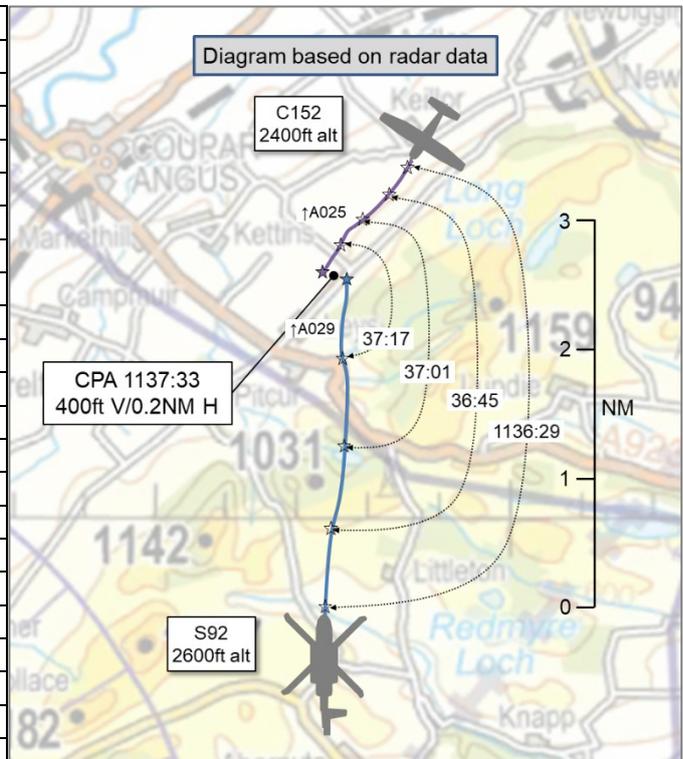


AIRPROX REPORT No 2021009

Date: 21 Feb 2021 Time: 1138Z Position: 5632N 00313W Location: Coupar Angus

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	S92	C152
Operator	Civ Comm	Civ FW
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	VFR	VFR
Service	Basic ¹	AGCS
Provider	Dundee Approach	Perth Radio
Altitude/FL	2900ft	2500ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Company livery	White/silver/red
Lighting	NR	NR
Conditions	VMC	VMC
Visibility	30km	>10km
Altitude/FL	2000ft	2700ft
Altimeter	QNH (1003hPa)	NK
Heading	360°	260°
Speed	100kt	95kt
ACAS/TAS	TCAS I	Not fitted
Alert	TA	N/A
Separation		
Reported	500ft V/0.5NM H	Not Seen
Recorded	400ft V/0.2NM H	



THE S92 PILOT reports that approximately 5min after departure, the Dundee Approach controller was informed of their intent to conduct general handling in the area of Forfar; the controller informed them that there was no known traffic in the area. The candidate then went under the IF hood in preparation for commencing IF general handling. Approximately 8NM E of Blairgowrie they received a TCAS TA caution. The traffic indicated 100ft below with no climb or descent. The P1 took control and the aircraft was manoeuvred initially in a climb and then turned right 30° once the target had been sighted. The conflicting traffic was identified as a Cessna 152 which passed approximately ½NM to the left and below whilst maintaining course and altitude. Dundee ATC was informed of the presence of the Cessna and the controller re-iterated that they had no aircraft on frequency in that area, then suggested a call to Leuchars Approach for a radar service. Leuchars Radar was duly contacted and a Traffic Service received.

The possibility of encountering GA traffic had been covered during the Threat and Error Management (TEM) pre-check brief, and this was re-emphasised on hearing a GA aircraft requesting a MATZ crossing approximately 15min prior to the TCAS TA whilst they were conducting the RNP approach to RW27 at Dundee.

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

THE C152 PILOT reports preparing their aircraft for joining the circuit at Perth. Between Forfar and Perth Airport they contacted Perth ATC to advise they were inbound and requested the aerodrome information. To their knowledge it was an uneventful flight. However, it is worth noting that due to flying

¹ The pilot reports receiving a Basic Service, but none was agreed with the Dundee Approach controller (although the controller was working as if they were providing a Basic Service).

in a westerly direction the sun was facing them and the glare was quite intense that day due to reflection off the clouds above them. Because of this they did not see a helicopter on their flight routing.

The following day, the Chief Flight Instructor advised them that Perth Tower had received a telephone call from Dundee Tower enquiring whether an aircraft from Perth airport had seen a helicopter, and that the pilot of the helicopter was considering raising an Airprox. The pilot called Dundee ATC and explained the details of their flight as described above.

The pilot assessed the risk of collision as 'None'.

THE DUNDEE APPROACH CONTROLLER reports the pilot of [the S92], having completed training at Dundee and routed north to carry out general handling in the Forfar area, reported a C152 operating in the same area. The ATCO confirmed with [the S92] pilot that there was no other known traffic on frequency, and suggested a change of frequency to Leuchars Radar, who may be able to supply more Traffic Information. [The S92] crew concurred and changed frequency. Dundee ATC has access to an Aircraft Situational Awareness Display (ASAD) on a trial basis. ASAD was showing only [the S92] in the Forfar area. [The S92] crew did not report an Airprox at the time, but subsequently informed Dundee ATC that they would file.

THE PERTH AIR/GROUND OPERATOR reports the [the C152] pilot departed Perth at 1021Z and reported changing to Edinburgh approach at 1024Z. The aircraft returned to Perth at about 1200Z and completed four circuits. No mention was made of any incidents and neither of the aircraft were on their frequency at the time of the reported Airprox.

Factual Background

The weather at Dundee Airport was recorded as follows:

METAR EGNP 211150Z 23016KT 9999 FEW028 09/05 Q1003=

Analysis and Investigation

HIAL ATS Safety Investigation

The crew of [the S92] was operating on a training flight and had planned to carry out an RNP Approach at Dundee Airport followed by a short circuit detail before returning to [base]. Inbound to Dundee they were provided with a service from Leuchars Radar and then transferred to Dundee Approach just before they reached the Initial Approach Fix OSVIB on the RNP Approach to RW27 at Dundee. After completion of the RNP Approach they commenced a go-around into the left-hand visual circuit before landing on RW27. After approximately 4min holding on the RW they departed, initially on runway track until passing 2000ft altitude for noise abatement and then turned to track northbound. On departure, the crew was simulating a single engine departure and the pilot under training was operating under an IF hood, which meant that they would not be able to visually scan outside the aircraft. The pilot stated that once the departure drills were complete and the idle engine re-instated, they intended to proceed towards Forfar for general handling.

Approximately 6min after departing Dundee the crew received a TCAS TA on traffic approximately 100ft below them. Initially the crew could not see the conflicting traffic so elected to climb to try and increase vertical separation. The crew then sighted the conflicting aircraft which was tracking SW and they then turned right 30° to increase separation. The conflicting traffic was identified as a Cessna 152 which had passed down their left-hand side at approximately 0.5NM and 300-500ft below them. The crew stated that the Cessna appeared to maintain track and altitude. The crew informed Dundee ATC of the presence of the Cessna 152 who replied that they were not working another aircraft in that area and suggested the crew contact Leuchars ATC for a radar service, which the crew elected to do.

In a fairly detailed report, the crew of [the S92] stated that before commencing the RNP Approach at Dundee and while they were still being provided with a service by Leuchars Radar they had heard

on that frequency a Cessna 152 requesting crossing of the Leuchars MATZ and which was intending to route to Forfar. The crew commented at the time that they may encounter this aircraft while en-route to Forfar themselves. However, after departing from Dundee they were informed that Dundee ATC had no known traffic to affect in the Forfar area and therefore assumed that the Cessna was no longer a factor to them.

The Cessna 152 departed [a local airfield] and routed to the south. When south of Leuchars the pilot turned northbound and requested a Leuchars MATZ crossing. This was approved and the aircraft routed over Leuchars and Broughty Castle where it continued onto Forfar while under a Basic Service provided by Leuchars Radar. When the pilot reported at Forfar they requested a change of frequency to Perth Radio which was acknowledged by Leuchars Radar. In an interview, the pilot was convinced that they were not involved in the incident and stated that at no point had they observed a helicopter while en-route to Perth. They did state that they had observed some navigation lights in the distance.

Due to COVID-19 restrictions, Dundee ATC was manned to a minimum level involving single manning in the morning and afternoon and the airport opening times were restricted to 0900-1615 each day. The controller on duty at the time had opened watch at 0900Z and had carried on watch until 1215Z when they handed over watch to the afternoon controller.

The controller had not recorded an ATC watch break despite the fact that rostered breaks had been NOTAM'd. Dundee ATC does have CAA approval to operate up to four hours without a break, provided traffic conditions are very light. At the time of the incident the controller had 3 aircraft operating under their control, the [S92] and 2 light aircraft that were departing Dundee to the south-west VFR. Also, a trainee controller was present in the VCR during the morning and was acting as an assistant only.

After [the S92] had departed, the controller passed the pilot Traffic Information on another helicopter that was under the control of Leuchars ATC and was routing towards OSVIB but was still some distance away. After being informed by the crew of [the S92] that they would be operating in the vicinity of Forfar the controller stated that they had no known traffic to affect in the area of Forfar and asked them to report complete. When the controller was informed of the Cessna by [the S92] crew, they confirmed that the aircraft was not on the Dundee frequency and suggested that they contact Leuchars Radar.

At the time the controller observed the ASAD, it was only showing a return for [the S92]; no other aircraft was displayed at the time. In a statement, the controller stated that as the ASAD is currently on trial the acting assistant was asked to check Flightradar24 to ascertain if that application was showing any aircraft in the vicinity of Forfar. The assistant confirmed that it identified [the C152] that was in the vicinity of [the S92]. The controller also stated that, as the accuracy of the information provided on Flightradar24 cannot be guaranteed, they did not include this information in the ECCAIRS report. The ASAD consists of a webpage displayed on a monitor with a visual representation of the local area in map form. The positions of appropriate equipped aircraft are generated either by Automatic Dependent Surveillance-Broadcast (ADS-B), Flight Alarm (FLARM) and Multilateration (MLAT). At the time of the incident, MLAT-based returns were not being generated and therefore the controller could only see ADS-B generated returns which only accounted for a small proportion of aircraft operating in the vicinity of Dundee Airport that day. The only aircraft that was displayed was [the S92]. The controller even resorted to using a Flight Tracker app to see if any aircraft were in the vicinity and this did show the presence of [the C152] adjacent to [the S92]. In an ASAD feedback survey, the controller reported four issues with ASAD on the day of the incident. Most of these revolved around the lack of MLAT displays for aircraft they had worked earlier in the day but one concerned the temporary disappearance of the ADS-B return for [the S92] when passing the final approach fix of the RNP approach. Had the MLAT returns been operative on the day then it would have been likely that [the C152]'s return would have been visible to the Dundee controller and they would have been able to at least give generic Traffic Information to the crew of [the S92]. It has subsequently been discovered that the reason that the MLAT returns were not

displaying was due to a telephone line issue with the airport Wi-Fi. It is believed that this is due to be rectified.

During the investigation the controller's RTF was monitored and transcribed and at no point did the controller sound stressed or overloaded.

The Leuchars controller provided [the C152 pilot] with a Basic Service as they transited the Leuchars MATZ, Broughty Castle and Forfar. When [the C152 pilot] reported at Forfar they requested a change of frequency to Perth radio and this was approved.

After analysis of the Dundee ATC RTF and telephone records, the Leuchars controller telephoned Dundee ATC just prior to handing control of [the S92] to Dundee. In the conversation, the Leuchars controller stated that [the S92] was approaching OSVIB and they had traffic crossing the MATZ and that it would pass behind the helicopter. Based on the times and the statement from Leuchars ATS the crossing traffic was the Cessna 152.

Dundee ATC has approved Letters of Agreement with both RAF Leuchars and Perth Air Ground. The Letter of Agreement with Leuchars mainly concerns the actions each unit will take for Dundee IFR arrivals and departures as well as VFR traffic inbound to Dundee and VFR departures and arrivals if Errol Parachuting is active. Only two paragraphs cover transiting traffic and these are:

Section 3, n,

Additional Liaison – Leuchars controllers will liaise with and provide additional information to Dundee under the following circumstances:

ii Traffic is likely to require transit of or pass close to the Dundee ATZ or transit through the Dundee Instrument Approach Procedures (IAP's) whilst in use,

iii If time and workload permits, Leuchars Radar Controllers are aware of military fast jet (FJ) traffic routeing through areas where Dundee ac are operating, will endeavour to pass TI or a generic warning if appropriate.

In this incident the Leuchars controller did, to a degree, follow paragraph ii above, when they informed Dundee ATC of the MATZ crosser passing behind the helicopter approaching OSVIB.

The Letter of Agreement with Perth A/G is centred on the procedure required to deconflict the passage of aircraft carrying out both the conventional and RNP arrival procedures to Dundee from aircraft operating in the Perth ATZ during its published hours of operation. Nothing in the Letter of Agreement covers aircraft transiting to the north of Dundee when inbound to Perth against a VFR departure from Dundee. The Letters of Agreement are constantly reviewed to confirm they are still appropriate and this will be carried out at the next operator's forum.

Taking into consideration the amount of information available to the controller at the time, there was little else that they could have done to prevent this Airprox. Since [the C152 pilot] had not made an RTF call on the Dundee Approach frequency and stated their routeing and intentions, the controller was only left with stating no known traffic to affect to the crew of [the S92]. Also, the fact that ASAD was not showing any MLAT returns prevented the controller from viewing a more realistic image of what traffic was operating in the vicinity of Dundee.

The only sections in MATS Pt1 that have any relevance to the incident is in Section 3: Chapter 1 Para 1B.1 which state:

An Approach Control unit at an aerodrome outside controlled airspace shall provide ATS to aircraft, as determined by the Aerodrome operator and approved by the CAA, from the time and place at which:

(3) overflying aircraft place themselves under the control of Approach Control until they are clear of the approach pattern and either no longer wish to receive a service or are 10 minutes flying time away from the aerodrome, whichever is the sooner.

Similarly, the MATS Pt 2 Section 2 Ch1 Para 2.3.5 states:

Aircraft operating under VFR in receipt of a Basic Service outwith the vicinity of the aerodrome will not have de-confliction minima applied however traffic information on other aircraft operating in their vicinity will be passed whenever practicable.

In both cases, it relies on pilots of aircraft placing themselves under the control of the appropriate unit and, in this case, this did not happen as the pilot of [the C152] was in communication with Perth Air/Ground, rather than contacting Dundee Approach.

The investigation concluded that the following factors contributed to this Airprox:

1. A non-sighting of the helicopter by the pilot of [the C152].
2. A late-sighting of the Cessna 152 by the crew of [the S92]. The TCAS equipment alerted the crew to the presence of the Cessna 152 but there was initial confusion as to the exact location of the Cessna in relation to the helicopter. This confusion did cause a delay in the crew making visual contact with the Cessna.
3. The pilot of [the C152] was in communication with Perth Air/Ground rather than Dundee Approach.
4. Failure of the Dundee ATC ASAD to show any MLAT returns therefore depriving the Dundee ATCO with a more complete picture of the traffic situation in the vicinity of Dundee.
5. The position of the low sun in relation to the Cessna 152 may have created a blind spot for the pilot of [the C152] in the direction from which the helicopter was approaching.

The following Safety Recommendations were made:

1. Dundee ATC to investigate ways to heighten the awareness of local aircraft operators to the fact that Dundee Approach can be contacted while they are operating within the vicinity of Dundee.
2. Dundee Airport management to ensure that the ASAD trial is continued to a satisfactory standard and is continually maintained to high standard.

CAA ATSI

The two S92 pilots were carrying out a training detail and were in receipt of a service from Dundee Approach (non-radar), at the time of the Airprox. The pilots had previously been conducting Instrument Approach Training at Dundee, and on completion they had undertaken a stop/go landing. On departure from Dundee no agreement was reached between the pilot and the controller regarding what type of service would be provided. The Dundee ATC Investigation report stated that a Basic Service should have been provided.

The C152 pilot was conducting a flight for the purpose of building commercial hours and was preparing to join the visual circuit at Perth at the time of the Airprox. The pilot was in receipt of an AGCS from Perth Radio, having previously been in receipt of a service from Leuchars.

The Dundee controller had access to an ATCO Situational Awareness Display (ASAD), as part of a trial being conducted at Dundee. The data displayed on the ASAD is derived from Multilateration (MLAT), Automatic Dependent Surveillance-Broadcast (ADS-B) and Flight Alarm (FLARM). The controller reported that the S92 was displayed on the ASAD but that the C152 was not displayed. The Dundee ATC Investigation report stated that *“at the time of the incident MLAT-based returns*

were not being generated and therefore the controller could only see ADS-B generated returns which only accounted for a small proportion of aircraft operating in the vicinity of Dundee Airport that day”.

Note: The ASAD trial at Dundee is currently suspended, pending a review.

The CAA ATS Investigator had access to pilot reports for both aircraft involved, a report from the Dundee controller and the unit investigation report from HIAL. The RTF and Area Radar recordings were also reviewed for the period leading up to the incident. In the interests of brevity, only the RTF from the S92 pilot has been included in this report. All levels within the screenshots in this report are displayed as Flight Levels and the QNH entered into the controller situational display was 1007 hPa.

At **1111:50** the Leuchars controller telephoned the Dundee controller and advised them that they were about to transfer the S92 pilot to the Dundee frequency. During the call, the Leuchars controller passed Traffic Information on a Leuchars MATZ crossing aircraft that was currently to the south of Leuchars and said that they would ensure that the crossing aircraft passed behind the S92 traffic.

Note: The aircraft in question was the C152 that was subsequently involved in the Airprox. The C152 was transponding code 7402 at the time of the call; however, due to MLAT returns not being displayed on the Dundee controller’s ASAD, the Dundee controller would not have been able to see the aircraft return or monitor the track of the aircraft.

At **1112:20** the S92 pilot made initial contact with the Dundee controller. The controller passed the Dundee QNH 1003, instructed the pilot to squawk 7374, cleared the pilot for the RNP procedure RW27 and instructed them to report passing OSVID. The pilot provided an accurate readback, advised that they were currently at OSVID, turning inbound for the RNP approach. The controller instructed the pilot to report passing the final approach fix, and this was read back by the pilot. The type of ATC service was not requested or agreed (Figure 1). At **1113:10** the controller asked the S92 pilot for their intentions after the approach. The pilot advised that it would be a low approach and go around, into the visual circuit, followed by a stop/go landing for departure VFR to the north. The controller advised that it would be a left-hand visual circuit RW27. At **1117:50** the positions of the aircraft are shown below (Figure 2).

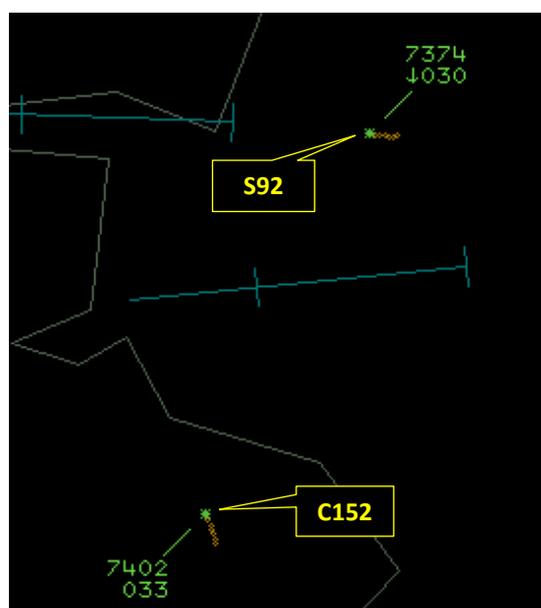


Figure 1 – 1112:20

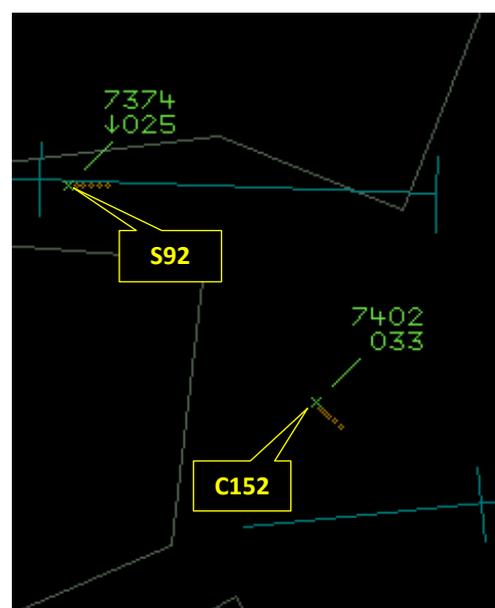


Figure 2 – 1117:50

At **1119:00** the S92 pilot reported at the final approach fix and was cleared for a low approach RW27 and provided with the surface wind. At **1124:00** the S92 pilot reported in the missed approach to join the visual circuit and was instructed to report downwind left-hand. At **1125:00** the positions of the aircraft are shown below (Figure 3). The S92 was approaching downwind left-hand and the C152

was 8NM north of Dundee Airport. At **1126:00** the S92 pilot reported downwind for the stop/go and was instructed to report final and to anticipate a late landing clearance. At **1126:21** the C152 was 9.9NM north of Dundee and the pilot changed from the Leuchars squawk of 7402 to the general conspicuity code of 7000, displayed as V below (Figure 4).

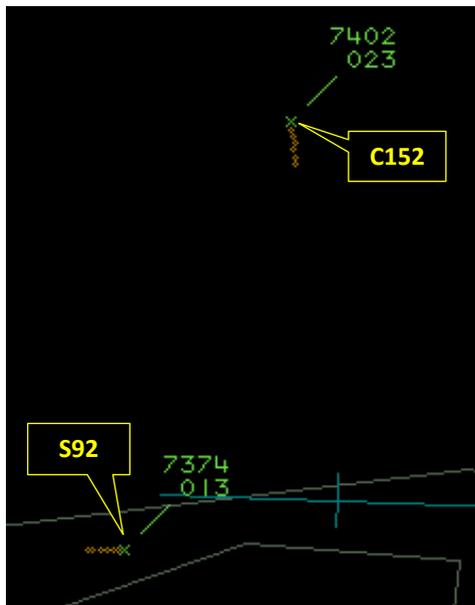


Figure 3 – 1125:00

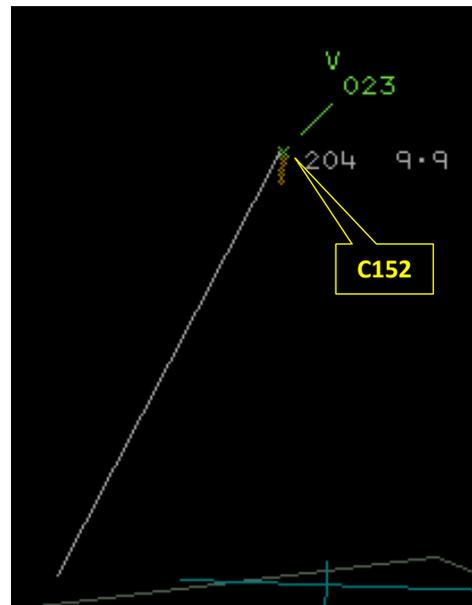


Figure 4 – 1126:21

At **1128:10** the S92 pilot was cleared to land RW27 and was instructed to report ready for departure. At **1131:30** the S92 pilot reported ready for departure and advised that this would be a rolling take-off for a visual departure to the north. The pilot was issued with an instruction to climb straight ahead to altitude 2000ft before turning north. The pilot provided an accurate readback and was cleared for take-off RW27. The type of ATC service to be provided after departure was not requested or agreed. At **1136:04** the positions of the aircraft are shown below (Figure 5). At **1137:33** CPA occurred, with the aircraft separated by 0.2NM laterally and 400ft vertically (Figure 6).

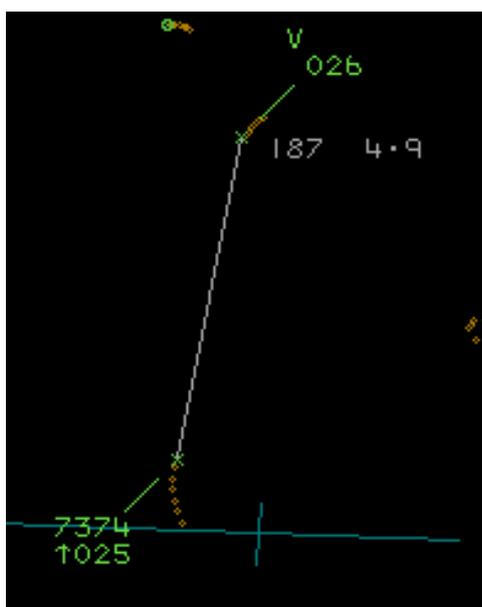


Figure 5 – 1136:04

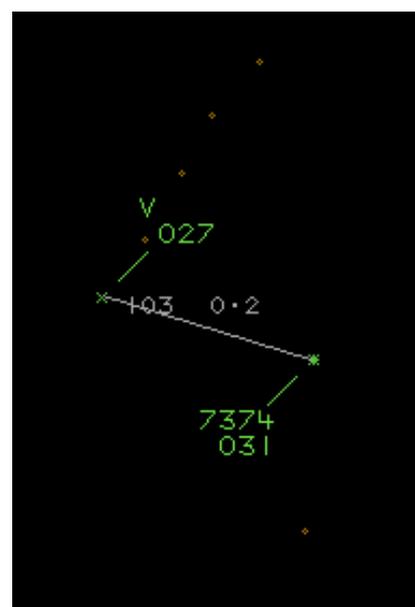


Figure 6 – 1137:33 - CPA

At **1137:50** the controller passed Traffic Information to the S92 pilot *“company AC75, inbound towards OSVID from the north”*. The pilot responded, *“roger, we’ll be operating up to altitude 2500”*

feet in the area of Forfar". The controller advised the pilot, "no other known traffic in the Forfar area to affect and report complete". The pilot acknowledged with "roger".

At **1139:30** the S92 pilot advised the controller that there was a Cessna operating their vicinity. The controller responded that the Cessna was not talking to Dundee and suggested that the pilot may receive better Traffic Information from Leuchars. The pilot advised that they had passed the Cessna now, had climbed to altitude 3000ft, and would change to the Leuchars frequency. At **1506:30** the S92 pilot telephoned Dundee ATC, to let them know that an Airprox report was being submitted. They explained that while they were on the Dundee frequency earlier in the day, they had come close to a Cessna that was not on the Dundee frequency at the time. The pilot advised that while operating at 2000ft and approximately 8 miles to the east of Blairgowrie, they had received a TCAS TA warning and had to take avoiding action. The avoiding action necessitating a change of heading of 30° and a climb of 500ft. The pilot said that the Cessna maintained course and altitude and as such they believed that the Cessna pilot had not seen the S92.

The Dundee unit investigation report makes mention that the controller had reported four issues with the ASAD on the day of the incident. Most of these revolved around the lack of MLAT targets being displayed for aircraft they had worked earlier in the day, with one concerning the temporary disappearance of the ADS-B return for the S92, when it was passing the final approach fix of the RNP approach.

It was subsequently discovered that the BT telephone line supporting the MLAT system had been terminated, without the knowledge of ATC, on or around the 30th December 2020. This line is essential to the ASAD project as it is linked to the server (situated in the Control Tower building equipment room) which carries out all the MLAT processing. The resulting lack of MLAT was not immediately noticed by the unit due to the limited traffic at the beginning of the year and only came to light in February, when traffic levels picked up.

The Temporary Instruction (TOI) to Dundee ATC staff, introduced to facilitate the ASAD trial contained the following text:

ASAD availability and checking TOI 10/2020

3.1 Optimal MLAT on the ASAD is dependent on the availability of six 1090MHz receivers. Their locations are:

*Craigowl– North
Perth Aerodrome – West
Errol – South West
Dundee – On the VCR roof
St Andrews – South East
Redford – North East*

*The serviceability of each can be checked at watch opening either by:
a) Looking at the receiver status panel (bottom right of the map display)*

Green – Fully serviceable
Amber – Serviceable but limited coverage
Red – Not available
Missing – On maintenance or withdrawn.

*Or, if the receiver panel is missing:
b) Click on a receiver symbol (coloured tower – colour reflects the status as above).
c) A serviceable receiver will indicate the range of coverage diagrammatically on the map.
d) A second click in the respective receiver will clear the coverage indication.
e) Repeat for each of the five receivers.*

3.2 The loss of any receivers is to be recorded in the ATC Watch Log and reported to the SATCO/DSATCO for onward notification to, and rectification by, (supplier name redacted). In the event that there is a loss of one receiver then there will be a reduction in the quality and coverage of MLAT,

3.3 If two or more receivers are indicating out of service, then MLAT capability will not be available however ADS-B and FLARM will continue to be available in the local area.

A letter of agreement exists between Dundee and Leuchars ATC, the letter states that Traffic Information shall be passed in the following circumstance:

“Traffic is likely to require transit of or pass close to the Dundee ATZ or transit through the Dundee Instrument Approach Procedures (IAP’s) whilst in use.”

The Leuchars controller passed Traffic Information on the C152 to the Dundee controller during the handover call on the S92 at **1111:50**. The C152 pilot was observed (on the radar replay) to have changed from the Leuchars squawk to the general conspicuity squawk when the C152 was 9.9 NM north of Dundee. The aircraft had passed behind the S92, was clear of conflicting traffic and was on a track that was no longer a threat to Dundee traffic. The squawk change would indicate that the Leuchars service was terminated at this point (approximately 10min prior to the Airprox occurring). There was no further requirement on the Leuchars controller to monitor the flight of the C152.

When the Leuchars controller passed the Traffic Information and intentions of the C152 during the handover call, the Dundee controller, whilst having been made aware of the presence of the aircraft, was not able to acquire and monitor the track of the aircraft.

On the initial and subsequent RTF calls to Dundee ATC, from the S92 pilot, the type of service to be provided to the S92 pilot was not requested or agreed.

The Airprox occurred at **1137:33**. The S92 pilot reported that they may have relaxed their look out, as a result of receiving information from the Dundee controller that there was no known traffic in their vicinity. The only call made by the controller containing this phrase was made at **1137:50**, when the controller passed Traffic Information to the S92 pilot on unrelated traffic. This call contained the phrase, *“no other known traffic in the Forfar area to affect, and report complete”*. This call was made 17sec after the Airprox had occurred.

The Temporary Instruction (TOI) to Dundee ATC staff, introduced to facilitate the ASAD trial, contained the following text:

ATCOs should always be aware that the ASAD will not show aircraft which are not equipped with either Mode S/ADS-B transponders or FLARM and, since multi-lateration is dependent on a combination of transponder interrogation and line-of-sight, an aircraft which is not being interrogated and/or out of ‘sight’ to two or more of six active receivers will not necessarily show on the display. Additionally, MLAT responses can be intermittent, the system has a built-in process to smooth these variances out giving a consistent aircraft track on the display, however hovering over an MLAT generated plot or symbol will often display these variances graphically.

The above explanation confirms that even when the ASAD system is fully functional, it will not display a full surveillance traffic picture. Pilots in receipt of a service from Dundee ATC are unlikely to be aware of what equipment is in use and the limitations of the equipment. As such, careful consideration needs to be given to how the system is to be used, to ensure that new risks are not introduced into the ATC or airborne systems.

UKAB Secretariat

The S92 and Cessna 152 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

² SERA.3205 Proximity.

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 converging then the S92 pilot was required to give way to the Cessna 152.⁴

Summary

An Airprox was reported when an S92 and a Cessna 152 flew into proximity near Coupar Angus at 1138Z on Sunday 21st February 2021. Both pilots were operating under VFR in VMC, the S92 pilot in receipt of a Basic Service from Dundee Approach (though no type of Service had been formally agreed) and the Cessna 152 pilot was receiving an Air/Ground Communications Service from Perth.

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 considered the actions of the S92 pilot and discussed the relative advantages of a surveillance-based Air Traffic Service (ATS) from Leuchars over a non-surveillance-based Service from Dundee. The Board heard from a pilot member familiar with operating in the area where the Airprox occurred that, in their experience, pilots from the flying schools based at Dundee and Perth tend to seek a Service from Dundee so that they can maintain situational awareness on local traffic on the relevant frequency. That said, and given that the S92 pilot had been intending to conduct IF general handling to the north of Perth and Dundee, the Board considered that the S92 pilot might have been better served seeking a surveillance-based ATS on their transit to their intended operating area; indeed, after the Airprox had occurred the S92 pilot had then sought an ATS from Leuchars on the suggestion of the Dundee controller. However, the Board agreed that in the moments leading up to the Airprox the S92 pilot had only had generic situational awareness (**CF3**) of the presence of the C152 (gained from hearing a transmission from the C152 pilot earlier in the flight), and that their reaction to climb on receipt of the TCAS TA that had been generated from the transponder signals from the C152 (**CF4**) had been instrumental in ensuring adequate vertical separation. The Board also agreed that this TCAS contact had also enabled the S92 pilot to become visual with the C152 and initiate a turn away whilst still at a reasonable distance from the other aircraft.

Turning to the actions of the C152 pilot, members considered that they had sought an appropriate ATS from an appropriate provider throughout the majority of their flight. Some members questioned why the C152 pilot had not sought an ATS from Dundee prior to switching to Perth, but a GA pilot member suggested to the Board that the timing of the C152 pilot's frequency change to Perth had been entirely appropriate and that, prior to the frequency change, they had been in receipt of a surveillance-based Service from Leuchars (which would have been preferable to a non-surveillance-based Service from Dundee). The Board agreed that, at the time of the frequency change, the S92 would not have been a factor to the C152 pilot and so Traffic Information would not have been passed by the Leuchars controller; therefore, the C152 pilot had had no situational awareness of the presence of the S92 (**CF3**). Furthermore, the C152 pilot's lookout had been hindered by the glare from the low sun and that this had led to them not sighting the helicopter (**CF5**).

The Board then considered the actions of the Perth Air/Ground Operator (AGO) and Dundee controller and quickly agreed that the Perth AGO did not play – and could not have played – any part in this event. The discussion revolved around the actions of the Dundee controller and the type of ATS that was being delivered. It was clear to the Board that no ATS had been formally agreed between the S92 pilot and

³ SERA.3210 Right-of-way (c)(1) Approaching head-on.

⁴ SERA.3210 Right-of-way (c)(2) Converging.

the Dundee controller but, since both were operating as if a Basic Service was being delivered and received, the Board did not feel that this absence of formal agreement had been contributory to the Airprox and, therefore, considered that the Ground Elements Regulation, Processes, Procedures and Compliance barrier had been fully effective in this case. However, to all intents and purposes the event had occurred under the terms of a Basic Service and the Board judged the Airprox in this regard, noting that there had been no requirement for the controller to monitor the S92 (**CF1**) and that the Dundee controller had had no situational awareness of the presence of the C152 (**CF2**). Members agreed that the Dundee controller had done all that they could have done with the information that they had had to hand.

Finally, the Board discussed the risk involved in this incident and quickly agreed that there had been no risk of collision. A short discussion ensued as to whether or not safety had been reduced but, ultimately, members felt that, due to the early actions of the S92 pilot in response to the TCAS TA and then sighting the C152, normal safety standards and parameters for flight in Class G airspace had pertained. Consequently, a Risk Category E was assigned to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2021009				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Contextual	• ANS Flight Information Provision	Provision of ANS flight information	The ATCO/FISO was not required to monitor the flight under a Basic Service
2	Contextual	• Traffic Management Information Action	An event involving traffic management information actions	The ground element had only generic, late or no Situational Awareness
Flight Elements				
• Situational Awareness of the Conflicting Aircraft and Action				
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
• Electronic Warning System Operation and Compliance				
4	Contextual	• ACAS/TCAS TA	An event involving a genuine airborne collision avoidance system/traffic alert and collision avoidance system traffic advisory warning triggered	
• See and Avoid				
5	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

Degree of Risk: E

Safety Barrier Assessment⁵

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

Ground Elements:

Situational Awareness of the Confliction and Action were assessed as **not used** because the Dundee controller was not required to monitor the S92 under the terms of a Basic Service (albeit the type of Service had not been formally agreed).

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

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because The S92 pilot had generic situational awareness that the C152 might be operating in a similar area to themselves, and the C152 pilot had no situational awareness of the presence of the S92.

Airprox Barrier Assessment: 2021009		Outside Controlled Airspace					
Barrier	Provision	Application	Effectiveness				
			Barrier Weighting				
			0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 5%]			
	Manning & Equipment	✓	✓	[Green bar to 2.5%]			
	Situational Awareness of the Confliction & Action	✗	○	[Red box from 0% to 15%]			
	Electronic Warning System Operation and Compliance	●	●	[Grey bar to 2.5%]			
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✓	[Green bar to 10%]			
	Tactical Planning and Execution	✓	✓	[Green bar to 10%]			
	Situational Awareness of the Conflicting Aircraft & Action	⚠	✓	[Yellow bar to 20%]			
	Electronic Warning System Operation and Compliance	⚠	✓	[Green bar to 15%]			
	See & Avoid	✓	✓	[Green bar to 20%]			
Key:			Full	Partial	None	Not Present/Not Assessable	Not Used
Provision	✓	⚠	✗	●			
Application	✓	⚠	✗	●		○	
Effectiveness	■	■	■	■		□	