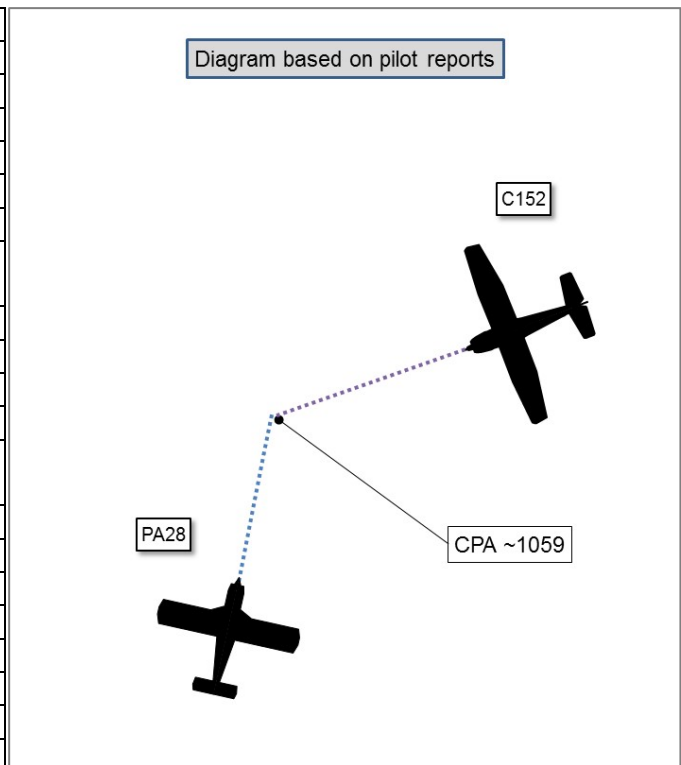


**AIRPROX REPORT No 2019018**

Date: 30 Jan 2019 Time: ~1059Z Position: 5634N 00334W Location: Dunkeld

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

Recorded	Aircraft 1	Aircraft 2
Aircraft	C152	PA28
Operator	Civ FW	Civ FW
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Scottish Information	Scottish Information
Altitude/FL	NK	NK
Transponder	A, C (reported)	A (reported)
<b>Reported</b>		
Colours	White	Green, White
Lighting	Nav, Landing, Beacon	Strobe, Nav, landing
Conditions	VMC	NK
Visibility	>10km	
Altitude/FL	2800ft	
Altimeter	QNH (991hPa)	
Heading	150°	
Speed	90kt	
ACAS/TAS	Not fitted	Not fitted
<b>Separation</b>		
Reported	30ft V/0m H	Not seen
Recorded	NK	



**THE C152 PILOT** reports that he was returning to Perth via Dunkeld on a track of 150° at 2800ft. The other aircraft was spotted in his 9 o'clock at a distance of about 40m horizontally and 30ft below. It was about 90° to his track (heading about 240°), flying directly towards him, and passed directly underneath his aircraft. There was no time to take avoiding action and, if the other aircraft had been a little higher, he felt that a collision would have been inevitable. He notified Scottish Information of the Airprox having asked if they were aware of an aircraft in the area. They asked [PA28 C/S] what their position was to which they replied Dunkeld. He subsequently heard from the tower operator at Perth that the other pilot did not see any other aircraft.

He assessed the risk of collision as 'High'.

**THE PA28 PILOT** reports that he did not see the C152 and therefore cannot recall the event.

**THE SCOTTISH INFORMATION FISO** reports that he was talking to the C152 routing via Coupar Angus and Kinnel. The C152 pilot reported over Dunkeld at 3000ft at 1059. The C152 pilot reported that he was filing an Airprox after coming within 30ft of a green and white PA28. The only other aircraft on frequency en-route to that point was [PA28 C/S]. He asked the PA28 pilot to report his position and he replied approaching Dunkeld. The PA28 pilot did not see the C152 and subsequently said he would be filing an Airprox. The PA28 pilot confirmed his aircraft had a green and white livery.

**Factual Background**

The weather at Dundee was recorded as follows:

EGPN 301050Z 27006KT 9999 FEW020 01/M01 Q0992

## Analysis and Investigation

### NATS Ltd Unit Investigation Report

At 10:16, the C152 pilot reported 'routing Perth-to-Perth via Kinnell disused airfield and Dunkeld, presently three thousand feet, ah, just to the East of Cupar Angus'. This route is represented by the red line on the chart extract below (Figure 1).

At 10:19, the PA28 pilot reported 'en-route from Dundee-to-Dundee via Kippen, currently three miles South-East of Perth, altitude two thousand five hundred on nine nine two Hectopascals'. This route is represented by the purple line on Figure 1.

It can be seen that no potential conflict existed, based on the aircraft route reports.

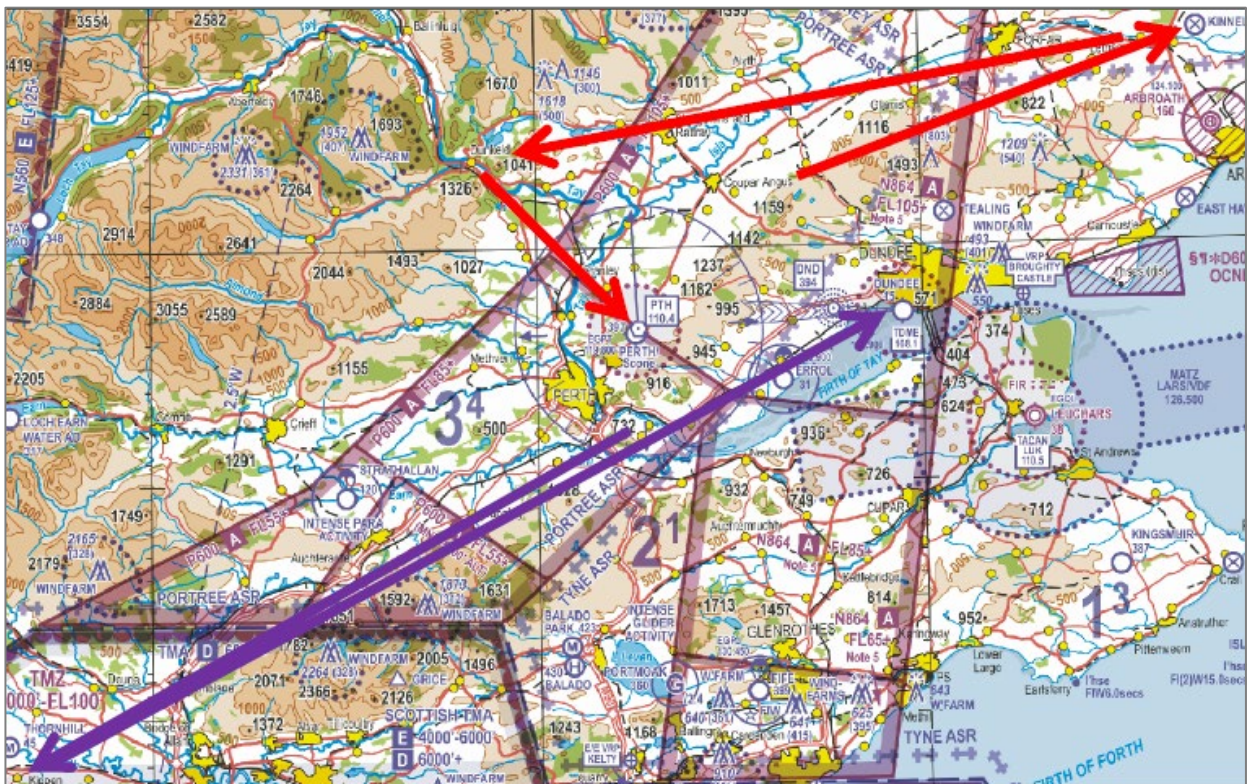


Figure 1

At 10:31, the C152 pilot reported Kinnell, routing Dunkeld, with a last reported altitude of three thousand feet. This track is represented by the red line of the chart extract at Figure 2.

At 10:40, the PA28 pilot reported Kippen, 'on track to Dunkeld', with a last reported altitude of two thousand five hundred feet. This track is represented by the purple line on Figure 2.





Figure 2

The distances from Kinnell to Dunkeld and from Kippen to Dunkeld are equidistant at approximately 33nm. The surface wind at Dundee, Edinburgh and Glasgow at the time of the event can be summarised as a light westerly breeze. The normal cruising speed differential between a C152 and a PA28 is approximately 10 to 15kts, with the PA28 being faster. The PA28 pilot reported their aircraft type as a Piper Arrow, which although a variant of a PA28 (normal cruise around 105kts), this aircraft was a PA-28RT-201 Arrow IV, which has a retractable landing gear and a more powerful engine, and a subsequent higher cruise speed. The aircraft type on the FPS was recorded as a 'PA28'. The correct designator for Piper Arrow is 'P28T' or 'P28R', with other variants of the PA28 design being 'P28A' or 'P28B'. For the purposes of providing a Basic Service, 'PA28' serves well as a generic type identification, and FISO's cannot be expected to know the different variants nor their exact expected cruising speeds. When asked post-interview what they had expected a typical PA28 and C152 to cruise at, the FISO responded '95kts'. Although unaware that the PA28 involved was a Piper Arrow (as the type was stated to the previous FISO), they expected a Piper Arrow to also cruise at 95kts.

The actual flying time to Dunkeld would be approximately 20 minutes for the C152 and 17 minutes for the PA28; however, this does not take account of an inaccurate position report, cloud avoidance, 'bimbling' (sightseeing), navigational inaccuracy/training, flight control demonstration or any other reason which may alter the estimated flying time, unlike aircraft within controlled airspace which operate in a consistent manner (and can be seen to be doing so by use of radar surveillance), there may be a wide variation in how an aircraft is operated in Class G, most of which is unknown by the FISO, unless reported by the pilot.

Based on the FISOs perception, they had an expectation that the C152 would reach Dunkeld approximately eight minutes prior to the PA28 (9 minutes difference reporting routing towards Dunkeld, at an expected 95kts airspeed and an adjustment for wind). In fact, with the anticipated higher cruising speed of the PA28, the differential would have decreased to an expected six minutes.

The FISO did not consider that the aircraft would come into proximity to each other. Had both pilots flown without deviation, at the speeds the FISO expected, with an allowance for a slight westerly wind, this should have produced approximately an eight-minute separation at Dunkeld. Had both

pilots flown without deviation, at the normal speed for both aircraft types, with an allowance for a slight westerly wind, there should have been approximately a six-minute separation at Dunkeld.

Neither pilot had provided a forward estimate for Dunkeld, which, if accurate, may have alerted the FISO to the probability of the aircraft being in closer time proximity at Dunkeld than anticipated. However, there is no guarantee that the estimates would have been accurate, or updated, should they change.

The C152 pilot did not state the pressure setting they were using to fly at 3000ft. Until questioned after the event, the pilot of PA28 did not report to the FISO that they had climbed from the last reported level of 2500ft to 3000ft (the last reported level of the C152), and nor were they required to do so.

The FISO was providing a Basic Service to both aircraft which were in Class G airspace. CAP774 (UK Flight Information Services) states:

*Basic Service relies on the pilot avoiding other traffic, unaided by controllers/ FISOs.*

### **UKAB Secretariat**

The C152 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<sup>1</sup>. If the incident geometry is considered as converging then the PA28 pilot was required to give way to the C152<sup>2</sup>.

Neither aircraft is visible on the radar replay therefore the Airprox location, aircraft heights or the actual separation cannot be determined.

### **Summary**

An Airprox was reported when a C152 and a PA28 flew into proximity at about 1059hrs on Wednesday the 30<sup>th</sup> of January 2019. Both pilots were operating under VFR in VMC and in receipt of a Basic Service from Scottish Information.

### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available consisted of reports from both pilots, transcripts of the relevant R/T frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and 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 began by looking at the actions of the FISO. It was recognised that the FISO was relying solely upon the accuracy of the pilot reports to determine which aircraft will affect another, and that sometimes this information can be inaccurate due to the various factors involved in calculating an estimate, route deviations, unexpected weather etc. Although the Board agreed that the FISO did not need to pass specific TI to each pilot based on the available information in this scenario, some members thought that the FISO should nonetheless have provided generic information given that both aircraft were going to route through the same general area (**CF2 & 3**). The Board were informed by the NATS advisor that the FISO's situational awareness display was not working on the day of the incident; whilst members agreed that this should not have had any detrimental effect upon the FISO's situational awareness, it was noted as being a sub-optimal configuration that might have meant that the FISO did not fully assimilate the geometry of the incident (**CF1**).

<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3210 Right-of-way (c)(2) Converging.

The Board then turned to the actions of the pilots. Although they had no situational awareness from the FISO about each other, members felt that information was likely available to both if they had heard the other pilot's transmission on the frequency (**CF5**). Had they assimilated the position reports from the other pilot, and therefore the possible conflict, then they could have requested additional information from the FISO or other pilot (**CF6**). The Board also agreed that both pilots could have updated their route estimate information to the FISO irrespective of their knowledge of the other aircraft; this was good practise to provide a better degree of situational awareness for both FISOs and pilots on the same frequency (**CF4**). Ultimately, members noted that the PA28 pilot did not see the C152 and had no recollection of the incident (**CF7**), and the C152 pilot only saw the PA28 after CPA (**CF7**). Members commented that this highlighted once more the need for a robust lookout at all times, and especially when approaching turning points when task focus on navigation can result in distraction from the visual scanning task.

Turning to the risk, members agreed that both pilots had not seen the other aircraft in time to materially affect the situation. Although the aircraft were not visible on the radar replay it was apparent from the C152 pilot's report that the aircraft were in very close proximity and that it had only been providence that had prevented a collision. The Board therefore quickly agreed that there had been a serious risk of collision; risk Category A.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

#### Contributory Factors:

CF	Factor	Description	Amplification
<b>Ground Elements</b>			
<b>• Manning and Equipment</b>			
1	Technical	• Aerodrome and ATM Equipment	Non-Functional equipment
<b>• Situational Awareness and Action</b>			
2	Contextual	• Situational Awareness and Sensory Events	Not required to monitor the aircraft under the agreed service
3	Human Factors	• Traffic Management Information Provision	Not provided, inaccurate, inadequate, or late
<b>Flight Elements</b>			
<b>• Tactical Planning and Execution</b>			
4	Human Factors	• Accuracy of Communication	Ineffective communication of intentions
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>			
5	Contextual	• Situational Awareness and Sensory Events	Pilot had no, or only generic, Situational Awareness
6	Human Factors	• Understanding/Comprehension	Pilot did not assimilate conflict information
<b>• See and Avoid</b>			
7	Human Factors	• Monitoring of Other Aircraft	Non-sighting by one or both pilots

Degree of Risk: A.

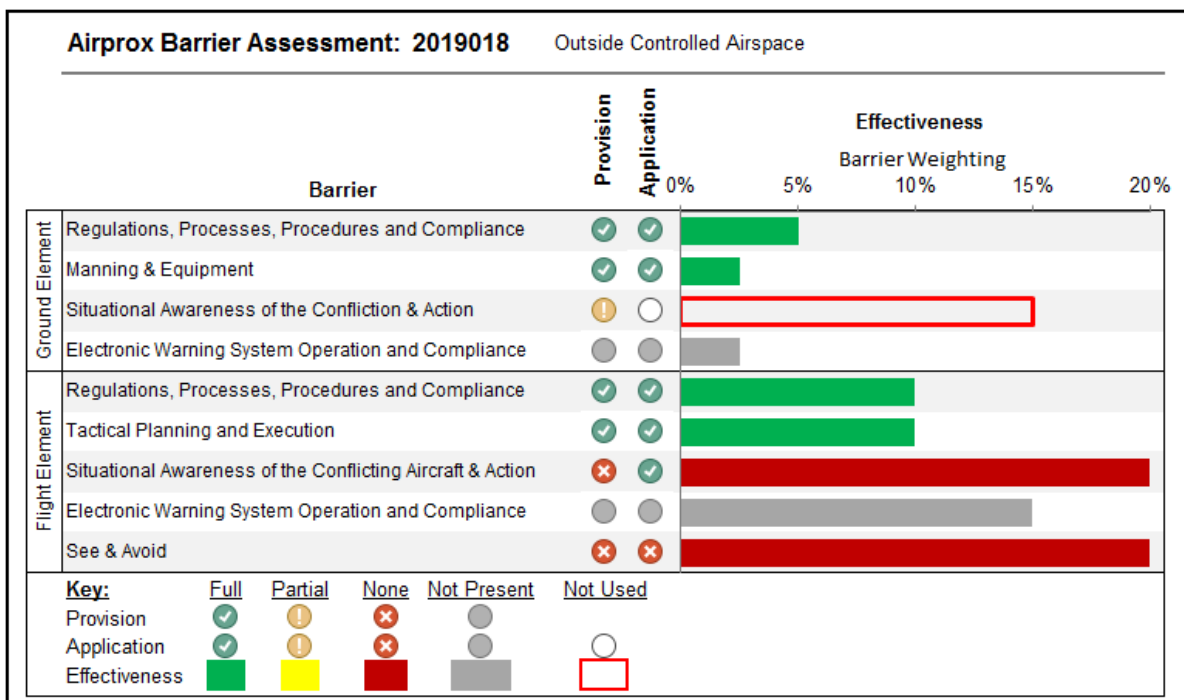
### Safety Barrier Assessment<sup>3</sup>

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

#### Flight Element(s):

**Situational Awareness and Action** were assessed as **ineffective** because neither pilot had any situational awareness on the other aircraft.

**See and Avoid** were assessed as **ineffective** because the PA28 pilot did not see the C152 at all, and the C152 pilot did not see the PA28 early enough to carry out any avoiding action to materially increase the separation.



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