

AIRPROX REPORT No 2021244

Date: 14 Dec 2021 Time: 1046Z Position: 5627N 00301W Location: Dundee

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	ATR42	PA28
Operator	CAT	Civ FW
Airspace	Dundee ATZ	Dundee ATZ
Class	G	G
Rules	IFR	VFR
Service	Procedural	ACS
Provider	Dundee	Dundee
Altitude/FL	NK	NK
Transponder	A, C, S	A, C ¹
Reported		
Colours	Company	Blue, White
Lighting	Strobes	Nav, Beacon, Strobe, Landing
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1100ft	1500ft
Altimeter	QNH (1015hPa)	QNH
Heading	140°	180°
Speed	160kt	95kt
ACAS/TAS	TCAS II	Not fitted
Alert	Information	N/A
Separation at CPA		
Reported	0ft V/1.5NM H	NK V/1.5NM H
Recorded	NK	



THE ATR42 PILOT reports conducting a circling approach to land RW27 at Dundee. Beacon outbound was called and ATC confirmed “clear for the procedure”. Localiser was established and initial descent initiated in accordance with the first segment of the circling approach. At 500ft above their circling platform the TCAS screen displayed proximate traffic, within 5 miles, left-to-right and descending at a similar rate. No TA was issued. The crew briefed that a GA aircraft was a possibility. When their platform altitude was reached and break-heading was achieved, they observed a Warrior had already joined crosswind and into the circuit, at the same level and the same heading, although as an estimation about 1.5 miles abeam. They highlighted their position, re-iterated their intentions and announced to ATC their proximity to the traffic who, at that moment, were initiating their avoiding actions. The circling procedure continued and the last turn to visual final approach was set.

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

THE PA28 PILOT reports that they made an initial call on changing back from Scottish when approx. 5NM to run to Piperdam. They were given Piperdam as a reporting point and clearance limit with the understanding that the ATR was beacon outbound for the ILS. On reaching Piperdam they were cleared to join crosswind for RW27 as the ATR had not yet reported localiser established. On passing Longforgan they heard the ATR report localiser established at 5.5NM and spotted it descending out of cloud already behind. They were then asked to route immediately to a low-level downwind join which was executed expeditiously. The ATR then routed behind them on heading of 150° and continued to report distances to the PA28. They took avoiding action when instructed by Dundee Tower to alter course to the right. Dundee tower spoke to the pilot via telephone after the flight and confirmed that

¹ Reported but not seen on the NATS radar.

both parties had the same thinking; that at the time of clearance onto crosswind the ATR was still beacon outbound.

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

THE DUNDEE CONTROLLER reports that the ATR42 aircraft went NDB outbound at 1040, routing southwest, following the procedure for ILS approach RW09, with the intention of breaking south from the ILS approach for visual manoeuvring (circling) to land on RWY27 due to cloudbase and surface wind conditions. The PA28 aircraft operating on VFR northwest of the aerodrome asked for re-joining instructions and was instructed to route to a location approximately 4NM northwest of the aerodrome, with that location as its clearance limit. The PA28 reported approaching clearance limit location and was instructed to join crosswind for RW27 as the ATR42 had not yet reported established on localizer. The ATR42 had established localizer between 8 and 9 DME but the next radio call apologized for the late call passing 5.5 DME. The ATR42 was given Traffic Information on the PA28, which was on crosswind at this time. The PA28 reported passing a location which was 0 DME at 1500ft and the ATR became visible to the pilot, descending through the cloudbase on their right side. The PA28 was asked whether they were able to descend immediately and join a low-level circuit to land on RW27 – they were, and started descent to 500ft and routed to join the low-level circuit. The ATR42 broke south from the ILS approach with a right turn to follow the visual manoeuvre (circling) at 1100ft and was instructed not to descend below 1000ft. The ATR42 pilot reported on heading 150° with traffic 2NM 12 o'clock similar altitude. The PA28 was instructed to descend immediately and join the low-level circuit which they did. The ATR42 was instructed to make a right turn to avoid traffic. The PA28 was given a landing clearance and landed at 1048. The ATR42 was downwind at this time and was instructed to report turning final on RW27 and being No1 in traffic. The ATR42 pilot reported at 3NM final and landed on RW27 at 1053. The ATR42 did not get TCAS TA/RA and stated that not calling localizer established until 5.5 DME was because they saw the PA28 on their TCAS screen. The pilot of the PA28 said that they anticipated to hold at their clearance limit location if the ATR42 had been localizer established when they reached their clearance limit and continue to join crosswind if the ATR42 wasn't yet established on the localizer. In an operating environment of uncontrolled airspace and procedural control which completely relies on accurate position reports from the pilots without the help of any surveillance system, the late localizer established call left both the controller and PA28 pilot with incomplete situational awareness. This combined with a strong tailwind left very little time to adjust to the traffic situation which could have been avoided or solved earlier.

Factual Background

The weather at Dundee was recorded as follows:

METAR EGNP 141050Z 24019KT 9999 FEW015 BKN022 07/05 Q1016=

Analysis and Investigation

Occurrence Investigation

HIA Investigation

Dundee is in Class G airspace and the services provided are Basic and Procedural, in accordance with CAP 774. CAP 774 states that "pilots are ultimately responsible for collision avoidance". RW27 was in use. No ILS procedure is available for RW27. The ATR42 aircraft are unable to fly RNP procedures, and the cloud ceiling was below the level of the beginning of the initial approach segment, preventing a visual approach for RW27. This left only the ILS procedure for RW09 with visual manoeuvring (circling) for RW27.

The ATR42 Captain erroneously believed that the call of "Beacon Outbound" would prevent all other traffic from crossing the final approach or returning to join the Dundee visual circuit. When [PA28 C/S] made initial contact, requesting joining instructions, the Dundee ATCO instructed the crew to route to Piperdam, with a clearance limit of Piperdam. The Dundee ATCO issued Traffic Information on [ATR42 C/S]. Aware that [ATR42 C/S] would have a head wind on the outbound leg of the

procedure, and therefore have a slower groundspeed than if RW09 was in use, the Dundee ATCO intended to use [PA28 C/S]'s Piperdam report as a guide on whether to issue crosswind joining instructions or hold [PA28 C/S] at Piperdam. The Dundee ATCO believed that if [ATR42 C/S] had not yet reported localiser established when [PA28 C/S] reported at Piperdam, there would be enough time for [PA28 C/S] to join crosswind for RW27, ahead of [ATR42 C/S]. Additionally, the Dundee ATCO intended to instruct [PA28 C/S] to convert their circuit to a low-level/bad-weather circuit, if necessary, to ensure the aircraft remained ahead of [ATR42 C/S] on the downwind leg of the RW27 circuit.

The Dundee ATCO intended to issue Traffic Information about [PA28 C/S] to [ATR42 C/S] when the [ATR42 C/S] crew reported localiser established. The Dundee ATCO anticipated the [ATR42 C/S] crew would report localiser established when the aircraft was approximately 8 DME. Post-incident, the [ATR42 C/S] Captain stated that they were localiser established at between 8 and 9 DME. When [PA28 C/S] reported at Piperdam, the [ATR42 C/S] crew had not yet reported localiser established.

The statement from the [ATR42 C/S] crew reports a 3 minute 45 second elapse time from the "*Beacon Outbound*" call to the completion of the level base turn at 8.5DME. This corroborates that [ATR42 C/S] was still in the base turn of the ILS procedure when [PA28 C/S] reported at Piperdam. At 8.5DME, the [ATR42 C/S] crew identified a PROX aircraft on TCAS, directly ahead, within 6NM. The TCAS did not issue a "Traffic Advisory" warning. However, the [ATR42 C/S] crew judged the PROX aircraft to be a significant threat to the continuation of their flight and discussed go-around options. They did not alert the Dundee ATCO to, or query the presence of, this threat aircraft.

The go-around discussion between the [ATR42 C/S] Captain and First Officer resulted in the Dundee ATCO not being advised of the aircraft being localiser established until the aircraft was at 5.5DME. The Dundee ATCO issued Traffic Information on the aircraft joining crosswind. The [ATR42 C/S] crew replied, "*we have him on screen*". They did not communicate their concern about the aircraft being a significant threat. Realising that [ATR42 C/S] was closer than anticipated, the Dundee ATCO requested [ATR42 C/S]'s altitude. The crew reported descending through 1700ft. The Dundee ATCO instructed the crew not to descend below 1000ft. The Visual Manoeuvring (Circling) Data for RW27 defines an Obstacle Clearance Altitude (OCA) of 750ft. The Dundee ATCO further instructed the [ATR42 C/S] crew to report breaking south (for visual manoeuvring (circling) for RW27). The [ATR42 C/S] crew did not acknowledge these instructions.

At this time, the Dundee ATCO had visual contact with [PA28 C/S], south of Longforgan (south of the final approach) and requested their altitude. [PA28 C/S] confirmed 1500ft. The Dundee ATCO asked if [PA28 C/S] could join the circuit low-level, descending immediately. [PA28 C/S] replied "*Affirm*". The Dundee ATCO's phraseology was ambiguous. Positive instruction was not issued to [PA28 C/S]. [PA28 C/S]'s Safety Report states that a descent to 600ft was initiated.

On reaching the company's visual manoeuvring (circling) height of 1100ft, the [ATR42 C/S] crew broke south from the ILS approach onto a heading of 150°. This turned them towards [PA28 C/S]. The [ATR42 C/S] crew's statement indicates that the PROX return was still indicating on the TCAS screen when they initiated the turn. The [ATR42 C/S] crew did not inform the Dundee ATCO of "*Breaking South*". [ATR42 C/S] was "*within 3 miles and converging*" on [PA28 C/S] when the [ATR42 C/S] crew acquired visual contact with the aircraft. The [ATR42 C/S] crew transmitted that they were on a heading of 150° for the circling procedure for RW27, and had an aircraft in their 12 o'clock, same level, at 2 miles. The crew went on to advise that they had called beacon outbound approximately five minutes before. This transmission lasted 20 seconds, during which the Dundee ATCO was unable to issue any instructions to mitigate the situation.

The Dundee ATCO reports that, at this point, [PA28 C/S] was positioning for a low-level circuit, slightly below normal circuit height [1000ft] and descending. The Dundee ATCO acknowledged the [ATR42 C/S] transmission then instructed [PA28 C/S] to make an immediate descent to a low-level circuit.

This instruction was acknowledged and complied with. To prevent the [ATR42 C/S] crew making a further left turn onto downwind, towards [PA28 C/S], the Dundee ATCO instructed [ATR42 C/S] to make a right turn. This instruction was not acknowledged. The Dundee ATCO believed the aircraft to have made a slight right turn. As [PA28 C/S] turned onto the base-leg of the low-level circuit, the Dundee ATCO cleared [PA28 C/S] to land. [PA28 C/S] gave a correct readback. The Dundee ATCO issued Traffic Information on [PA28 C/S] to [ATR42 C/S] and instructed [ATR42 C/S] to continue the visual approach, left downwind.

[ATR42 C/S] crew replied “*understood*” and confirmed that they were turning left downwind. [PA28 C/S] landed and the Dundee ATCO instructed the crew to vacate the runway on C. Correct readback was received. The Dundee ATCO then instructed [ATR42 C/S] to report final, number one [to land]. [ATR42 C/S] crew confirmed, “*Wilco*.” The Dundee ATCO subsequently cleared [ATR42 C/S] to land and received correct readback.

Conclusion

When [PA28 C/S] reported at Piperdam, the [ATR42 C/S] crew had not yet reported localiser established on the ILS procedure for RW09. The Dundee ATCO therefore believed that there was sufficient time for [PA28 C/S] to join crosswind ahead of [ATR42 C/S]. Whilst the [ATR42 C/S] was still in the base turn, at this point, the tailwind on final approach resulted in [ATR42 C/S] being faster on the final approach than anticipated.

The [ATR42 C/S] crew did not report, or query, the presence of an aircraft they believed presented a significant threat to the continuation of flight. During the visual manoeuvring (circling) procedure for RW27, the [ATR42 C/S] crew initiated a turn that positioned the aircraft on a converging course with conflicting traffic, despite the conflicting traffic indicating on their TCAS equipment.

The Dundee ATCO had taken into consideration the headwind on the outbound leg of the ILS and formulated a contingency plan to instruct [PA28 C/S] to convert the crosswind join to a low-level circuit, remaining ahead of [ATR42 C/S]. [ATR42 company] had not previously made the unit aware that, under certain conditions, ATR speeds on the inbound leg could be as high as 180kt. However, although both [PA28 C/S] and the Dundee ATCO underestimated the speed at which [ATR42 C/S] would fly the inbound leg, the ATCO’s forward planning would have been implemented in good time if [ATR42 C/S] had reported localiser established promptly, when established at between 8 and 9 miles. Late localiser established calls are not a usual occurrence at Dundee and [ATR42 company] had not previously made the unit aware that, under certain conditions, the localiser call could be made as late as 6 miles.

The Dundee ATCO’s planning was undermined by [ATR42 C/S] turning onto a conflicting course with [PA28 C/S], despite the TCAS PROX. Additionally, the Dundee ATCO was unable to immediately mitigate the resulting situation due to the 20 second transmission from [ATR42 C/S].

During the investigation a senior, Dundee-based, [company] Captain advised that when the ILS for RW09 with visual manoeuvring (circling) for RW27 is required, the tailwind may result in ATR aircraft travelling at up to 180kts on the ILS inbound leg and the downwind leg of the visual circuit for RW27. Additionally, in these circumstances, there is a potential for the aircraft not to be localiser established until 6.5 miles. To enhance integration of IFR and VFR traffic into the visual circuit, it is recommended that all Dundee ATCOs should be advised of the above information, via the unit’s OPNOT facility.

Additionally, to rectify any erroneous understanding within [company] crews that the call of “Beacon Outbound” prevents all VFR traffic from crossing the final approach or returning to join the Dundee visual circuit, it is recommended that this is one of the points raised at the upcoming discussion of Dundee ATC IFR/VFR integration procedures between Dundee ATC and the local operators.

CAA ATSI

The ATR42 was inbound to Dundee, completing an ILS approach to RW09, converting to a visual circling approach to the RW27 which was the runway in use. The PA28 was returning from the north, approaching Piperdam Loch, an unpublished visual reference point 4.5NM to the northwest of the airfield (Figure 1). Only the ATR42 was initially visible on the area radar replay as it approached Dundee from the southeast. However, the radar contact was lost when the aircraft descended below 3000ft. The PA28 was never seen.

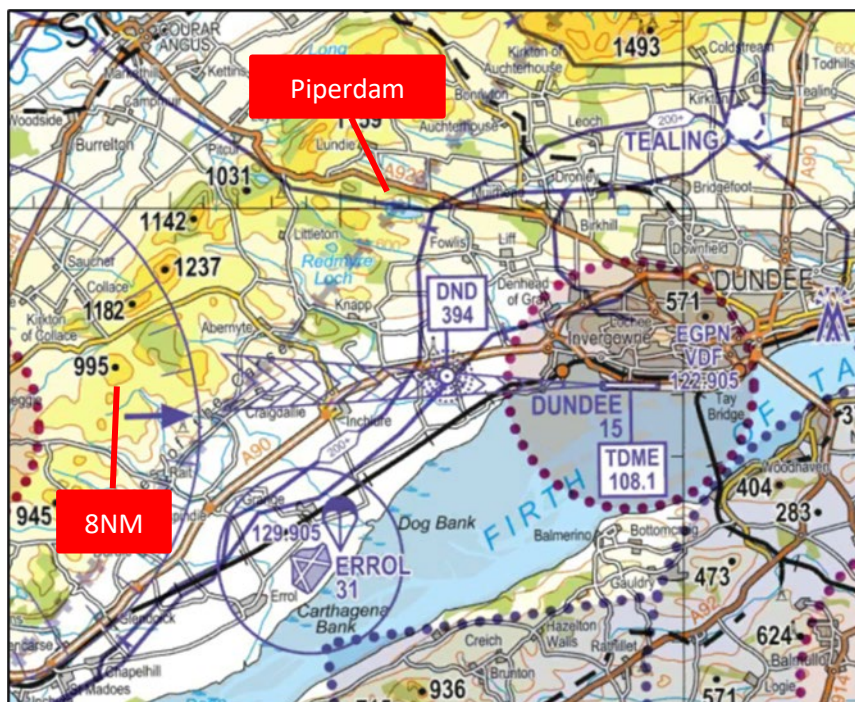


Figure 1

At 1038:30 the pilot of the ATR42 called the Dundee Approach controller advising that they were maintaining 3100ft but were in the tops of the clouds, and so were requesting a circling approach to RW27 and a Procedural Service. The Dundee controller who was operating as combined Tower and Approach, cleared the pilot to the Dundee NDB and passed the Dundee QNH which was readback correctly by the pilot. The controller then confirmed it was a Procedural Service and advised the pilot that on reaching the beacon they were cleared for the ILS approach to RW09 and to “*advise circling Runway 27*” which the pilot readback correctly. Then the controller instructed the pilot to call “*beacon outbound*”.

The controller was then occupied with an aircraft in the circuit. At 1040:10 the ATR42 pilot reported beacon outbound and the controller instructed the pilot to report localiser established.

At 1040:35 the pilot of the PA28 reported approaching Piperdam for re-join to land. The controller instructed the pilot to report at Piperdam, advising that that was their clearance limit with “*traffic just beacon outbound for the ILS*” which was readback by the pilot.

The controller was then called by the pilot of the aircraft in the circuit advising that they wished to leave the circuit to the west. The controller advised them that the ATR42 was beacon outbound for an ILS.

At 1043:10 the pilot of the PA28 reported at Piperdam and the controller instructed them to report crosswind. The pilot’s reply was garbled and so the controller repeated the instruction which was readback by the PA28 pilot.

The pilot of the aircraft previously in the circuit then called and the controller advised them that it was a Basic Service.

At 1044:58 the ATR42 pilot called: “*apologies for the late call. Localiser established five and a half miles*”. The controller replied “*roger - there’s traffic joining crosswind from your left-hand side*” which the ATR42 pilot acknowledged, advising that they had it “*on screen*”. The controller then requested their level which was reported as “*descending through altitude 1700ft*”. The controller instructed them to descend “*not below 1000ft before breaking south*”. The ATR42 pilot did not read back this instruction. The controller then asked the PA28 pilot for their level which was reported as 1500ft. Part of the transmission was undecipherable but which according to the Dundee investigation report was the pilot advising that they were “*south of Longforgan and can divert west to Errol*”. (Figure 2). The controller’s reply was also partly undecipherable on the RTF but according to the Dundee report the controller asked if the PA28 pilot could join the low-level circuit with immediate descent to position number one ahead of the ATR42, which the PA28 pilot confirmed they could.

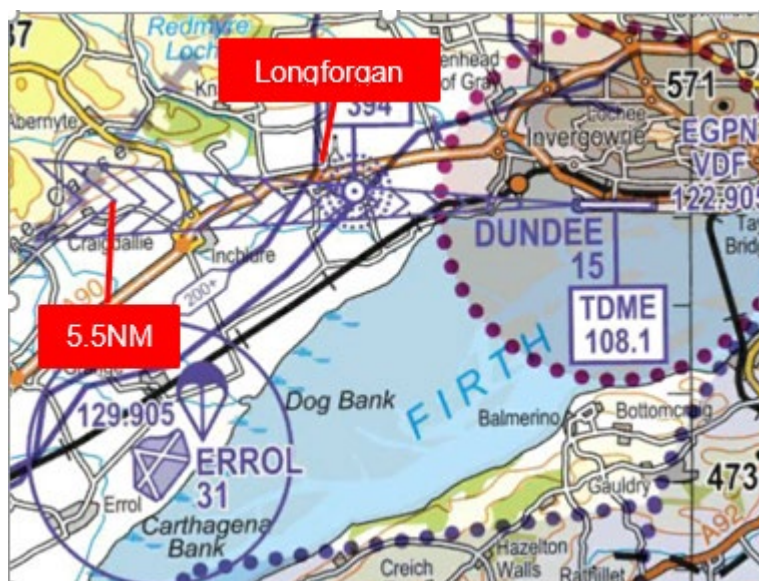


Figure 2

At 1046:25 the ATR42 pilot reported “*I have an aircraft in my 12 o’clock at the same level at two miles, joining downwind and I am heading 150 for the circling procedure for 27 at Dundee. We called beacon outbound about five minutes ago*”.

The controller acknowledged this and then instructed the PA28 pilot to “*descend low level circuit immediately*”, which the pilot acknowledged. The controller then instructed the ATR42 pilot to “*make a right turn to avoid*”, which was not acknowledged by the pilot.

Analysis

ATSI had access to reports from both pilots, the Dundee controller report and RTF and the Dundee ATC unit investigation report.

The initial clearance limit of Piperdam issued to the PA28 ensured that the aircraft remained north of the RW09 final approach. However, the controller elected to then allow the PA28 to continue to join towards crosswind RW27 when they reported at Piperdam. The controller justified this on the basis that they had not received a localiser established call from the ATR42 pilot, which they were expecting at a range of between 9 and 8 DME. However, they did not confirm the exact position of the ATR42. The unit investigation report stated that the controller had an alternative plan in mind, which they attempted to enact, which was to have the PA28 descend into the low-level circuit to stay ahead of and below the ATR42. However, when the ATR42 pilot did call established, it was at 5.5DME, placing both aircraft much closer than anticipated. The report from the ATR42 pilot stated that they saw the PA28 on TCAS at a similar level and descending at the same rate as themselves.

Had the controller requested a position report from the ATR42 when the PA28 reported at Piperdam, it is possible that they would have realised that the ATR42 was much closer-in and could have stuck to the original plan to hold the PA28 at Piperdam.

The unit investigation included details of a conversation with a senior Dundee-based captain from the airline concerned, which highlighted that on occasions approaches to RW09 when RW27 is in use, (and with the possibility of a tailwind), can lead to the aircraft flying through and not capturing the localiser, resulting in the need to disconnect the autopilot and a resultant later established call. The aircraft would also be flying down the approach and breaking off into the downwind position at a higher-than-normal [ground] speed.

The routing taken by the PA28 to Piperdam and then through the RW09 final approach, is considered standard due to circuit direction at Dundee (all to the south of the runway). This restriction is based on both the location of, and visibility from, the ATC tower, with rising ground to its north, and the built-up area also to the north. The only other option is an extended routing to the east, remaining well north of the city, and reporting at the VRP Broughty Castle, placing the aircraft on a close right-base for long finals RW27.

The unit investigation reported that the controller saw the ATR42 as it broke cloud just before the pilot made their 5.5DME call, and that the PA28 was already south of the RW09 centreline.

The only reference to circling approaches in the Dundee MATS Part 2 (July 2021) is that:

No aircraft shall be permitted to depart, join finals or receive landing clearance after an aircraft on an instrument/RNP approach has passed 4 DME 'I-DDE' or 4 miles from touch-down unless:

- a) Both aircraft are in VMC and have each other in sight, and*
- b) The aircraft carrying out the instrument/RNAV approach is intending to carry out a missed or circling approach, and*
- c) Traffic information is passed to both aircraft.*

The Dundee AIP entry also advises:

Because of operational difficulties caused by the siting of the ATC facility, flight in the ATZ to the North of Runway 09/27, and the extended centre-line, is not normally permitted,

and that:

- a) Circuit directions: Runway 09 - RH; Runway 27 - LH. Remain South of the Runway at all times.*
- b) Circuit Height: 1000 FT AAL unless otherwise directed by ATC.*
- c) Circuits are to be flown in such a manner as to avoid flight over built up areas in the vicinity of the airport whenever practicable.*

The pilot of the ATR42 reported seeing the PA28 “*within 5 miles, left to right and descending at a similar rate as ourselves.*” They also reported not receiving a Traffic Advisory but briefed on the possibility of initiating a go-around. When they reached the level at which they then commenced the circling approach, they saw that the PA28 was also crosswind at the same level, but believed the instructions issued by the controller to the PA28 (to descend to low-level) were sufficient to keep them clear.

The pilot of the PA28 spotted the ATR42 as it broke cloud following the localiser established call at 5.5 miles and noted that it was “already behind”. And they then followed the controller’s instructions to descend into the low-level circuit.

The Dundee unit investigation highlighted that “the controller did not employ concise and unambiguous phraseology”. However, it did not otherwise raise any issues with the controlling of this situation.

The unit investigation and subsequent management review did however make the following recommendations, all of which have since been completed:

- Operational Notice (OPNOT) on visual manoeuvring.
- OPNOT on use of unambiguous phraseology.
- A review of the integration procedures with operators.
- A review of MATS Part 2 – integrating traffic in the vicinity of the aerodrome.

Also, to be completed:

- Dundee ATCOs to complete training based on this incident

The unit has since issued a Supplementary Instruction to their MATS Pt2. which includes the requirement for aircraft approaching Piperdam from the north to be held there, once an aircraft which is completing an instrument approach to RW09 when RW27 is in use has reported beacon outbound.

Conclusion

The controller, in allowing the PA28 to continue to join crosswind, ahead of the ATR42 which was making an approach to RW09, and without obtaining an up-to-date position check from the ATR42, allowed the two aircraft to come into such proximity that, in the opinion of a pilot of the ATR42, the distance between aircraft as well as their relative positions and speeds had been such that the safety of the aircraft involved was or may have been compromised.

Whilst there is no requirement to separate IFR from VFR when on a Procedural Service, in accordance with CAP493 Manual of Air Traffic Services there is still a requirement that:

Aerodrome Control shall issue information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic with the objective of:

- (1) *Preventing collisions between:*
- (a) *aircraft flying in, and in the vicinity of, the ATZ;*
 - (b) *aircraft taking-off and landing;*

UKAB Secretariat

The ATR42 and PA28 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

Summary

An Airprox was reported when an ATR42 and a PA28 flew into proximity at Dundee at around 1046Z on Tuesday 14th December 2021. The ATR42 pilot was operating under IFR in VMC, and in receipt of a Procedural Service from Dundee and the PA28 pilot was operating under VFR in VMC in receipt of an ACS also from Dundee.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, 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.

The Board first looked at the actions of the ATR42 pilot. They were unable to conduct a visual approach into Dundee due to cloud and therefore had to conduct an ILS to the opposite runway in use and circle

² (UK) SERA.3205 Proximity.

to land. Members familiar with operations at Dundee told the Board that this was fairly standard practice and the ATR42 pilot should have been familiar with the procedure. They noted that Dundee did not have any protected airspace and therefore: the ATR42 was flying an instrument approach in Class G airspace; did not automatically receive any priority; nor was the airspace ahead sterilised once aircraft started the procedure. The Board was told that that Piperdam, whilst not a formal VRP, was nevertheless used regularly and most pilots would be familiar with its location. Although the ATR42 crew reported having the PA28 on their TCAS screen, it appeared to have become a distraction as the crew discussed whether it would be an issue. This in turn meant that their 'localizer established' call was late, thus reducing the situational awareness for both the controller and the PA28 pilot. Members questioned why the ATR42 crew did not seem to have assimilated what the PA28 was doing, the crew should have heard the PA28 pilot call at Piperdam, they had seen it on their TCAS and having heard the controller clear it inbound, they should have been aware that it would join ahead. They thought that although the workload in the cockpit would have been high, the crew should have been familiar with the potential threats and briefed accordingly. Therefore, members wondered why the crew had not adapted their plan to take the PA28 into consideration and either slowed down their approach, or questioned the controller on their intentions (**CF4, CF5**). Once the ATR42 had reached the circling minima, the crew were aware that the controller had asked the PA28 pilot to descend to a low-level circuit, they turned onto a downwind heading, which, with the differing speeds of the aircraft, had the potential to exacerbate the situation. At this point, now visual with the PA28, the crew reported to ATC that they were concerned by the positioning of it and were unhappy with the separation (**CF7**).

Turning to the PA28 pilot, members agreed that the pilot did everything that the controller asked them to do. They reported at Piperdam and were told by the controller that the ATR42 was inbound, but were not given specific information about its range, due to the controller having incorrect information (**CF6**). They were cleared by ATC to join the circuit, which they did correctly and once given the avoiding action to descend to a low-level circuit by the controller, acted accordingly.

The Board then considered the actions of the Dundee controller. The controller was operating without a radar or any form of Flight Information Display and so was entirely reliant on pilots' position reports to plan the order of recovery. The controller had asked the PA28 to report at Piperdam with the intention of assessing where the ATR42 was before clearing it inbound. In the event, the late 'localiser established' call by the ATR42 pilot meant that the controller's situational awareness was sub-optimal because they believed that the ATR42 was further away than it actually was (**CF2, CF3**). That being said, some controlling members thought that the controller was trying to be too expeditious, they thought that the controller would have known the time that the pilot called 'beacon outbound' and known the approximate time it would take to make the approach, and if in doubt could have asked for an updated range from the ATR42 pilot. Even if the ATR42 pilot had made accurate inbound calls, members thought that clearing the PA28 to join ahead may have made the situation tight when downwind, with the potential for the much faster ATR42 to catch up the PA28. They therefore thought that a safer option would have been to hold the slower PA28 at Piperdam until it could position behind the ATR42. Once it became apparent that the separation of the two aircraft was not what they expected it to be, the controller instructed the PA28 to descend to low-level (**CF1**) thus deconflicting the two aircraft.

In assessing the risk of the Airprox the Board considered the reports from both pilots together with that of the controller. Both pilots assessed the separation as 1.5NM, which some members considered to be normal separation in Class G airspace and with no risk of collision (Risk Category E). However, others thought that although there had been no risk of collision, safety had been degraded because the approach and the subsequent avoiding action descent to a low-level circuit could not be considered to be 'normal operations'. In the end the latter view prevailed and the Board agreed on a Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

2021244				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Ground Elements				
• Situational Awareness and Action				
1	Human Factors	• Conflict Resolution - Provided Late	An event involving the late provision of conflict resolution	
2	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	
3	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				
• Tactical Planning and Execution				
4	Human Factors	• Insufficient Decision/Plan	Events involving flight crew not making a sufficiently detailed decision or plan to meet the needs of the situation	Inadequate plan adaption
• Situational Awareness of the Conflicting Aircraft and Action				
5	Human Factors	• Lack of Communication	Events involving flight crew that did not communicate enough - not enough communication	Pilot did not request additional information
6	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
• See and Avoid				
7	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Safety Barrier Assessment³

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 **partially effective** because the controller did not have accurate information on the position of the ATR42 on the ILS.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the ATR42 could have slowed to minimum approach speed when they first saw the PA28.

³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the PA28 pilot only had generic information on the position of the ATR42.

Airprox Barrier Assessment: 2021244		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							