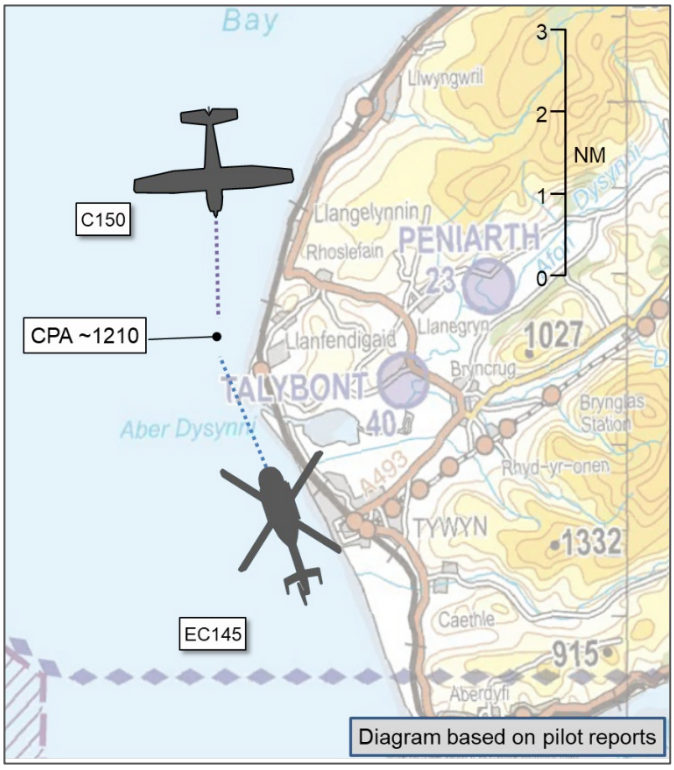
AIRPROX REPORT No 2020143

Date: 08 Oct 2020 Time: 1210Z Position: 5237N 00408W Location: 3NM NW Tywyn

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	EC145	C150
Operator	HEMS	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Altitude/FL	NK	NK
Transponder	A, C, S	Not Recorded[1]
Reported		
Colours	Red, Green	Blue, White
Lighting	Anti-cols, Strobes, Landing	Nav, Beacon
Conditions	VMC	VMC
Visibility	>10km	20km
Altitude/FL	1500ft	1500ft
Altimeter	RPS (1006hPa)	QNH (1013hPa)
Heading	345°	180°
Speed	120kt	90kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
Separation		
Reported	50ft V/0m H	Not Seen
Recorded	NK	



THE EC145 PILOT reports that their TCAS had been showing the symbology of an unidentified aircraft for approximately one minute prior to a 'Traffic' alert but the echo was bouncing around the screen anywhere from the 2 to 8 o'clock position which hampered threat identification and did not give any height indication. The left-hand seat Paramedic Technical Crew Member spotted the other aircraft first and directed the pilot's eyes onto it (initially blind to them due to fuselage A-pillar until they moved position in the seat). The other aircraft was in the 2 o'clock and not moving across the windscreen, either up, down or laterally. They performed a robust descending, port turn and the aircraft passed overhead. The rear seat passengers saw the aircraft pass overhead through the starboard rear passenger window as they turned and descended. All crewmembers agreed the passing of both aircraft had been well within 100ft vertically, probably as close as 50ft vertically. It was a simple case of two aircraft not seeing one-another hampered further by the other aircraft being masked by a grey/white cloud base background.

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

THE C150 PILOT reports they were on a local flight and throughout the flight were broadcasting on the frequency of 118.930 (Llanbedr Traffic), on the day the tower and frequency were unmanned therefore they were making blind calls frequently to give their position and altitude to any other possible traffic in the area. Due to terrain and their position in the area they were unable to contact Valley Radar to request a service during their flight. They were heading towards Tywyn with the intention of continuing to Aberdyfi to turn and head back towards Llanbedr. They approached Tywyn on a pressure setting of 1013 QNH at 1500ft whilst conforming to the rules of the air, keeping the coastline on their left-hand side. Throughout the period of the flight they were constantly scanning for any traffic and at no point were they visual with the Helimed helicopter. With no anti-collision equipment on-board they had no indication of any traffic in the area, until they heard a call from the Helimed pilot in the area trying to

[1] A and C reported by the pilot, but not observed on radar, probably due to radar coverage.

contact the Tower at Llanbedr. On hearing this transmission the C150 pilot broadcasted their location, altitude and pressure setting. The pilot of the Helimed, attempted to reach Llanbedr once again before calling any traffic in the area, to which the C150 pilot responded again and in the exchange of transmissions established they had had an Airprox. This was the first time they were aware of this (therefore the first call they heard on frequency was post Airprox), and assumed it was their aircraft due to there being no other aircraft in the area. They then promptly returned to the airfield, landed and contacted the Helimed office in order to confirm the incident and discuss it.

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

THE VALLEY CONTROLLER reports that they began their shift at 1200Z and took control of a previously vacant position, there were no aircraft on their frequencies. At 1214Z they were called by [EC145 C/S] on VHF 125.225, they stated that they had had an Airprox and asked if the controller had any information on a light civilian aircraft in their vicinity. The controller asked the pilot for their position, once this was established they saw no radar returns, either primary or secondary in that area. The controller informed the EC145 pilot that they had no information on the aircraft in question and suggested that the pilot contacted Llanbedr Airfield to see if they could provide any details. The pilot told the controller that they had tried Llanbedr but were unable to contact them. At no point did the pilot ask for, nor did the controller offer, any kind of radar or Basic Service.

Factual Background

The weather at Valley was recorded as follows:

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METAR EGOV 081150Z 35007KT 9999 FEW021 SCT028 BKN043 12/09 Q1013 TEMPO 7000 -SHRA
SCT021 RMK BLU TEMPO WHT=
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Analysis and Investigation

UKAB Secretariat

The EC145 and C150 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 geometry is considered as head-on or nearly so then both pilots were required to turn to the right.[3]

Summary

An Airprox was reported when an EC145 and a C150 flew into proximity 3NM NW Tywyn at 1210Z on Thursday 8th October 2020. Both pilots were operating under VFR in VMC, neither were in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first looked at the actions of the EC145 pilot. They discussed the route that the pilot took in flying with the coast to their right, noting that the UK AIP states:

[2] SERA.3205 Proximity.
[3] SERA.3210 Right-of-way (c)(1) Approaching head-on.

> An aircraft which is flying within the United Kingdom with the surface in sight and following a road, railway, canal or coastline, or any other line of landmarks, should fly to the right of the line feature unless flying within controlled airspace in accordance with instructions given by the appropriate air traffic control unit..[4]

In defence of the pilot, members noted that previously the introduction of SERA had removed this from UK legislation, but that it was featured in the CAA Skyway Code to be used as good practice. Notwithstanding possible confusion over changing guidance material, members thought that it had always been good practice to adhere to it where possible, and in this case, because the C150 pilot had been flying to the right of the coastline, it would have provided some separation between the two aircraft (**CF1**, **CF2**). Acknowledging that it was difficult to get any sort of ATS in the area, some members thought that, had the EC145 pilot called on the Llandbedr frequency earlier, the C150 pilot may have been able to alert them to his presence. They noted that in the absence of any alternative for an ATS, when Air Traffic was closed it was always worth transmitting blind on the frequency for the awareness of others also in the area (**CF3**). Members then discussed at length the performance of the TCAS I in the EC145, and those members with helicopter experience noted that TCAS I often performed in the way described by the pilot and observed that it was not unusual to receive an indication that was 180° out. A brief discussion followed on the merits of upgrading such equipment; members acknowledged that there was significant benefit in the carriage of electronic conspicuity equipment and with the continuous advances in associated technologies, observed that there were a variety of systems available to the aviation community which may offer better situational awareness to pilots in the Class G environment .Members therefore thought that although the TCAS had alerted the crew to the presence of the C150 (**CF5**, **CF6**), without specific directional or height information, it had been down to good look-out by the non-flying crew member who saw the C150 first and was then able to guide the pilot to see the C150 from behind the fuselage pillar (**CF7**, **CF10**). Once the pilot had seen the C150 they managed to take avoiding action but reported a separation of less than 100ft. Noting that the TCAS could have been a distraction for the pilot, some members with fixed-wing experience wondered whether the helicopter could have gone into a hover whilst the pilot looked for the other aircraft. However, this was quickly rebutted by the helicopter members as being too dangerous and just not possible with a heavy aircraft, nor was it a practical action in response to a Traffic indication or alert.

Turning to the C150 pilot, members again discussed that when Llandbedr ATC were closed, there was no-one to call for an ATS in that area, particularly when heading south. Some members wondered whether Valley had radar coverage but were told by those familiar with flying in the area that the terrain prevented it, blocking both radar and radio communications. Therefore, listening out on the Llandbedr frequency for any other pilots in the area was probably the best that the pilot could do. Without an ATS or any CWS, the C150 pilot had no situational awareness about the EC145 (**CF4**), leaving see-and-avoid as the only remaining mitigation to mid-air collision. However, the C150 pilot did not see the EC145 at all and was only aware of the Airprox when the EC145 pilot called on the Llandbedr frequency after the event (**CF9**). Fortunately, the EC145 pilot had managed to take some action.

When determining the risk, in the absence of any radar data, the Board took into consideration the separation and avoiding action described by the EC145 pilot, together with their assessment of a 'high' risk of collision. Members quickly agreed that the late sighting followed by late avoiding action by the EC145 pilot, coupled with the non-sighting by the C150 pilot, described a situation whereby safety had been much reduced below the norm (**CF8**); Risk Category B.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020143		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
x	**• Regulations, Processes, Procedures and Compliance**		

[4] UK AIP ENR 1.2 2:10 Following line features

1	Human Factors	• Flight Operations Documentation and Publications	Regulations and/or procedures not fully complied with
x	**• Tactical Planning and Execution**		
2	Human Factors	• Flight Planning and Preparation	
3	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
x	**• Situational Awareness of the Conflicting Aircraft and Action**		
4	Contextual	• Situational Awareness and Sensory Events	The pilot had generic, late or no Situational Awareness
x	**• Electronic Warning System Operation and Compliance**		
5	Contextual	• ACAS/TCAS TA	
6	Technical	• ACAS/TCAS System Failure	CWS did not alert as expected
x	**• See and Avoid**		
7	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
8	Contextual	• Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle	Piloted air vehicle
9	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
10	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots

Degree of Risk: B.

Safety Barrier Assessment[5]

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

Flight Elements:

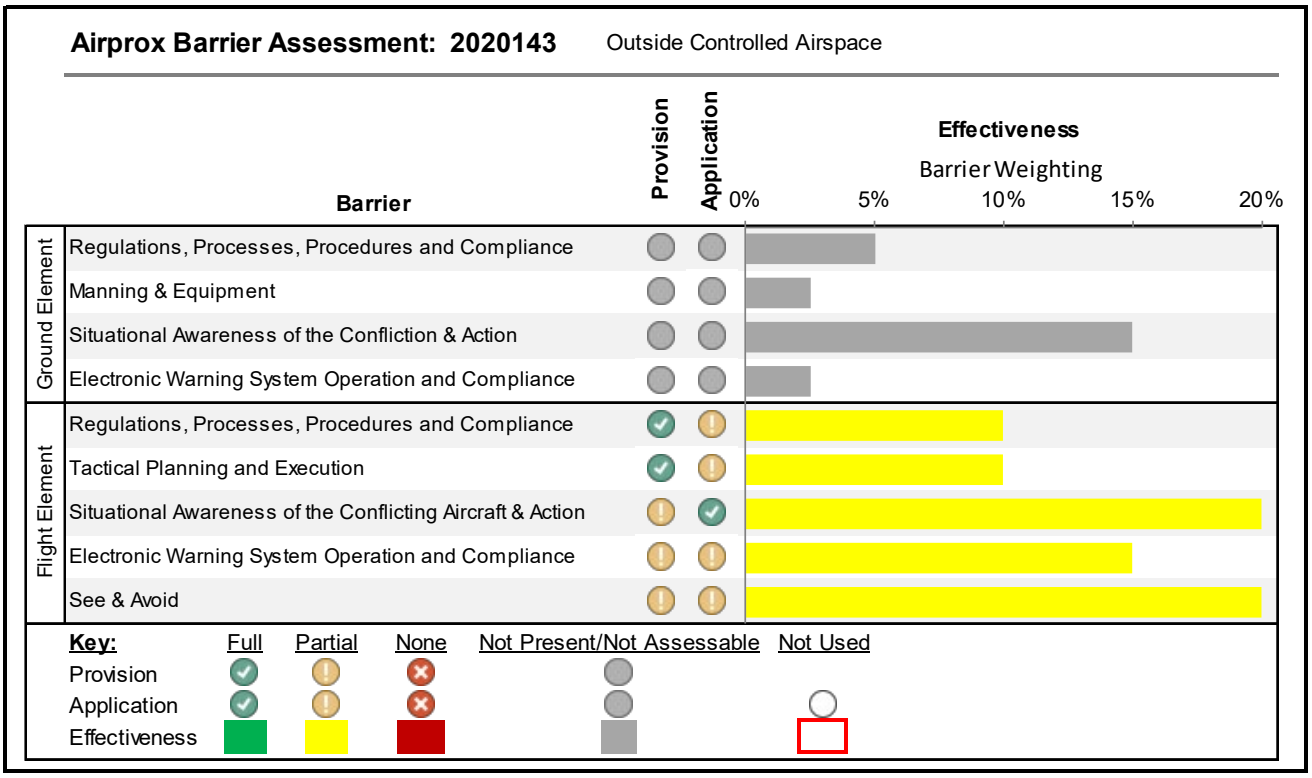
Tactical Planning and Execution was assessed as **partially effective** because the EC145 pilot did not fly to the right of the coast in accordance with the UK AIP.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the EC145 pilot only had generic situational awareness from the TCAS I and the C150 pilot did not have any situational awareness on the EC145.

Electronic Warning System Operation and Compliance were assessed as **partially effective** because the EC145 pilot did not get specific information from the TCAS alert to allow them to deconflict from the C150 prior to seeing it.

See and Avoid were assessed as **partially effective** because although the C150 pilot did not see the EC145, the EC145 pilot managed to take late avoiding action.

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


Airprox Barrier Assessment: 2020143
Outside Controlled Airspace
Barrier
Provision
Application
Effectiveness
Barrier Weighting
0%
5%
10%
15%
20%
Ground Element
Regulations, Processes, Procedures and Compliance
Manning & Equipment
Situational Awareness of the Confliction & Action
Electronic Warning System Operation and Compliance
Flight Element
Regulations, Processes, Procedures and Compliance
Tactical Planning and Execution
Situational Awareness of the Conflicting Aircraft & Action
Electronic Warning System Operation and Compliance
See & Avoid
Key:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness