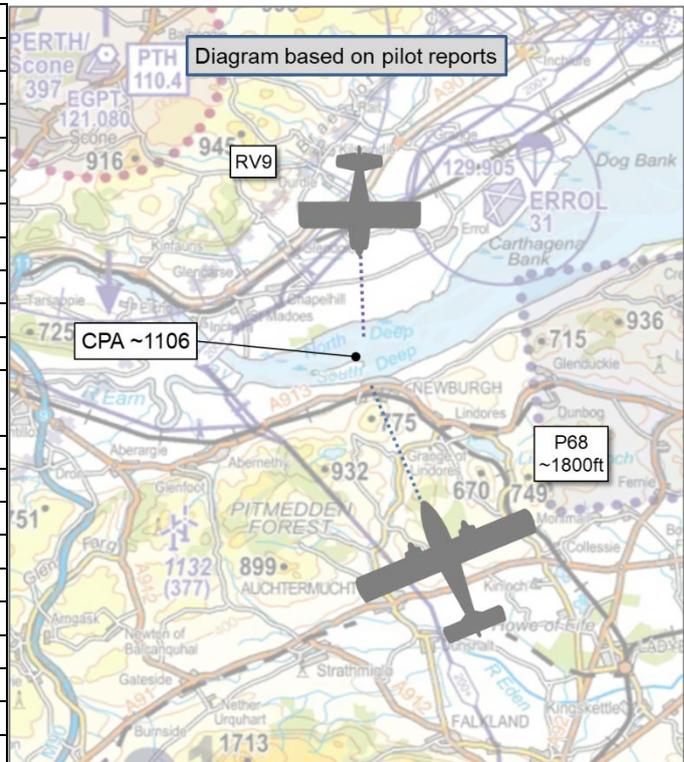


AIRPROX REPORT No 2021127

Date: 18 Jul 2021 Time: 1106Z Position: 5620N 00313W Location: 10NM SW Dundee

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------------|-------------------|---------------------|
| Aircraft | P68 | Van's RV9 |
| Operator | Civ Comm | Civ FW |
| Airspace | Scottish FIR | Scottish FIR |
| Class | G | G |
| Rules | VFR | VFR |
| Service | None ¹ | AGCS |
| Provider | | Perth |
| Altitude/FL | NK | NK |
| Transponder | A, C | A, C, S |
| Reported | | |
| Colours | Blue, White | Blue, White, Purple |
| Lighting | Beacon, Nav | Strobe |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 1800ft | NK |
| Altimeter | QNH (1025hPa) | NK |
| Heading | 350° | NK |
| Speed | 120kt | NK |
| ACAS/TAS | Not fitted | TAS |
| Alert | N/A | None |
| Separation | | |
| Reported | 0ft V/0.5NM H | Not Seen |
| Recorded | NK | |



THE P68 PILOT reports that after completing a left turn to head northbound onto the next survey line they left Leuchars App and contacted Dundee App to request a Basic Service and conspicuity squawk. This was because their survey lines were creeping closer to Dundee and their extended centreline for RW09, as they were working the survey from west to east. They first spotted a C182 in the 12 o'clock high moving right to left, no factor (although they were about 200ft above). However, the conflicting traffic (Van's RV9), was unknown as they had their eyes fixed on the C182 at the time, it was 1 o'clock same height and less than 1 mile, converging. They were unable to see the conflicting RV9 due to the survey computer screen that was attached to the forward P2 window, coupled with their fixation on the C182. Thankfully, the camera operative in the back of the plane spotted the RV9 in enough time to give the pilot the whereabouts of the traffic, and after the pilot spotted the RV9 they were able to evade the conflicting traffic by performing a turn to the right. ATC was informed about the issue and once clear of the traffic they continued to survey. Unfortunately, Leuchars App could only offer a Reduced Traffic Service where Traffic Information was given on SSR transponding aircraft only. That would also be further reduced to a Basic Service as they dropped off radar coverage from time to time.

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

THE VAN'S RV9 PILOT reports that they were totally unaware of any Airprox so were struggling to provide any meaningful information. They did recall Perth Radio passing Traffic Information on a Partenavia survey aircraft to the south of Perth airfield, but did not see it.

THE LEUCHARS CONTROLLER reports that they were the SRE controller and ATCO IC at the time of the reported Airprox. The reported time was indicated as 1106Z, at which time Leuchars LARS was

¹ The pilot reported that they were receiving a Basic Service from Dundee.

closed for a period of 1 hour for a controller lunch break due to limited manning in accordance with local orders. At this time it would be expected that the P68 would have been working Scottish Information.

The RT transcript provided has been completed for the Period of Extract from 0945.58 UTC until 1014.14 UTC. During this period the [P68 C/S] was on the Leuchars LARS frequency receiving a Basic Service believed to be conducting a survey route. GA traffic was of medium intensity throughout the day. Multiple contacts were passed as a duty of care to the Basic Service throughout. The Airprox was not mentioned or highlighted via RT at any time during the sortie.

THE DUNDEE CONTROLLER reports that for background information at the time of the Airprox they believed that the P68 was not on their frequency and was in communication with Perth A/G and Leuchars Radar. The pilot did not state at any time that they were filing an Airprox and the controller only became aware that they had, much later after the event. They were working as combined Approach/Tower at Dundee when the P68 called up for taxi for a survey detail to the west of Dundee. They asked what area the P68 was working and the pilot informed them that it was no closer than 10NM to the west of Dundee on north-south runs over Perth airport at approximately 1600ft agl. They asked the pilot if they had notified Perth A/G to which they replied they had not. The controller then rang Perth A/G to advise them of this detail which did in fact surprise them. The A/G operator said that they expected to be extremely busy that day as the weather was good. The controller gave the P68 instructions to depart on track to the west and to expect to contact Perth A/G soon after departure. They also stated that if the pilot wished to route any closer than 10NM from Dundee then they should contact Dundee to which they replied that they would. After the aircraft departed Dundee the controller didn't believe they had any known traffic to affect and so stated that the pilot should change frequency to Perth. They believed that during the detail the pilot was communicating with both Perth A/G and Leuchars Radar. Sometime later (although they could not remember when) the P68 pilot suddenly came onto the Dundee frequency stating that they were extremely close to two aircraft south of Perth airport. The controller was surprised by this transmission and stated that they did not know of any traffic within that area. At the time they believed that the pilot had mixed up the radio boxes and had meant to transmit that message to either Perth or Leuchars. They believed they gave the aircraft a Dundee conspicuity squawk and provided a Basic Service. The pilot did not mention the aircraft again and did not state that they intended to file an Airprox report. The overall situation was confusing with the P68 working two frequencies and occasionally Leuchars would freecall the aircraft back onto the Dundee frequency when it was transiting the Dundee ILS Approach area, despite the fact that Dundee coordinate all approach traffic with Leuchars well before the traffic establishes on the procedure.

THE PERTH AGO reports that they were informed about the Airprox south of the Perth ATZ two weeks after the event. On the morning of the 18th July they were asked by Dundee ATC if they knew about a survey aircraft which was going to be spending most of the day flying back and forth through the Perth ATZ at 1800ft agl. The aircraft was about to depart Dundee 12 miles away. This was the first they knew of any additional activity and no NOTAM had been issued. The aircraft track was about 20 miles long approximately north-south mainly centred on the Perth ATZ at 1800ft AAL for a substantial part of the day. A call was received on each entry and departure of the ATZ and the zone was being penetrated roughly every 15 minutes. The Perth standard arrival procedure is to arrive in the overhead at 2000ft and descend in a circle to join the circuit at 1000ft AAL. The change in procedures without notice caused a substantial increase in workload. They were alone in the radio room that day. They had just under 200 movements and no report of an Airprox.

Factual Background

The weather at Dundee was recorded as follows:

METAR EGPW 181050Z 23007KT 9999 FEW012 20/15 Q1025=

Analysis and Investigation

UKAB Secretariat

Although analysis of the NATS radars was undertaken, the radar coverage in the area was extremely poor and the Airprox could not be seen.

The P68 and RV9 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.² If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right.³ If the incident geometry is considered as converging then the P68 pilot was required to give way to the RV9.⁴

Summary

An Airprox was reported when a P68 and a Van's RV9 flew into proximity approximately 10NM southwest of Dundee at around 1106Z on Sunday 18th July 2021. Both pilots were operating under VFR in VMC, the P68 pilot was not in receipt of an ATS and the RV9 pilot was in receipt of a AGCS from Perth.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first discussed the actions of the P68 pilot. They were conducting a survey at 1800ft in the vicinity of Perth and Dundee. Members questioned how in-depth the pre-flight planning for the survey had been, given that neither the Perth AGO nor the Dundee controller knew about the flight before it took place (**CF2**). Also, with the flight routing through the Perth area multiple times, members opined that it would have been preferable for the crew to have given some prior notice to them. Furthermore, the flight was planned to continue during a period of closure of Leuchars, which had been NOTAM'd (**CF1**). Members recalled that previous Airprox with survey aircraft had resulted in recommendations to both the CAA and to survey companies asking them to consider mitigations to mid-air collisions when operating on survey tasking⁵. They were therefore disappointed that this aircraft was operating without any CWS and was programmed to fly during a period where the only surveillance-based radar service provider would be closed. Without a radar service from Leuchars, the pilot was left with no choice but to have a Basic Service from Dundee and even then there appeared to have been some confusion as to whether they were receiving one at the time of the Airprox. Without a radar service the pilot did not receive any situational awareness on the RV9 until it was pointed out by the camera operative (**CF3**) and whilst this was considered good teamwork, still members opined that, if the mitigation to MAC was to be through look-out alone, then perhaps a dedicated crew member would have been preferable. The pilot reported watching a C182 to make sure it did not become a threat and members cautioned against allowing look-out to become fixated in one area. A further reduction to their ability to look-out occurred due to the positioning of the survey computer screen which had obscured the pilot's view of the RV9 (**CF7**). However, once visual the pilot was able to take avoiding action to remain clear (**CF6**).

For their part, the RV9 pilot was operating in the area and had no recollection of the Airprox, they recalled being told that a P68 was conducting a survey in the area, but did not recall seeing it (**CF5**). Some members wondered whether that might have been because at a reported range of 0.5NM, the pilot might not have considered it to be a threat. The RV9 pilot reported that the RV9 was fitted with a TAS, but that it did not provide any information; members were uncertain as to whether this was because the pilot did not recall receiving it, or because it did not detect the P68.

² (UK) SERA.3205 Proximity.

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

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

⁵ See Airprox 2019201, 2019208 and 2019226.

UKAB Secretariat Note: Subsequent discussion with the RV9 pilot has revealed that the aircraft was fitted with FLARM and ADS-B and that they did not alert. The P68 was not fitted with CWS or Mode S, therefore the electronic warning systems on the RV9 could not detect the P68 (CF4).

Turning to the role of ATC, the Airprox occurred on a Sunday and so due to their weekend manning, Leuchars ATC closed for lunch, this was NOTAM'd and the P68 pilot should have been aware of it. The Dundee controller reported that they believed the P68 pilot was receiving a service from Perth and Leuchars and that they were not providing one at the time of the Airprox, that the pilot called them to report seeing another aircraft but that they had not realised that the pilot considered it to be an Airprox. Members wished to remind pilots of the merits of reporting an Airprox on the RT at the time of the event to allow ATSU's to make the necessary arrangements to preserve any RT or radar data.

Finally, when assessing the risk of collision, members were hampered by the lack of data; without any radar or GPS data and because the RV9 pilot did not recall seeing the P68, there was only the P68 pilot's assessment to go on. Some members thought that because the P68 pilot assessed the separation as 0.5NM, this could be considered normal operations in Class G airspace. Others countered that although early avoiding action by the P68 pilot had meant that there had been no risk of collision, the positioning of the survey computer limiting the pilot's view and the lack of mitigations to aid the pilot to avoid a collision meant that safety was degraded. The latter view prevailed and the Board agreed on Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | 2021127 | | | |
|---|---------------|--|--|--|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 1 | Human Factors | • Communications by Flight Crew with ANS | An event related to the communications between the flight crew and the air navigation service. | Pilot did not request appropriate ATS service or communicate with appropriate provider |
| 2 | Human Factors | • Pre-flight briefing and flight preparation | An event involving incorrect, poor or insufficient pre-flight briefing | |
| • 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 | Technical | • ACAS/TCAS System Failure | An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations | Incompatible CWS equipment |
| • 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 |
| 6 | 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 |
| 7 | Contextual | • Visual Impairment | Events involving impairment due to an inability to see properly | One or both aircraft were obscured from the other |

Degree of Risk:

C.

Safety Barrier Assessment⁶

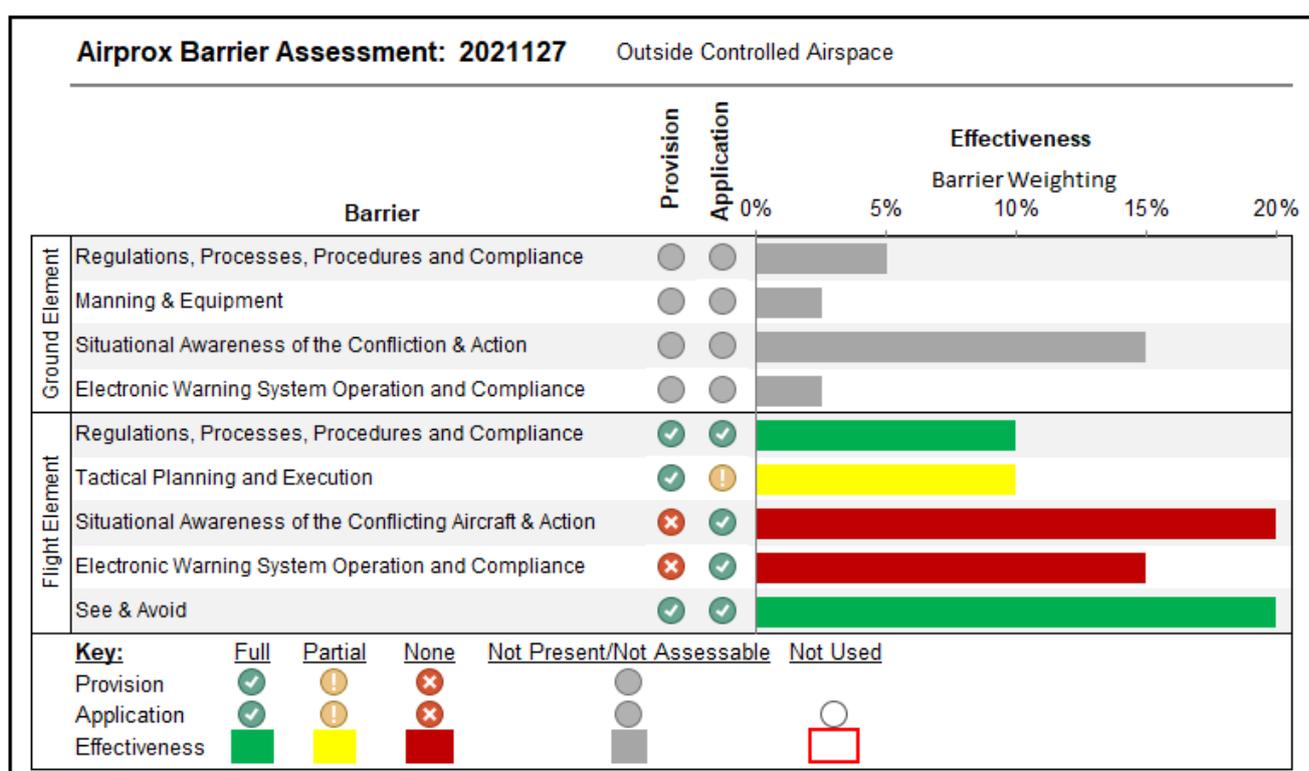
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the survey undertaken by the P68 was planned to continue over the period of time NOTAM'd by Leuchars that they were closed, resulting in the P68 operating without a surveillance-based radar service.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot had any situational awareness that the other aircraft was in the vicinity.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the FLARM and ADS-B on the RV9 could not detect the P68.



⁶ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).