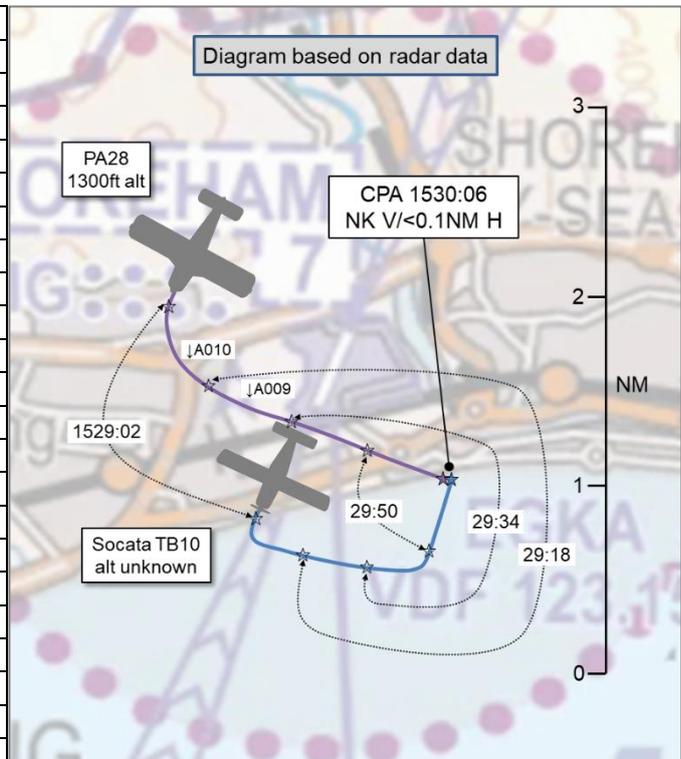


AIRPROX REPORT No 2021120

Date: 18 Jul 2021 Time: 1530Z Position: 5050N 00017W Location: Shoreham circuit

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------------|---------------------|----------------|
| Aircraft | Socata TB10 | PA28 |
| Operator | Civ FW | Civ FW |
| Airspace | Shoreham ATZ | Shoreham ATZ |
| Class | G | G |
| Rules | VFR | VFR |
| Service | AGCS | AGCS |
| Provider | Shoreham Radio | Shoreham Radio |
| Altitude/FL | NK | 900ft |
| Transponder | A | A, C, S |
| Reported | | |
| Colours | White, blue | White, purple |
| Lighting | Strobes, Lndg light | Strobe |
| Conditions | VMC | VMC |
| Visibility | >10km | >10km |
| Altitude/FL | 1200ft | 1100ft |
| Altimeter | QNH (1024hPa) | QFE (1024hPa) |
| Heading | 020° | 'Turning' |
| Speed | 80kt | 95kt |
| ACAS/TAS | Not fitted | Not fitted |
| Separation | | |
| Reported | <50ft V/<150m H | 50ft V/10m H |
| Recorded | NK V/<0.1NM H | |



THE SOCATA TB10 PILOT reports that they departed RW20 and, to their knowledge at the time, the only aircraft in the circuit was an aircraft on left-base and a Cub that had landed prior to the TB10 pilot lining up. They took off, completed the noise abatement turn (10° right) and then turned left after the coast keeping the RW at 90°. They decided that departing the circuit on the downwind was the safest option to avoid large built-up areas to the east and their routing was through Gatwick so this seemed logical. They had not heard an aircraft call crosswind. They looked left and right before turning downwind, rolled wings level and were climbing through 1200ft when, for some reason, they looked left 90°. They sighted some of an aircraft immediately on their left-hand side. They fairly abruptly applied aft elevator deflection to climb above the aircraft as fast as possible. To their surprise, there was no collision. Some RT messages were exchanged and the other aircraft's pilot said they didn't expect them to be on a close downwind, to which point they replied that they were flying the published circuit.

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

THE PA28 PILOT reports that they joined the circuit overhead at 2000ft, descended deadside and were flying crosswind, just at the end of RW20 at 1100ft. Approaching the downwind leg position, they turned level 30° of bank and rolled out heading approximately 020° to proceed just to the left of the Southwick tunnel, in accordance with the published circuit track. It was at this time that the Tobago passed on the port side just below them. They never saw this aircraft until this time and believe that it must have been climbing up behind/beneath them or below their starboard wing. The Tobago pilot then radioed saying that the PA28 pilot had almost taken them out; however, given the fact that [the Tobago] was obviously behind/below them, they were not aware that [the Tobago] was there. It was not possible to take avoiding action as they did not see [the Tobago] until it passed them on the port side and just below. [The Tobago] was going much faster than them and they feel that [the Tobago pilot] should have overtaken on the right, as the PA28 pilot was in the normal circuit pattern that the pilot flies very regularly and in the correct position. The Tobago proceeded to fly a very tight downwind.

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

THE SHOREHAM AIR/GROUND OPERATOR reports that [the PA28 pilot] called for re-join from the west and was given airfield information. They chose to join overhead for RW20. A few minutes later, [the Tobago pilot] began taxi from the pumps for K1 [the holding point for RW20]. It is worth noting they copied airfield information from the AGO's previous transmissions and did not pass their intentions to the AGO until after they had begun taxi and entered the taxiway. [The Tobago pilot] later reported ready for departure or stated they were lining up for RW20 hard, they cannot be sure. They were given the Piper Cub traffic passing in front of them and were told it was landing on RW20 grass. [The Tobago pilot] lined up and asked if they were able to depart with the Cub on the grass; the Cub vacated very shortly after. [The Tobago pilot] departed and the AGO observed from the Tower an early left turn with no further observation made. They believe that [the PA28 pilot] reported descending from the overhead before the other aircraft departed but, again, they cannot be sure. The next transmission that they recall from either aircraft was [the Tobago pilot] saying they had taken avoiding action to avoid [the PA28] on the downwind leg and would be filing an Airprox. The AGO does not remember [the Tobago pilot] saying they would be departing via the downwind leg to head north or [the PA28 pilot] reporting crosswind.

Factual Background

The weather at Shoreham was recorded as follows:

METAR EGKA 181520Z 21008KT 9999 FEW045 26/16 Q1024=

Analysis and Investigation

UKAB Secretariat

Analysis of the NATS radar replay showed the PA28 executing a standard overhead join and descending to circuit altitude (Shoreham airfield elevation is 7ft) on the deadside of the circuit. The Tobago was first detected by the NATS radars shortly after its departure, at 1528:58 (see Figure 1). The PA28 pilot flew crosswind at an indicated altitude of 900ft and paralleled the track of the Tobago for approximately 15-20sec before the Tobago pilot turned downwind. After this turn, the PA28 and the Tobago remained on an almost constant relative bearing until CPA. Because the Tobago was not displaying any Mode C information it was not possible to determine the vertical separation at CPA. Horizontal separation was measured at <math><0.1\text{NM}</math>.

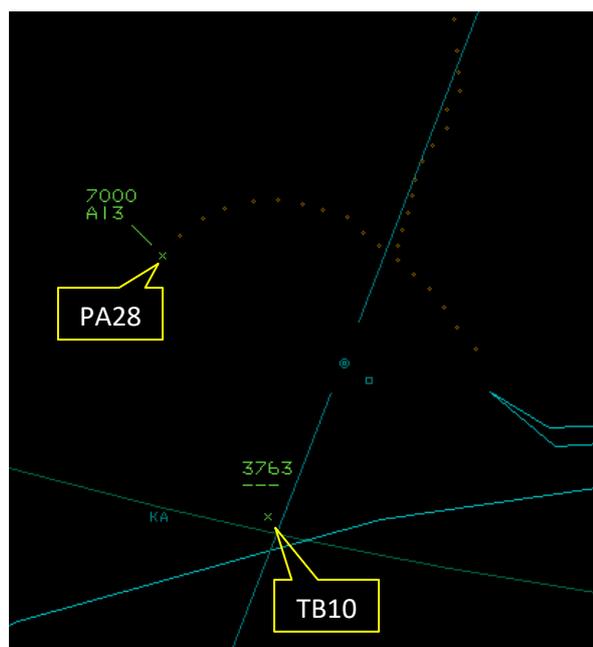


Figure 1 – 1528:58

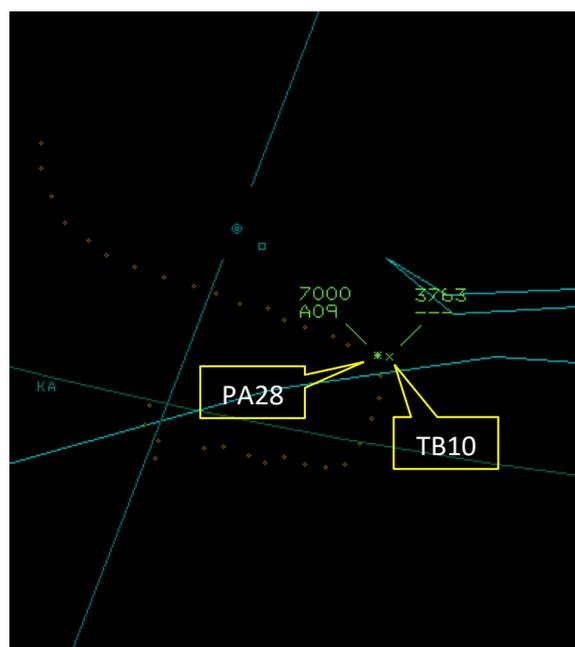


Figure 2 – 1530:06 – CPA

Figures 3 and 4 below depict the circuit patterns published on the Shoreham Airport website and the standard overhead join as published in the Skyway Code respectively.

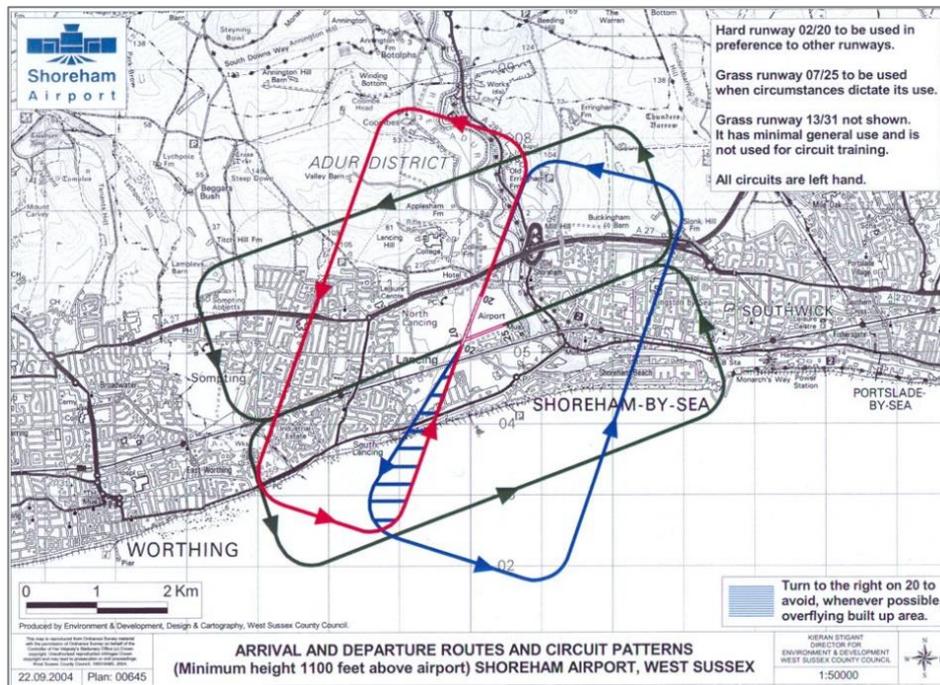


Figure 3 – Shoreham published circuit pattern¹

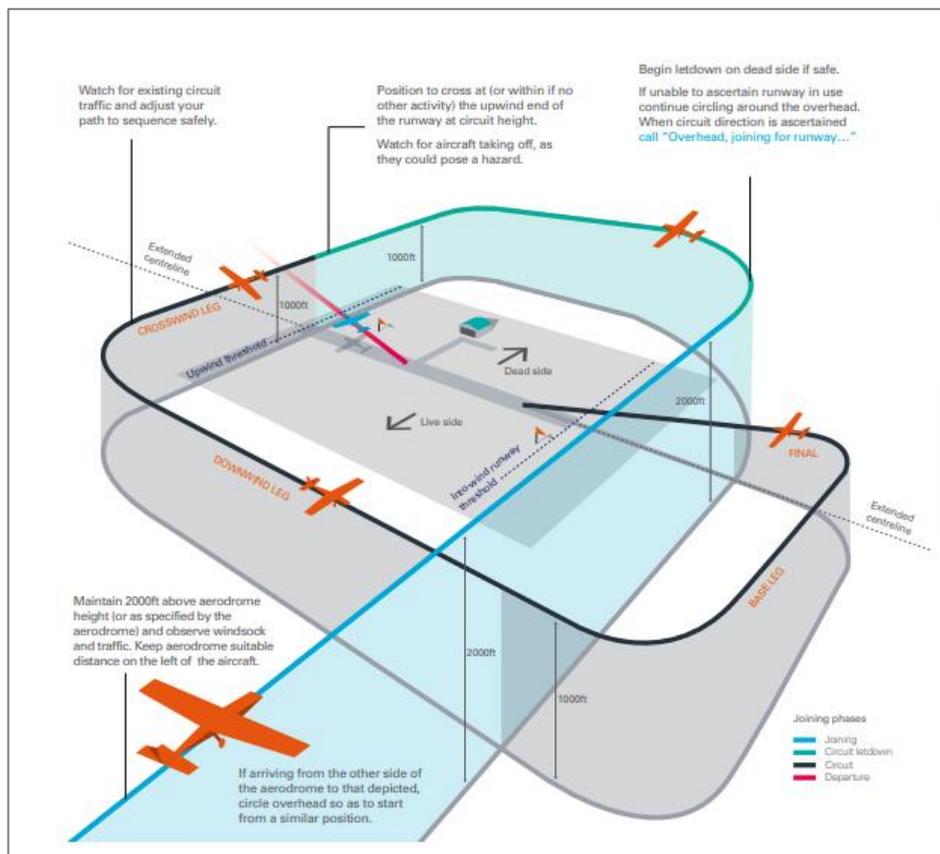


Figure 4 – Overhead join as depicted in The Skyway Code²

¹ Source: <https://flybrighton.com/circuit-plan/>

² Source: <https://publicapps.caa.co.uk/docs/33/CAP1535S%20Skyway%20Code%20Version%203.pdf>

The Socata TB10 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.³ An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation.⁴

Summary

An Airprox was reported when a Socata TB10 and a PA28 flew into proximity in the Shoreham visual circuit at 1530Z on Sunday 18th July 2021. Both pilots were operating under VFR in VMC and both pilots were in receipt of an AGCS from Shoreham Radio.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and a report from the air/ground operator 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 considered the actions of the Socata TB10 pilot and discussed whether or not they could have announced their intention to depart from the downwind leg. The Board heard from a GA pilot member that there is no requirement for them to have done so and that they could quite easily have departed in any direction after take-off, so it is incumbent on others within or joining the circuit to lookout for aircraft taking off and departing. Nonetheless, the Board considered that an extra information call (either regarding their intent to depart from downwind or announcing their presence on the downwind leg) may have assisted the PA28 pilot's situational awareness. While discussing situational awareness, members agreed that the TB10 pilot had not had any situational awareness of the presence of the PA28 (**CF3**) and that this had probably been down to their non-assimilation of a possible conflict from the PA28 pilot's "overhead, shortly descending deadside" call while the TB10 pilot was preparing for departure (**CF4**). The Board agreed, therefore, that the PA28 pilot had flown their departure in the belief that there had been no other traffic to affect them and that their sighting of the PA28 had not only been fortuitous, but had also been too late to materially increase the separation between the 2 aircraft (**CF5**). Members also wished to highlight to pilots that the applicable regulation regarding the avoidance of collisions within a circuit pattern is '(UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome' which requires pilots to conform with or avoid the pattern of traffic, and not '(UK) SERA.3210 Right-of-way'; the TB10 pilot had stated on the radio that 'they were on the right and so the PA28 pilot should have given way'.

Turning to the actions of the PA28 pilot, the Board noted that they had joined through the overhead and had announced their intention to descend deadside, and agreed that it had been for them to integrate with the traffic established in the pattern, including aircraft departing from the runway. However, although the TB10 pilot had announced their departure on the radio, the Board concluded that the PA28 pilot had not assimilated this call (**CF4**) and had, therefore, not had any situational awareness of the presence of the TB10 (**CF3**). Members agreed that this had led to the PA28 pilot being unable to take account of the departure track of the TB10 and, therefore, unable to integrate into the pattern with it (**CF1**, **CF2**). Not expecting to see another aircraft on the downwind leg, the Board felt that the PA28 pilot had understandably been surprised at the sudden appearance of the TB10 under their left wing and that their sighting of the aircraft had been hindered by the low wing of the PA28 (**CF6**); therefore, they had not seen the TB10 in time to take any action to increase separation (**CF5**). The Board again wished to highlight to pilots that a through lookout is essential at all stages of flight, but especially within a circuit where the presence of other aircraft may not always be apparent.

The Board then briefly considered the actions of the Shoreham Air/Ground Operator and quickly agreed that there was nothing that they could have done to assist either pilot in this situation as they were

³ (UK) SERA.3205 Proximity.

⁴ (UK) SERA.3225 Operation on and in the Vicinity of an Aerodrome.

themselves unaware of the relative proximity of the 2 aircraft and, in any case, an AGO is not permitted to issue instructions to pilots.

Finally, the Board considered the risk involved in this Airprox. Members noted that the TB10 had not been displaying any Mode C height information on the NATS radar replay, but took into account the fact that both pilots had reported, independently, a vertical separation in the order of 50ft. Equally, both pilots' accounts suggested that there had not been very much lateral separation and this had been confirmed on the NATS radar replay at less than 0.1NM. The Board quickly agreed that there had been a risk of collision (Risk Category A or B) (**CF7**) and then discussed whether either pilot had managed to manoeuvre to increase the separation. Members agreed that the PA28 pilot had not seen the TB10 until after CPA (the TB10 emerged of the left-hand side of the PA28) and so debated if the timing of the TB10 pilot's control inputs had been early enough to avoid a collision. The Board concluded that the TB10 pilot's inputs had most likely not had time to take effect before the aircraft had passed each other and so agreed that providence had played a major part in events. Accordingly, a Risk Category A was assigned to this event.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| 2021120 | | | | |
|---|---------------|--|---|--|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 1 | Human Factors | • Action Performed Incorrectly | Events involving flight crew performing the selected action incorrectly | Incorrect or ineffective execution |
| 2 | Human Factors | • Monitoring of Environment | Events involving flight crew not to appropriately monitoring the environment | Did not avoid/conform with the pattern of traffic already formed |
| • 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 |
| 4 | Human Factors | • Understanding/Comprehension | Events involving flight crew that did not understand or comprehend a situation or instruction | Pilot did not assimilate conflict information |
| • 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 | Contextual | • Visual Impairment | Events involving impairment due to an inability to see properly | One or both aircraft were obscured from the other |
| • Outcome Events | | | | |
| 7 | Contextual | • Near Airborne Collision with Aircraft | An event involving a near collision by an aircraft with an aircraft, balloon, dirigible or other piloted air vehicles | |

Degree of Risk:

A

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 Shoreham Air/Ground operator is only required to pass information to enable the flight to be conducted safely within the aerodrome traffic zone.

Flight Elements:

Tactical Planning and Execution was assessed as **partially effective** because the PA28 pilot, joining through the overhead, did not conform with the pattern of traffic formed by the departing TB10.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither pilot assimilated the potential for conflict from the radio calls and therefore neither had any situational awareness regarding the positioning and proximity of the other aircraft.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft in time to materially increase the separation.

| Airprox Barrier Assessment: 2021120 | | Outside Controlled Airspace | | Effectiveness | | | | | |
|-------------------------------------|--|-----------------------------|-------------|---------------------|----------------------------|----------|-----|-----|--|
| Barrier | | Provision | Application | 0% | 5% | 10% | 15% | 20% | |
| Ground Element | Regulations, Processes, Procedures and Compliance | ✓ | ✓ | [Green bar to 5%] | | | | | |
| | Manning & Equipment | ✓ | ✓ | [Green bar to 5%] | | | | | |
| | Situational Awareness of the Confliction & Action | ⚠ | ○ | [Red bar to 15%] | | | | | |
| | Electronic Warning System Operation and Compliance | ● | ● | [Grey bar to 5%] | | | | | |
| Flight Element | Regulations, Processes, Procedures and Compliance | ✓ | ✓ | [Green bar to 10%] | | | | | |
| | Tactical Planning and Execution | ✓ | ⚠ | [Yellow bar to 10%] | | | | | |
| | Situational Awareness of the Conflicting Aircraft & Action | ✗ | ✓ | [Red bar to 20%] | | | | | |
| | Electronic Warning System Operation and Compliance | ● | ● | [Grey bar to 15%] | | | | | |
| | See & Avoid | ✗ | ✗ | [Red bar to 20%] | | | | | |
| Key: | | Full | Partial | None | Not Present/Not Assessable | Not Used | | | |
| Provision | ✓ | ⚠ | ✗ | ● | ○ | | | | |
| Application | ✓ | ⚠ | ✗ | ● | ○ | | | | |
| Effectiveness | ■ | ■ | ■ | ■ | □ | | | | |

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