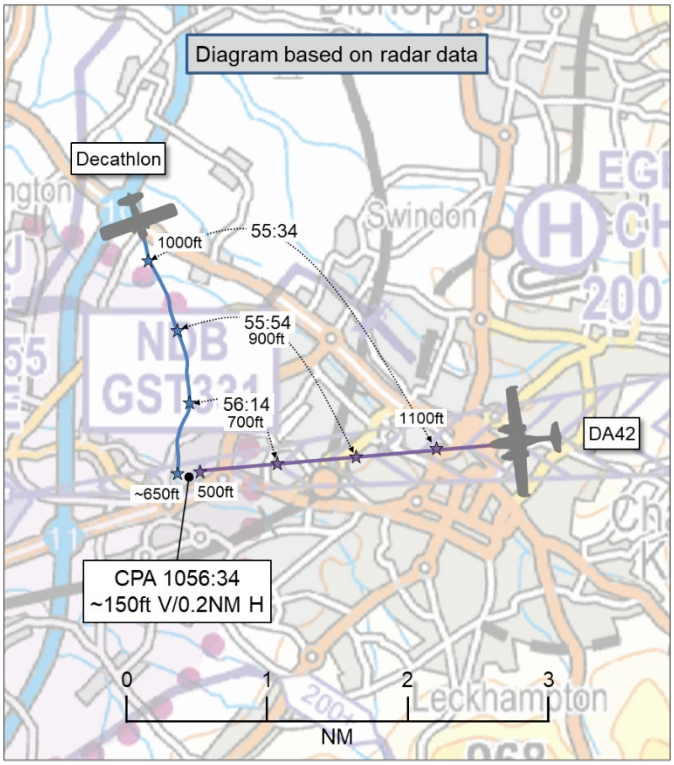
AIRPROX REPORT No 2024226

Date: 29 Aug 2024 Time: 1057Z Position: 5154N 00208W Location: 1NM E of Gloucester Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Decathlon	DA42
Operator	Civ FW	Civ FW
Airspace	Gloucester ATZ	Gloucester ATZ
Class	G	G
Rules	VFR	IFR
Service	ACS	Between frequencies
Provider	Gloster Tower	Gloster App/Twr
Altitude/FL	~650ft	500ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Red	White
Lighting	Strobes, Nav, landing.	Position, landing taxi, anti-collision
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	600ft	1100ft
Altimeter	QNH (1019hPa)	QNH (1018hPa)
Heading	230°	270°
Speed	80kt	100kt
ACAS/TAS	Not fitted	TAS and SkyEcho
Alert	N/A	None
Separation at CPA		
Reported	100ft V/150m H	0ft V/200m H
Recorded	~150ft V/0.2NM H	



THE DECATHLON PILOT reports that they were joining the circuit at Gloucester. They were given a right-base join from Tewksbury. They reported 5NM as standard and were transferred from the Approach frequency to the Tower. Tower instructed them to join right base and report final, number one. They proceeded to base then they looked up the approach for RW27, saw no traffic to conflict, then turned final and called final to land and were then instructed to go around to the deadside of the airfield. They pitched into the climb, added full power then looked around to determine the reason for the instruction to go around. The runway appeared to be clear. They scanned around and, as they looked in their 5 o'clock position, saw a DA42 very close. They were then instructed by ATC to level-off. The DA42 was clearly climbing in a go-around from an instrument approach so they levelled the aircraft and continued their heading to the deadside. ATC informed them to call visual on the DA42 then arrange their flight to pass behind the aircraft and rejoin downwind for RW27. They complied with this instruction and landed. ATC informed them that their situational awareness radar was unserviceable and they were relying on position calls by the instrument traffic for awareness. ATC did not inform them that there was an aircraft on the instrument approach before telling them to go-around.

The pilot further reported that the Airprox occurred 1NM on the final approach for RW27 at Gloucester Airport. They conducted a go-around to the deadside of the circuit as instructed by ATC.

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

THE DA42 PILOT reports that they were the FI on an IR training flight and the conflict happened in the latter stages of an RNP IAP just after a go-around had been initiated at Decision Altitude. ATC had been notified of their intention to go around from the approach. The trainee was the pilot flying whilst they were operating the R/T to reduce their workload. Gloster Approach had requested a position report at the final approach fix (FAF) which was 5NM from the threshold. Due to intense radio chatter from

other local VFR and IFR traffic, they were unable to make the call until approximately 2.5NM. They were then transferred to Gloster Tower. Again, the frequency was busy and they recalled having to delay checking in. During the consequent go around at 650ft altitude, they became aware of the other aircraft slightly left of the nose, at their altitude and climbing. They estimated the lateral separation at first visual acquisition to be 100-200m. They deduced quickly that they were generally diverging so did not change heading, however, they instructed the trainee to raise the nose to achieve a higher rate of climb as they knew they could out-climb the aircraft. It is possible that the aircraft was displayed on the G1000 TAS but they recalled that the screen was cluttered with multiple other aircraft so was of little value. Generally, the onboard TAS becomes quite unreliable within an ATZ with high traffic density. They were also using [electronic conspicuity equipment] which was connected to their iPad and running [2 forms of navigation software]. Again it is likely that the other aircraft was displayed on both software, but in that phase of flight and in VMC, their attention was firmly out of the window and not on the iPad on their knee. At no point did ATC inform them of any conflicting traffic. They believed that contributory factors were the late call from themself beyond the FAF, high traffic density therefore busy R/T, high workload in the cockpit reducing general situational awareness and high workload in the Tower VCR for the same reasons also reducing their situational awareness.

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

THE GLOSTER TOWER CONTROLLER reports that the Decathalon [pilot] had been given a direct right-base join for RW27 to land. The DA42 was carrying out an RNP instrument approach to RW27 to go around. The ATM/radar screen was unserviceable.

They believed that when [the Decathlon pilot] made contact on the frequency they instructed [the pilot] to report final. They had a co-ordination strip from Approach, giving details of the instrument approach aircraft carrying out an RNP27, confirming that [the DA42] would go around and climb straight ahead to altitude 3000ft. The Approach ATCO would instruct the aircraft to report at the Final Approach Fix (FAF) at 5NM, then the aircraft would be transferred to Tower. The Approach ATCO advised them that the DA42 was at approximately 2.5NM and could they clear them to go around. They were not aware that the aircraft was this close as the ATM was unserviceable. They could not see [the Decathlon] on final and believed them to still be on right base, so they agreed that Approach could issue the go-around clearance. They then saw the [Decathlon] on final, their view having been blocked by the pillar of the VCR. They sent them around, and passed Traffic Information on the DA42. They instructed Approach to instruct the DA42 pilot to go around wide on the deadside. [The Decathlon pilot] advised that they were visual with the DA42 and was requested to arrange their flight to pass behind, to then reposition into the right-hand visual circuit.

This report had been filed to the best of their abilities to remember the sequence of events and without having listened to the recordings. They were not aware that an Airprox had been filed until the Airprox Board contacted the MATS on 02/09/24 and they were asked to file an MOR.

Factual Background

The weather at Gloucestershire Airport was recorded as follows:

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METAR EGBJ 291050Z 21006KT 180V260 9999 FEW030 19/10 Q1018
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The RNAV procedural approach for RW27 procedure for Gloucestershire Airport was as follows:

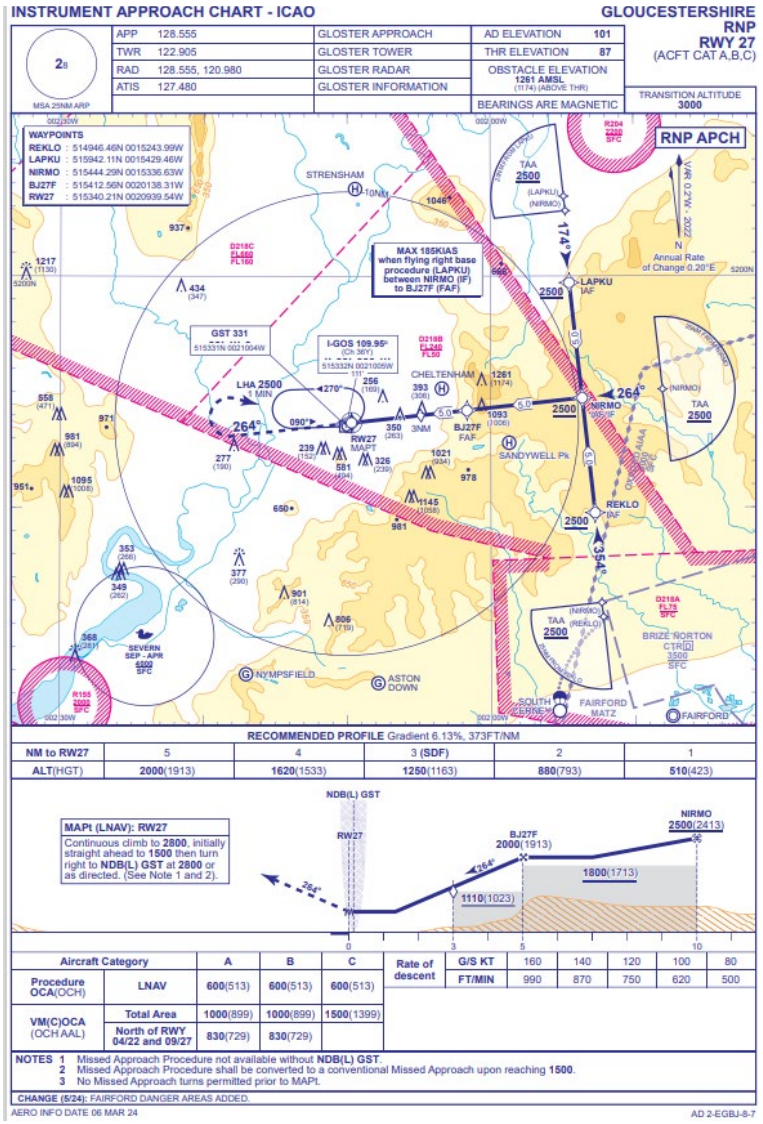


Figure 1 RW27 RNAV Approach Procedure for Gloucestershire Airport

Analysis and Investigation

Gloucestershire Airport

The investigation report analysed the following: transcription of salient parts of Tower and Approach R/T, interviews with the Approach and Tower ATCOs and pilots involved, METARs, watch log entry, and flight progress strips.

The radar/ATM was first reported as unserviceable on the morning of the 28th of August. It was still unserviceable on the 29th of August (the day of the Airprox).

The unserviceability of the ATM meant that ATCOs could not use it to determine the landing order, spacing and distance from touchdown of arriving aircraft or to provide information to aircraft on the position of other aircraft in the circuit or carrying out an instrument approach.

The Aerodrome controller would normally maintain, as far as practicable, a continuous watch by visual observation on all flight operations in the vicinity of the aerodrome. These visual observations would normally be achieved through direct out-of-the-window observation, or through indirect observation utilising the ATM. As the ATM was unserviceable, the Aerodrome controller would have had to rely on out-of-the-window observations supported by pilot position reports. Although the Aerodrome controller had worked without the ATM when it had failed the day before, this was still a different way of operating to normal, with little time to become used to these abnormal operating

conditions. It may also be worth noting that the size and streamlined shape of the DA42 can make them difficult to see on final approach.

In this event the Tower controller did not have visual observation of either aircraft until they were both within 2.5NM final.

GLOSTER MATS 2 (Section 3, Chapter 2, 1.1.1 (d)) states that: "ATC is to mutually establish transfer of control points with APC for arrivals, having regard to traffic density and weather conditions. Default points are 5NM for direct joins (the Decathlon).....and 5NM at the FAF for RNP (DA42)."

During this event there was no coordination that suggested the transfer of control points were any different to these default points. The transfer of control of [the Decathlon] was carried out after they had reported at 4NM and the transfer of control of [the DA42] was not clearly specified as the pilot was told to contact Tower "when ready" and significantly past "5NM at the FAF for RNP" (probably at approximately 2.5NM final based on RTF recordings, likely DA42 indicated airspeed and pilot report). It should be noted that during the busy RTF loading on the Approach frequency leading to the Airprox there were other examples of late position reports being given e.g. [the DA42 pilot] reported 6NM from REKLO (not 8).

GLOSTER MATS 2 (Section 3, Chapter 2, 2.2.2) states: "Due to the high volume of IFR and VFR traffic that requires integration into the circuit, in addition to passing routine Traffic Information, controllers should employ defensive controlling techniques to minimise the likelihood of a confliction." Whilst this paragraph goes on to focus on missed approaches versus standard overhead joins this fundamental defensive controlling technique would apply in this case.

In this event neither [pilot] received Traffic Information on the other until they were relatively near to one another on final approach.

The Tower ATCO made the decision to advise the Approach ATCO that [the Decathlon] could make a direct join to right-base. Given the likely relative positions of the two aircraft when these decisions were made, it is reasonable to say that their projected flight paths were towards a point of conflict at approximately 2NM final for RW27. A defensive controlling technique may have been to give [the Decathlon] a right-hand downwind join. This may have given further opportunity to assess the landing order and pass Traffic Information and number in the sequence. In light of the fact that the ATM was unserviceable, a downwind join may have been more appropriate.

GLOSTER MATS 2 (Section3, Chapter 8.1) states: "ADC is to ensure that circuit traffic is advised of its number in the landing sequence and sufficient information or instructions are passed to avoid conflicting with aircraft undertaking instrument approaches."

In this event the Tower controller did advise [the Decathlon pilot] that they were number one but no proactive control was taken by Tower or Approach to ensure that this order could be adhered to as neither aircraft had been given Traffic Information on the other and a point of confliction was, thus, inevitable at approximately 2NM final.

CAP493 Manual of Air Traffic Services (MATS) – Part 1 states,

3. Information to Other Units

3A. Aerodrome Control

3A.1 Approach Control shall supply the following information to Aerodrome Control:

(1) Pertinent data on all relevant flights including the type of flight, i.e. IFR or VFR, level of arriving aircraft and ETA;

(2) The anticipated order in which control of aircraft is to be transferred;

At Gloster, the transfer of control is carried out at defined points rather than by the passing of an anticipated order. The late transfer of control of both aircraft in this event contributed to the Airprox. The late transfer of control of [the DA42] was most likely caused by a failure of [the DA42 pilot] to report at FAF (as requested), but the lack of FAF report was made almost impossible by the volume of R/T workload on the Approach frequency.

CAP493 states:

2. Responsibilities

2A. Specific Responsibilities

2A.2 Approach Control may instruct approaching IFR flights to contact Aerodrome Control before transfer of control has become effective.

In this event, if transfer of control had been carried out prior to 5NM (FAF) then the Tower ATCO may have been able to reassess the situation and taken appropriate action to avoid a point of confliction. As Gloucestershire Airport is in Class G airspace, Approach ATCOs do not tend to transfer control before 5NM as there is a history of Airprox/TCAS avoidance between aircraft on Instrument Approaches and aircraft flying through or close to the final approach for instrument approaches who have not contacted the ATSU.

It may be appropriate to introduce a procedure whereby Approach ATCOs advise IAP aircraft to contact Tower on reaching 5NM (FAF) in order to avoid the risk that position reports cannot be made on the Approach frequency due [to] R/T congestion.

CAP493 states:

7. Information to Aircraft

7A. Traffic Information and Instructions

7A.1 Traffic information and instructions shall be passed to aircraft on any occasion that a controller considers it necessary in the interests of safety, or when requested by a pilot. In particular, Aerodrome Control shall provide:

(1) generic traffic information to enable VFR pilots to safely integrate their flight with other aircraft;

(2) specific traffic information appropriate to the stage of flight and risk of collision;

(3) timely instructions as necessary to prevent collisions and to enable safe, orderly and expeditious flight within and in the vicinity of the ATZ.

In this event, Traffic Information was not passed (by Tower or Approach) soon enough to prevent the Airprox.

CAP493 states:

8. VFR Flights

8.1 Approach Control shall retain all arriving VFR flights under its control until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome Control.

In this event, Approach Control transferred control of [the Decathlon] without passing appropriate Traffic Information on [the DA42]. It should be noted that the workload of the Approach ATCO was high.

From prior to 1052 until after the Airprox incident the Approach frequency was constantly busy suggesting that traffic loading and workload were both high for the Approach ATCO.

At time 1052:21 [the Decathlon pilot] reported 2NM north of Tewkesbury which meant they may have been approximately 9NM miles from touchdown.

A few seconds later [the DA42 pilot] reported at NIRMO (1052:28z) which is 10NM east of the Airport.

At 1052:31 Gloster Approach instructed [the DA42 pilot] to report Final Approach Fix (FAF).

At 1054:15 [the Decathlon pilot] reported *"4 miles"*. At interview the pilot (Instructor) of [the Decathlon] advised that the *"4 miles"* referred to was 4NM from the Aerodrome Reference Point according to [their navigation] software. This was a wide right-base position and would mean they were about 5NM from touchdown.

At 1054:30 Gloster Tower instructed [the Decathlon pilot] to *"report final runway two seven, number one"*. [The Decathlon pilot] replied *"Report final two seven, number one, [callsign]"*. No further transmissions were made on the Tower frequency until 1056:19 which suggests that Tower traffic loading may not have been particularly high although the Tower ATCO reported being *"fairly busy"* at the time.

Anecdotal evidence suggests that DA42 aircraft fly at approximately 120kt indicated airspeed from NIRMO to the FAF. This meant that at 1054:30 [the DA42] may have been approximately 6NM from touchdown.

At 1054:30 the Tower ATCO was not visual with either aircraft but had made the decision that [the Decathlon] was number one.

At 1056:03 there was an unreadable transmission on the Approach frequency.

At 1056:06 Gloster Approach broadcast *"Two stations together, transmission blocked, [DA42 callsign] say again"* and [the DA42 pilot] replied *"Two miles to go around"*. This statement may have appeared vague as it may not have had a definitive equivalent range on final approach. However, the pilot (Instructor) of [the DA42] advised that they thought they were approximately 2.5NM final at this point.

Just after 1056:06 the Approach ATCO reported advising the Tower ATCO of the position of [the DA42] and requesting low approach clearance which the Tower ATCO granted. The Approach ATCO remembered the Tower ATCO placing a coordination strip in the runway bay to represent [the DA42] going around on RW27.

At 1056:15 Gloster Approach broadcast *"[DA42 callsign] runway two seven, cleared low approach, surface wind 220, 5, when ready contact Tower 122 decimal 905."*

AT 1056:24 [the DA42 pilot] replied *"Cleared low approach and then to Tower 11905 [callsign]."* The Approach ATCO advised that they should have transferred [the DA42] at that moment rather than stating *"when ready"*.

At 1056:19 Gloster Tower broadcast *"[Decathlon callsign]"*

At 1056:23 [The Decathlon pilot] replied *"[callsign] go"*

At this point it was assumed (following interview with the Tower ATCO) that the Tower ATCO was going to clear [the Decatlon] to land but noticed that the runway bay on the flight progress board was blocked with the coordination strip for [the DA42] and so the Tower ATCO broadcast:

"[Decathlon callsign] go around on the deadside, I say ("again" not included) *go around on the deadside acknowledge".* It is also assumed that the Tower ATCO included the instruction to go around on the deadside to try and deconflict the two aircraft.

[The Decathlon pilot] acknowledged that they were going around.

At 1056:31 the Approach ATCO realised that the 2 aircraft were in close proximity and was unsure if [the DA42 pilot] had left the Approach frequency. The Approach ATCO attempted to pass Traffic Information to [the DA42] but instead addressed the Traffic Information to [the Decathlon]; *"[Decathlon callsign], traffic is a Bellanca [Decathlon] going around ahead of you on the deadside"*

At 1056:42 The Tower ATCO broadcast *"And [Decathlon callsign] sorry, if could level out now please level out there's traffic going around behind you, it's instrument traffic that made a late call".*

At 1056:51 [The Decathlon pilot] replied *"Roger we're visual with that traffic [Decathlon callsign]"*.

1057:08 The Tower ATCO broadcast *"[DA42 callsign] are you on Tower....frequency?"* and at 1057:11 [the DA42 pilot] reported that they were on Tower frequency. It is unknown at what point [the DA42 pilot] changed from Approach to Tower frequency but it must have been at some point between 1056:26 and 1057:08.

Observations from the pilot (Instructor) of [the Decathlon] given under interview with the ATS Manager revealed that the flight of [Decathlon callsign] was a training flight that had involved general handling in Class G Airspace whilst carrying out UPRT (Unusual Position Recovery Training) for a trainee pilot with approximately 220 hours of flying time. The Instructor reported that the Decathlon aircraft has a tandem seating position in which the Instructor sits at the rear position where visibility is slightly restricted. The Instructor reported that they remembered asking for a direct rejoin at about 2NM north of Tewkesbury and then reporting at a range of 4NM (from the Aerodrome Reference Point as determined by their [navigation] software). They believed that the Approach frequency had been busy and that was why they reported at 4NM rather than the requested 5. The Instructor reported that they had been aware that [the DA42] had been undertaking an IAP for RW27 but they had forgotten about [the DA42] due to their workload interacting with their student pilot.

The Instructor of [the Decathlon] reported that they looked left up the final approach path of RW27 before turning onto final but did not see [the DA42] at that point. They reported that checking the final approach path was standard and good practice. They reported that when on final they became aware that there must have been a reason for [the Tower controller] sending them around and so they started climbing "aggressively" and looked left over their shoulder and saw [the DA42] approximately 150m behind at a similar level. They believed the risk of collision was high and stated that if they had been 2 or 3kt slower then they may have collided. The Instructor reported that both the Decathlon and the DA42 have similar performance in the climb (both capable of approximately 1500ft per minute).

Observations from the pilot (Instructor) of [the DA42] given under interview with the ATS Manager were that the [DA42] flight was a training flight undertaking instrument approaches. The Instructor was in the right-hand seat and the student was in the left-hand seat under [simulated] IMC (wearing foggles). The pilot reported being cleared for an RNP RW27. The pilot advised that they were asked to report at [the] FAF but the student pilot could not make this call due to intense R/T congestion on the Approach frequency. The pilot reported making the call at 2.5 mile final. They believed that they were then handed to the Tower frequency and that they considered that frequency to be *"very busy"*. The pilot believed they were cleared for low approach, reached the minimum descent altitude and went around RW27. The pilot believed that the minimum separation between the 2 aircraft was 100m to 200m at the same level. On initiating the go-around and pitching the nose up, that is when the pilot first saw [the Decathlon] and they climbed as rapidly as possible believing that they could out climb it. At this point they reported that [the Decathlon] was left of their nose and diverging. The pilot believed that the only evasive action left open to them was to continue climbing as fast as they could (an extra 500ft per minute more than their normal rate of climb). The pilot did not remember receiving Traffic Information on [the Decathlon]. The pilot described the incident as *"incredibly close"*, *"really surprising"* and that *"4 or 5 seconds difference could have resulted in a different outcome".* They described the risk of collision as high.

Observations from [the] Tower ATCO given under interview with the ATS Manager were that the Tower ATCO reported having a slight cold but not feeling fatigued. The Tower ATCO believed that they first saw [the Decathlon] at approximately 1NM final. At that moment the Tower ATCO believed [the DA42] was at approximately 2NM final. The Tower ATCO could not comment on what level of risk of collision there was but did state that steps were taken for the two aircraft to avoid each other. The Tower ATCO could not remember what other traffic they were giving a service to, but thought they were *"fairly busy"*. The Tower ATCO did not know if mutual Traffic Information had been passed on [the DA42] and [the Decathlon] by the Approach controller. The Tower ATCO doubted that they had passed Traffic Information to [the Decathlon] on [the DA42] before [the Decathlon] was on final as the FAF (5 mile) check had not been passed on [the DA42]. With hindsight, the Tower ATCO thought that they should not have sent [the Decathlon] around but that was in reaction to seeing the [DA42] strip being in the runway bay. The Tower ATCO said that it was not normal practice at Gloster to say *"join and report"* to direct VFR circuit joins and could not remember if [the Decathlon pilot] had reported right-base (they did not report right-base).

Observations from [the] Approach ATCO given under interview with the ATS Manager were that the Approach ATCO said that they would normally give a coordination strip (on an RNP approach aircraft) to the Tower ATCO when the aircraft reported 8NM to the Initial Approach Fix (IAF-REKLO in this case). The Approach ATCO remembered [the Decathlon pilot] asking for a direct join just north of Tewkesbury which was coordinated with the Tower ATCO at that point and clearance was given to [the Decathlon pilot]. The Approach ATCO remembered [the DA42 pilot] reporting at NIRMO and that the Tower ATCO was advised of this. The Approach ATCO remembers the Tower ATCO moving the coordination strip to the middle bay at this point. The Approach ATCO could not remember if [the DA42 pilot] reported at [the] FAF (R/T was very busy at this time). The Approach ATCO believed that [the DA42 pilot] reported at 2.5NM final and that this was advised to the Tower ATCO.

At this point, the Approach ATCO believed they requested a low approach clearance for [the DA42] and that they were given this by the Tower ATCO. The Approach ATCO remembered passing the low approach clearance to the Tower ATCO, placing the coordination strip in the Tower's flight progress board runway bay. The Approach ATCO then remembered looking out of the window and the Tower ATCO asking the Approach ATCO to tell [the DA42 pilot] to go around. The Approach ATCO believed they wanted to pass this instruction to [the DA42 pilot] but couldn't as they had left the frequency. The Approach ATCO believed that both aircraft went around and thought that [the DA42] was slightly behind and on the deadside, [whereas the Decathlon] was actually the aircraft on the deadside. It is reasonable to say that the Approach ATCO may not have been aware of the proximity of the two aircraft as transfer of control of [the DA42] should have been at 5NM and so it was reasonable for them to assume that [the Decathlon] would not have been a conflict to [the DA42]. The workload of the Approach ATCO may have also meant that remembering traffic already transferred to the Tower was unlikely.

CAA ATSI

The report provides a synopsis based on the Gloucestershire Airport investigation and draws the following conclusion:

The R/T loading on the Approach frequency was very high and the DA42 pilot reported being unable to get their 5NM final call in, due to frequency congestion.

The Approach controller appears to have been caught out by the late final call from the DA42 pilot. The DA42 pilot had not received information on the status of the visual circuit or Traffic Information on the Decathlon prior to the pilot being instructed to transfer to the Tower frequency.

The Decathlon pilot had not received Traffic Information on the DA42 from the Approach controller prior to being instructed to transfer to the Tower frequency.

The Tower controller had been passed the DA42 flight progress strip by the Approach controller at an earlier stage and was expecting the aircraft but was unaware of how close it was, and appeared to have been caught out by the consequential late coordination.

When the DA42 pilot transferred from Approach to Tower, the Tower controller was already engaged in a conversation with the Decathlon pilot, and this delayed the initial contact call from the DA42 pilot. The Airprox occurred in the interim.

The Decathlon pilot subsequently received Traffic Information on the DA42 from the Tower controller 7sec after CPA had occurred. The DA42 pilot had not yet checked in on the Tower frequency at this point.

The DA42 pilot subsequently received Traffic Information from the Tower controller (after they had confirmed that the pilot was on the Tower frequency) 27sec after CPA.

The Airprox had occurred at 1056:43, after the DA42 pilot had left the Approach frequency and before they had an opportunity to check in on the Tower frequency.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and both aircraft were positively identified using Mode S data. CPA was at 1056:34 with 0.2NM horizontal and less than 100ft separation (Figure 2).

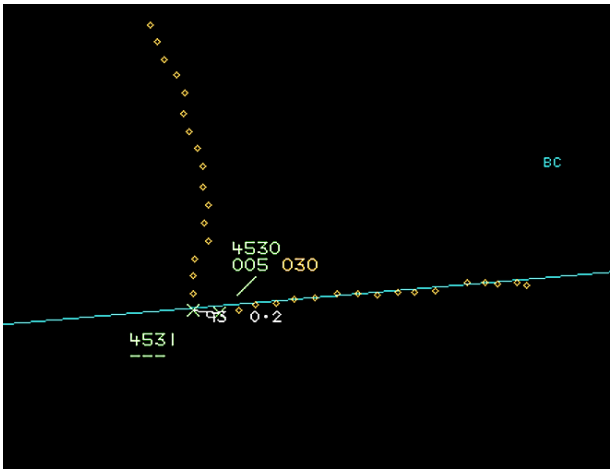


Figure 2: 1056:34 separation 0.2NM and less than 100ft.

After CPA the Decathlon and DA42 diverged as the Decathlon began to climb away.

The Decathlon and DA42 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[1] An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.[2]

Summary

An Airprox was reported when a Decathlon and a DA42 flew into proximity 1NM east of Gloucestershire Airport at 1057Z on Thursday 29th August 2024. The Decathlon pilot was operating under VFR in VMC in receipt of an ACS from Gloster Tower; the DA42 pilot was operating under IFR in VMC and was transferring between Gloster Approach and Gloster Tower frequencies.

[1] (UK) SERA.3205 Proximity.
[2] (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, a report from the Gloster Tower controller and a report from the appropriate operating authority. 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 discussed the actions of the air traffic controllers involved and was grateful for the extensive investigation report produced by Gloucestershire Airport, because it enhanced the Board's understanding of the event. Members discussed the conditions on the day of the Airprox and noted the high workload of the controllers, particularly of the Approach controller. The Board was concerned that the high R/T workload created a difficult environment for the ATCO and for pilots, inasmuch as the frequency congestion had led to the DA42 pilot being unable to provide their requested FAF call at 5NM (**CF8**), and that this delay to the radio calls had further led to a lack of situational awareness for the ATCOs with regards to the DA42's position (**CF9**). Members agreed that, because the expected calls had not been made in the appropriate places, neither the Approach nor the Tower ATCO had been able to detect the impending conflict between the Decathlon and the DA42 (**CF5**). The Board wondered why the Approach ATCO had not asked the DA42 pilot for a position report and concluded that the R/T loading at the time had probably precluded this. Members agreed that the ATCOs had had an inaccurate mental model of the DA42's position and had assumed that, because the DA42 pilot had not yet called at 5NM, it had been far enough away to allow the Decathlon to be cleared as 'number one' on the approach (**CF6**). Members were concerned that the busy environment had also led to the Approach controller not passing Traffic Information to either the Decathlon pilot or the DA42 pilot (**CF4**) on the other aircraft, and that the overall workload that they had found themselves under had prevented them from devoting enough of their attention to the Decathlon and the DA42 (**CF7**). Members heard that the ATCO had been engaged in rapid-fire reactionary R/T, having reached saturation point, and it was agreed that they had not been able to prioritise the DA42 on an RNP IAP over other traffic.

Considering the tasking of the ATCOs, the Board agreed that their situational awareness had been reduced by the non-functioning ATM (**CF3**), and wondered what training was in place at Gloucestershire Airport with regards to working without this equipment. Members followed this with a discussion on procedures and methodology for the prioritisation of traffic, including the management and positioning of the ATCO's flight progress strips, where it was suggested the DA42's flight strip could be placed as 'actively inbound' at the Tower controller's position. Members discussed use of specific R/T, for example the 5NM FAF call, as a trigger for actions. The Board was mindful of procedures that were in place to enable ATCOs to have reduced or better managed their workflow, but agreed that, in this case, these appeared not to have been effective. The discussion culminated in the Board's agreement that Gloucestershire's ATC procedures had permitted traffic loading to exceed that which could be adequately managed by the controllers (**CF1**). The Board considered that VFR traffic should be fitted around aircraft on the RNP IAP, and agreed that allowing the Decathlon's VFR join on right-base with the DA42 on an IFR procedure in such a busy environment had not left the controllers with any room for contingency without the full awareness of their relative positions. Controller members also wondered why the Approach ATCO had not limited their traffic loading by perhaps refusing a service due to workload, or asking pilots to either standby or call later. The Board determined that the Approach ATCO had allowed traffic to become so busy that the R/T had become saturated (**CF2**).

Moving their attention to the Decathlon pilot the Board discussed the virtues of making circuit position and landing intentions calls. Members acknowledged that the initial call of 'distance to run' had not been particularly helpful due to its lack of specificity, although a call on right-base most certainly could be. However, the Board agreed that the Decathlon pilot's opportunities for having made such a call on this occasion may have been depleted by the R/T congestion. The Board noted that the Decathlon pilot had been called as 'number one', and members thought that this instruction may have implanted a mental model of a clear approach. Some members pondered on whether the pilot's expectations had led to a more brief lookout up the final approach path than usual and that, having not sighted the DA42 (**CF12**), the Decathlon pilot's mental model had matched the lack of R/T calls from the DA42 and having not received any Traffic Information regarding an aircraft on the IAP. The Board agreed that conditions

were such that the Decathlon pilot had had no situational awareness of the presence or position of the DA42 (**CF10**).

Looking at the actions of the DA42 pilot, the Board agreed that although procedures had not been followed and the 5NM call not made, there had been nothing that the pilot could have done other than continue the approach and call on the congested frequency when able. The Board noted that the DA42 pilot had neither been passed Traffic Information on the Decathlon nor received an alert from their electronic conspicuity equipment as may have been expected (**CF11**). The Board agreed that this had exacerbated the DA42 pilot's lack of situational awareness of the Decathlon's presence or relative position (**CF10**) and that they had not sighted the Decathlon until after the closest point of approach.

In finalising their discussions, the Board broached the importance of all pilots' responsibilities regarding 'Threat Error Management' (TEM) at all times and reiterated that the 'see and avoid' barrier was as important to IFR traffic as it was to VFR traffic. Some members recalled a similar situation occurring at Coventry in 2008 between a calibration aircraft and a Rand KR2 that had sadly resulted in a mid-air collision.[3] Returning to this incident, the Board concluded that safety margins had been reduced much below the norm and that it had been largely through happenstance that the separation had been such that the controller's management of the go-around for both aircraft had been of no direct consequence to the initial CPA.As such, the Board agreed that there had been a risk of collision and assigned Risk Category B to this event (**CF13**).

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2024226			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Ground Elements			
	• Regulations, Processes, Procedures and Compliance			
1	Organisational	• Aeronautical Information Services	An event involving the provision of Aeronautical Information	The Ground entity's regulations or procedures were inadequate
2	Human Factors	• ATM Regulatory Deviation	An event involving a deviation from an Air Traffic Management Regulation.	Regulations and/or procedures not fully complied with
	• Manning and Equipment			
3	Technical	• Radar Coverage	Radar Coverage	Non-functional or unavailable
	• Situational Awareness and Action			
4	Human Factors	• ANS Traffic Information Provision	Provision of ANS traffic information	TI not provided, inaccurate, inadequate, or late
5	Human Factors	• Conflict Detection - Not Detected	An event involving Air Navigation Services conflict not being detected.	
6	Human Factors	• Expectation/ Assumption	Events involving an individual or a crew/ team acting on the basis of expectation or assumptions of a situation that is different from the reality	
7	Human Factors	• Task Monitoring	Events involving an individual or a crew/ team not appropriately monitoring their performance of a task	Controller engaged in other tasks
8	Contextual	• Frequency Congestion	An event involving frequency congestion that reduces the effectiveness of communications	
9	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late, no or inaccurate Situational Awareness
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
10	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
	• Electronic Warning System Operation and Compliance			

[3] AAIB report 8/2010

11	Human Factors	• Response to Warning System	An event involving the incorrect response of flight crew following the operation of an aircraft warning system	CWS misinterpreted, not optimally actioned or CWS alert expected but none reported
	• See and Avoid			
12	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			
13	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.

Recommendation: Gloucestershire Airport reviews its procedures to ensure that effective mitigations are in place for occasions when the ATM is unserviceable.

Safety Barrier Assessment[4]

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 **ineffective** because Gloucestershire Airport ATC procedures did not adequately describe procedures for combined VFR and IFR approaches with an unserviceable ATM. Additionally, the Gloster Approach ATCO had allowed traffic to become so busy that the R/T was saturated.

Manning and Equipment were assessed as **ineffective** because the ATM was not functional.

Situational Awareness of the Confliction and Action were assessed as **ineffective** because Traffic Information had not been passed to either the Decathlon or DA42 pilots, and the Gloster ATCOs had not detected the conflict between the Decathlon and the DA42.

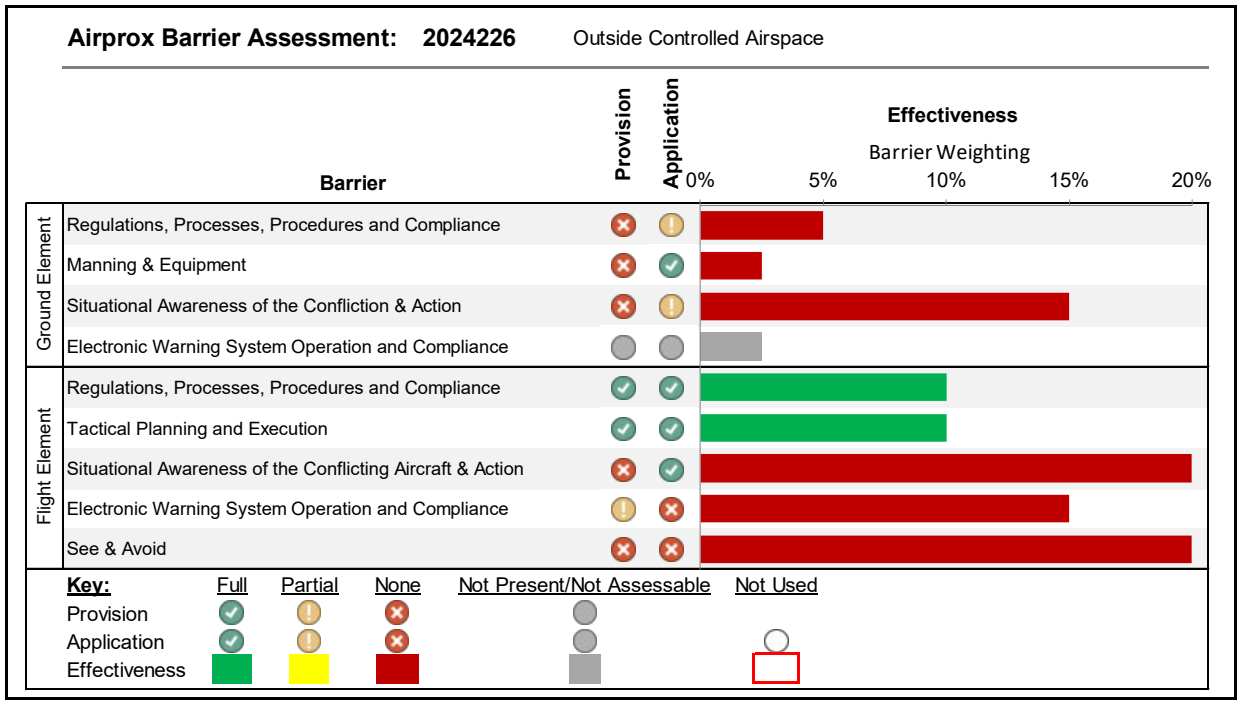
Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the Decathlon pilot nor the DA42 pilot had situational awareness of the presence or position of the other's aircraft.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the DA42's electronic conspicuity equipment had not alerted them to the presence of the Decathlon.

See and Avoid were assessed as **ineffective** because neither the DA42 pilot nor the Decathlon pilot sighted the other's aircraft prior to CPA.

[4] 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: 2024226
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