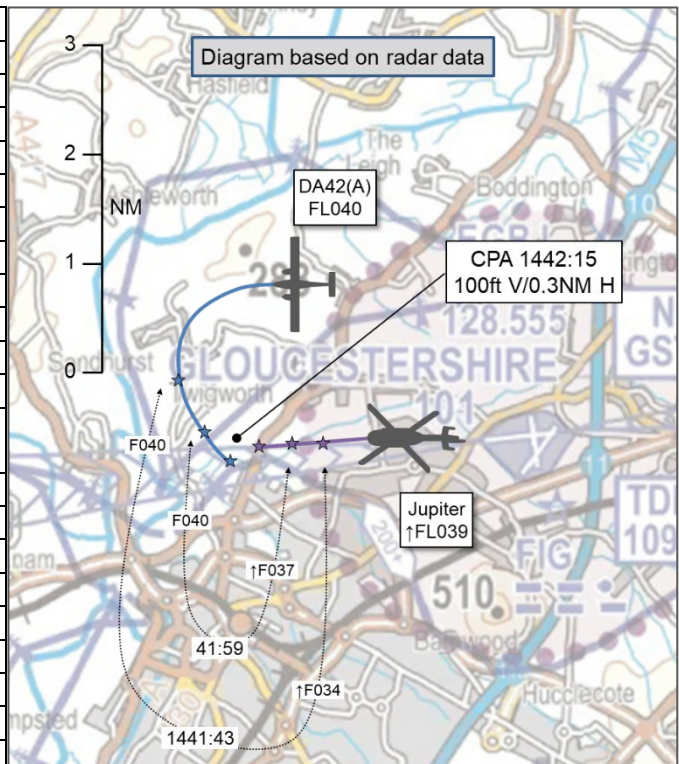


AIRPROX REPORT No 2020166

Date: 02 Dec 2020 Time: 1442Z Position: 5153N 00214W Location: IVO Gloucestershire Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DA42(A)	Jupiter
Operator	Civ FW	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	IFR	IFR
Service	Procedural	Procedural
Provider	Gloster App	Gloster App
Altitude/FL	FL040	FL039
Transponder	A, C, S	A, C, S
Reported		
Colours	White	Dark Blue, Yellow
Lighting	Strobes, Nav	Nav, Anti-cols, Strobes
Conditions	IMC	IMC
Visibility	'variable'	NK
Altitude/FL	FL040	4000ft
Altimeter	1013hPa	QNH
Heading	091°	270°
Speed	120kt	100kt
ACAS/TAS	TAS	TCAS I
Alert	TA	TA
Separation		
Reported	200ft V/0.5NM H	0ft V/0.5NM H
Recorded	100ft V/0.3NM H	



THE DA42(A) PILOT reports that they were established in the GST NDB hold at FL040. The pilot was a CRE/IRR examiner candidate (sat in the right pilot seat) under assessment from a CAA Flight Ops (Training) Inspector sat in the rear right passenger seat. They were observing the dummy candidate, another CAA Flight Ops (Training) Inspector, sat in the left pilot's seat who was flying the aircraft using the autopilot. This pilot was wearing an IFR hood to restrict their vision to simulate IMC.

The first indication of the other traffic was a "Traffic" aural warning from the Avidyne Traffic Advisory System integrated with the G1000 EFIS. They had just started descending at the request of ATC due to a PA32 experiencing icing in the hold at FL50. They looked up and saw a medium size turbine style helicopter pass down their left hand side at almost the same level. Once the other traffic had passed, the examiner turned to the CAA inspector in the back to confirm details of what they had just seen. The CAA Inspector recorded some parameters which have been used to compile this form. They heard the helicopter pilot report that they had just passed a "Diamond Twin Star". They confirmed with Gloucester Approach that they had also seen the helicopter. Later as they commenced the procedural 3D approach they confirmed that they would file an Airprox.

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

THE JUPITER PILOT reports that they were carrying out a missed approach from a RNP approach RW27. They were initially cleared to climb straight ahead to 3000ft and then cleared to 4000ft QNH. During the approach an aircraft (Robin) on the runway for departure experienced radio problems and could not talk to Tower. They were instructed to go-around as the runway was blocked and were instructed to change to APP. Once on APP they heard the Approach controller talking to the Robin pilot. They were cleared to 4000ft and told to continue straight ahead. The Instructor was instructing the HP and became aware of an aircraft declaring icing whilst in the hold. The Approach controller started to sequence the aircraft to lower levels. They believed the aircraft were descending below their level. As

they entered a break in the clouds, they became aware of another aircraft ahead of them at the same level and turning towards. The Instructor watched the aircraft and having assessed the risk took control of the Jupiter and turned the aircraft gently right to maintain separation. They had sight of the aircraft at all times as it passed down the left-hand side of their aircraft, passing approximately 0.5NM laterally. They informed APP that they believed they had climbed them into the holding pattern. On the next radio call they declared an Airprox.

The pilot assessed the risk of collision as ‘Medium’.

THE GLOSTER APP CONTROLLER reports that during a busy procedural session, the Jupiter had gone around following an RNP approach RW27 in accordance with the missed approach instructions of climb straight ahead to 3000ft Q1015, under a Procedural Service. After being transferred back to Approach by Tower, [Jupiter C/S] was instructed to climb to 4000ft. The GST Hold was active at FL40 with the DA42(A) and at FL50 with a PA32, both under a Procedural Service. A Diamond Twinstar was on the final approach track, carrying out an RNP approach RW27 under a Basic Service, to go around into the visual circuit. Tower reported that RW27 was blocked due to an aircraft with a radio failure, a Robin DR40. This aircraft then transmitted several times on the Approach frequency, and after co-ordination with Tower, they were instructed to remain on the Approach frequency and cleared for take-off. The Twinstar completed their RNP approach and went around into the visual circuit. An Agusta 109 helicopter was waiting to depart to 3000ft IFR, with a clearance of ‘turn onto heading 225° climb to 3000ft’. The PA32 pilot reported icing in the hold and requested descent. The DA42(A) was instructed to descend to 3000ft Q1015 and the PA32 was then instructed to descend FL45. The PA32 was able to maintain 4300ft without further descent required for icing. The DA42(A) was instructed to maintain 3000ft until advised and cleared for the ILS approach RW27. The aircraft reported GST outbound and was cleared to descend with the procedure. Both the Jupiter pilot and the DA42(A) pilot advised that they would be reporting an Airprox.

Factual Background

The weather at Gloucestershire Airport was recorded as follows:

METAR EGBJ 021420Z 23002KT 9999 5000E VCSH FEW008 BKN022 08/07 Q1015=

Analysis and Investigation

CAA ATSI

Both the DA42(A) and the Jupiter were carrying out instrument training approaches IFR to RW27 at Gloucestershire. The DA42(A) had previously joined the GST NDB Hold at FL40, with the Jupiter routing for an RNP approach via reporting point REKLO from the southwest at 3000ft. During this period, two other aircraft requested VFR joins with the Approach controller from the northwest and southwest, with the visual fixed wing and helicopter circuits also active. At 1425:40 a second DA42 (DA42(B)) called inbound to the airfield from the northeast, requesting an RNP approach via LAPKU (see Figure 1).

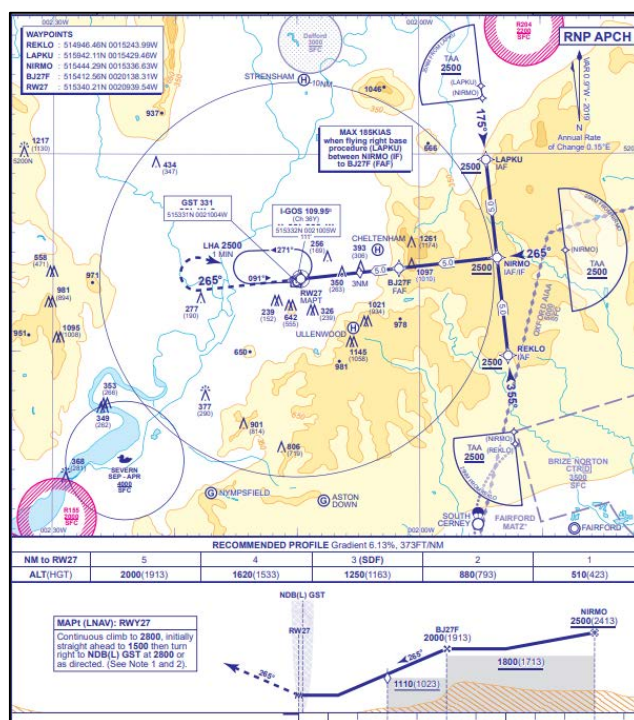


Figure 1 – RNP Approach RW27

Then at 1431:23 a PA32 pilot called inbound from the east requesting an RNP approach via LAPKU at FL50. The Approach controller advised them that they would be No4 and cleared them to join the GST Hold at that level. The pilot acknowledged this and said that they would complete an ILS approach instead (Figure 2). The Jupiter, both DA42s and the PA32 were all receiving a Procedural Service from the Gloucestershire Approach controller.

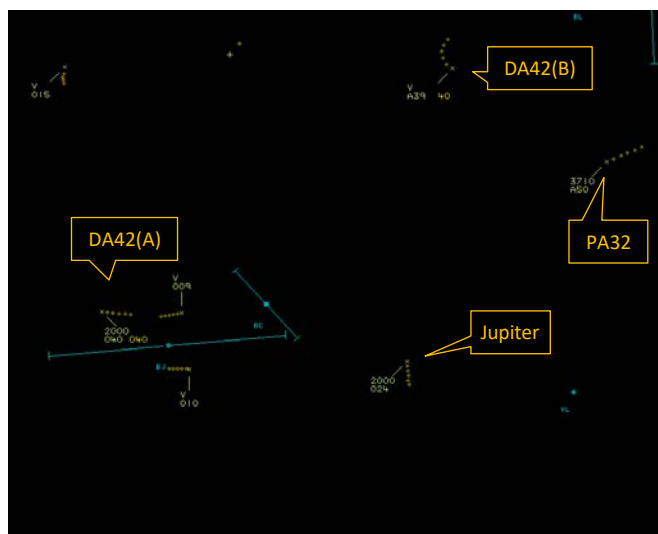


Figure 2 - 1431:23 – radar replay displaying as FL in vicinity of airfield (+54ft for alt)

Having established that the Jupiter had 3NM to run to the Final Approach Fix (FAF), level at 2000ft, at 1433:55 the Approach controller cleared the DA42(B) to commence their RNP approach, and descended them to 3000ft.

On the Tower frequency during this period was, along with other traffic, an A109 taxiing for an IFR departure to the southwest and a DR40 waiting to depart VFR to the southeast. At 1435:25 the Tower controller instructed the DR40 to line-up and wait which was readback by the pilot. The A109 reported ready for departure at 1435:40 but was advised that there would be a short delay due to traffic (the Jupiter) on final approach. At 1435:45 the Approach controller passed Traffic Information to the Jupiter pilot on the helicopter circuit and transferred them to the Tower frequency (Figure 3).

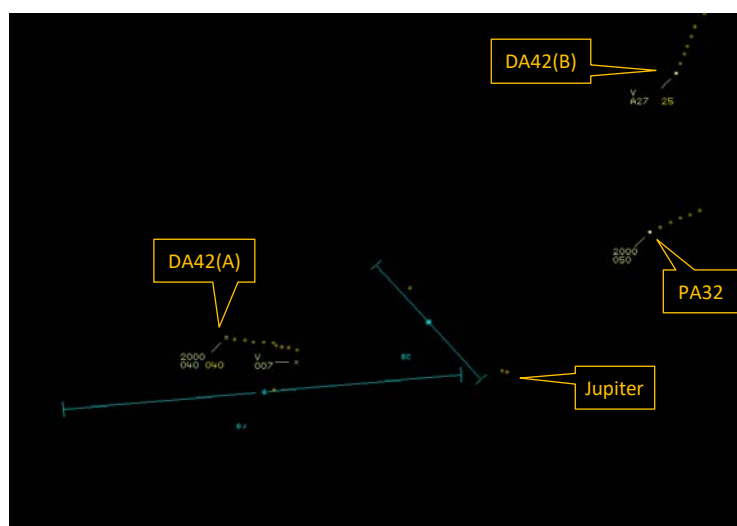


Figure 3 – 1435:45 (Jupiter disappears from area radar replay momentarily)

The Jupiter pilot reported on the Tower frequency at 1436:10 and was instructed to continue their approach by the Tower controller, as there was an aircraft departing ahead. The Tower controller then, at 1436:30, asked the DR40 pilot whether they would prefer a left or a right turn-out after departure but received no reply. The Tower controller then made a further four attempts to contact the DR40 without success.

At 1436:55 the DA42(B) pilot reported at LAPKU and was instructed by the Approach controller to report at NIRMO (on final approach). At 1437:12 the controller requested a position report from the DA42(A), who advised that they were turning inbound towards the “beacon” and would be ready for their approach the next time over the beacon. The Approach controller advised them that they could expect to go outbound after the next hold and to report as they “*track back in*”.

At 1437:35 the Tower controller made a blind call to the DR40, passing information on the helicopter circuit and clearing them for take-off, but again received no response. Then at 1437:55 another pilot was heard to call the DR40 on the Approach frequency. The Approach controller thought that this was the DR40 pilot, advised them to remain on the Approach frequency and cleared them for take-off, but received no reply. The Approach controller then made two further attempts to contact the DR40 without success.

At 1438:05 the Tower controller advised the Jupiter pilot to expect a late clearance as the DR40 departing ahead was on the wrong frequency. At 1438:30 another pilot was heard to try and establish contact with the DR40 on the Tower frequency, (the same pilot as had called the DR40 on the Approach frequency), advising them that they had been cleared for take-off. At the same time, and crossing with this transmission, the Jupiter pilot was heard to say that they were ready to go-around. The Tower controller advised them, at 1438:40, that the DR40 had a suspected radio-fail and so instructed them to go-around.

At 1438:48 the DA42(B) reported at NIRMO and was instructed by the Approach controller to report at the FAF. At 1439:00, the Tower controller made another failed attempt to contact the DR40, however the pilot was then heard on the Approach frequency making reference to light signals, and was immediately contacted by the Approach controller.

At 1439:48 the Approach controller instructed the DR40 to remain on their frequency, passed Traffic Information on the helicopter circuit and on the Jupiter in the go-around, and cleared them for take-off. The DR40 pilot acknowledged this, reported visual with the Jupiter and read-back the take-off clearance. At 1439:50 the Jupiter pilot reported going around and was transferred by the Tower controller back to the Approach frequency.

The Jupiter pilot reported back on the Approach frequency at 1440:10, advising that they were carrying out the missed approach. The controller replied “*Procedural Service, climb to altitude 4000ft, report passing altitude 3000ft*” which was readback correctly by the pilot (Figure 4).

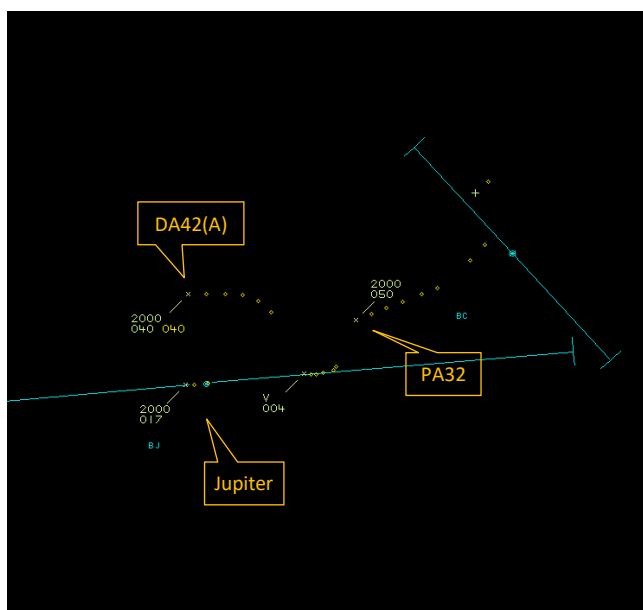


Figure 4 – 1440:10

The Approach controller then advised the Jupiter pilot that they could make a left turn-out on track to the southwest, which was readback by the pilot as *“cleared left turn-out to the southwest back towards Oxford”*. The controller queried this, believing that they had booked out to Bristol, which the pilot confirmed was not the case, that they wished to return to Oxford and that they would maintain their heading (straight-ahead). The Approach controller replied *“in that case continue straight ahead to 4000ft, report passing altitude 3000ft”*. The pilot replied, *“straight ahead to er... sorry was that to 3000 or 4000?”* The controller replied; *“report passing 3000ft, climb to altitude 4000ft”* which was readback correctly by the pilot.

At 1441:00 another aircraft on the ground mistakenly called on the Approach frequency for taxi instructions. The Approach controller transferred them back to the Tower frequency (but received no response).

At 1441:21 the Jupiter pilot reported passing 3000ft, but the Approach controller missed the call sign and the call and asked for the call to be repeated, which the pilot did, but to which the controller then did not reply (1441:30 – Figure 5).

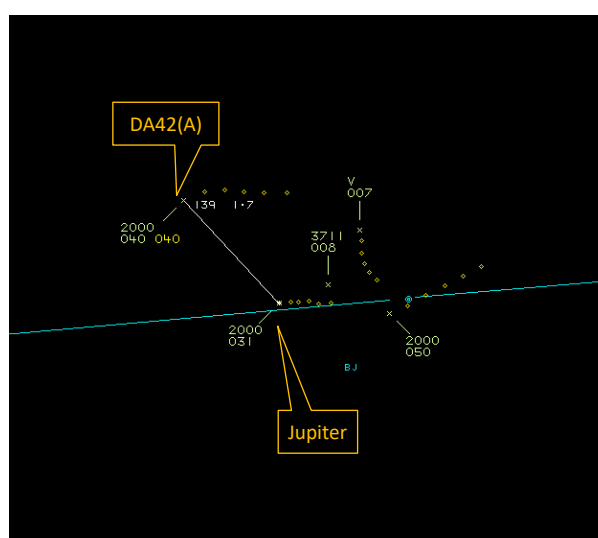


Figure 5 – 1441:30

Then at 1441:38 the PA32 pilot reported taking up the hold at FL50 and requesting descent *“as soon as possible”* as they were picking up ice (Figure 6).

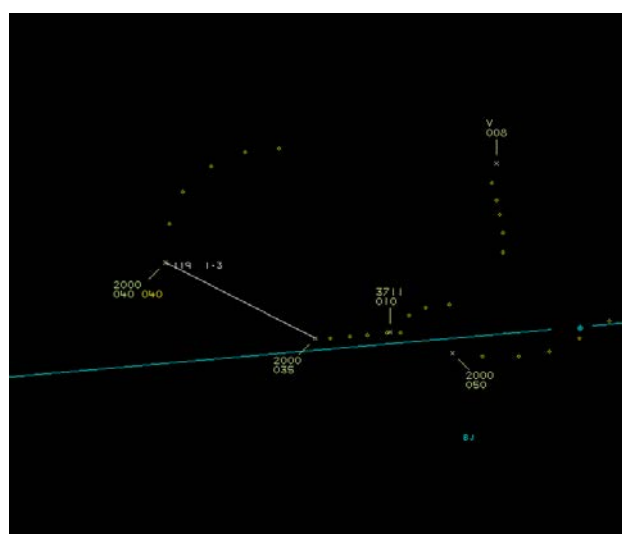


Figure 6 – 1441:38

The Approach controller acknowledged the call and at 1441:50 instructed the DA42(A) to descend to 3000ft, and to report leaving FL40 but received no response (Figure 7).

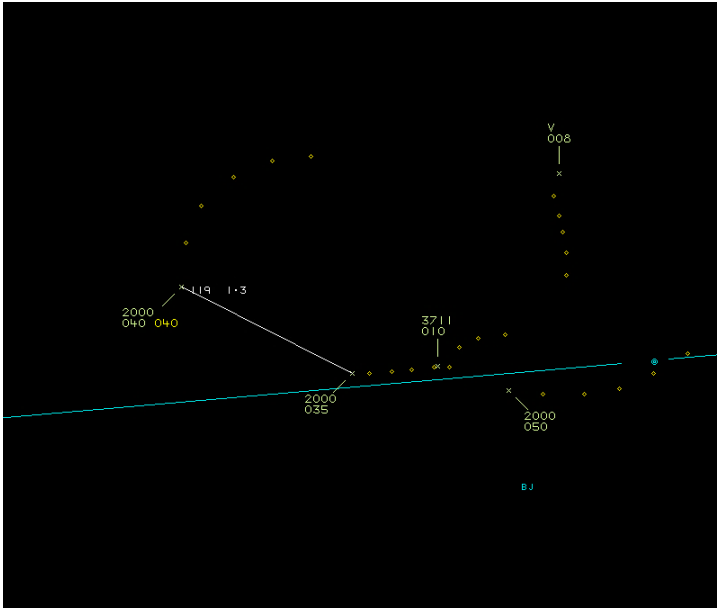


Figure 7 – 1441:50

At 1442:00 the DA42(B) reported at the FAF requesting 3 visual circuits. The controller did not respond to this call and at 1442:10 repeated the descent instruction to the DA42(A) which was readback correctly by the pilot (Figure 8).

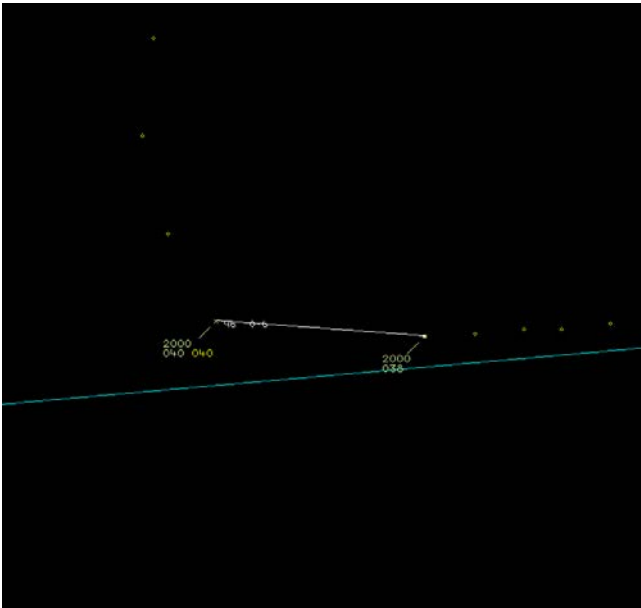


Figure 8 – 1442:10

According to the area radar replay, CPA for the Jupiter and DA42(A) occurred at 1442:14, with the aircraft separated by 0.3NM and 100ft. The Jupiter could be seen to be in a right turn as subsequently reported by the pilot in their written Airprox report (Figure 9).

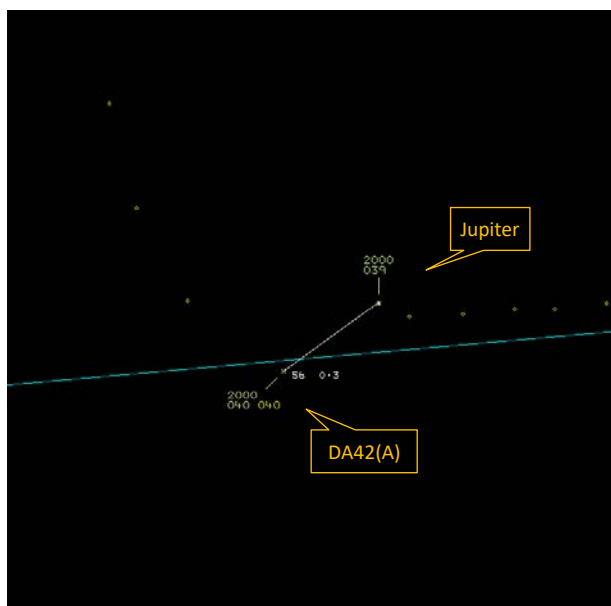


Figure 9 – 1442:14 – CPA

At 1442:40 the Jupiter pilot advised “...and we’ve just climbed er, you’ve just climbed us into the hold. And we’ve just passed the Twinstar”. The controller replied “er roger, apologies, that traffic now just descending in the hold due to icing with the aircraft above”. The pilot replied; “copied – luckily we just broke VMC to see it in time”. This was acknowledged by the controller. The Jupiter pilot advised the Approach controller at 1443:20 that they wished to file an Airprox but confirmed they would complete the report via a landline call.

The Gloucestershire ATC unit investigation reported that when the Approach controller was interviewed later, they could give no reason for having issued the climb instruction to the Jupiter to the same level as the DA42 and admitted that it had been a mistake. The controller stated that they had been distracted by the radio-fail aircraft blocking the runway and had wanted to have the Jupiter vacate the missed-approach level (3000ft), should the second aircraft on the approach, the DA42(B) go around also, (the DA42(B) pilot had actually stated early that their intentions from the approach was to fly visual circuits). The climb instruction issued to the Jupiter at 1440:10 represented a technical loss of procedural separation, becoming an actual loss when the pilot subsequently reported passing 3000ft in the climb to 4000ft at 1441:21.

Whilst Gloucestershire ATC has an ATM, it has limited functionality as it is taken from their primary-only radar and therefore no aircraft level information would be available to the controller. It is not authorised for use as a surveillance system and could not have been used to assess the separation between the Jupiter and the DA42.

Having analysed the area radar replay and RTF together with the unit investigation report, the following conclusions were drawn in relation to this Airprox:

- Assessed against the traffic levels specified in the unit’s training plan, in the period running up the Airprox, traffic levels which had started as “Light” became “Heavy”.
- Whilst providing an Approach Procedural Service to four aircraft, and then having to deal with a radio-fail aircraft blocking the runway, with another pilot calling that radio-fail aircraft on the Approach frequency, and a third aircraft also calling up on the wrong frequency, the complexity of the traffic situation with which the Approach controller was presented, increased to the point where it caused them to become distracted, and to lose their situational awareness.

- The discussion with the pilot of the Jupiter after their go-around about their destination may have further distracted the Approach controller, who went on to repeat the climb instruction a further two times, but still did not spot the confliction with the DA42.
- A further opportunity to spot the confliction between the Jupiter and the DA42 was missed by the Approach controller, when the Jupiter reported passing 3000ft at 1441:21.
- Finally, the request for descent in the hold due to icing by the PA32, further diverted the Approach controller's attention away from the Jupiter and DA42.
- Correct use of the flight progress strips which should have formed the basis of any decision to climb the Jupiter could not be assessed, as they were neither referenced nor included in the unit investigation report.
- It should be noted that the Tower and Approach positions are co-located in the VCR, albeit at right-angles to each other. ATSI believe that there is an ongoing risk of either controller being distracted by the other, should they be dealing with an abnormal or emergency situation.
- The Approach controller climbed the Jupiter into confliction with the DA42.

ATSI have made a number of recommendations including a review of the proximity of Tower and Approach controller positions in the VCR, and the quality and content of unit investigation reports. These have already been submitted to the CAA ATS Inspector (Operations) responsible for that unit.

UKAB Secretariat

The DA42(A) and Jupiter 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 If the incident geometry is considered as converging then the Jupiter pilot was required to give way to the DA42.²

Summary

An Airprox was reported when a DA42 and a Jupiter flew into proximity in the vicinity of Gloucestershire Airport at 1442Z on Wednesday 2nd December 2020. Both pilots were operating under IFR in IMC, and both were in receipt of a Procedural Service from Gloster App.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

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

The Board first spent some time discussing the actions of the Approach controller. The controller was presented with a set of circumstances and a series of incidents that built to increase the traffic levels to the point where they were operating with an increasingly complicated scenario not of their own making. Some members noted that it was not the first time that the Board had seen an Airprox at Gloucestershire Airport which had its roots in a complicated traffic environment whereby ATC was trying to accommodate too many non-standard activities. The CAA ATSI advisor noted that following on from

¹ SERA.3205 Proximity.

² SERA.3210 Right-of-way (c)(2) Converging.

previous incidents, Gloucestershire had incorporated a system whereby ATC could refuse traffic if levels became too busy. However, on this occasion, part of the issue was that pilots that had booked out to return VFR, encountered weather and returned IFR instead. The controller was providing a Procedural Service which required that they separated known traffic (CF1), although as they were operating without a radar they had no means of verifying the position or altitude of the aircraft under their control. A discussion followed about whether in general pilots were aware of their own responsibilities when receiving a Procedural Service³, in particular that controllers are only required to separate known traffic. However, it was quickly agreed that on this occasion both pilots were fully aware of what they could expect from the controller. Members thought that the circumstances around the radio-failure aircraft on the runway, with the numerous calls from both controllers trying to contact the pilot, other pilots trying to help and eventually the pilot with the problem calling on the Approach frequency, caused a distraction to the controller (CF5). Certainly, when the Jupiter pilot called back on frequency after their go-around, the controller climbed the aircraft to 4000ft, the same level as the DA42(A), without realising the confliction and the Board agreed that this clearance set up the circumstances which led to the Airprox (CF4). At the same time as issuing this clearance, the controller and pilot had a discussion about the routing required, and this may have served to further distract the controller from realising their mistake (CF2). Shortly afterwards, when the PA32 pilot reported icing the controller descended the DA42(A), but still did not appreciate that the two aircraft were going to come into proximity and so did not offer any conflict resolution advice (CF3). Indeed, the controller did not seem to be aware of the proximity until it was reported by the pilots (CF6).

Turning to the actions of the pilots, both pilots only had generic situational awareness from hearing the other on frequency (CF7). Some members wondered whether the DA42(A) pilot could have heard the Jupiter pilot call on the frequency on climb-out, heard the controller issue the instruction to climb to their level and realise that the Jupiter was in their vicinity. Others felt that with the examination and the fact that they were IMC, the pilot would have had a high workload and would naturally assume the controller had the situation under control, therefore, a contributory factor was not attributed. With both pilots flying in IMC, neither could see the other at range (CF10). Although it was not known when the Jupiter pilot received the TCAS TA (CF8), as the Jupiter broke cloud the pilot became visual with the DA42(A) and took a 'gentle turn' to remain clear (CF13). The DA42(A) pilot received a traffic alert from their electronic warning system (CF9) which cued them to look for the traffic but they did not see the Jupiter until it was passing down their left-hand side, by which time it was too late to take any avoiding action, making the encounter effectively a non-sighting (CF12).

When determining the risk of the Airprox members were split, with some opining that the separation, at 0.3NM, and the gentle avoiding action turn made by the Jupiter pilot, described a situation where, although safety had been degraded, there had been no risk of collision. Others countered that both pilots were IMC and that both were receiving an ATS that should have ensured that they were separated from each other. Furthermore, the separation was largely circumstantial because neither pilot had been able to see the other aircraft in time to take any earlier action. In the end the latter view prevailed and the Board assessed that safety had been much reduced (CF11); Risk Category B.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2020166		
CF	Factor	Description	Amplification
	Ground Elements		
x	• Regulations, Processes, Procedures and Compliance		
1	Human Factors	• ATM Regulatory Deviation	Regulations and/or procedures not fully complied with
x	• Situational Awareness and Action		
2	Human Factors	• Conflict Detection - Not Detected	

³ For details of ATS outside CAS, including Procedural Service, see the [CAA Skyway Code](#) page 76.

3	Human Factors	• Conflict Resolution – Not provided	
4	Human Factors	• Inappropriate Clearance	The ANS clearance contributed to the Airprox
5	Human Factors	• Distraction - Job Related	Controller engaged in other tasks
6	Contextual	• Loss of Separation	Standard separation was not achieved
Flight Elements			
x	• Situational Awareness of the Conflicting Aircraft and Action		
7	Contextual	• Situational Awareness and Sensory Events	The pilot had generic, late or no Situational Awareness
x	• Electronic Warning System Operation and Compliance		
8	Contextual	• ACAS/TCAS TA	
9	Contextual	• Other warning system operation	Warning from a system other than TCAS
x	• See and Avoid		
10	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
11	Contextual	• Near Airborne Collision with Aircraft, Balloon, Dirigible or Other Piloted Air Vehicle	Piloted air vehicle
12	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots
13	Human Factors	• Monitoring of Other Aircraft	Late-sighting by one or both pilots

Degree of Risk: B.

Safety Barrier Assessment⁴

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

Ground Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because ATC cleared the Jupiter to climb to the same level as the DA42(A).

Situational Awareness of the Confliction and Action were assessed as **ineffective** because the controller did not detect the conflict between the DA42(A) and the Jupiter when they issued the clearance for the Jupiter to climb to 4000ft.

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because both pilots only had generic information about the other aircraft.

See and Avoid were assessed as **partially effective** because the Jupiter pilot broke cloud and was able to take late avoiding action.

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: 2020166		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	■	■	■	■		□	