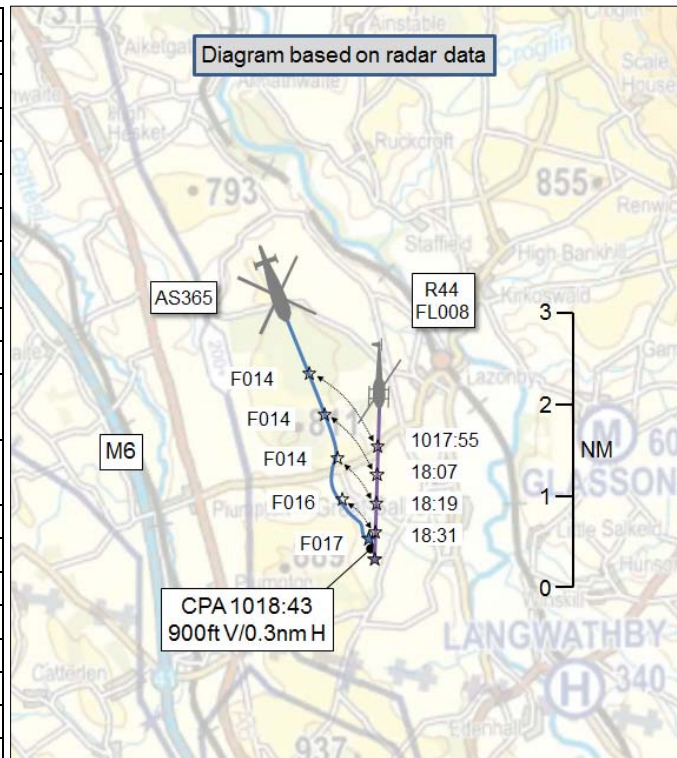


AIRPROX REPORT No 2017093

Date: 23 May 2017 Time: 1019Z Position: 5443N 00244W Location: 10nm south Carlisle Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	AS365	R44
Operator	HEMS	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Carlisle	Carlisle
Altitude/FL	FL017	FL008
Transponder	A, C	A, C, S
Reported		
Colours	White, green, yellow	Purple, 'Hi Vis' blades
Lighting	HISL, beacon, nav, landing	HISL, beacon, nav, landing
Conditions	VMC	VMC
Visibility	30km	50km
Altitude/FL	1500ft	1388ft
Altimeter	QNH (1018hPa)	Rad Alt
Heading	160°	227°
Speed	150kt	71kt
ACAS/TAS	TCAS I	TCAS II
Alert	TA	None
Separation		
Reported	400ft V/200m H	>1000ft V/ NK H
Recorded	900ft V/0.3nm H	



THE AS365 PILOT reports climbing away from a hospital landing site when TCAS indicated an aircraft at 1000ft, 500ft above his altitude, about 4nm south of Carlisle. The Carlisle controller had made the AS365 pilot aware of a R44 routing from Wigton to Shap, which the AS365 pilot assessed would keep that aircraft west of the M6 with his aircraft to the east of the M6 during his route back to base. Because of the unidentified TCAS contact, the AS365 pilot climbed to 1500ft to maintain at least 500ft above the other aircraft whilst travelling south-bound. The pilot stated he was initially unconcerned about the TCAS contact as it was maintaining a track to his east. However, the TCAS suddenly 'refreshed' to a position directly under his aircraft with a Traffic Alert (the vertical separation not noted). Climbing turns were initiated to ensure separation and to visually identify the other aircraft. The aircraft was seen and appeared to be a burgundy coloured R44. Visual separation was maintained on approach into his HEMS base. Carlisle was informed of the traffic and that the AS365 pilot planned to file an Airprox. A phone call to Carlisle Tower later confirmed that the only R44 that they were aware of had reported leaving the Wigton area and routing to Shap, and should not have conflicted with the AS365 routing.

He assessed the risk of collision as 'Low'.

THE R44 PILOT reports that as far as he was aware the event was not an Airprox. He had booked out with Carlisle ATC and advised that he would be 'looking to pick up task at Castle Carrock, routing Penrith, Shap round to Whitehaven and back'. He departed to Castle Carrock and from there reported 'on task' to Carlisle ATC at 1010. He commenced a roughly southbound track on a survey. At about 1012, the AS365 pilot came on frequency for a service routing from Carlisle to Langwathby. The R44 pilot knew their tracks would cross at some point as he had flown the routing almost identically, fortnightly, for the last 6 years and was familiar with the AS365 pilot's reported locations.

He was satisfied that he was far enough ahead that he would remain so, and that the AS365 would pass behind him. The AS365 pilot was given Traffic Information by Carlisle ATC, who reported the Pipeline helicopter had left Carlisle to route to Wigton to Penrith. When the next opportunity presented itself, at about 1018, the R44 pilot reported to Carlisle that he was just north of Penrith, to make sure both Carlisle ATC and the AS365 pilot were aware of his actual location. At about 1020, the AS365 pilot reported 'visual with the Pipeline'. The R44 pilot looked around but could not gain visual contact because the AS365 was behind him. The Observer saw the AS365 about 2 minutes later in the left 10 o'clock position and considerably higher. The pilot also then got visual contact and, from its position and height, was satisfied that the AS365 had crossed above and behind him. At about 1022, the AS365 pilot transmitted that 'in accordance with his ops manual he would record that as an Airprox'. Both the R44 pilot and observer also heard what they thought was a comment 'he [the AS365 pilot] had passed 1000ft above and 1 mile behind from the Pipeline'. The R44 pilot stated that the reason he remembered this comment so clearly was that Carlisle ATC sounded as surprised as he and the observer had been. He and the observer then discussed the situation for the next few minutes as in their combined opinion it could not have been an Airprox at either of those separations in Class G airspace. Additionally the AS365 was always behind the R44 and in superb VMC conditions, so much so that 3 area photographs were taken for reference because '9999' did not do the day justice.

He assessed the risk of collision as 'None'.

THE CARLISLE CONTROLLER reports being on duty as the aerodrome controller at Carlisle with no access to surveillance equipment. The R44 pilot was on a local flight from Carlisle under a Basic Service in Class G airspace. When the R44 pilot booked out he said that he was going to pick up a pipeline survey South of Wigton and route to Shap. The AS365 pilot was on a Basic Service in Class G airspace. The reported R44 track was not near the AS365 so no Traffic Information was passed. At about 1017, the R44 pilot reported that he was still north of Penrith after hearing the controller pass Traffic Information to another aircraft in the Wigton area. Again his routing from Wigton to Shap should have put him nowhere near the AS365 track so no Traffic Information was passed. At 1018, the AS365 pilot reported that he was going to file an Airprox once on the ground. The R44 pilot did not mention an Airprox or say that he had seen any other traffic. The R44 pilot reported at Penrith at 1022 and requested a frequency change to London Information. Because of this position report, and along with the AS365 pilot's report, it suggests that the other aircraft was the R44 and that the pilot routed directly southbound from Carlisle instead of routing from South of Wigton. The AS365 pilot telephoned afterwards and explained that he had been following a target on TCAS for approximately 4 minutes. The pilot said that the target was always approximately 2nm ahead of his aircraft, travelling in the same direction. The pilot then said that the target seemed to jump on his TCAS display; the pilot sighted a R44 helicopter north of Penrith.

Factual Background

The weather at Carlisle was recorded as follows:

METAR EGNC 231020Z 26010KT 210V290 9999 SCT025 15/08 Q1018=

Analysis and Investigation

CAA ATSI

The Airprox was reported by an AS365 pilot when he came into proximity with an R44 approximately 15nm south of Carlisle airport. Both pilots were in receipt of a Basic Service from Carlisle, which does not have a radar. ATSI had access to recorded R/T and telephone from Carlisle.

At 1005:01, the R44 pilot, who was planning a local survey flight, booked out over the radio with Carlisle. The controller believed he had requested to route from south abeam Wigton, down to Shap. The R/T recording was indistinct in parts and contained a syllable between 'south abeam'

and 'down to Shap', which was interpreted as 'Wigton' by the controller. Wigton is a small town approximately 14nm west-southwest of Carlisle airport. The R44 pilot departed from Carlisle at 1008 and a Basic Service was agreed. The controller requested, at 1010:57, that the R44 pilot report approaching Penrith. Figure 1 depicts the sites mentioned by the pilots. Carlisle airport is approximately 5nm east-northeast of the city of Carlisle.

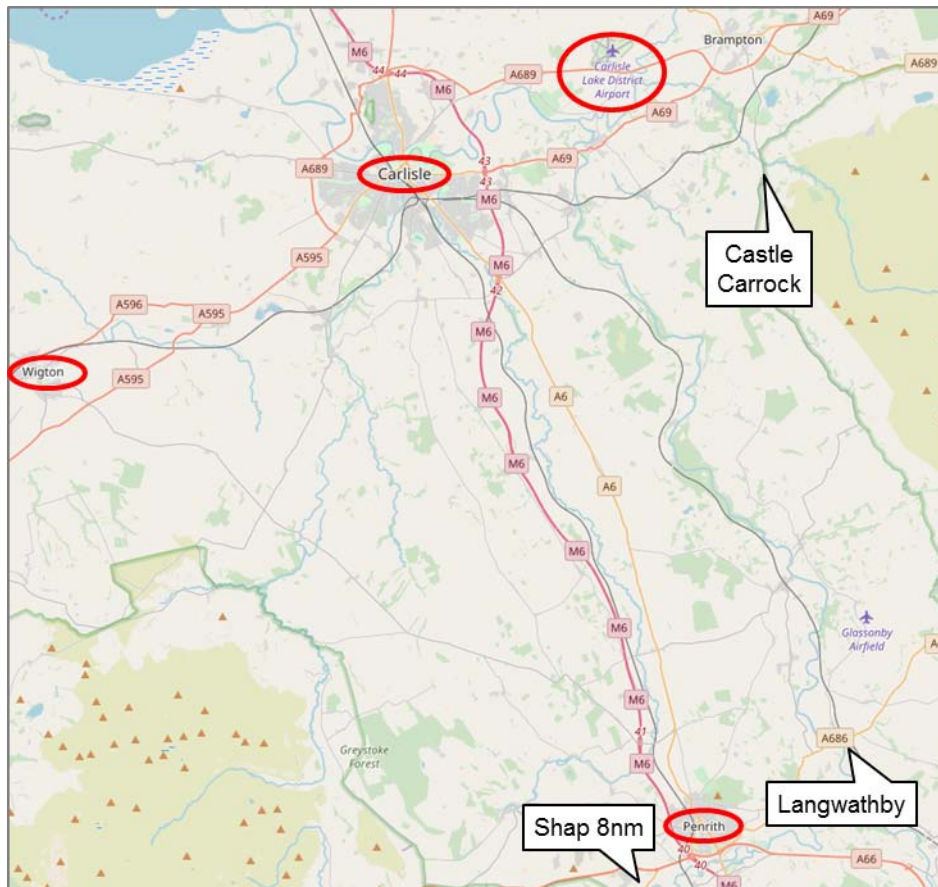
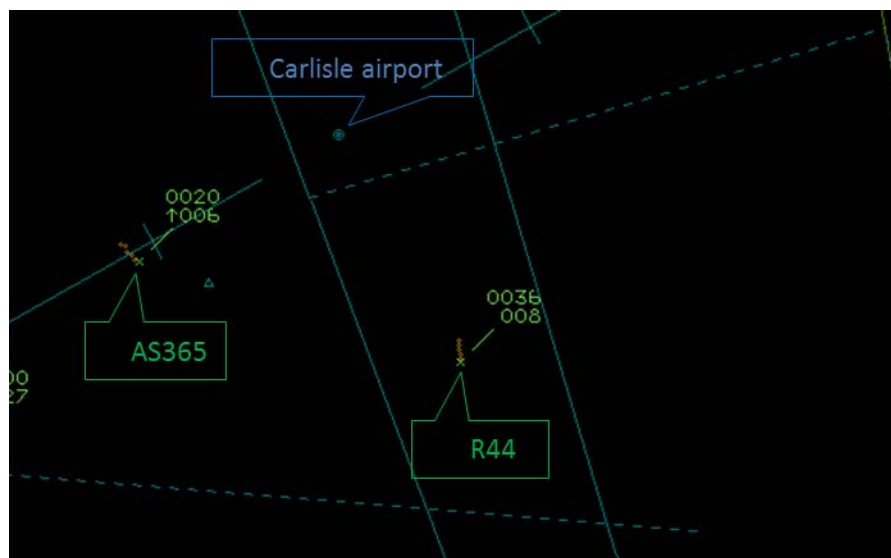


Figure 1¹

At 1012:47, the AS365 pilot called Carlisle and reported departing the Cumberland Infirmary in Carlisle, proceeding to Langwathby. A Basic Service was agreed. Figure 2 (1013:30) depicts the radar recording when the AS365 was first observed.



¹ © OpenStreetMap contributors.

Figure 2 – 1013:30

At 1015:30 a Robin light aircraft pilot reported approaching Wigton tracking northeast bound. The controller provided Traffic Information about the R44, which he stated was routeing from Wigton to Shap, and AS365 to the Robin pilot and also advised the R44 and AS365 pilots about the Robin.

On the radar replay, the track of the R44 and AS365 could be seen to converge as the R44 pilot had taken a southerly routing from Carlisle. The controller reported that, because the R44 pilot had mentioned tracking from a point south of Wigton, they had not provided Traffic Information to the R44 about the AS365 as they had not considered the aircraft tracks would conflict. The R44 pilot reported the weather conditions to be very good with excellent visibility, and also commented that they were aware of the AS365 routing because they had operated in this area for many years on a regular basis.

At 1017:30, another pilot reported south of Wigton, tracking northeast-bound and the controller issued mutual Traffic Information to this traffic and the R44 pilot, again stating the R44 was routeing from Wigton to Shap. The R44 pilot then reported approaching Penrith. At 1018:27, the AS365 pilot reported a TCAS warning had been received and that an R44 had been sighted and they advised Carlisle of its presence. In his written report, the AS365 pilot stated he had been aware of the TCAS track [in fact the R44] soon after departure from Carlisle, had elected to climb to 1500ft to remain above its level, and also that his track would be to the east of, and the R44 which had been reported, to the west of the M6 motorway.

CPA occurred at 1018:43 with the aircraft indicating 900ft vertically and 0.2nm horizontally apart. (Figure 3). The AS365 pilot advised Carlisle that he would be filing an Airprox report.

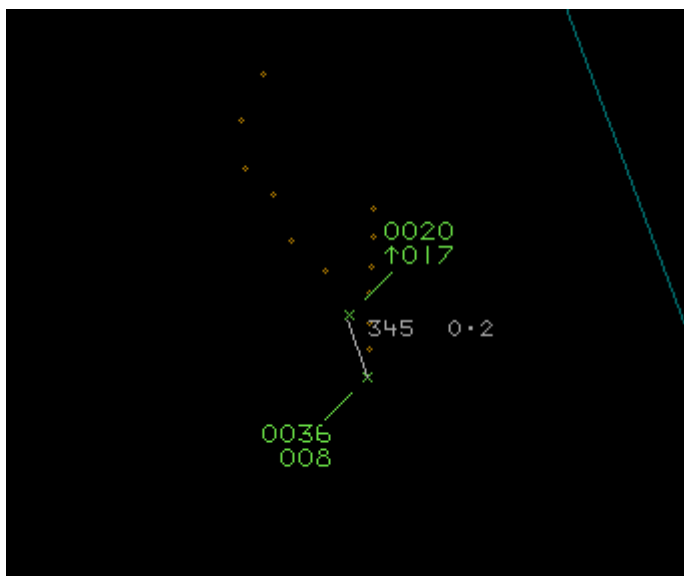


Figure 3 – CPA 1018:43

Carlisle were providing a Basic Service without the use of surveillance equipment. The provider of a Basic Service is not required to monitor a flight and pilots should not expect any form of Traffic Information from a controller. However, generic Traffic Information may be provided if a controller knows of aerial activity that may affect a flight, for the purposes of helping the situational awareness of the pilot. Whether Traffic Information has been provided or not, the pilot remains responsible for collision avoidance without assistance from the controller.

The AS365 pilot later called Carlisle and discussed the event. He confirmed that he had also understood that the R44 was routeing from Wigton to Shap and, like the controller, had considered it would be well away from his own track. The AS365 pilot commented that he could see a contact on TCAS for some 4 minutes prior to the Airprox and had not been concerned. He also commented that initially he was not particularly concerned about the traffic as it was

remaining ahead of their track, but that TCAS appeared to offer a sudden change of position whereupon the R44 was sighted underneath. The AS365 pilot commented that he filed the report partly to highlight that TCAS isn't necessarily always accurate.

UKAB Secretariat

The AS365 and R44 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard². If the incident geometry is considered as overtaking then the R44 pilot had right of way and the AS365 pilot was required to keep out of the way of the other aircraft by altering course to the right³. TCAS is known to suffer from angle of arrival error, which may lead to traffic indications being inaccurate in bearing, but is not known to suffer from range error. Other than the theoretical possibility of signal masking of the R44 from the AS365, the reason for the R44 TCAS indication suddenly appearing under the AS365 could not be determined. Although the Carlisle controller thought that the R44 pilot had planned to route from Wigton to Shap, and passed that Traffic Information to the AS365 pilot, the R44 pilot reported that he had passed his intended routeing and had flown that route.

Summary

An Airprox was reported when an AS365 and an R44 flew into proximity at 1019 on Tuesday 23rd May 2017. Both pilots were operating under VFR in VMC, both in receipt of a Basic Service from Carlisle.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the air traffic controller involved and a report from the appropriate ATC authority.

Considering the Carlisle controller's actions first, members agreed that he had passed available information, as he perceived reported to him, which in the normal course of events would have greatly assisted the pilots concerned. It was unfortunate that the R44 pilot's transmission of routeing intentions was perceived such that an erroneous mental model was created in the AS365 pilot's and Carlisle controller's minds.

As for the actions of the pilots, members agreed that although the AS365 pilot had assimilated the R44 pilot's routeing as being from Wigton to Shap, as far as he knew the encounter could equally have been with a different aircraft indicating on his TCAS and so the R44 routing was something of a red herring. Ultimately, it was for the AS365 pilot to afford right of way to aircraft if he knew he was overtaking them and, in that respect, it was noted that the AS365 pilot had been aware of an aircraft apparently to the east (left) of him for some time on TCAS, and that he had sensibly increased vertical separation as a result of not seeing it. Presumably, the AS365 pilot had been looking to the left for the TCAS contact as shown on his display and had not seen the R44 because it may instead have been more directly ahead of him as shown by the radar replay. If so, the Board commented that this was a timely reminder of the need to ensure a robust all-round lookout at all times and not to become focused on one specific area for too long despite what other sources might be indicating.

Members commented that the incident seemed to stem from the concern caused by the TCAS contact suddenly 'jumping' underneath the AS365 pilot's aircraft. Bearing error was a known TCAS phenomenon, but members did not have experience of range or elevation 'jumping' and could therefore not wholly account for the AS365 pilot's observation. Irrespective, it was for the AS365 pilot to afford right of way to the R44, which, with albeit flawed situational awareness of the R44's position and altitude from his TCAS, was largely achieved by him climbing to 1500ft. The Board agreed that separation was such that, although the AS365 pilot had been concerned by the sudden repositioning of the TCAS return on his display, there had been no risk of collision and that normal safety

² SERA.3205 Proximity.

³ SERA.3210 Right-of-way (c)(3) Overtaking.

standards had pertained. Some members commented on the somewhat undesirable fact that the AS365 pilot had reported filing the Airprox as a procedural response to a TCAS TA as defined in his company Ops Manual rather than concern for safety *per se*.

Finally, members reiterated that an Airprox was not necessarily conditional on proximity of aircraft but rather on the wider premise that the safety of aircraft may have been compromised. As such, this incident was entirely consistent with being reported as an Airprox.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

Cause: A sighting report.

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:

ANSP:

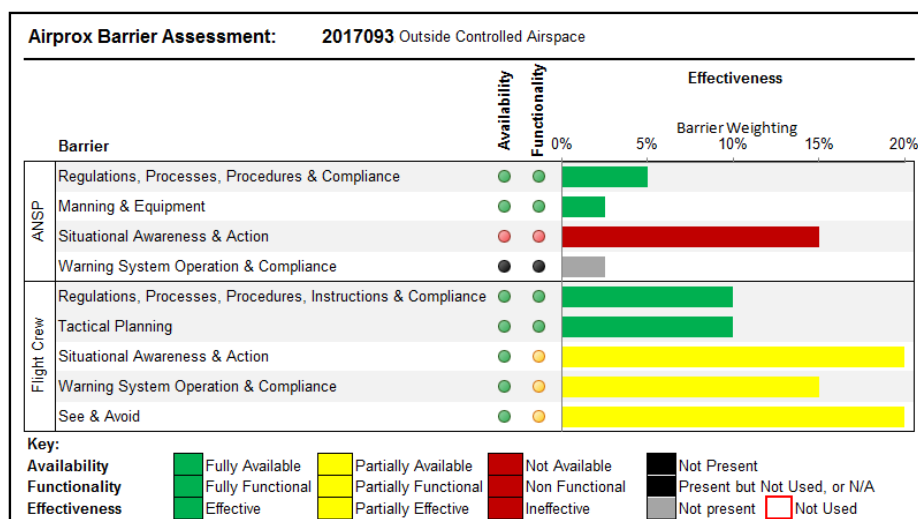
Situational Awareness and Action were assessed as **ineffective** because the Carlisle controller's understanding of the R44 pilot's routing was different to that flown by the R44 pilot; as a consequence of which, ATC were unable to pass correct Traffic Information to the AS365 pilot and other traffic.

Flight Crew:

Situational Awareness and Action were assessed as **partially effective** because the AS365 pilot's TCAS information led him to believe that the R44 was to his east and so he only increased vertical separation and did not increase lateral separation as he overtook.

Warning System Operation and Compliance were assessed as **partially effective** because the AS365 TCAS display was initially ambiguous and then only alerted 'late' and unexpectedly.

See and Avoid were assessed as **partially effective** because the R44 pilot did not see the AS365 before CPA and the AS365 pilot only saw the R44 at a late stage.



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