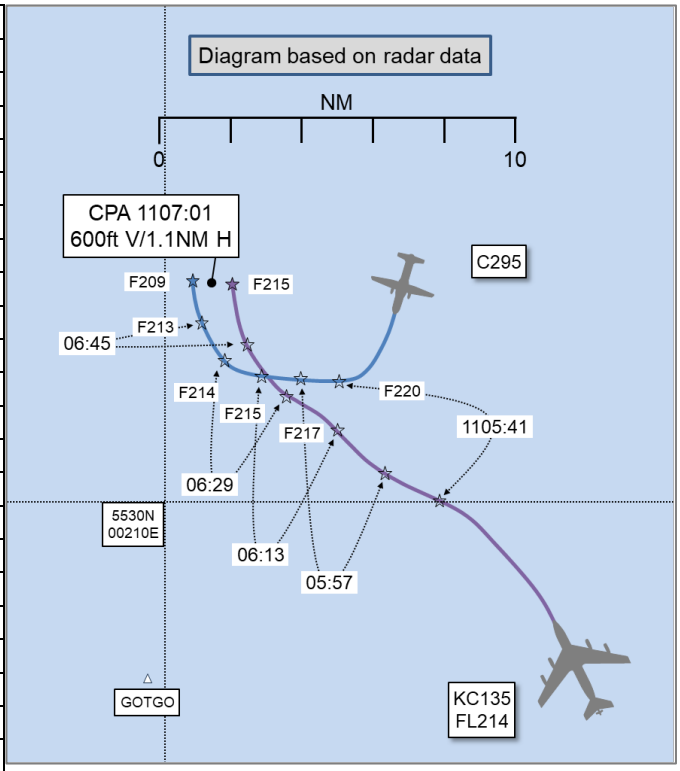
AIRPROX REPORT No 2024241

Date: 23 Sep 2024 Time: 1107Z Position: 5536N 00213E Location: 11NM NNE GOTGO

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	CASA 295	KC135
Operator	Foreign Mil	Foreign Mil
Airspace	Scottish UIR	Scottish UIR
Class	C	C
Rules	IFR	IFR
Service	Deconfliction	Traffic
Provider	Swanwick(Mil)	Boulmer
Altitude/FL	FL209	FL215
Transponder	A, C, S+	A, C, S
Reported		
Colours	Grey	Grey
Lighting	Nav, beacon	Nav
Conditions	IMC	VMC
Visibility	<5km	5-10km
Altitude/FL	FL220	21,000ft
Altimeter	SPS	QNH (999hPa)
Heading	270°	270°
Speed	252kt	NK
ACAS/TAS	TCAS II	TCAS II
Alert	RA (Descend)	Information
Separation at CPA		
Reported	600ft V/3NM H	0ft V/<2NM H
Recorded	600ft V/1.1NM H	



THE C295 PILOT reports [originally] heading 185°. The pilot flying notified that the TCAS display showed approaching traffic, co-altitude and near the 10NM boundary. At 1105:00 Swanwick Control directed them to fly heading 270° to avoid head-on traffic with 600ft vertical separation. The pilot flying missed the heading call and asked the heading from Swanwick again. At 1105:14 they turned to heading 270°. At 1105:23 the KC135 was 17,400m separated from them and co-altitude. Later on, they got a TCAS TA and were [somewhat] confused because they were not expecting the traffic [to turn] towards them. The controller directed them to descend to FL180 but the manoeuvre was not quick enough. They got a TCAS RA and at the same time the controller directed them to turn further north, heading 350°. The TCAS RA was 1. Descend, 2. Level Off, and 3. Descend. They manoeuvred according to the TCAS RA and got out of the conflict. The deepest dive was 2800ft/min, but the average 1000-2000ft/min. Later on, the controller gave them FL150 and apologised. They resumed the Deconfliction Service and flew back to the south. It seemed that the KC135 bugged out from the racetrack to the north at the same time [as they were in the area] and maintained altitude all the time. When clear of conflict, they identified the KC135 in the 3 o'clock and high.

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

THE KC135 PILOT reports operating in support of [an exercise], remaining within the Air-to-Air Refuelling Area (AARA) named Ultron North, under a service from [Boulmer]. The crew were UK based and familiar with UK FIS. Unfortunately, the crew did not receive an expected airspace deconfliction plan from the exercise sponsor prior to the flight, due to the exercise POC's unavailability. Importantly, this meant that the crew did not have an up-to-date airspace briefing and expected that anyone operating withing the 'operating area' boundary would be an exercise 'player' and be deconflicted. As per SOP during AAR, TCAS RA was suppressed to prevent RA [alert's] against [receiver] aircraft [moving into formation]. The TCAS was on and the crew utilised the [display] to assist their situational awareness. They did not have receivers in formation at the time of the occurrence. Prior to being made

aware of the [other Airprox aircraft], the last instruction they had been given by [Boulmer] was to operate within Ultron North with a left orbit. They had been carrying out the same orbit pattern for approximately 20min with the turns to the north of the AARA further south than the boundary to remain VMC due to weather in the north. [Boulmer] notified them of the other [Airprox] traffic ahead and above. The crew used TCAS to identify the traffic. The crew identified the track on TCAS and determined that it was no factor. The crew formed the opinion that, as the [other] aircraft was transiting through an exercise area, at a level that was being used by their receivers to vacate the tanker block, it was [an exercise participant] and had been briefed on the activity and vertically deconflicted from them. They had not been given any further information as to the intentions of the traffic but elected to monitor on TCAS. The crew saw the traffic visually in and out of clouds, apparently deconflicted and at a stable level on TCAS (not indicating climb or descent). Believing that the traffic was being managed by ATC, they began their left turn as planned. When the crew identified [the Airprox aircraft] in a descent on TCAS, directly through their altitude, they attempted to determine its vector by manipulating TCAS and directing their attention out of the window. [The Airprox aircraft] was in and out of cloud. After they had begun their left turn [Boulmer] issued a right turn to 010°. They acknowledged this transmission by reading back the instruction but the aircraft commander elected not to take the right turn due to their assessment that to do so would take them closer into confliction with the [other] aircraft. The crew determined this by observing TCAS and looking out of the window. The crew elected to continue to turn left to increase their separation against [the Airprox aircraft] and notified [Boulmer] that they were turning left due to traffic. Once they were satisfied that their separation was sufficient, the crew kept looking out to judge [the Airprox aircraft's] vector as they had no update from [Boulmer]. Once [the Airprox aircraft] was identified out of the clouds they had changed their original vector and the left-hand turn was no longer sufficient to increase separation, [as had originally been assessed]. An immediate right-hand turn was initiated [which they] called [to Boulmer]. With no radio contact with the other aircraft, they determined that both aircraft may have been asked to turn right at the same time which would have explained [the Airprox aircraft's] change in direction from that originally determined. During the flight they had noted that [the radio] (which they were using for ATC comms) was intermittent/poor, which resulted in the crew having to ask the controller to 'say again' many times. This radio was listed serviceable in the Tech log, tested working prior to the flight and was reported [unserviceable] on return. In addition to radio issues, there were several occasions of callsign confusion due to [an almost identical callsign] also working the area. These included occasions of the controller calling [the other callsign] when intending to call them.

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

THE SWANWICK(MIL) OJTI reports training a controller (returning to controlling after approximately 8 months away from the role) with a north-south transit at FL220 callsign [C295 C/S] under a Radar Control Service. The [trainee controller] had correctly scanned and assessed conflictions and had spotted a traffic confliction with a 2460 squawk. As the squawk was an [exercise] squawk belonging to [Boulmer], the [trainee controller] was unable to identify who at [Boulmer] was controlling the aircraft. They discussed calling [Boulmer] (supervisor for weapons controllers) to request coordination either by proxy or to be transferred to the controller. [C295 C/S], under a Radar Control Service, was shortly to become Deconfliction Service due to entering a TRA on its heading at that time. [Boulmer Supervisor] answered the call, the [trainee controller] requested coordination and pointed out a 2460 Squawk with a Mode C indicated height of 214 and used 'GOTGO' as a location to point-out the required traffic. [Boulmer Supervisor] was unable to locate GOTGO so the OJTI intervened and said that it was east of D514 airspace where the exercise was being conducted. [Boulmer Supervisor] called contact on the 2460 traffic and the [trainee controller] pointed out their own aircraft to then discuss coordination. Coordination was not forthcoming from [Boulmer Supervisor] and the tracks were getting closer (opposite direction). The OJTI requested that [the KC135] stay inside the TRA as a solution and [the C295] would take a turn left to remain outside of the TRA and give them more freedom to manoeuvre. [Boulmer Supervisor] advised that this would not be achievable and instead directed them to take up a heading of 200°. In response the OJTI confirmed that if they took that heading they were the unknown factor and [Boulmer] would be required to avoid their traffic by 5 miles. [Boulmer Supervisor] agreed the course of action. With the traffic coordinated, they instructed [C295 C/S] to descend to FL180 as [Boulmer Supervisor] had said the air-to-air refuelling levels were FL190-220 which would have meant they could have avoided them for less time. Within approximately 3min of the coordination being agreed,

and as the aircraft were separated by 10NM laterally west to east, with [C295 C/S] being to the west of the 2460 squawk, they witnessed the 2460 squawk turn left towards [C295 C/S]. As [C295 C/S] was slower than the 2460 squawk they issued an avoiding action turn onto 270°. This required a repeated instruction for the aircraft to take action and the final call [of avoiding action] was 6NM northwest of the 2460 squawk. The 2460 squawk continued to track directly towards [C295 C/S] and close the lateral distance. The [Swanwick(Mil)] Supervisor intervened and asked them to stop the descent. The OJTI kept calling the traffic and reassessed the avoiding action, eventually updating [it] to a turn onto 360°. The last traffic call to [C295 C/S] before [C295 C/S] advised that they were responding to TCAS RA was less than 1NM and co-level. They asked the [C295 pilot] to report ready to resume ATC instructions and eventually were able to turn back onto a southerly heading and requested vertical coordination with [Boulmer]. The OJTI noted that the situation was completely unsafe in the relative distance between aircraft and could have resulted in a collision; TCAS RA was the only remaining barrier.

The controller perceived the severity of the incident as 'High'.

THE SWANWICK(MIL) SUPERVISOR reports they had called the [trainee controller] in for a training session where, at the time, only the [C295 C/S] was on frequency transiting to the east of D514. Very shortly afterwards, East Bank prenoted [a transit aircraft] wanting a transit around the west side of D514 for a transit into Lossiemouth. The [trainee controller] was with an experienced controller [instructor] who was [an examiner] on a separate bank. They were asked by the instructor if they could [coordinate the transit aircraft] which they sorted with the relevant civil sector. Once they had passed on the [coordination] they returned to look at the Supervisor radar feed and could see the potential issue with a [Boulmer] squawk and [C295 C/S], and could hear the discussion taking place between [trainee controller] and instructor. They continued their supervisory tasks and their attention was alerted when they heard the Instructor intervene and take control of the situation, issuing a heading of 200°. The instructor then informed them that [Boulmer] would be 'taking 5' [avoiding the C295 C/S by at least 5NM]. Very soon after, the [Boulmer] squawk started turning left, directly towards [C295 C/S]. They saw the selected FL on their tag, and asked the instructor to stop their descent. They then heard further headings being issued and a reaction to a TCAS RA. Once clear, they saw that the Mode C of [C295 C/S] was below the [Boulmer] squawk. A few moments later, the [Boulmer controller] called, asked them to turn left with [C295 C/S] and that they would continue to turn right. The Supervisor said negative to that request, that they were going to instruct [their controller] to continue their [traffic] right turn and that they were continuing a descent to FL180 as they were now at least 2000ft below the [Boulmer] track. The [Boulmer controller] acknowledged and hung up.

THE BOULMER CONTROLLER reports they were Weapons Controller (WC) in the Fighter Marshall (FM) position with an instructor, undergoing upgrade training. As FM, they received a call from Swanwick requesting traffic information on [a 2460 squawk, the KC135]. They explained that it was a tanker working on the exercise, and was operating on the Force QNH 999hPa at 21,000ft, blocking 19,000-22,000ft. [KC135 C/S] was showing a Mode C of FL214. Swanwick was controlling [C295 C/S] at FL220 that was routing north-south around the east of EG D514. They agreed to deconflict laterally, that they would tell [KC135 C/S] to turn right, onto heading 010° and [C295 C/S] would turn right onto heading 200°. They called in the conflicting traffic (the [C295 C/S]) to [KC135 C/S], and told them to turn onto the heading of 010° a total of 3 times. [KC135 C/S] throughout ignored the orders. The instructor then took over the radio and ordered the avoiding action, which [KC135 C/S] also ignored. [KC135 C/S] then turned left (following their orbit pattern) pointed directly towards [C295 C/S]. [C295 C/S] then descended and became co-level with [KC135 C/S] at perceived 2NM. After the incident [KC135 C/S] was cooperative on UHF.

THE BOULMER SUPERVISOR reports as the Fighter Allocator for [the exercise mission], they were supervising 2 controller positions (a 'Lane WC' and an FM). At the point of the occurrence, their focus was primarily on the Lane WC due to the number of aircraft they had on channel, as well as to supervise the tactical requirements of the mission. They became aware of the developing situation with [KC135 C/S] and [C295 C/S] as they heard what turned out to be the third instruction from the FM to [KC135 C/S] to turn right onto heading 010°, shortly followed by the FM's instructor taking the radio and issuing an avoiding action. The FM and Instructor were sat directly behind the supervisor in the Ops Room and so the Instructor spoke directly to them to highlight what was occurring. At that point they zoomed in on

the situation and observed [KC135 C/S] turning left, following its tanker AAR orbit, as [C295 C/S] was turning right onto 270°. This resulted in [KC135 C/S] being in behind [C295 C/S] 1NM and co-level as [KC135 C/S] then began to also turn right. They called the Swanwick Supervisor at that point to inform them [KC135 C/S] was being instructed to continue right onto 010°.

Analysis and Investigation

Military ATM

An Airprox occurred on 23 Sep 24, east of the D514 complex at 1105 UTC. The C295 was transiting south and in receipt of a Radar Control Service from Swanwick Military. The KC135 was established within an air-to-air refuelling area and in receipt of a Traffic Service from CRC Boulmer.

Utilising occurrence reports and information from the local investigations, 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. Screenshots are taken from NATS radar recordings and therefore may not present the actual radar presentation of the C295 and KC135 available to the controllers.

The Swanwick Military controller was under training following a significant period of absence, with a Unit Trainer established. The C295 was the only aircraft being provided a service, although two further aircraft had been pre-noted and were expected. The CRC Boulmer controller was under training in the Fighter Marshaller role with a Unit Trainer established as part of the Combat Ready upgrade process. In addition to the KC135, there were 9 additional aircraft being provided a service.

In support of a large-scale military multinational air exercise, EGD514 and the associated Operating Area had been established.[1] Establishment of the exercise area had resulted in the C295 submitting a Flight Plan that avoided both EDG514 and the Operating Area through a routing to the northwest. On crossing the FIR boundary, the C295 was initially in receipt of a Radar Control Service from Prestwick Moray Low sector with the pilot requesting their flight planned routeing. Conscious of the flight plan's 319NM track mileage, as opposed to the direct routing of 251NM, the Moray Low controller asked the C295 pilot if they would prefer a more direct routeing if this could be facilitated by Swanwick Military. The Moray Low controller contacted Swanwick Military and the Swanwick Military controller agreed to facilitate a more expeditious routeing with handover of the aircraft occurring.

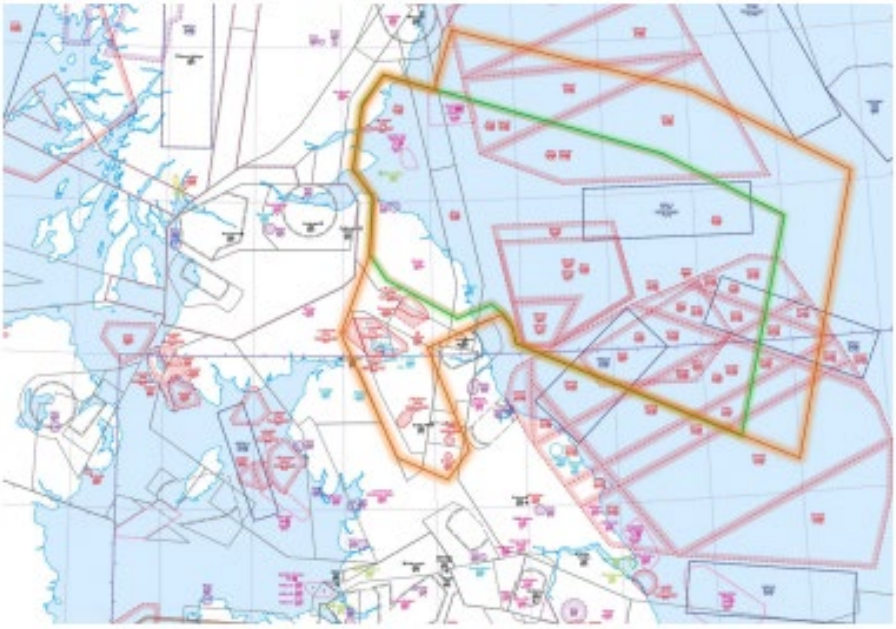


Figure 1. Overview of Exercise Area: EGD514 (Green) and Operating Area (Orange)

[1] Published via Aeronautical Information Circular Y 140/2024

At 1058:00, the CRC Boulmer controller approved the KC135 to operate within the air-to-air refuelling northern area. The KC135 was established at 21,000ft on the Force QNH 999hPa with the assigned operating altitude block for air-to-air refuelling being 19,000ft to 22,000ft.

At 1101:18, the Swanwick Military controller contacted CRC Boulmer to request co-ordination between the C295 at FL220 and the KC135 indicating FL214 because of the Force QNH difference.

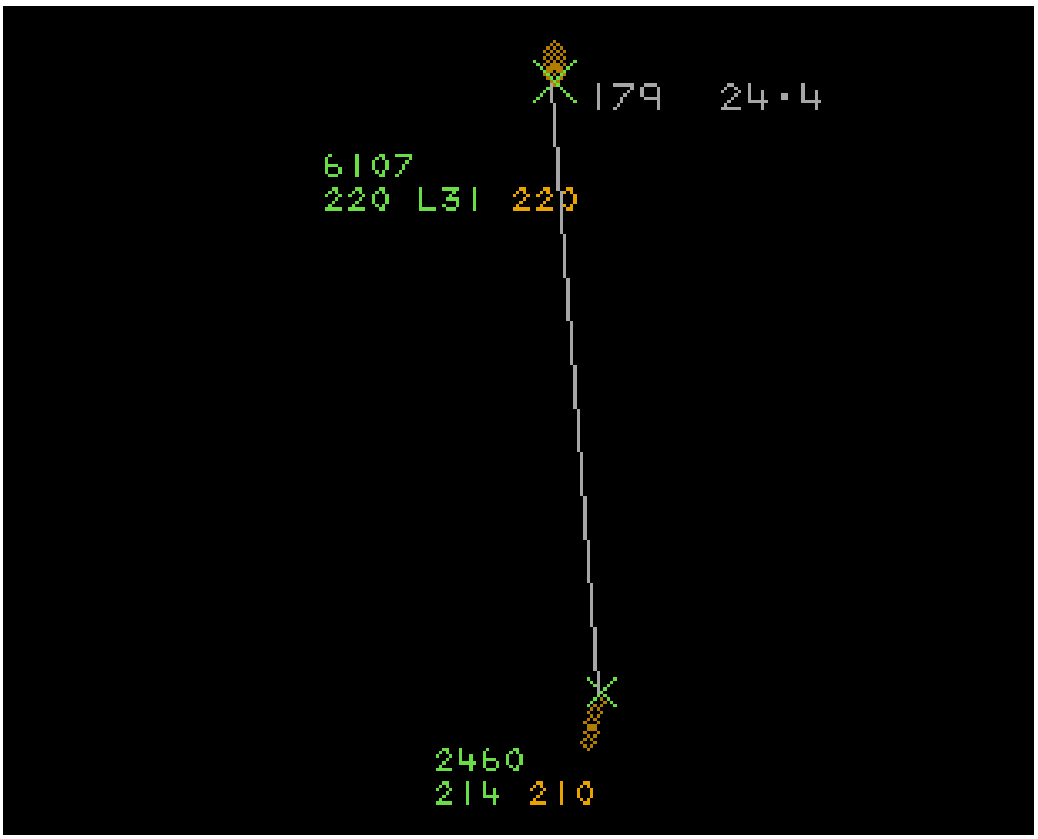


Figure 2 (1102:45). Co-ordination initiated.

The call was transferred to the CRC Boulmer controller at 1102:45. The Swanwick Military controller pointed out the C295 using GOTGO as a reporting point, however, the CRC Boulmer controller was unaware of this reporting point and the co-ordination was delayed as the C295 was pointed out as east of the EGD514 airspace and through the Mode 3A code. The Swanwick Military Trainer who intervened asked, "*Is it [KC135] staying inside or outside the TRA?"* to which the CRC Boulmer controller replied *"he's [KC135] routeing around, he's in the 514 airspace".*

The Swanwick Military Trainer's initial plan was to turn the C295 right, requesting the KC135 [pilot] to maintain their heading and therefore achieving lateral separation. The CRC Boulmer controller questioned this plan through stating "*you'll be coming into my tanker block there, I'm blocking 19 to 22*". The Swanwick Military Trainer amended their plan in response to this, proposing "*we'll come left if you can come left*". Assessing this would not achieve the required separation the CRC Boulmer controller proposed "*if you turn right 200, that'll deconflict it*". The Swanwick Military Trainer confirmed the co-ordination agreement at 1103:50 with "*turn right 200 and you'll avoid*".

At 1103:51, the Swanwick Military Trainer instructed the C295 [pilot] to turn right on to heading 200°, which the C295 [pilot] acknowledged. As the C295 was approaching the active Temporary Reserved Area, the Swanwick Military Trainer informed them and requested their type of service required. The C295 [pilot] requested a Deconfliction Service on exit from controlled airspace.

At 1104:01, the CRC Boulmer controller provided the KC135 [pilot with] Traffic Information on the C295, "*Traffic, BRAA, 350/19, FL220, tracking south*", which the KC135 [pilot] acknowledged.

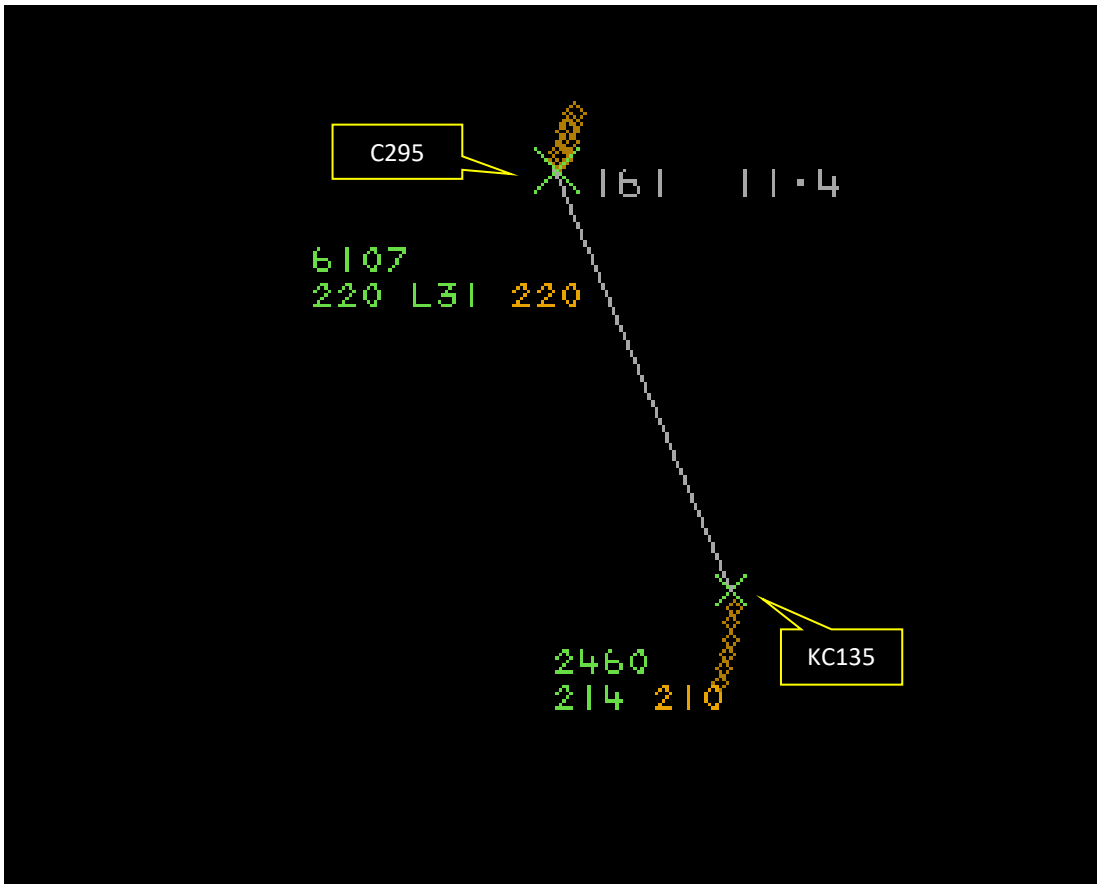


Figure 3 (1104:45). KC135 commencing left-hand turn.

At 1104:24, the Swanwick Military Trainer instructed the C295 [pilot] to descend to FL180, which the C295 [pilot] acknowledged. At 1104:44 the Swanwick Military Trainer, observing the left-hand turn of the KC135, issued an avoiding action for the C295 [pilot] in addition to the descent "*avoiding action turn right heading 270 degrees, traffic was southwest 10 miles manoeuvring indicating 600 feet below*." Following a request to repeat the heading the C295 [pilot] acknowledged the heading change. Also observing the left-hand turn of the KC135, the CRC Boulmer controller instructed the KC135 [pilot] to remain in formation with their refuelling receiver aircraft. The KC135 had no receiver aircraft in formation, however a legacy aircraft's data block had remained attached to the KC135 which resulted in it presenting as if refuelling was ongoing. The KC135 [pilot] requested the instruction to be repeated, however, at 1104:58, the CRC Boulmer controller attempted to issue a turn to the KC135 [pilot] but incorrectly used another callsign in use with another KC135 on frequency.

At 1105:12, whilst in receipt of a Short-Term Conflict Alert, the Swanwick Military Trainer provided the C295 [pilot] with Traffic Information on the KC135. This was followed by a further heading change at 1105:54, when the Swanwick Military Trainer instructed the C295 [pilot] to turn right on to heading 360°, which the C295 [pilot] acknowledged. At 1105:59, the CRC Boulmer controller rectified the incorrect callsign and issued the KC135 [pilot] with avoiding action onto a heading of 010°. The KC135 [pilot] twice requested the instruction to be repeated before acknowledging the instruction, but instead reported turning left due to traffic. At 1106:49, the C295 [pilot] reported a TCAS Resolution Advisory alert which was followed by the C295 [pilot] reporting visual with the KC135 at 1107:00. CPA occurred at 1106:41 and was recorded as 1.5NM and 0ft separation.

Independent local investigations were conducted by both CRC Boulmer and Swanwick Military following the event to identify the ATS-related causal/aggravating factors. The CRC Boulmer investigation found that the controller's non-standard response to the request for co-ordination stemmed from surprise that other non-participating aircraft were in the vicinity of the airspace. Additionally, the initial description of the KC135 was incorrect as it lacked altitude block information that was essential for the Swanwick Military controller to develop a suitable deconfliction plan. Whilst

the initial avoiding action would have been sufficient, the delay in its provision through incorrect callsigns and the KC135 radio issue significantly diminished its effectiveness. The Swanwick Military investigation found that the non-standard nature of the co-ordination agreement resulted in an ambiguous agreement that ultimately did not ensure the provision of the required separation for the C295.

2 Gp BM Analysis
Whilst both controllers and trainers responded to the changing scenario and provided appropriate avoiding actions to achieve separation, the original co-ordination agreement was the root cause for the occurrence. A combination of non-standard phraseology and incorrect description of aircraft intentions prevented either controller having an adequate understanding of the other aircraft to develop a suitable deconfliction plan.

UKAB Secretariat

The C295 and KC135 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] If the incident geometry is considered as overtaking then the C295 pilot had right of way and the KC135 pilot was required to keep out of the way of the other aircraft by altering course to the right.[4]

Swanwick Occurrence Investigation

The Swanwick Occurrence Investigation found the following outcomes, causes and causal factors:

Outcome: As both aircraft were converging, Swanwick initiated avoiding action onto a heading of 270° against [KC135 C/S], turning further right to 360°. The [Boulmer] controller issuing a right turn unknowingly increased the risk as they were no longer aware of Swanwick's intentions to also turn further to the right.

Cause: The poor radio communications between [KC135 C/S] and [Boulmer] meant that [Boulmer]'s turn to the right wasn't initiated sooner with the reasoning to explain the turn. This could've meant that before [KC135 C/S] turned left to maintain their tanker orbit, separation could have been maintained. [KC135 C/S] not taking the right turn due to assessing the flight path of an aircraft in and out of cloud, on TCAS and not having the fullest picture of track vectors of the aircraft that radar provides may have increased the risk of collision exacerbated by the poor radio communications degrading awareness for both the pilot and controller.

Causal Factor: [KC135 C/S] having intermittent/poor radio communications with ATC meant that calls/full reasoning behind decisions were missed and the tanker pilot's situational awareness was degraded.
Mitigation/Local Actions: [KC135 C/S] raised the matter with the maintainers and the UHF comm 2 radio was subsequently placed inoperable.

Outcome: The coordination that was agreed was non-standard and [C295 C/S] was not referred to as required in RA3230[5], with [C295 C/S] operating under a Deconfliction Service, it was the responsibility of the Swanwick controller to maintain 5NM separation laterally or 3000ft vertically. With [KC135 C/S] turning to the left and towards [C295 C/S], best effort was made to maintain separation, however, it was not achieved.

Cause: In a high pressure situation where co-ordination was the chosen course of action. The co-ordination was non-standard and due to the fact that Swanwick although pointing out [Boulmer]'s track ([KC135 C/S]) using a correct method of identification under RA3227[6] (i.e. SSR data). [C295

[2] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.
[3] (UK) SERA.3210 Right-of-way (c)(1) Approaching head-on. MAA RA 2307 paragraph 13.
[4] (UK) SERA.3210 Right-of-way (c)(3) Overtaking. MAA RA 2307 paragraph 14.
[5] https://www.gov.uk/government/publications/regulatory-article-ra-3230-traffic-coordination
[6] https://www.gov.uk/government/publications/regulatory-article-ra-3227-methods-of-identification

C/S] was not referred to explicitly as detailed in RA3230 although it was evident to both parties which aircraft were involved due to no other relevant traffic in the area.
Mitigation/Local Actions: Controllers were debriefed and reminded of the importance of keeping co-ordination phraseology standard and the need to point out tracks explicitly.

Causal Factor: The pressure of two tracks in opposite directions and the aim of agreeing a suitable course of action may have rushed controllers to deviate from the correct phraseology and also the duration from the call being initiated to the course of action being agreed was over 3min in duration.
Mitigation/Local Actions: Controllers were debriefed and reminded of the importance of keeping co-ordination phraseology standard and the need to point out tracks explicitly.

Boulmer Occurrence Investigation

The Boulmer Occurrence Investigation reported the following summary, outcomes, causes and causal factors:

Summary

The WC was a trainee under instruction coming to the end of an arduous Combat Ready training package.

The WC's response to the request for co-ordination appeared to be hesitation born out of surprise at being asked for co-ordination at all, and perhaps lack of practice in conducting that activity.

This likely stemmed from the expectation that the interaction with other traffic in that area would have been minimal or none, due to the activation of EGD514 and the level of their traffic being within the TRA and below Class C (FL245) [airspace]; therefore, geographically removed from other air traffic.

The appropriate response to Swanwick's request from the WC should have been "Not below altitude 190, not above altitude 220, Tanker in Area ULTRON NORTH", iaw MAA RA 3230 as their aircraft was working in a block as part of [the exercise].

This would have prompted the Swanwick controller to realise that any form of lateral co-ordination/deconfliction would be unlikely due to the nature of the task being conducted and prompted a different CoA (Swanwick descend beneath the tanker).

This would have resolved the situation extremely quickly and [it] would have [been] expected [that] their respective instructors intervene at that point.

Asking for coordination is infrequent amongst the control cadre, as they are expected to plan clear of conflictions, and most live flying training is conducted within segregated airspace where coordination with GAT is not required.

As the tanker was on the FQNH in a block, there was a Mode C difference to SPS, and so converting those altitudes to FLs in the heat of the moment can be tricky when confronted with coordinating an opposing aircraft in level flight on the SPS.

Ultimately, both the WC and [Boulmer] controller acted to avert LoSS in an appropriate manner through avoiding action – albeit the tanker [crew] did not respond as requested as they were already in a left-hand turn; however, this situation could have been averted through agreeing a far more efficient CoA much earlier using vertical separation.

Outcome: AIRPROX. Safe separation lost between KC135 and C295. Perceived Closest Point of Approach (CPA) 0ft <1NM whilst both in right-hand turn in response to: [KC135 C/S]: Avoiding action instructions, [C295 C/S]: TCAS RA

Cause: The process was inappropriate due to ambiguity, factual inaccuracies or poor wording and the outcome occurred as the procedure was not followed as intended. Phraseology not IAW MAA RA3230. The appropriate response to Swanwick's request from the WC should have been "Not below A190, not above A220, Tanker in Area ULTRON NORTH", iaw MAA RA 3230, as their aircraft was working in a block as part of [the exercise] which may have prompted the Swanwick controller to realise that any form of lateral co-ordination/deconfliction would be unlikely due to the nature of the task being conducted and prompted a different CoA (Swanwick descend beneath the tanker). The Boulmer controller stated that [KC135 C/S] is "in the D514 airspace." This added ambiguity and factual inaccuracy.
Mitigation/Local Actions: Air C2 Control team briefed on the importance of formats with regards to traffic information and requests for coordination. Air C2 Force FAs have been reminded of the importance of checking WCs understanding of both FQNH vs SPS altimetry differences and Coord agreements during in-briefs through the use of 'check questions' designed to highlight any potential unusual FS issues particular to that sortie/scenario. Airspace brief is checked and understood during C2 Mass Brief.

Causal Factor 1: Controller workload was deemed as increasing at the time of occurrence due to several aircraft joining the AAR pattern and 3 tankers establishing within ULTRON NORTH and SOUTH [AAR tracks].
Mitigation/Local Actions: Request for additional 'support controller' to be considered during Large Force Exercise (LFE). The AAR/FM task should, if similar or greater intensity is expected, be split between two (or more) controllers to reduce workload, RT load and the propensity for cognitive error.

Causal Factor 2: In accordance with BM Order 805, controllers cannot provide Radar Control to more than 8 Speaking Units. At the time of event, all tankers were established below FL245 and outside Class C [airspace] due to limitations placed upon Tac C2 regarding provision of Radar Control to more than 8 speaking units. This compressed the vertical limits of the airspace allowing little room for manoeuvre with joining/departing aircraft, and/or other GAT/OAT.
Mitigation/Local Actions: After an extensive safety assessment, the BM Order 805 regarding 8 Speaking Units has been removed. This has enabled more altitude blocks to become available for AAR and transits.

Causal Factor 3: For LFEs such as [this exercise], Tac C2 is usually supplemented by a [Swanwick] LNO. The LNO is responsible for assisting the control team in sighting traffic and providing conflict resolution in the absence of automated Short Term Conflict Alert (STCA). This allows the controller to focus on getting aircraft to/from the AARAs safely whilst also providing transits to/from the operating area. In this instance, a LNO was unavailable due to low staffing across both [Swanwick], and Tac C2 (operational demands across both AORs); therefore liaison and early warning of approaching conflicts were degraded to a significant extent.
Mitigation/Local Actions: A3/5 Plans has factored in early requests for LNO support and has placed leave restrictions over exercise periods in the event that LNO support is unavailable.

Causal Factor 4: It was discovered that COMM2, the UHF radio which [KC135 C/S] was using to interact with Tac C2, was not functioning correctly during flight and subsequently declared INOP by maintainers on inspection following this event.
Mitigation/Local Actions: USAFE KC135 maintainers have grounded the airframe in question until the COMM2 UHF radio issue is resolved.

Causal Factor 5: Once [C295 C/S] had been 'called in' to [KC135 C/S] and avoiding action observed, follow-on traffic information was observed to cease. There was no follow on communication between [Swanwick] and Tac C2, nor did Tac C2 continue to pass traffic information to [KC135 C/S] regarding the position of [C295 C/S]. This is deemed to link to [the first] Causal Factor - Workload, leading into cognitive failure during a high-stress event.
Mitigation/Local Actions: Since this event, control teams have received briefings from [Boulmer] regarding the importance of passing traffic information and taking aircraft size and speed into consideration. [Boulmer] has also contacted NATS Prestwick to arrange for controllers to visit their

control centre to discuss defensive controlling, traffic observations and standard routeings, and to observe the impact of communication from a GAT perspective.

Causal Factor 6: At 1012:35 the [C295 C/S] checked in on the Moray Low sector. The Moray controller asked [C295 C/S] their route and asked if they can arrange a more direct route with Swanwick Mil, and would they want that? [C295 C/S] said yes they would take the direct route. 1013:58 Moray called Swanwick Mil and asked if they can take [C295 C/S] to give a more direct route? 1014:49 Swanwick Mil said they were happy to take. [C295 C/S]'s details were passed. It was identified by Swanwick Mil and a squawk, frequency and level agreed. Moray asked Swanwick Mil if there was anywhere they wanted [C295 C/S] routed to? Swanwick Mil replied, "I can sort that out when he comes on". 1016:15 [C295 C/S] transferred to Swanwick Mil at KLONN.
Justification of no action: Both NATS and [Swanwick] were aware of the exercise airspace, including the 'operating area' outside D514 and understood that coordination would possibly be required around this airspace.

Summary

An Airprox was reported when a C295 and a KC135 flew into proximity 11NM NNE of GOTGO at 1107Z on Monday 23rd September 2024. Both pilots were operating under IFR, the C295 pilot in IMC in receipt of a Deconfliction Service from Swanwick(Mil) and the KC135 pilot in VMC in receipt of a Traffic Service from Boulmer.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, GPS data, a report 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 controllers' actions and was informed that the C295 crew had originally flight planned to route to the north and west of both the exercise operating area and EGD514. The Prestwick controller had, reasonably in the Board's opinion, suggested a re-route to save time and fuel and had coordinated the re-route with Swanwick. The acceptance of the re-route by Swanwick was discussed at length and its training value was understood. Some members were of the opinion that the Swanwick controller could either have achieved coordination with Boulmer at an earlier stage or have declined the re-route. Members felt that although it had appeared sensible and achievable at the time, subsequent confusion had contributed to the Airprox. Swanwick had attempted to coordinate the re-route with Boulmer, but the Boulmer controller (undertaking an upgrade with an instructor also on console) had been confused as to the status of the C295, believing all traffic within the exercise operating area to have been exercise traffic. Coordination was delayed and both the Swanwick and Boulmer OJTIs had stepped in, but none of the controllers had used the correct RTF phraseology (**CF1**), which the Board felt had contributed to the lack of effective coordination (**CF3**) and which in turn had resulted in inadequate separation (**CF5**) and conflict resolution (**CF4**) with an associated STCA warning (**CF6**). Having agreed a course of action, the situation was then compounded by the KC135 pilot not receiving the Boulmer controller's instructions, due to a faulty radio, and of the use of a similar callsign but not that of the Airprox KC135. Further confusion had been caused by the KC135 radar return displaying a legacy label indicating that it had been trailing a 'chick' i.e. that another aircraft had been in close formation awaiting refuelling, and then by the KC135 crew's interpretation of their TCAS returns on the C295 and their fleeting visual sightings of the C295 as it had flown in and out of cloud (**CF12**). Additionally, the Boulmer controller had not passed Traffic Information on the C295 to the KC135 pilot (**CF2**) and the KC135 crew TCAS had been operated in TA-only mode, as was standard when engaged in air-to-air refuelling operations. Turning to the pilots, members agreed that it had been entirely the KC135 pilot's prerogative to manoeuvre their aircraft in any way they had felt necessary in order to maintain safety, however, members felt that their decision making could have been communicated to the Boulmer controller at an earlier stage (**CF7**). In the event, the KC135 crew had not had fully correct situational awareness on the C295 (**CF8**), hence had been concerned by its proximity (**CF9**), and their manoeuvring had resulted in a reduction in separation which had been ultimately resolved by the C295

TCAS RA (**CF10**), whose crew had also seen the KC135 and had understandably been concerned by its proximity (**CF11**).

Despite the complex chain of events that had culminated in this Airprox, the Board members were satisfied that separation at CPA and the TCAS interaction had been such that risk of collision had been effectively averted, Risk C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024241			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Situational Awareness and Action			
2	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
3	Human Factors	• ATM Coordination	Coordination related issues (external as well as internal)	
4	Human Factors	• Conflict Resolution-Inadequate	An event involving the inadequate provision of conflict resolution	
5	Human Factors	• Separation Provision	An event involving Air Navigation Services separation provision.	
	• Electronic Warning System Operation and Compliance			
6	Technical	• STCA Warning	An event involving the triggering of a Short Term Conflict Alert (STCA) Warning	
	Flight Elements			
	• Tactical Planning and Execution			
7	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
	• Situational Awareness of the Conflicting Aircraft and Action			
8	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
9	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
	• Electronic Warning System Operation and Compliance			
10	Contextual	• ACAS/TCAS RA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system resolution advisory warning triggered	
	• See and Avoid			
11	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft
12	Contextual	• Visual Impairment	Events involving impairment due to an inability to see properly	One or both aircraft were obscured from the other

Degree of Risk: C.

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:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because some controller instructions were not iaw the relevant MAA RAs.

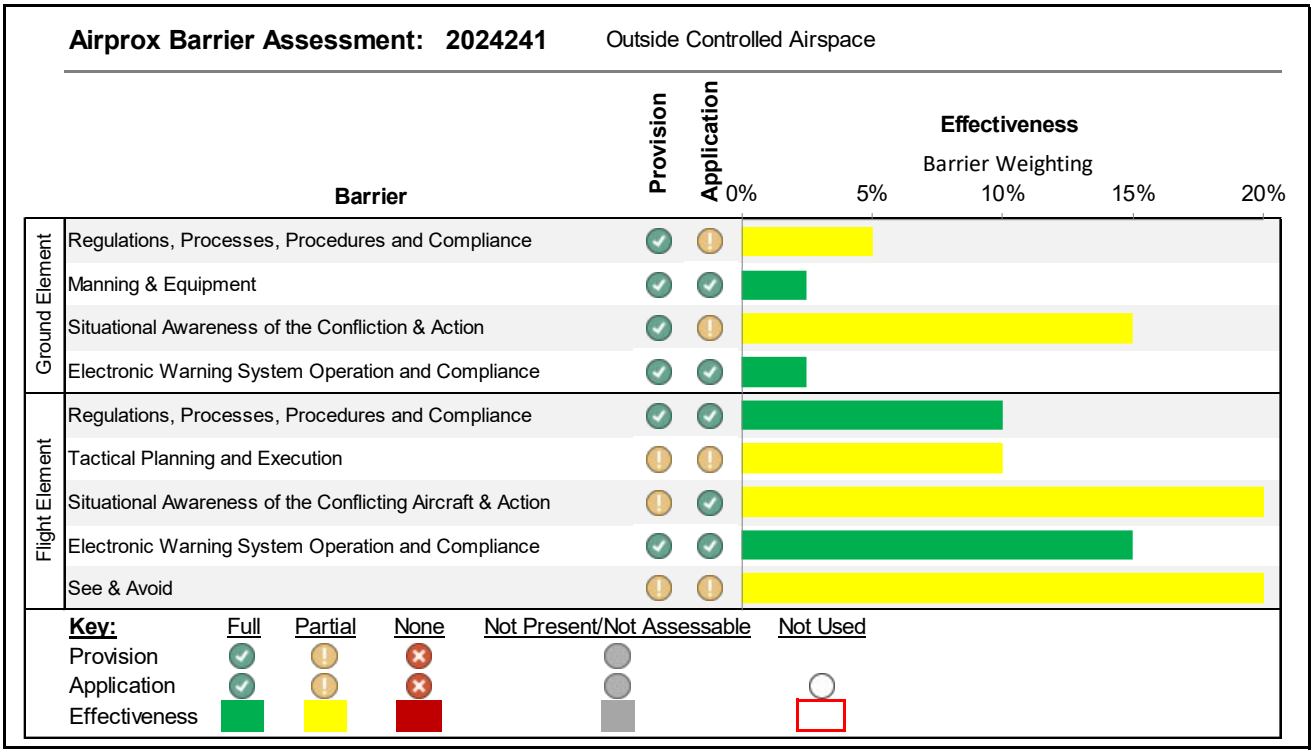
Situational Awareness of the Confliction and Action were assessed as **partially effective** due to a lack of effective coordination.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the KC135 crew extended their decision making with regards to their own avoiding action without informing Boulmer.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the KC135 crew did not have full situational awareness on the C295 and were concerned by its proximity.

See and Avoid were assessed as **partially effective** because the aircraft were partially obscured by cloud.



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