. Had he been able to, he would have seen the Hawk planned route and been able to contact the aircrew to negotiate deconfliction. He noted that the contact phone number on CADS is routinely a military number which is not useable from civilian networks. He stated that a civilian number, preferable a mobile number, would be the preferred contact method.

He also opined that the speed and altitude of operation by fast jets at low-level prevented them from achieving an effective lookout or being able to manoeuvre to avoid, that Class G airspace was established with 'see-and-avoid' as the primary means of collision avoidance and therefore that fast-jets should operate under conditions where 'see-and-avoid' was effective, this being either higher and/or slower, or in segregated airspace. He stated that in his opinion a near fatal event had occurred because of one airspace user's inability to see-and-avoid.

He assessed the risk of collision as 'High'.

Factual Background

The weather at Newcastle and Durham Tees Valley was recorded as follows:

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METAR EGNT 291420Z 26014KT 9999 FEW025 SCT040 20/14 Q1014
METAR EGNV 291420Z 28010KT 9999 SCT030 22/13 Q1014
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Analysis and Investigation

CAA ATSI

The CAA ATSI had access to Newcastle RTF and radar recording together with area radar recording and the written reports from both pilots. The Airprox was not reported to the Newcastle ATSU by RT as neither pilot was in receipt of a service from Newcastle. CAA ATSI discussed the occurrence with the Newcastle ATSU and the controller concerned.

[2] Pipeline Inspection Notification System

The incident occurred 18nm south-southwest of Newcastle Airport, within Class G airspace, between a BAE Systems Hawk T1 and an Aerospatiale Ecureuil AS350 helicopter. The Hawk pilot was operating on a low-level VFR sortie, on a route which passed west of Newcastle airport on a southerly track. He had been in receipt of a Basic Service from Newcastle Radar but had then transferred to the military UHF low-level common frequency two minutes prior to reported CPA.

The AS350 pilot was operating on a local VFR flight from the Newcastle City Heliport and was conducting a four-hour powerline patrol in the Crook area. Due to the low-level nature of the flight, he had left the Newcastle frequency approximately two hours prior to reported CPA. A Pipeline Inspection Notification Procedure (PINS) fax notification was received by the Low Flying Booking Cell (LFBC) on 23 July 2014, regarding the subject helicopter operating in a number of Low Flying Areas including Low Flying Area 12 (LFA 12), from 28 July 2014 to 01 August 2014 (inclusive), between 0800 and 1700, but no route information had been provided. LFA12 covers an area extending from the Scottish Borders across Northumberland and Durham as far south as Leeming. The PINS information regarding the helicopter operation had been notified to military pilots via a warning NOTAM. In addition, the AS350 operating company had read-only access to the military situational awareness CADS tool, which provides details regarding military flights. The AS350 pilot indicated that the operating company were not currently able to input data into CADS.

At 1204:50, the AS350 pilot contacted Newcastle Radar and reported airborne from the Newcastle City Heliport routeing VFR south to operate in the Crook area on patrol at low level. At 1211:18, the AS350 pilot reported going en-route and advised that he would call when inbound to the City Heliport.

The Radar controller started his shift at 1300. At 1411:51, the Hawk pilot contacted Newcastle Radar and reported *" … six west abeam Eshott southbound for the gap in er three minutes".* The controller replied *"*[Hawk C/S] *roger er report at Hexham er it's a Basic Service the Tyne pressure setting is one zero zero eight".* The Hawk pilot acknowledged *"one zero zero eight Wilco* [Hawk C/S]*".* The Newcastle Radar showed the Hawk 14nm north of Newcastle at an altitude of 1000ft. At this point the AS350 was shown as an intermittent contact 18nm south-southwest of Newcastle without level reporting, see Figure 1.

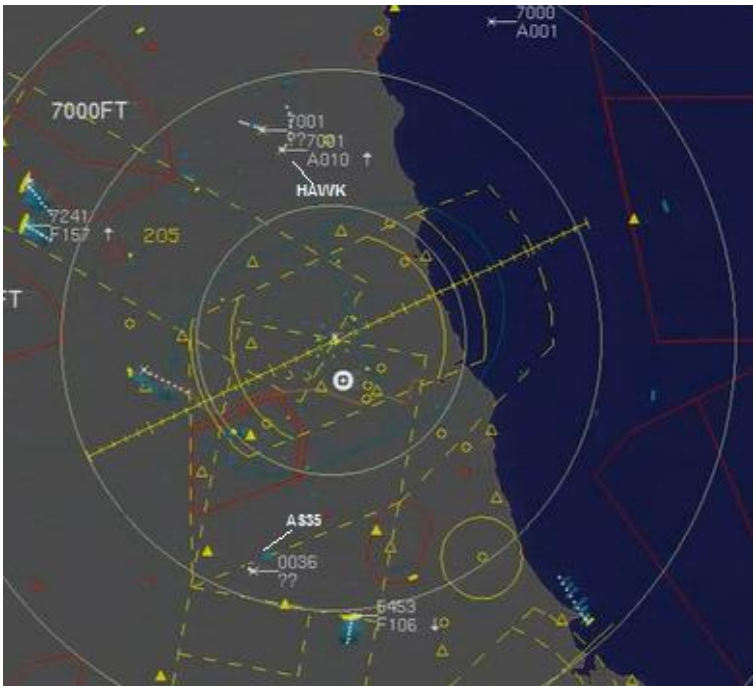

Figure 1: Newcastle Radar at 1411:51

At the end of the RTF exchange between the Hawk pilot and Newcastle Radar [1412:03] the AS350 had faded from radar.

At 1414:50, the Hawk pilot advised *"*[Hawk C/S] *is sou – Hexham southbound".* The controller responded *"*[Hawk C/S] *roger further traffic for you just left Durha – sorry the Fishburn, a light airfield just north – sorry just south of Durham routeing to Barnard Castle, Motor Glider, very slow, I think you're going to be well ahead".* The Hawk pilot acknowledged *"*[Hawk C/S]*".* The Hawk pilot then transferred to his en-route frequency, low-level common, see Figure 2.

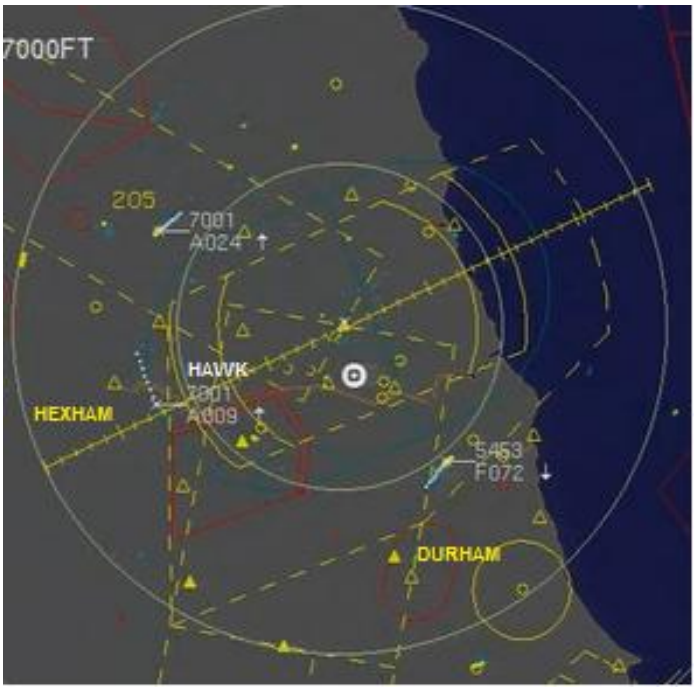

Figure 2: Newcastle Radar at 1415:00

At 1416:52, the Hawk passed 4.7nm west-northwest of Crook, see Figure 3. This was also in close proximity to the last recorded radar position [at 1411:51] of the AS350.

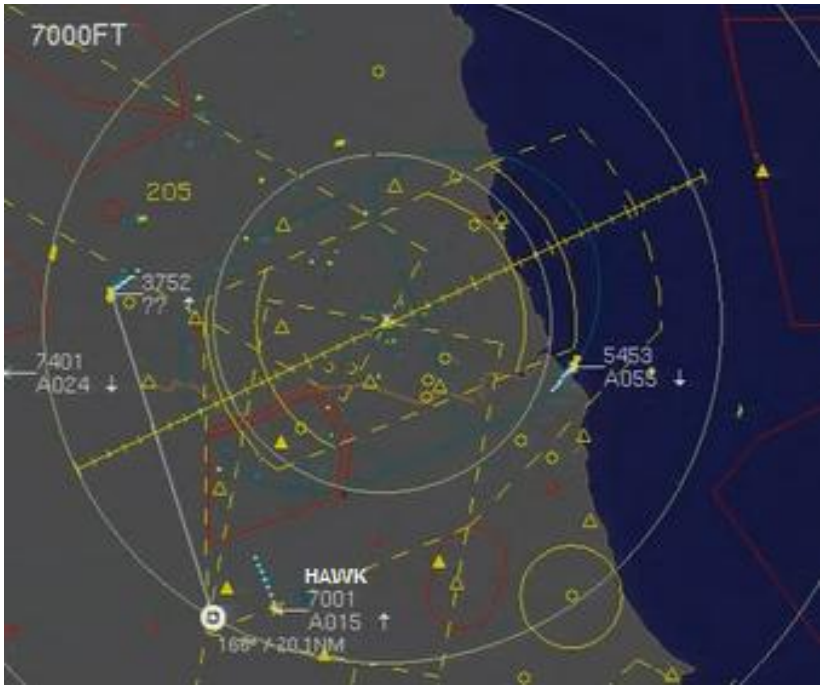

Figure 3: Newcastle Radar at 1416:52

At interview, the Newcastle Radar controller indicated that he had not been on watch when the AS350 pilot departed the City Heliport and could not recall observing any radar returns from the AS350 until after the pilot had called inbound, returning to the City Heliport. He explained that the

previous controller had placed the AS350's local (pink) flight progress strip (FPS) in the pending bay ready for its return flight. The controller added that the AS350 was routinely operated inbound and outbound from the Heliport and it was quite common to have a local FPS for the AS350 in the pending bay, together with other pending local flights. The controller did not believe that he was specifically briefed about the AS350 pilot's operation, other than it was a pending strip waiting for the aircraft's return, and was not aware of its intended route or intentions during the four-hour low-level flight. The controller confirmed that had he observed the AS350 on radar or had greater awareness of the FPS and intended operation in the Crook area, he would have passed Traffic Information. The ATSU reported that the FPS for the AS350 was annotated City - South - City and did not show Crook or any other geographical location. The ATSU advised that it was usual practice for controllers to pass any Traffic Information to military aircraft 'on the low-level route'.

The Newcastle ATSU considered that in addition to the notification measures taken with regards to PINS and LFBC, helicopter operators should also take the opportunity to raise the profile of their operations by better advanced notification and coordination of their intended area of operation with those airports likely to be involved in the provision of information to low flying military aircraft.

Prior to leaving the Newcastle Radar frequency, the Hawk pilot was in receipt of a Basic Service. The controller was not required to monitor the flight and under a Basic Service pilots should not expect any form of Traffic Information. However where a controller has information that indicates that there is aerial activity in a particular location that may affect a flight, they should provide Traffic Information in general terms to assist with pilots' situational awareness.[3]

Before commencing any low-flying sortie, military pilots receive a comprehensive brief on all factors likely to affect their flight and a warning NOTAM had been issued, which included information regarding a helicopter operating in LFA12.

The UK AIP provides guidance for the notification of pipeline and powerline inspection aircraft, ENR 1.10 (Flight Planning), Chapter 6 (Pipeline and Powerline Inspection Procedures) dated 26 Jun 2014, at paragraph 6.2.2 states:

> 'Pilots, or their representatives, of pipeline inspection aircraft should notify details of all inspection flights to LFBC at RAF Wittering.'

And at paragraph 6.2.5 states:

> 'On the day of flight, helicopter pilots are strongly encouraged to make a booking with the LFBC by telephone to provide final confirmation that an inspection sortie is taking place. Military crews subsequently making a low level booking into the same areas booked into by the inspection helicopter will then be provided with a further warning based on the helicopter's booking. Similarly, if required by the helicopter pilot, some basic details of known military activity in their own area of operation can also be passed at the time of booking, this process may take a couple of minutes to complete.'

The AS350 pilot did not indicate whether he, or the operating company, had contacted the LFBC on the day of the flight.

UKAB Secretariat

The Hawk and AS350 pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision[4]. If the incident geometry is considered as converging then the AS350 pilot was required to give way to the Hawk[5].

[3] CAP774 Page 26, Paragraph 2.6
[4] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions) and as reflected in Military Flying Regulations.
[5] ibid., Rule 9 (Converging) and as reflected in Military Flying Regulations.

Comments

HQ Air Command

A number of barriers to MAC were ineffective in this incident: a PINS notification covering an entire Low Flying Area (in this case LFA 12) lacking the granularity necessary to develop a plan to deconflict with the inspection aircraft; the reported inability of the helicopter pilot to access CADS to gain information on the military flight; lookout impeded by the terrain; and neither aircraft fitted with ACAS or TAS (though it is unlikely that ACAS/TAS would have had time to alert either pilot in this instance). Thankfully a disciplined lookout permitted the helicopter pilot to see the Hawk and take appropriate avoiding action as it crested a ridgeline.

Summary

An Airprox was reported when a BAE Systems Hawk T1 and an Aerospatiale Ecureuil AS350 flew into proximity at about 1417 on Tuesday 29th July 2014. Both pilots were operating under VFR in VMC, neither pilot in receipt of an Air Traffic Service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, radar photographs/video recordings (which did not show the AS350 track at the time of the Airprox) and reports from the appropriate ATC and operating authorities.

The Board first considered the pilots' actions. The Hawk pilot had been conducting a planned and authorised low-level sortie in the Military Low-Level Flying System. He had been in contact with Newcastle ATC some 5min before CPA as he transited southwards, but had not received information on the AS350's presence. His first sighting of the helicopter was in his left 9 o'clock position, from where, the Board agreed, he could not have influenced the miss-distance; it was therefore effectively a non-sighting on his behalf. The AS350 pilot had planned a visual power-line inspection and had used PINS to notify the activity. He was not in receipt of an ATS due to his height and consequent RT terrain screening, but was maintaining a visual lookout such that he saw the approaching Hawk with sufficient time to take some avoiding action. The Board felt that his was a late sighting due in no small part to the Hawk pilot's use of terrain screening at low-level; given the local terrain, he could not reasonably have seen the Hawk much sooner. Even with all its lights illuminated, the Hawk pilot did not see the AS350, and Board members wondered if the visual conspicuity of the helicopter had been enhanced through the application of a contrasting colour on one of the rotor blades: military pilot members remarked on the effectiveness of this measure on SAR helicopters, even when viewing the blade disc at an oblique angle. In a subsequent discussion with the AS350 pilot after the Board meeting, he stated that the helicopter was fitted with high-conspicuity blades at the time of the Airprox.

The Board discussed the missed barrier of Traffic Information to the Hawk pilot regarding the AS350. The AS350 pilot had used PINS to notify his activity, but this notification, through no fault of his own, covered a large geographic area including the entirety of the Low Flying Area within which the Hawk pilot was flying at the time of the Airprox. The Board agreed with the AS350 pilot's comment that PINS lacked the granularity to provide meaningful traffic deconfliction, and noted that the CAA was currently reviewing the use and utility of PINS. Members noted that the AS350 pilot recalled having notified Newcastle ATC of his general operating area at commencement of daily operations, but that this information was not passed to the Hawk pilot.

Turning to traffic awareness measures, Board members were not clear as to the utilisation of CADS by civilian operating companies and consequently received a comprehensive brief from the Military Low-Level Flying Operations Advisor. He stated that the AS350 operating company had received CADS training in March, including read/write access to CADS, but it was a company decision as to how that access was implemented. The Advisor acknowledged that CADS was not fully compatible with the iOS operating system, but stated that it was just a question of reduced functionality, and that

read access to view other CADS routes was not limited.[6] In addition, he stated that the AS350 pilot could have contacted the Low Flying Booking Cell using a variety of means in order to pass his daily operating area. The question of contact phone number was then discussed, with members agreeing that provision of civilian contact numbers alongside military numbers could only enhance utility of the system, especially to those who might be trying to call in from mobile phones or civilian fixed land-lines. The Advisor concluded by reminding members that CADS was designed as a military system, for use by military personnel, and was hosted on a classified military computer system. This was not to say that it should not be used by civilian operators, but rather that large-scale adoption of the system by users not envisaged in the original design was likely to reveal issues that would require additional resource to resolve. Given the apparent overlap of the civilian and military requirement to gain as early a picture as reasonably practical of potential route conflictions, members discussed the practicality of establishing a common system. It was clear that CADS could be the means by which extra granularity could be added to PINS, and that this may inform the current PINS review. The Board therefore resolved to make a formal recommendation that, '*The CAA and HQ Air Command review the utility of hosting PINS on CADS.'*

Finally, Board members agreed that although the AS350 pilot was technically required to give way to the Hawk, this could not have been achieved in the time available. His actions effectively constituted 'avoiding action' as opposed to 'giving way'. The Board therefore agreed that the cause of the Airprox was due to the degree of late sighting by both pilots. Members also agreed that the AS350 pilot was not able to access CADS routeing information to obtain the Hawk pilot's planned route beforehand; they considered that not being able to do so was contributory to the Airprox. With regard to risk, members agreed unanimously that the Hawk pilot had seen the AS350 too late to take avoiding action, and that the AS350 pilot's speed was such that he had limited manoeuvering potential. Therefore, they considered that the situation had stopped just short of an actual collision, where separation had been reduced to the minimum, and nothing more could have been done to improve matters.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the AS350 pilot and effectively a non-sighting by the Hawk pilot.

Contributory Factor(s): The AS350 pilot was not able to access CADS.

Degree of Risk: A.

ERC Score[7]: 100.

Recommendation: The CAA and HQ Air Command review the utility of hosting PINS on CADS.

[6] In subsequent discussion with the AS350 pilot, he stated that on the day of the Airprox, CADS functionality was such that he was not able to view other routes.

[7] 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.