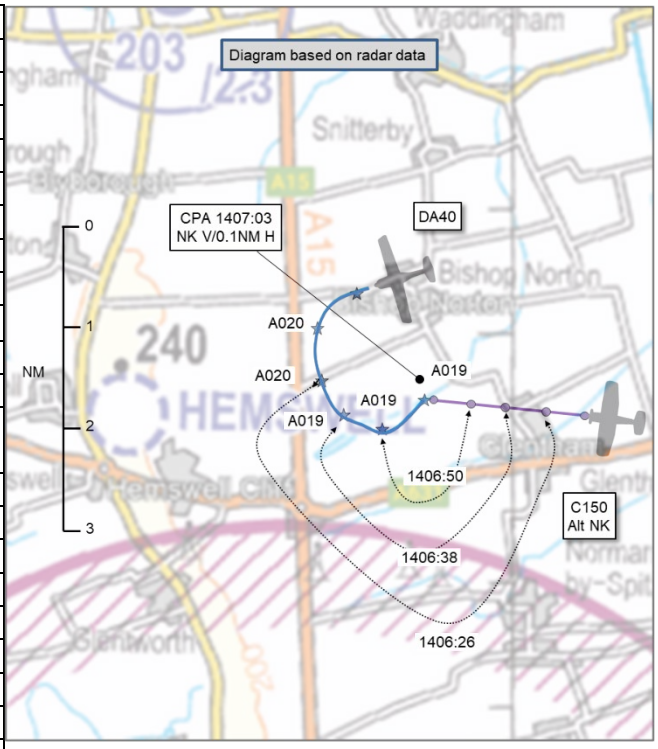
AIRPROX REPORT No 2023052

Date: 15 Apr 2023 Time: 1407Z Position: 5324N 00030W Location: 6NM North of Scampton

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA40	C150
Operator	Civ FW	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	VFR
Service	Traffic	None
Provider	Humberside	N/A
Altitude/FL	1900ft	NK
Transponder	A, C, S	None[1]
Reported		
Colours	White/Red Stripes	White/Blue
Lighting	Strobes/Landing/ Taxy/Position	Fitted
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	2000ft	NR
Altimeter	QNH NR hPa	RPS
Heading	050°	NR
Speed	125kt	NR
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	50ft V/30m H	NR V/NR H
Recorded	NK V/0.1NM H	



THE DA40 PILOT reports that the flight was an IRR training flight involving NDB and RNP approaches to Humberside, RW02. The frequency was busy. 2 x NDB approaches (one teach and one practice) were conducted without issue, and the first RNP approach had been without issue. Being vectored around to KULOS, the IAF for the RNP approach, ATC had reported a primary contact not squawking to the south of the aircraft but tracking east. The DA40 was heading east at this time. The instructor was maintaining a lookout and also monitoring the student as they positioned to fly their first RNP approach. To the west of KULOS, ATC directed a left turn to KULOS. Once rolled out of the turn, the intruding aircraft was seen in the 4 o'clock and just above. In the brief sighting, it looked very much like an aircraft familiar to the instructor. The Airprox was reported to Humberside ATC. A subsequent phone call to ATC revealed that they lost the intruding aircraft from radar northeast of Sturgate at 1412. The instructor called Sturgate to see if a C150/C152 had landed in the timeframe for the aircraft to be identified, but the Tower personnel had gone off shift as they only work until 1400. The next day, in general chat with another instructor, they mentioned someone on frequency had mentioned someone flying, "just under my wing." It is not known if this was the intruding aircraft.

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

THE C150 PILOT reports that they have no GPS trace nor recollection of any Airprox.

THE HUMBERSIDE CONTROLLER reports that, whilst being vectored under a Traffic Service for an RNP approach to RW02 at Humberside airport, [the DA40 pilot] was passed Traffic Information on a primary radar contact, which was not transponding, as the aircraft was given a turn onto the final approach. The DA40 pilot reported an Airprox with what they described as a C150 or C152, colour white, with blue and red horizontal stripes. They said the vertical distance was approximately 50ft and

[1] The pilot reported Modes A/C but none were seen on either Humberside or NATS radars.

the lateral distance was 100ft. The DA40 pilot continued with the approach. The conflicting aircraft faded from radar approximately 15NM southwest of Humberside, and was untraceable.

Factual Background

The weather at Humberside was recorded as follows:

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METAR EGNJ 151350Z 08007KT 050V120 9999 SCT017 14/09 Q1022=
METAR EGNJ 151420Z 09007KT 9999 FEW021 14/08 Q1022=
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Analysis and Investigation

Humberside

ATCO on duty APS was OJTI to trainee ATCO. Traffic level and workload assessed as High.

Radar 2 Controller was on their break/carrying out UTO office work prior to taking over as Radar 1.

Multiple LARS tracks under Basic Service and Traffic Service, [The DA40] in the Instrument pattern with VFR traffic operating through the Final Approach Track, DS traffic inbound and outbound. Multiple unknown squawking and non-squawking contacts within 12NM of Humberside, most of which were on long final or wide right and left base positions RW02.

Trainee ATCO (TATCO) was under the OJTI instruction.

1357 [The DA40 pilot was] under a TS was being vectored for an RNP approach RW02 at 2000ft heading 210° in a right hand pattern as Hibaldstow was active. A primary contact showed at approximately 10NM south of Humberside.

1358 TATCO attempted to contact an unknown a/c squawking 6777 11NM SW and left of FAT (Final Approach Turn) RW02 A012 but no response was received.

1359 OJTI then took over as the traffic level and complexity increased significantly and advised inbound DS of multiple unknown contacts on 10NM final/base leg and offered RW20 or a tighter vector for a potential visual approach RW02, the latter of which was accepted by the pilot. OJTI then vectored the a/c no2 to [an unrelated aircraft] on right base which was holding for a departure and provided TI on multiple contacts being avoided. The primary contact was not showing on radar. [The DA40 pilot] was instructed to turn left hdg 020° to hold off due to 2 a/c inbound ahead and 1 lined up for departure. This turned it away from the 6777 squawk which departed southwest.

1403 [The DA40] was 11NM south and [the pilot] was instructed to turn left hdg 270° with 14NM miles from touchdown no3 in traffic. The primary contact reappeared approximately 10.5NM south of Humberside and 1.5NM east of [The DA40] which was tracking away.

1404 OJTI tried to contact [an aircraft] squawking 4273 which was approaching the FAT at Brigg. After the 3rd call the pilot responded that their c/s was actually [redacted] (under a Basic Service), OJTI apologised and instructed it to hold at Brigg to remain clear of the FAT for the landing and subsequent training approach traffic. They then asked if it could climb to 3000ft in order to cross above but the pilot was unable; therefore held at Brigg.

1405 [The DA40 pilot] was instructed to turn left report passing KULOS RNP02 Q1022 and TI was passed on the unknown traffic SSE by 2 miles tracking westbound no height. The pilot replied left turn to KULOS. The primary contact was now passing through the FAT approximately 11NM east to west. [The DA40] turned towards the contact and blips merged.

1407 [The DA40 pilot] reported an Airprox and would pass details over the phone on landing. The primary contact faded off radar approximately 16NM SW of Humberside therefore unable to be traced. Details of the Airprox were written in the appropriate logs and ECCAIRS report was filed.

Follow up/recommendations: This was an extremely high workload situation of traffic under Basic, Traffic and Deconfliction Services in Class G airspace with multiple unknown squawking and non-squawking contacts in the area. Whilst the error in the c/s of [redacted] was a possible distraction, it was indicative of the effects of the high level and complexity of traffic. The OJTI was correct to take over the situation from the trainee as the workload significantly increased and a less experienced ATCO could have easily become overloaded in this situation. An option that was available was to cancel the training a/c, however, they would still have had to work the traffic thus their workload would not have decreased. The option to call for a Radar 2 ATCO to come in off their break would not have worked as it was too busy for the OJTI to be able to carry out a handover of traffic. Having a full time Radar 2 would have helped to alleviate the workload of the high level of traffic being worked by 1 ATCO however this is not currently possible due to staffing levels. In passing Traffic Information [the controller] carried out their responsibilities in accordance with CAP774 which also states high controller workload may reduce the ability of the controller to pass Traffic Information and in this situation clearly led to no update of TI being able to be passed. [The DA40 pilot] had received TI, was under their own navigation to KULOS and being under a TS the pilot remained responsible for collision avoidance.

CAA ATSI

The DA40 was a training flight, with 3 approaches having already been completed the aircraft was positioning for its final approach (RNP). Due to faster IFR inbound traffic, an imminent IFR departure and a further light jet aircraft also requesting re-join, the Humberside Radar controller, a trainee under supervision, elected to give the DA40 pilot a heading for delaying action. Traffic levels and complexity were reported in the unit investigation as increasing and the supervising controller took over the position from the trainee. The area radar replay used to complete this investigation is not representative of the situational display available to the Humberside controller but has been used for illustrative purposes as the unit investigation did not include any snapshots from their own radar displays.

At 1402:45 the Humberside controller took the DA40 off the northeasterly heading originally used for delaying action, turning the aircraft left onto a heading of 270°. According to the unit investigation report, a primary radar contact, later identified as the C150, had not been visible up until this point, but coincidently appeared 1.6NM to the east of the DA40 observed to be on a westerly track, placing it astern of, and on a similar track to, the DA40 (Figure 1).

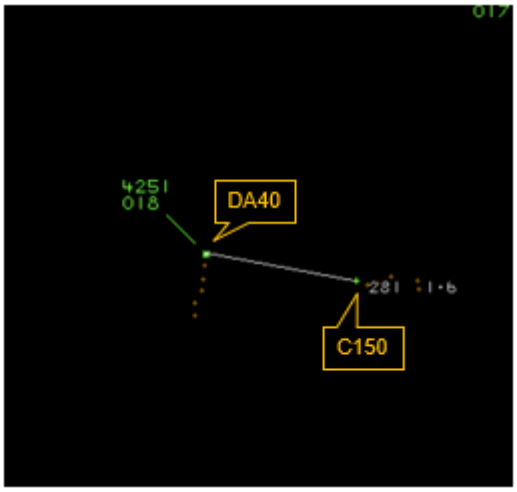


Figure 1 – 1402:45

The controller advised the DA40 pilot of their range from touchdown and position in traffic (Number 3). No Traffic Information was passed to the pilot on the C150 behind them.

At 1403:50 the IFR aircraft inbound from the east was turned onto an oblique base-leg and provided with Traffic Information on two aircraft, one approaching from the northwest and one holding to the

south of the airfield. Both the DA40 and C150 were continuing on their westerly tracks, separated by 1.7NM, with the C150's track offset to the south of the DA40's (Figure 2).

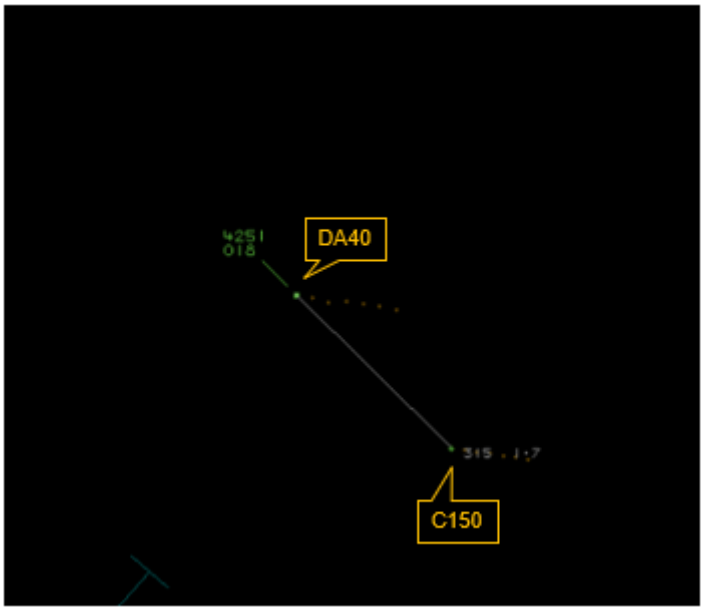


Figure 2 – 1403:50

The Humberside controller then made repeated (5) attempts to contact an aircraft tracking in from the northwest to coordinate action which would keep them clear of the final approach. The pilot did not respond immediately, because the controller was using the registration, not the callsign. Agreement was ultimately reached for them to orbit clear of the final approach at 1405:08 (Figure 3).

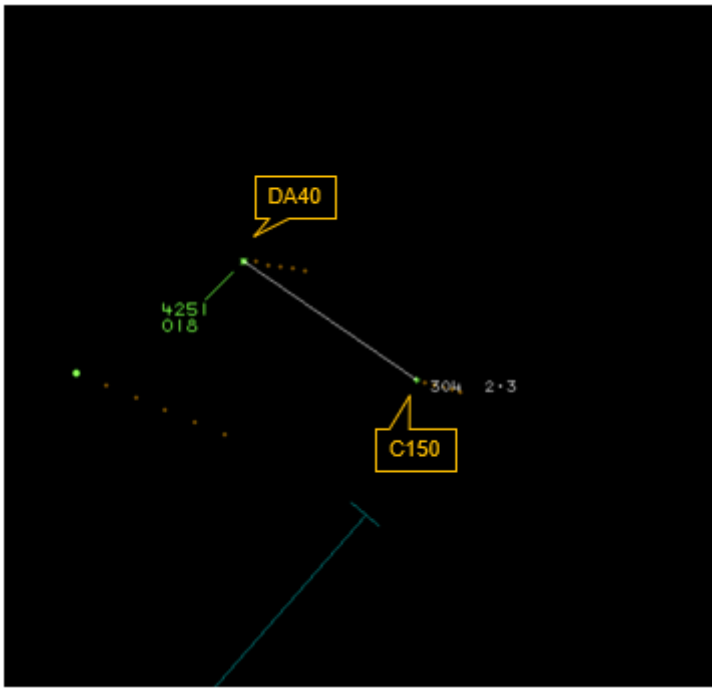


Figure 3 – 1405:08

At 1405:24 the controller instructed the DA40 pilot *"if you do a left-turn, I say again, a left-turn and report passing KULOS, RNP approach Runway 02 (QNH). Unknown traffic to the south-southeast of you by 2 miles, tracking westbound no height."*.

The DA40 pilot replied *"left turn to KULOS"* but did not acknowledge the Traffic Information, and this lack of readback went unchallenged by the controller (Figure 4).

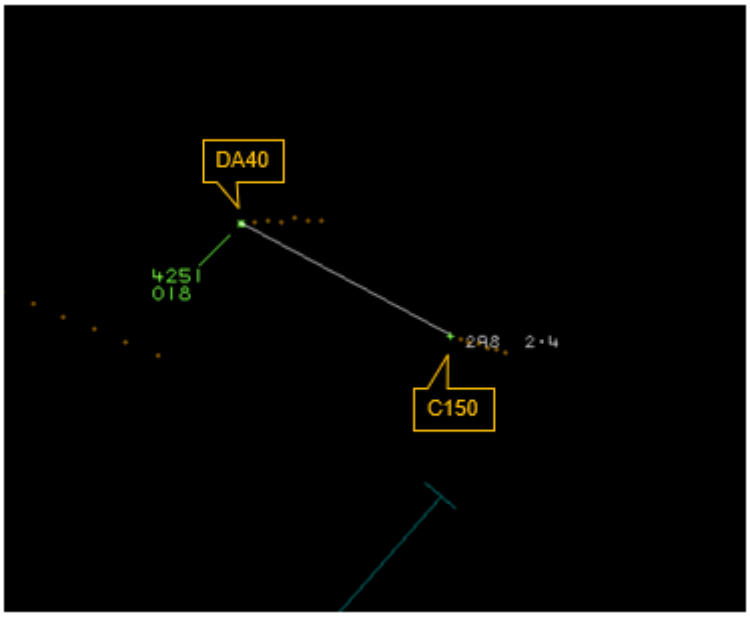


Figure 4 – 1405:24

The controller then dealt with the first call by the pilot of the departing traffic and a query from the pilot of the aircraft holding in the orbit to the northwest of final approach.

At 1406:30 the controller turned the first inbound [aircraft] onto a heading to intercept final approach (Figure 5).

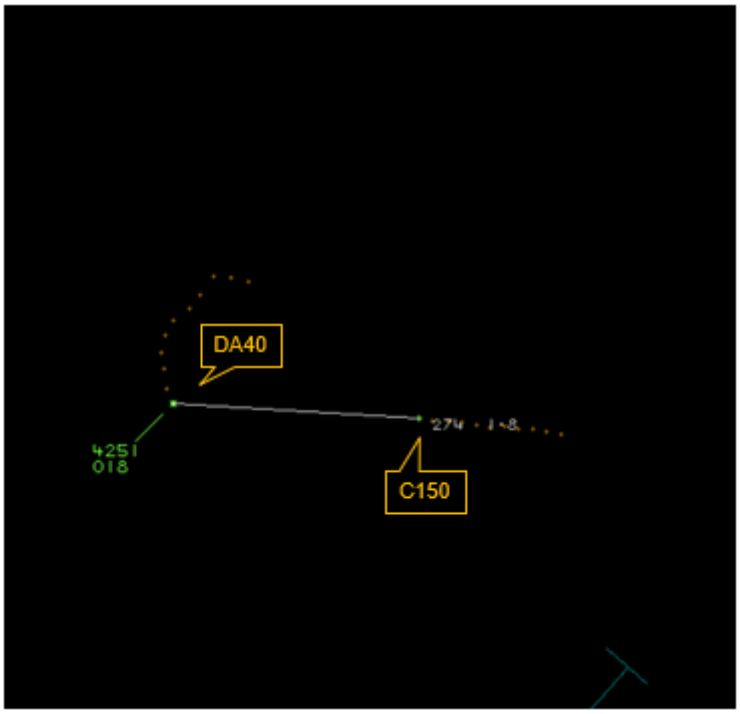


Figure 5 – 1406:30

The controller then dealt with a call from another pilot requesting a Traffic Service and passed relevant Traffic Information to that pilot at 1406:52 (Figure 6).

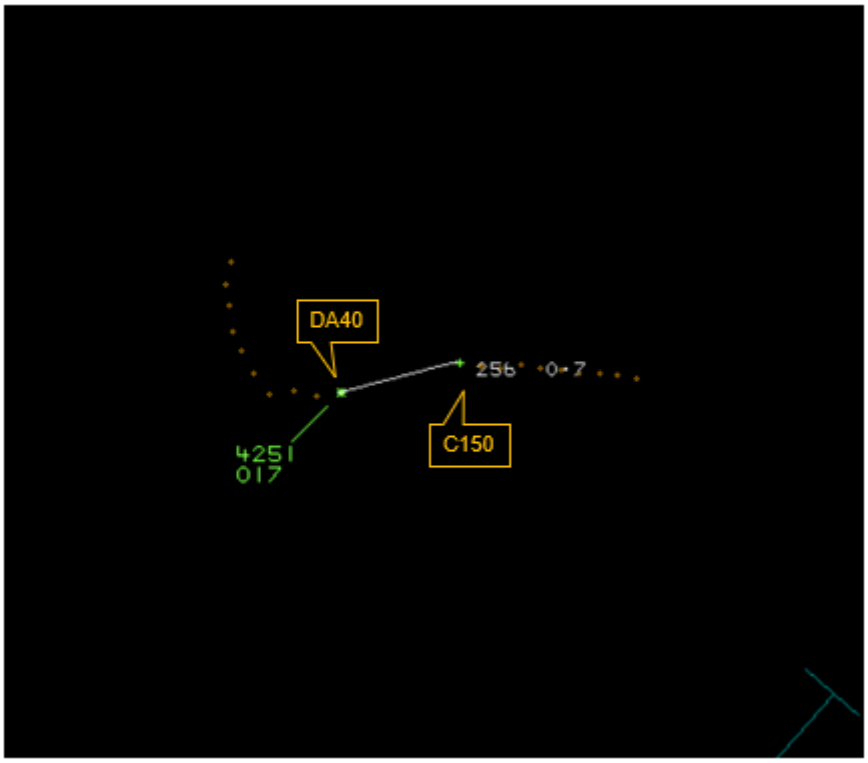


Figure 6 – 1406:52

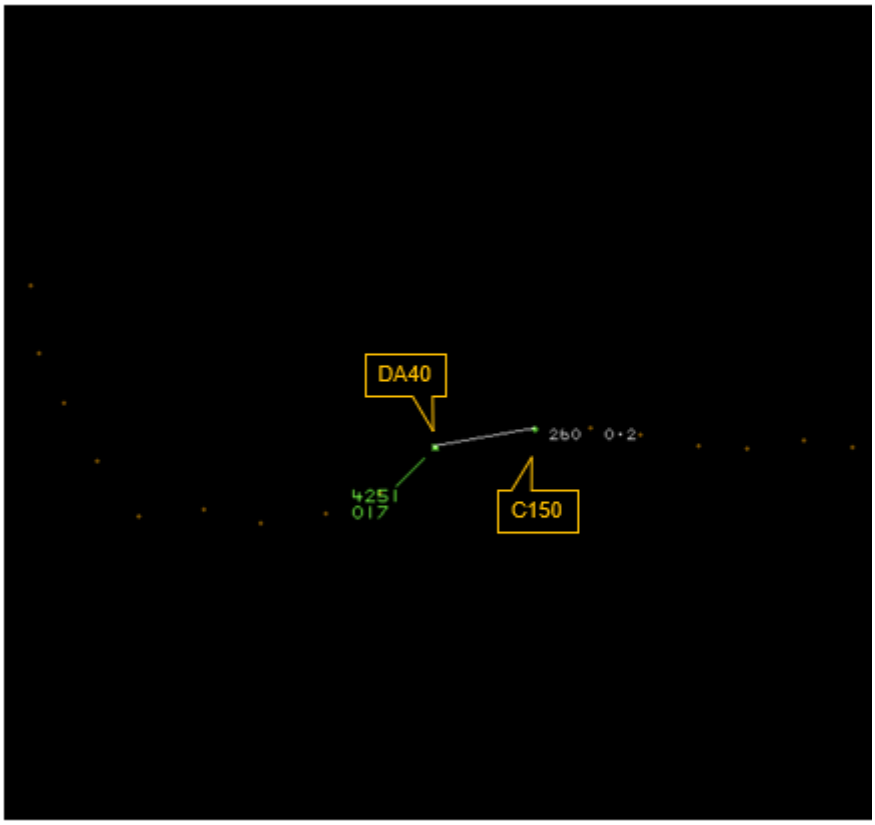


Figure 7 – 1407:00

CPA occurred at 1407:03 (Figure 8).

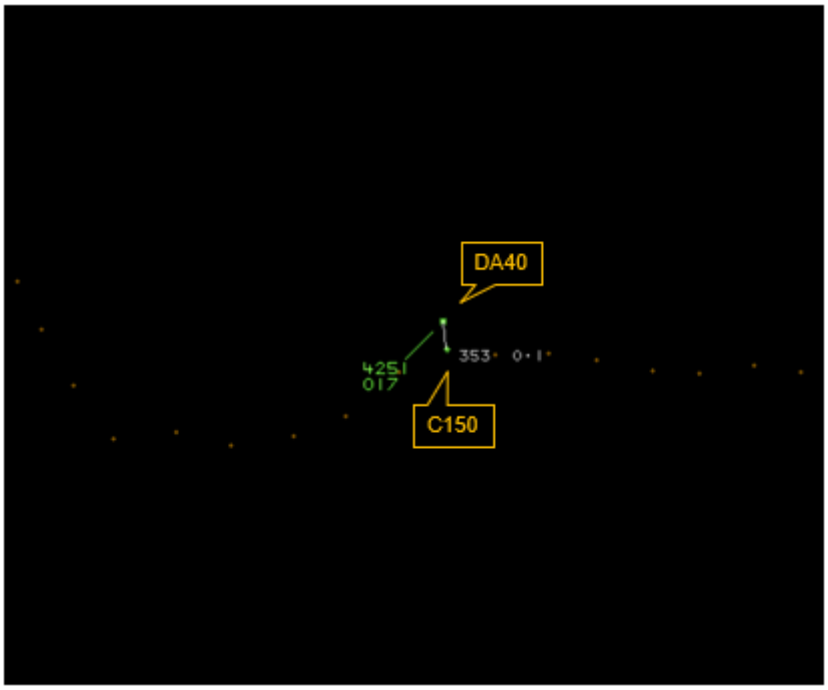


Figure 8 – 1407:03 CPA

At 1407:05 the pilot of the first inbound [aircraft] reported visual with the airfield, was advised that the circuit was active and passed Traffic Information on the two aircraft holding to either side of final approach, before then being transferred to the Tower controller. The pilot of the DA40 reported the Airprox at 1407:30 advising that it had taken place 20sec earlier.

Analysis

ATSI reviewed reports from both pilots (the pilot of the C150 did not recall the incident), the initial report from the Humberside controller and the unit investigation report. A review of the area radar recording, Humberside RTF and the Humberside investigation report was also completed. The Humberside report was lacking in some detail, partially due to a lack of snapshots from their radar, and a transcript of the RTF and so a full ATSI investigation report was deemed necessary.

The unit investigation firstly identified the appropriateness of the OJTI taking over from the trainee. Due to the number and positioning of unidentified aircraft within the vicinity of the airfield, the controller negotiated with the pilot of the IFR inbound [aircraft] for a shortened pattern bringing the aircraft closer to the airfield. The intention was to position the aircraft to enable the pilot to complete a visual approach which would require greater focus by the controller.

Secondly, there was a slight distraction for the controller during their attempt to coordinate a routeing for the aircraft from the northwest to keep it clear of the Humberside final approach. This took longer than normal due to the controller using the wrong callsign. The controller had also attempted unsuccessfully to contact a pilot of another aircraft operating to the southwest earlier, clearly again with the intention of reaching an agreement with that pilot to keep the aircraft clear of the Humberside final approach.

Finally, the unit does have provision for a Radar 2 to take some traffic, however a comment was made in the investigation report that the current unit staffing levels did not provide for this at that time. The intimation was that had a Radar 2 controller been available, they would have already had to have been in position as a handover of traffic at this stage would have been difficult and would not have immediately reduced the existing controller's workload.

Two references to CAP774 were made within the unit investigation report, one directly. Firstly, that during periods of high workload, the ability of the controller to pass timely Traffic Information may be impacted. Secondly, the fact that the DA40 pilot was on a Traffic Service placed the responsibility for collision avoidance directly with the pilot.

On the first point CAP774 gives detailed advice:

Reduced Traffic Information/deconfliction advice[2]

1.11 There may be circumstances that prevent controllers/FISOs from passing timely traffic Information and/or deconfliction advice, e.g. high workload, areas of high traffic density, unknown aircraft conducting high energy manoeuvres, or when traffic is not displayed to the controller or is obscured by surveillance clutter.

Controllers/FISOs shall inform the pilot of reductions in traffic information along with the reason and the probable duration; however, it may not always be possible to provide these warnings in a timely fashion.

In high workload situations, which may not always be apparent from RTF loading, controllers/FISOs may not always be able to provide timely traffic information and/or deconfliction advice.

High workload situations may not necessarily be linked to high traffic density.

High traffic density can cause difficulty interpreting ATS surveillance system data and may affect RTF loading or controller/FISO workload to the extent that the controller/FISO is unable to pass timely traffic information and/or deconfliction advice on all traffic

Under a Traffic Service the requirements for the provision of Traffic Information are[3]:

3.5 The controller shall pass traffic information on relevant traffic and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.

Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3NM and, where level information is available, 3000 ft of the aircraft in receipt of the Traffic Service or its level-band if manoeuvring within a level block. However, controllers may also use their judgment to decide on occasions when such traffic is not relevant, e.g. passing behind or within the parameters but diverging.

Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 NM, in order to give the pilot sufficient time to meet their collision avoidance responsibilities and to allow for an update in traffic information if considered necessary.

Controller judgement is essential to ensure that traffic information is relevant and timely. Controllers should take account of the aircraft's relative speeds, lateral and vertical closure rates, and track histories.

On the second point, it is correct that even whilst the aircraft was on an ATC heading the pilot still remained responsible for collision avoidance as they were in receipt of a Traffic Service:

[2] CAP774 Chapter 1 Page 20
3 CAP774 Chapter 3 Page 28

Headings[4]

3.10 ……Pilots remain responsible for collision avoidance even when in receipt of ATC headings and shall advise the controller in the event that they need to deviate from a heading in order to comply with Rules of the Air with regard to collision avoidance.

ATSI cannot comment on the ability of the controller to pass Traffic Information during this period as the capacity of the individual controller at any specific moment at a particular unit is for the unit to judge. A draft copy of this report was forwarded to the unit for comment and the following response was received:

"(AC1) was vectored in accordance with MATS Part 1, Section 3, Chapter 2, paragraph 9G, so as to be established before the IAF/IF (KULOS). (AC2) was on a heading to intercept before the IAF/IF, however, when cleared for the RNP, AC2 used KULOS as a flyby not a flyover waypoint so became more adjacent to the unknown aircraft. TI was passed. Workload was perceived as high. TI was not acknowledged which is not a requirement."

The decision by the controller to instruct the pilot of the DA40 to make a left turn back towards conflicting traffic at that moment, even with the provision of Traffic Information does appear questionable, compounded then by a lack of any further Traffic Information.

The pilot did not acknowledge the Traffic Information, and the controller did not challenge that lack of acknowledgement. The unit argued that the passing of Traffic Information is not a mandatory readback. It is possible that the DA40 pilot remained unaware of the presence of the C150, with no Traffic Information having even been passed at all up to this point in time.

Options available might have included a new heading that would increase the distance between the two aircraft and/or allow a tactical repositioning back towards the start of the RNP approach, perhaps with a right-turn to a point where a release to resume own navigation would keep it clear of any other potential conflictions.

The instruction given to the DA40 pilot by the Humberside controller to make a left turn back on to their own navigation, but which then placed their aircraft head-on to the opposite direction C150, likely contributed to the DA40 pilot's belief that safety had been compromised due to the distance between the two aircraft.

UKAB Secretariat

The NATS radar replay was observed from 1350 to 1430; the DA40 was tracked using Mode S and a primary track was observed in the vicinity of the DA40, tracing action confirms that contact as a C150 for AC2.

The DA40 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.[5] If the incident geometry is considered as converging then the DA40 pilot was required to give way to the C150 pilot.[6]

Summary

An Airprox was reported when a DA40 and a C150 flew into proximity 6NM north of Scampton at 1407Z on Saturday 15th April 2023. The DA40 pilot was operating under IFR in VMC and in receipt of a Traffic Service from Humberside Radar; the C150 pilot was operating under VFR in VMC and not in receipt of an Air Traffic Service.

[4] CAP774 Chapter 3 Page 29
[5] (UK) SERA.3205 Proximity.
[6] (UK) SERA.3210 Right-of-way (c)(2) Converging.

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 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 the circumstances of the event, with focus toward the service provision by Humberside; they noted the positive contribution in enabling awareness of contacts around the DA40 whilst its pilot undertook training approaches but did feel that, as the controller was busy with other traffic (**CF1**), perhaps the option of refusing a further training approach might have helped to avoid the subsequent interaction with the C150. Members also opined that the C150 pilot could have sought a service from Humberside LARS to better enable both their own and others' situational awareness.

The C150 had been showing as a primary-only contact which, as an aircraft fitted with a serviceable transponder (**CF4**, **CF5**, **CF6**), was determined to have been a contributory factor in accurate tracking and Traffic Service provision leading to only generic situational awareness for the controller (**CF2**) and the DA40 pilot (**CF7**). This had led in turn to the DA40 pilot being turned left into the path of the intermittent primary contact (**CF3**), a reduced opportunity to better assimilate a potential interaction with the C150 (**CF8**), the resulting non-sighting by both pilots (**CF9**) and a near collision between the 2 aircraft (**CF10**).

When determining the risk of collision, the Board agreed that safety margins had been much reduced below the norm through the non-sighting of the pilot of each aircraft and the absence of any avoiding action to materially increase separation at any stage. As such, the Board assigned a Risk Category B to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023052			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Manning and Equipment			
1	Organisational	• ATM Staffing and Scheduling	An event related to the planning and scheduling of ATM personnel	
	• Situational Awareness and Action			
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
3	Human Factors	• Traffic Management Information Provision	An event involving traffic management information provision	The ANS instructions contributed to the Airprox
	Flight Elements			
	• Regulations, Processes, Procedures and Compliance			
4	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
	• Tactical Planning and Execution			
5	Human Factors	• Communications by Flight Crew with ANS	An event related to the communications between the flight crew and the air navigation service.	Pilot did not request appropriate ATS service or communicate with appropriate provider
6	Human Factors	• Transponder Selection and Usage	An event involving the selection and usage of transponders	
	• Situational Awareness of the Conflicting Aircraft and Action			
7	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

8	Human Factors	• Understanding/ Comprehension	Events involving flight crew that did not understand or comprehend a situation or instruction	Pilot did not assimilate conflict information
	• See and Avoid			
9	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
	• Outcome Events			
10	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[7]

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

Ground Elements:

Manning and Equipment were assessed as **partially effective** because Humberside had declared staffing difficulties at the time of the Airprox.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because Humberside had only intermittent primary contact with the second aircraft (the C150) and advised a left turn for the DA40 towards the primary contact.

Flight Elements:

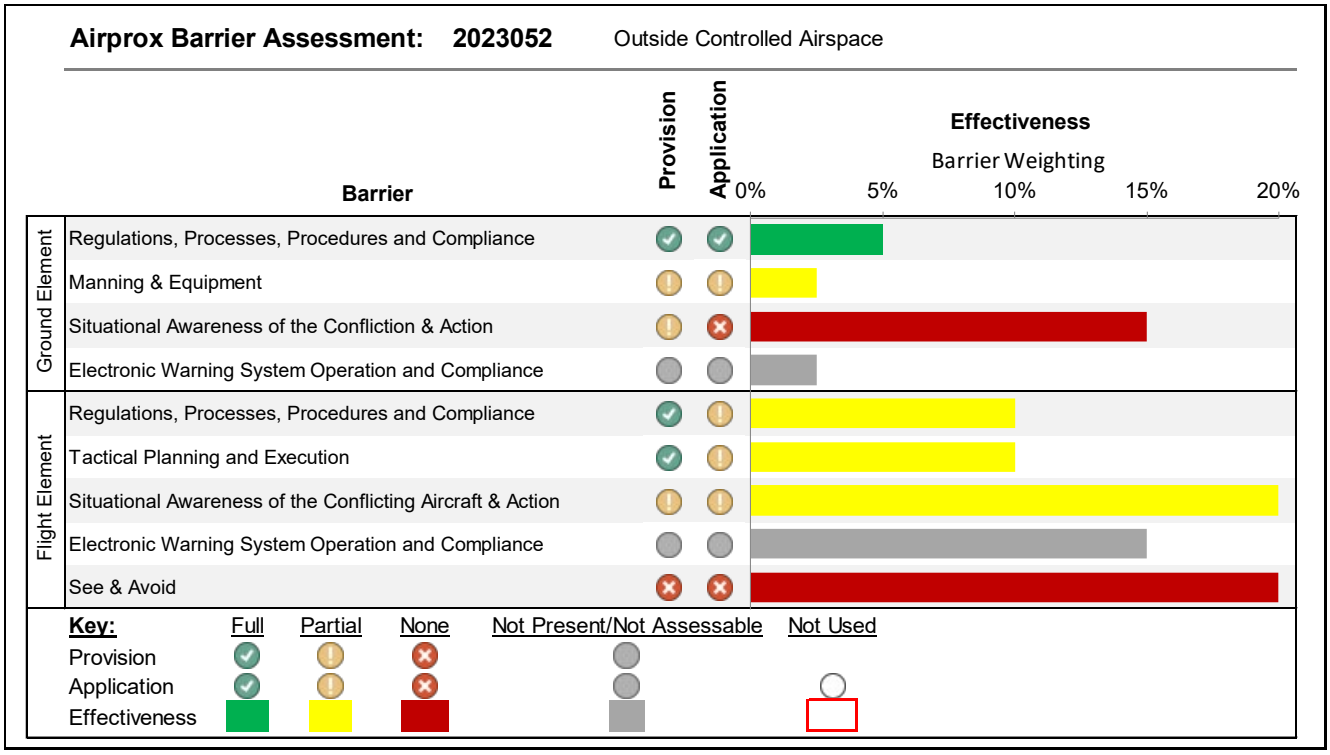
Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the C150 was fitted with an operational transponder which was not used in accordance with SERA.13001(a).

Tactical Planning and Execution was assessed as **partially effective** because the C150 pilot did not operate their serviceable transponder and, where options for a Traffic Service were available and would have helped to build awareness of any surrounding traffic, the pilot elected to operate independently.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because, although Traffic Information was passed to the DA40 pilot on the unknown traffic, the DA40 was instructed to turn left toward it, bringing it into conflict with the C150.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft with sufficient time to materially increase the separation.

[7] 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: 2023052
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