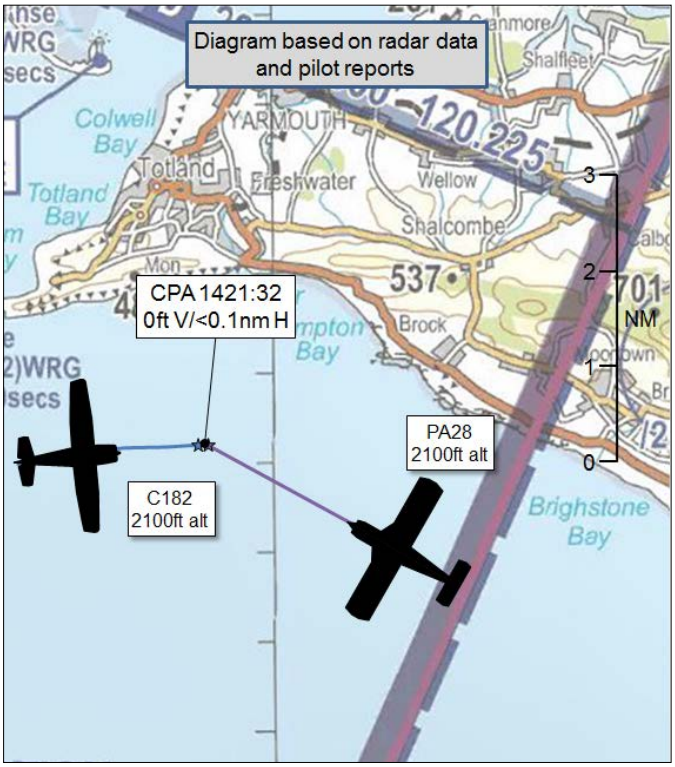
## AIRPROX REPORT No 2016173

Date: 16 Aug 2016 Time: 1521Z Position: 5038N 00131W Location: SW Newport, Isle of Wight

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | C182 | PA28 |
| Operator | Civ Pte | Civ Pte |
| Airspace | London FIR | London FIR |
| Class | G | G |
| Rules | VFR | VFR |
| Service | None | Basic |
| Provider | N/A | Bournemouth |
| Altitude/FL | 2100ft | 2100ft |
| Transponder | C, S | C, S |
| **Reported** | | |
| Colours | White | Red, White |
| Lighting | N/K | Strobe, Anti Col, Nov, Landing |
| Conditions | VMC | VMC |
| Visibility | >10km | 8km |
| Altitude/FL | 2000ft | 2350ft |
| Altimeter | QNH (1017hPa) | QNH (1017hPa) |
| Heading | 270° | 300° |
| Speed | 120kt | 115kt |
| ACAS/TAS | Unknown | Not fitted |
| Alert | Unknown | N/A |
| **Separation** | | |
| Reported | NK V/0.5nm H | NK V/NK H |
| Recorded | 0ft V/<0.1nm H | |




**THE C182 PILOT** reports that he was on the final phases of a flight to his destination. He was flying VFR over the Isle of Wight at around 2000ft. Having just left the Bournemouth Radar frequency, and while attempting to change to Solent Radar, he suddenly noticed the opposite direction traffic in about the 1 o'clock position and slightly high. He immediately took avoiding action with a right turn and descent. This action was partially delayed because the autopilot was on and the override was compensated for by the trim running. The autopilot was switched off, and the turn and descent continued. The opposite-direction traffic passed by also turning right and appearing to climb. There was not sufficient time to identify the other aircraft. On reflection two learning points were observed. When returning to a busy flying area such as the Isle of Wight, extra care should be taken to scan for and avoid other traffic. Secondly, beware of distractions from changing frequencies and be double sure of the autopilot cancel button on the aircraft yolk.

He assessed the risk of collision as 'Medium'.

**THE PA28 PILOT** reports that he had just crossed the Solent from the East, and had been advised by Farnborough Radar to free call en-route so he changed to Bournemouth Radar with the intent of a Basic Service. He made his initial call just North of Bembridge, but the VHF readability at the time was poor (level 2 at best), and he heard nothing back. To avoid blocking the frequency he didn't try again until overhead St Catherine's Point, by which time the frequency was quite busy with several training aircraft conducting instrument approaches and a Police Helicopter and various other GA aircraft requesting Basic Services; as a result, he was told to stand by. After eventually being instructed to pass his message ATC informed him that his transmission had been "stepped on" and asked him to repeat most of his message. His attention was diverted temporarily into the cockpit to re-check altitude, pressure setting and position, after which he looked out and saw the other aircraft on a collision course. He immediately initiated a turn to the right, and the conflicting aircraft passed

underneath on his left-hand side. At the time of the incident he was flying a West/North Westerly heading directly into the sun which reduced his forward visibility, compounded by hazy conditions in the area at the time. He believes that had he been able to contact Bournemouth on his initial call (and/or his transmission hadn't been interrupted), this situation would not have occurred because his workload would have been reduced, meaning he would have spotted (and avoided) the other aircraft earlier.

He assessed the risk of collision as 'Medium'.

## Factual Background

The weather at Southampton was recorded as follows:

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METAR EGHI 161520Z 17005KT 110V220 CAVOK 23/13 Q1017
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## Analysis and Investigation

### CAA ATSI

The C182 (code 7377) was on an eastbound VFR flight along the South Coast and at the time of the Airprox was in receipt of a Basic Service from Bournemouth Approach. The PA28 (code 7000) was also on a VFR flight and was conducting a cross-country navigational exercise westbound along the South Coast. Using the area radar recordings it was possible to identify the PA28 using Mode S. At the time of the Airprox the pilot of the PA28 was in communication with Bournemouth Approach; however, a Basic Service had yet to be agreed.

The PA28 pilot had made two unsuccessful attempts to establish two-way communications with Bournemouth Approach, the first at 1508:05 and then again at 1509:08. Both of these earlier transmissions had been acknowledged by the controller but not heard by the PA28 pilot as referenced in his written report.

At 1519:45 (Figure 1), the PA28 contacted Bournemouth Approach and requested a Basic Service. The Bournemouth Approach controller acknowledged the transmission and instructed the PA28 pilot to stand-by. The R/T loading on the Bournemouth Approach frequency around this time was relatively high with the controller engaged in providing services to mixed IFR and VFR traffic including one aircraft engaged in a SAR task.

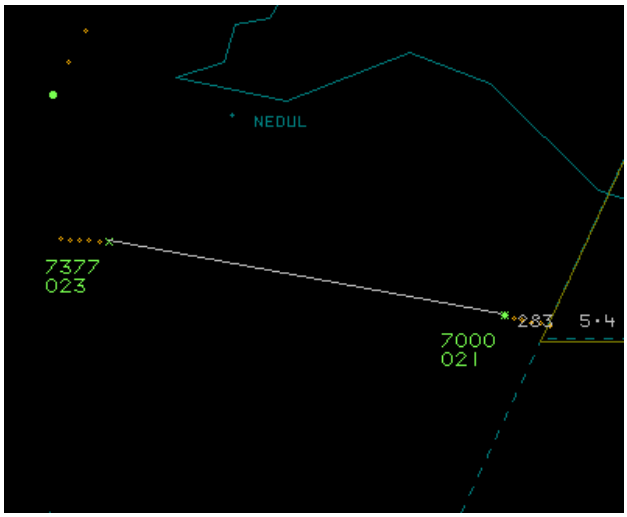



**Figure 1 – 1519:45**

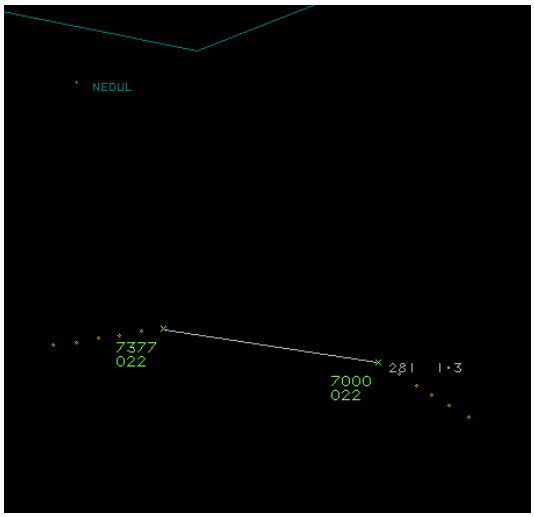



**Figure 2 - 1520:47**

At 1520:47 (Figure 2), the Bournemouth Approach controller instructed the PA28 pilot to pass his message. Coincident with the PA28 pilot passing his details, the transmission was partially

blocked by another station; consequently, the controller requested that the PA28 pilot pass his position, level and routeing again. The PA28 pilot then reported 4nm south-east of The Needles at altitude 2300ft on QNH 1019 routeing across Christchurch Bay to Swanage.

CPA occurred between 1521:06 (Figure 3) and 1521:11 (Figure 4) with a minimum horizontal distance of less than 0.1nm. Between these times both aircraft were indicating FL022.

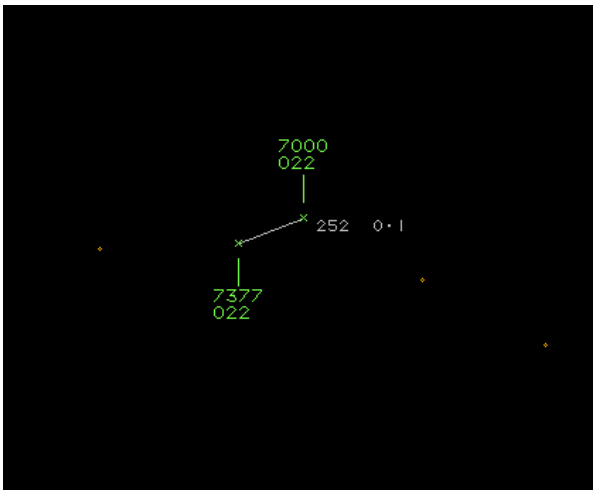



**Figure 3 – 1521:06**

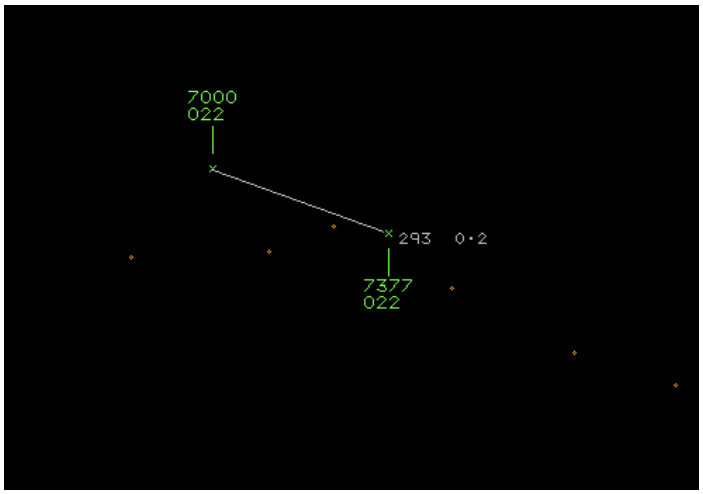



**Figure 4 – 1521:11**

At 1521:26 both aircraft had by this time passed each other and the Bournemouth Approach controller agreed a Basic Service with the PA28 pilot.

At the time of the Airprox, the Bournemouth Approach controller was providing a Basic Service to the C182 and a service had yet to be agreed with the PA28. There is contradictory information in the C182 pilot's written report, in which he stated that he had already left the Bournemouth Approach frequency and was in the process of switching to Solent Radar when the Airprox occurred. In actual fact, the C182 did not leave the Bournemouth frequency until sometime after 1522:06 when the Bournemouth Approach controller instructed the C182 to squawk 7000 and change frequency to Solent.

The area in which both the PA28 and the C182 were operating is Class G (uncontrolled) airspace. A Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. The provider of a Basic Service is not required to monitor the flight (and) pilots should not expect any form of traffic information from a controller[1].

### UKAB Secretariat

The C182 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]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[3].

## Summary

An Airprox was reported when a C182 and a PA28 flew into proximity at 1521 on Tuesday 16th August 2016. Both pilots were operating under VFR in VMC, the C182 pilot changing frequency and not in receipt of a Service and the PA28 pilot in receipt of a Basic Service from Bournemouth.

[1] CAP774, Chapter 2, Para 2.1 & 2.5
[2] SERA.3205 Proximity.
[3] SERA.3210 Right-of-way (c)(1) Approaching head-on.

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

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board began their deliberations by looking at the actions of the C182 pilot. They were heartened that he had identified some of the key learning points, namely, the importance of a robust lookout and the fact that in-cockpit distractions can have a negative effect upon the ability to maintain a good lookout. Whilst it is easy in hindsight to comment on cockpit task prioritisation, members commented that this incident was a timely reminder of the need to break up in-cockpit tasks so that a robust lookout can be maintained. The Board therefore agreed with the C182 pilot that changing frequency (or preparing to) had probably focused his attention in the cockpit and that this had resulted in his late sighting of the PA28.

For his part, the Board were mindful that the time of day and the position of the sun may have resulted in the hazy conditions hampering the lookout of the PA28 pilot. Members agreed that this, coupled with trying to establish contact with Bournemouth, would likely have distracted the PA28 pilot also and therefore contributed to his late sighting of the C182.

The Board then looked at the type of ATC service the aircraft pilots were receiving and agreed that, although a Basic Service is sometimes all that can be obtained in this area, it may have been more prudent to have requested a Traffic Service due to the busy airspace around the Isle of Wight during summer months, especially in the hazy conditions reported. However, the Board recognised that the radar cover at the aircraft operating altitudes may have meant a Traffic Service was not possible. Notwithstanding, they iterated the limitations of a Basic Service, especially in areas of poor radar cover, with the pilot being responsible for avoiding other traffic without the aid of the controller.

The Board then looked at the barriers that were relevant to this Airprox and decided that the following were key contributory factors:

- **Airspace Design and Procedures** was considered only **partially effective** because radar cover at the normal operating levels for traffic in this area often resulted in only intermittent radar returns; this meant the controllers may not be able to provide the best service to aircraft in the area.

- **Flight Crew Situational Awareness** was **ineffective** because, although the C182 and PA28 were both on the same frequency at concurrent times, neither seemed to have registered the other's route or level. Although both pilots were aware that the area was very busy, their distraction by in-cockpit tasks resulted in both pilots not fully assimilating the information that was available.

- **Onboard Warning/Collision Avoidance Equipment** was **inapplicable** because neither aircraft was fitted with the equipment. The Board agreed that because both aircraft were transponding, if this barrier had been available to at least one of the pilots it could have alerted them to the presence of the other aircraft early enough to carry out actions to increase separation.

- **See and Avoid** was **partially effective** because both pilots saw the other late and both took emergency avoiding action.

The Board then considered the cause and risk of the incident. They agreed that both pilots had been distracted by in-cockpit tasks which had degraded their lookout to the point that this incident was caused by a late sighting by both pilots. Turning to the risk, the Board agreed that this was an incident where safety had been much reduced below the norm; they therefore assessed the risk as Category B.

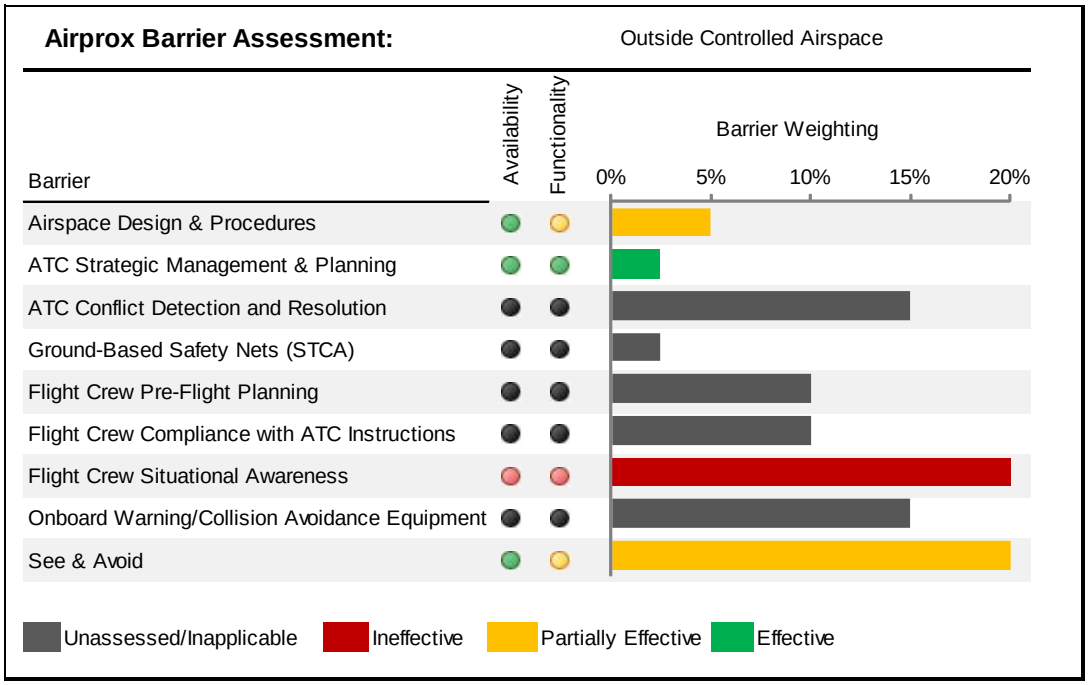
## PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by both pilots.

Degree of Risk: B.

Barrier Assessment:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).[4] The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, or Unassessed/Inapplicable). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.




| Barrier Effectiveness | | Consequence | | |
|---|---|---|---|---|
| | | Non-functional | Partially Functional | Functional |
| **Availability** | | **1** | **2** | **3** |
| Completely Unavailable | **1** | 1 | 2 | 3 |
| Partially Available | **2** | 2 | 4 | 6 |
| Available | **3** | 3 | 6 | 9 |

Key:

Effective

Partially Effective (If the system was partially available but fully functional score availability as 2.5)

Ineffective

Unassessed/Inapplicable

[4] Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.

| Barrier | Availability | | | Functionality | | | Unassessed / Inapplicable |
|---|---|---|---|---|---|---|---|
| | Fully (3) | Partially (2) | Not Available (1) | Fully (3) | Partially (2) | Non Functional (1) | |
| **Airspace Design and Procedures** | Appropriate airspace design and/or procedures were available | Airspace design and/or procedures were lacking in some respects | Airspace design and/or procedures were not appropriate | Airspace design and procedures functioned as intended | Airspace design and/or procedures did not function as intended in some respects | Airspace design and/or procedures did not function as intended | The Board either did not have sufficient information to assess the barrier or the barrier did not apply; e.g. ATC Service not utilised.<br><br>Note: The Board may comment on the benefits of this barrier if it had been available |
| **ATC Strategic Management and Planning** | ATM were able to man and forward plan to fully anticipate the specific scenario | ATM were only able to man or forward plan on a generic basis | ATM were not realistically able to man for or anticipate the scenario | ATM planning and manning functioned as intended | ATM planning and manning resulted in a reduction in overall capacity (e.g. bandboxed sectors during peak times) | ATM planning and manning were not effective | |
| **ATC Conflict Detection and Resolution** | ATS had fully serviceable equipment to provide full capability | ATS had a reduction in serviceable equipment that resulted in a minor loss of capability | ATS had a reduction in serviceable equipment that resulted in a major loss of capability | The controller recognised and dealt with the confliction in a timely and effective manner | The controller recognised the conflict but only partially resolved the situation | The controller was not aware of the conflict or his actions did not resolve the situation | |
| **Ground-Based Safety Nets (STCA)** | Appropriate electronic warning systems were available | Electronic warning systems is not optimally configured (e.g. too few/many alerts) | No electronic warning systems were available | Electronic warning systems functioned as intended, including outside alerting parameters, and actions were appropriate | Electronic warning systems functioned as intended but actions were not optimal | Electronic warning systems did not function as intended or information was not acted upon | |
| **Flight Crew Pre-Flight Planning** | Appropriate pre-flight operational management and planning facilities were deemed available | Limited or rudimentary pre-flight operational management and planning facilities were deemed available | Pre-flight operational management and planning facilities were not deemed available | Pre-flight preparation and planning were deemed comprehensive and appropriate | Pre-flight preparation and/or planning were deemed lacking in some respects | Pre-flight preparation and/or planning were deemed either absent or inadequate | |
| **Flight Crew Compliance with Instructions** | Specific instructions and/or procedures pertinent to the scenario were fully available | Instructions and/or procedures pertinent to the scenario were only partially available or were generic only | Instructions and/or procedures pertinent to the scenario were not available | Flight crew complied fully with ATC instructions and procedures in a timely and effective manner | Flight crew complied later than desirable or partially with ATC instructions and/or procedures | Flight crew did not comply with ATC instructions and/or procedures | |
| **Flight Crew Situational Awareness** | Specific situational awareness from either external or onboard systems was available | Only generic situational awareness was available to the Flight Crew | No systems were present to provide the Flight Crew with situational awareness relevant to the scenario | Flight Crew had appropriate awareness of specific aircraft and/or airspace in their vicinity | Flight Crew had awareness of general aircraft and/or airspace in their vicinity | Flight Crew were unaware of aircraft and/or airspace in their vicinity | |
| **Onboard Warning/Collision Avoidance Equipment** | Both aircraft were equipped with ACAS/TAS systems that were selected and serviceable | One aircraft was equipped with ACAS/TAS that was selected and serviceable and able to detect the other aircraft | Neither aircraft were fitted with ACAS/TAS or their systems were not selected on or unserviceable or systems incompatible | Equipment functioned correctly and at least one Flight Crew acted appropriately in a timely and effective manner | ACAS/TAS alerted late/ambiguously or Flight Crew delayed acting until closer than desirable | ACAS/TAS did not alert as expected, or Flight Crew did not act appropriately or at all | |
| **See and Avoid** | Both pilots were able to see the other aircraft (e.g. both clear of cloud) | One pilots visibility was uninhibited, one pilots visibility was impaired (e.g. one in cloud one clear of cloud) | Both aircraft were unable to see the other aircraft (e.g. both in cloud) | At least one pilot takes timely action/inaction | Both pilots or one pilot sees the other late and one or both are only able to take emergency avoiding action | Neither pilot sees each other in time to take action that materially affects the outcome (i.e. the non-sighting scenario) | |