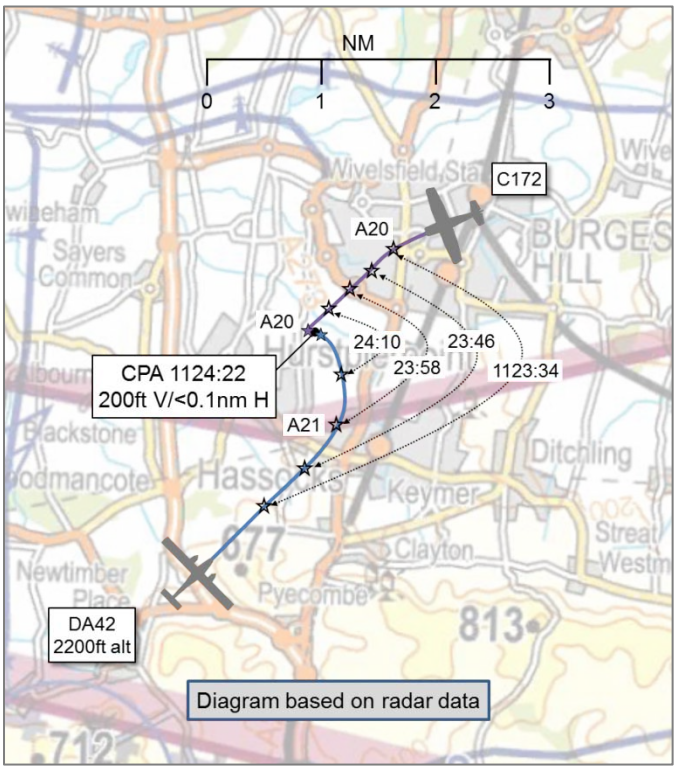
AIRPROX REPORT No 2014060

Date/Time: 7 May 2014 1124Z

Position: 5057N 00010W (Hurstpierpoint)

Airspace: London FIR (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	DA42	C172
Operator:	Civ Comm	Civ Pte
Alt/FL:	2200ft NK	1900ft QNH (NK hPa)
Conditions:	VMC	VMC
Visibility:	10km	>10km
Reported Separation:	200ft V/NK H	Not Seen
Recorded Separation:	200ft V/<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DA42 PILOT reports conducting an instrument training sortie with IF screens fitted. The white aircraft had navigation lights and strobes selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under IFR in VMC, in receipt of a Procedural Service from Shoreham. Whilst on the RW20 RNAV approach, between NITEN and ADURI the passenger exclaimed "that was close" and directed the pilot's attention to a high-wing, single-engine aircraft about 200ft below at a range of 200m in the left 8 o'clock position, going away. The pilot stated that the other pilot 'seemed unaware of instrument approach procedures' at Shoreham.

He did not make an assessment of the risk of collision.

THE C172 PILOT reports transiting to Shoreham. The predominantly white aircraft lighting state was not reported. The SSR transponder was selected on with Modes A and C. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under VFR in VMC, in receipt of a Basic Service from Shoreham APP. He had previously been in receipt of a Basic Service from Farnborough 'Radar', routeing southeast of Gatwick airspace and then to Shoreham. He obtained the latest Shoreham ATIS when about 15nm from Shoreham, and then changed to the Shoreham APP frequency. He was given a squawk of 3763, and was initially cleared for an overhead join for RW25, the standard overhead join being at 2000ft. Shoreham APP advised him of instrument traffic on approach to RW20, offered a right base join for RW25, which he accepted, and he landed without further incident. The pilot stated that despite 'very good and extra vigilant lookout', being aware of the instrument approach to RW20 due to the 'chart chevrons', local area knowledge, and being in contact with Shoreham ATSU, he did not see another aircraft in close proximity. He noted that no position reports were heard with regard to the instrument reporting points (NITEN and ADURI) and that this would have helped to build situational awareness and threat/error management. He suggested that depiction of the RNAV waypoints on the VFR chart would also have helped, and that construction of the RNAV approach path at 90° to final approach was 'not ideal'. The pilot made a number of other observations, the key ones being as follows:

- Not many pilots flying a VFR arrival to Shoreham will be aware of the RNAV legs between NITEN and ADURI, or BITLI and ADURI.

- Pilots flying RNAV approaches outside CAS should be aware of VFR traffic, that see-and-avoid applies, and that it is a requirement to give way to other aircraft i.a.w the Rules of the Air.

- Instrument approach traffic may not necessarily be on the final approach (as chart chevrons might imply), but may be on an intermediate stage adjacent to the final approach and at some distance out.

- RNAV waypoints such as ADURI and NITEN should be published on VFR approach plates or the 1:500,000 VFR chart.

- Pilots flying RNAV approaches make appropriate position reports so that non RNAV participating traffic can build a clearer mental picture of the position of the RNAV traffic. On a conventional instrument approach pilots make position calls such as 'beacon outbound', 'procedure turn complete' etc. Listening traffic can build a mental picture of instrument traffic position from this.

Factual Background

The weather at Shoreham was recorded as follows:

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METAR EGKA 071120Z 24021G31KT 9999 FEW011 SCT028 14/10 Q1011=
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Analysis and Investigation

CAA ATSI

ATSI had access to Shoreham RTF and area radar recording, together with the written report from both pilots. The Airprox was not reported to the ATSU either on the RTF or subsequently, and therefore no controller or unit report was available.

The Shoreham controller was providing an Approach Control Service without the aid of surveillance equipment but with access to D/F (direction finding) equipment. The controller's workload was assessed as medium.

The C172 was operating VFR on a flight inbound to Shoreham and, having just made contact, was in receipt of a Basic Service from Shoreham APP.

The DA42 pilot was conducting an IFR training exercise at Shoreham Airport comprising a hold at the SHM NDB, followed by the RNAV approach via NITEN (IAF) for RW20 and was in receipt of a Procedural Service from Shoreham APP. An extract from the UK AIP page AD 2-EGKA-8-4, dated 3rd April 2014, is reproduced in Figure 1 below:

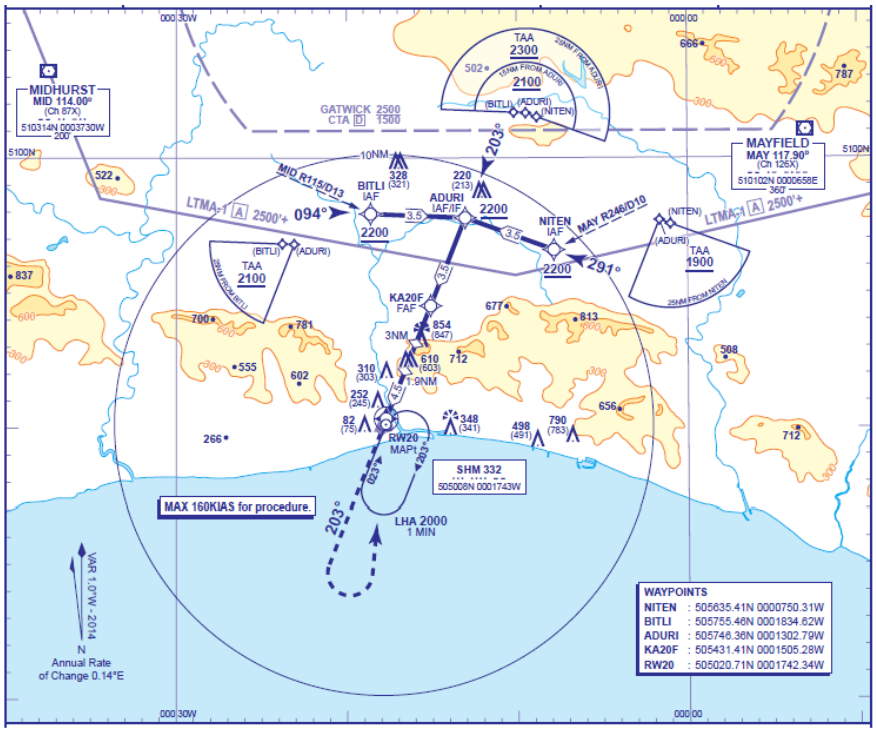

Figure 1 –Shoreham Instrument Approach Chart RNAV (GNSS) RW20 (ACFT CAT A,B – ICAO)

The DA42 pilot [squawking 3762 - Shoreham IFR conspicuity] had been cleared to take up the hold at the SHM NDB at 2500ft. At 1101:20, the DA42 pilot reported taking up the hold at 2000ft and, when challenged by the controller, the pilot confirmed at 2500ft. The controller then gave generic advice regarding other traffic joining at 2000ft, *"you may see traffic below you later joining at two thousand maintain two thousand five hundred feet and report when you've completed the holding there will be no delay for RNAV approach runway two zero via NITEN"*. The DA42 pilot acknowledged, *"maintaining altitude two thousand five hundred feet and wilco* [DA42 C/S]*"*.

At 1119:50, the DA42 pilot reported outbound in the hold and ready for the procedure. The controller instructed him to report beacon outbound at 2500ft, to cross NITEN at 2200ft, and then cleared him for the RNAV approach RW20. At 1121:16, the DA42 pilot reported beacon outbound and the controller instructed him to report at NITEN. The C172 is shown squawking 7000, 11nm northeast of the DA42 in Figure 2 below:

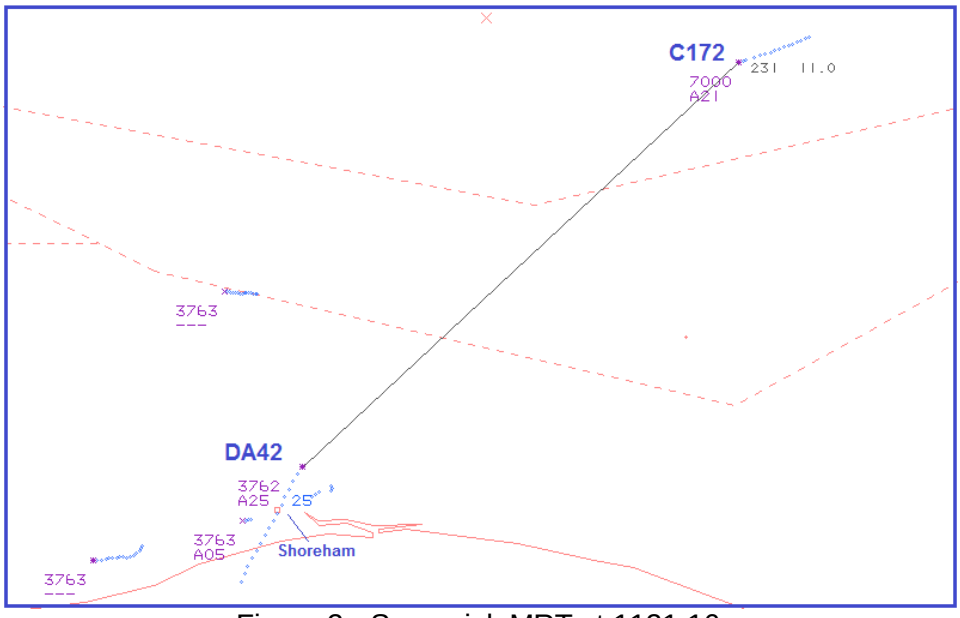

Figure 2 - Swanwick MRT at 1121:16

At 1123:34, the C172 was 2.5nm north-northeast of the DA42, see Figure 3 below:

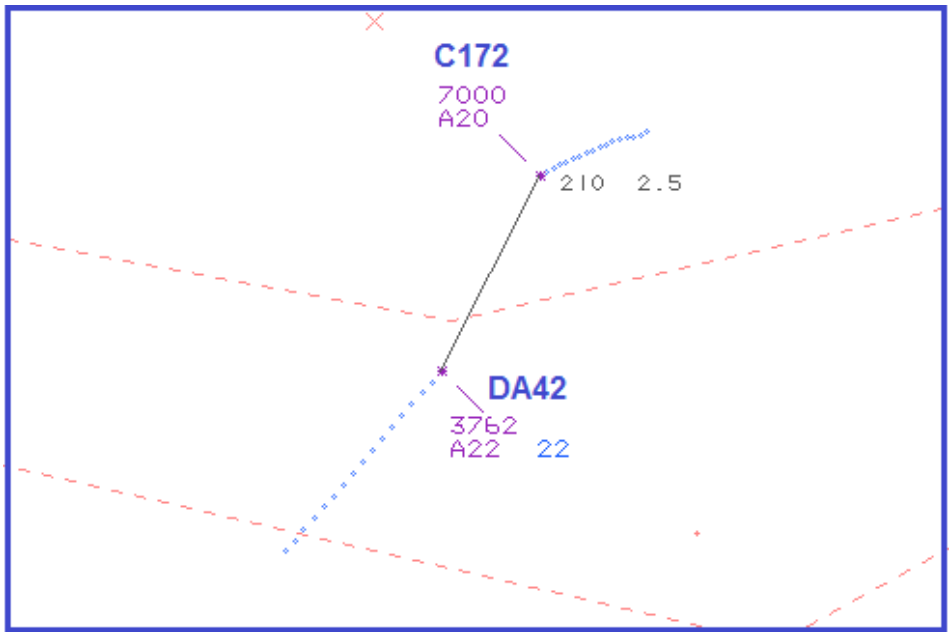

Figure 3 - Swanwick MRT at 1123:34

At 1123:37, the C172 pilot contacted Shoreham APP and reported at Burgess Hill at 2000ft on QNH 1011hPa, in receipt of information 'G'. The C172 pilot was instructed to squawk 3763 [Shoreham VFR conspicuity code] and to join overhead at 2000ft for RW25 left-hand circuit with QFE 1010hPa. This was acknowledged by the C172 pilot who asked for confirmation of RW25 left-hand, which was confirmed by the controller who then, at 1124:14, passed traffic information, *"there is traffic shortly in the instrument er approach routeing via NITEN, that's Parham more or less, towards Henfield and er at two thousand two hundred feet initially".* The C172 pilot did not reply and a number of other aircraft transmitted in quick succession with a number of crossed transmissions. Swanwick MRT recording showed the DA42 pilot had commenced a left turn with the C172 0.4nm north-northwest and without an SSR label, see Figure 4 below:

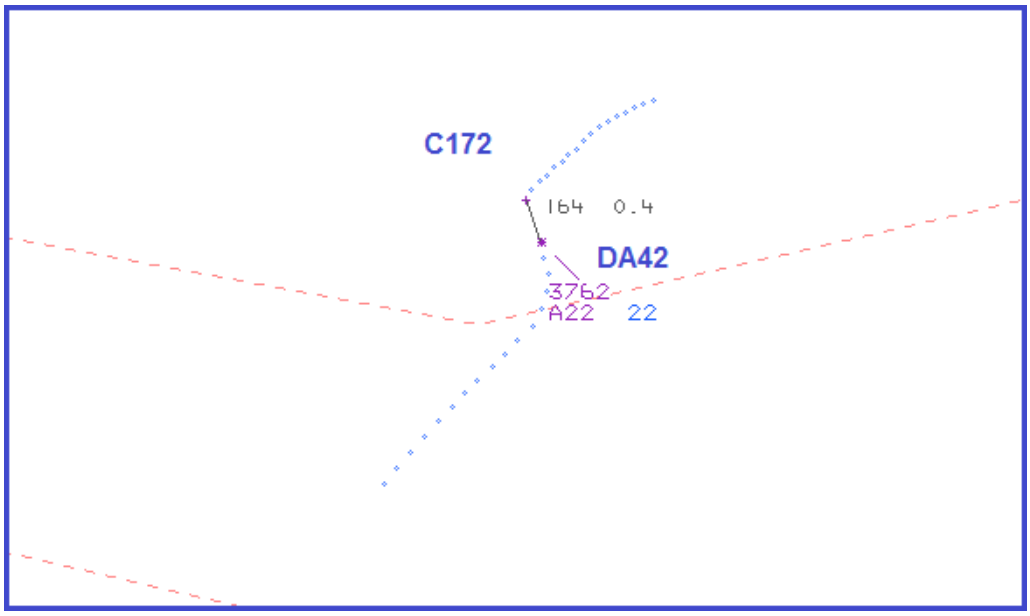

Figure 4 - Swanwick MRT at 1124:14

CPA occurred at 1124:22, when the C172 is shown squawking 3763, 0.1nm west-northwest of the DA42, see Figure 5 below:

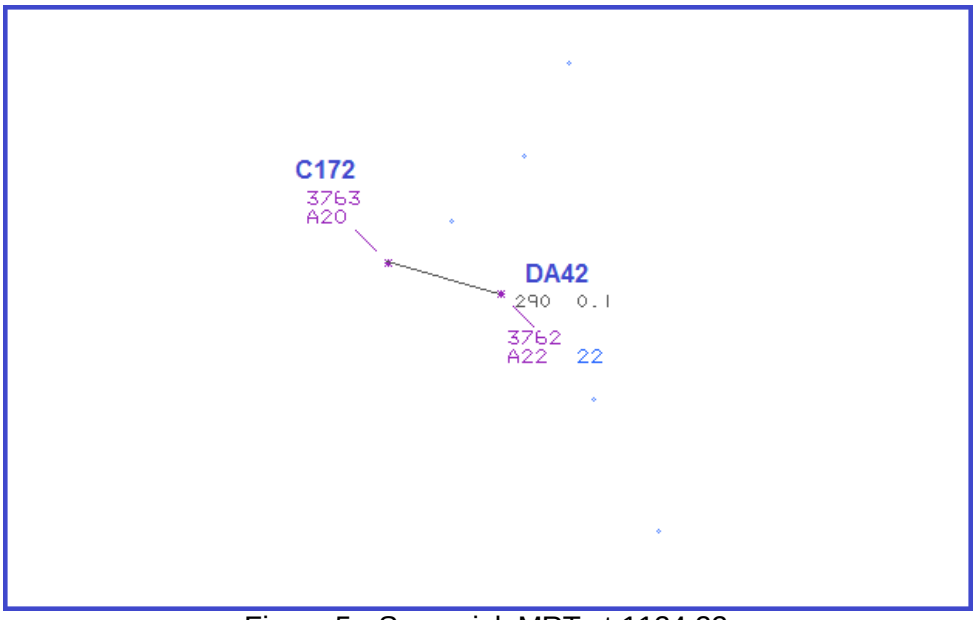

Figure 5 - Swanwick MRT at 1124:22

The DA42 was in receipt of a Procedural service and CAP774 Flight Information Services, Chapter 5, paragraphs 5.1 and 5.5 state:

> 'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'
>
> 'The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance…'

Whilst in the hold at 2500ft the DA42 pilot had been given general advice regarding other traffic which would be joining at 2000ft. The C172 pilot contacted Shoreham Approach just prior to the Airprox and the controller's workload and RTF loading was such that it was likely that he did not have time to assess the situation or pass a warning to the DA42 pilot. Pilots in receipt of a Procedural Service should be aware of the high likelihood of encountering conflicting traffic without warnings being provided by ATC.

On the C172's initial call the controller had passed joining instructions and gave traffic information regarding the DA42 in the procedure. However, this was not acknowledged by the C172 pilot, very likely due to the number of RTF calls and crossed transmission made at the same time. One of these crossed transmissions was the DA42 reporting at ADURI after the Airpox had occurred.

UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision[1]. If the geometry is considered 'converging' then the DA42 pilot was required to give way to the C172[2], if it is considered 'head-on' then both pilots were required to manoeuvre to the right[3].

Comments

[1] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).
[2] ibid., Rule 9 (Converging).
[3] ibid., Rule 10 (Approaching head-on).

DA42 Company Local Safety Manager

In subsequent conversation, the Local Safety Manager stated that the company had temporarily suspended operations to Shoreham until completion of a formal risk assessment.

Summary

An Airprox was reported when a DA42 and a C172 were flown into proximity near Hurstpierpoint at 1124 on Wednesday 7th May 2014. Both pilots were operating in Class G airspace, the DA42 pilot in receipt of a Procedural Service and the C172 pilot in receipt of a Basic Service, both from Shoreham APP.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, radar photographs/video recordings and a report from the appropriate ATC authority.

The Board first considered the Shoreham controller's actions. He was providing a Procedural Service to the DA42 pilot and had just passed the C172 pilot the Shoreham VFR conspicuity squawk, in anticipation of providing a Basic Service. He provided generic Traffic Information to both pilots, albeit with an incorrect geographical reference for NITEN (which is at Burgess Hill rather than Parham).

Turning to the pilots, the C172 radar track recording initially showed a 7000 squawk which reverted to a primary only return after the pilot contacted Shoreham and reappeared as the Shoreham VFR conspicuity code (3763) on the radar sweep at CPA. The Board postulated, therefore, that the C172 pilot had been looking inside the cockpit to change the IFF transponder setting up until very shortly before CPA. This unfortunate timing prevented visual acquisition but the Board agreed that the need to select an IFF code had to be balanced against the primary need to maintain an effective lookout. The DA42 pilot was conducting an instrument training sortie, with IF screens fitted, operating in suitable VFR weather conditions, albeit under IFR. The DA42 pilot did not visually acquire the C172 and was informed of its presence by a passenger on his aircraft. The Board noted that the mandatory requirement to fit IF screens was rescinded by the CAA in 2013[4] and that anecdotal evidence, including members' personal experience, indicated that their fitment could present a barrier to effective lookout. It was noted that the Board had made a recommendation to the DA42 Operating Company in Airprox 2014059, to review their use of IF screens.

The Board quickly agreed that the cause of this Airprox was a non-sighting by both pilots and many Board members considered that the separation at CPA warranted a risk category of A – separation reduced to the minimum, chance played a major part in events, and nothing more could have been done to improve matters. The Board then discussed the clearances given to the pilots and agreed that a degree of separation had been 'built-in' by the controller's clearance to the DA42 pilot to cross NITEN at 2200ft and to the C172 pilot to join overhead at 2000ft. Whilst this did not oblige the C172 pilot to be at 2000ft immediately, he was already at this altitude before contacting Shoreham and remained at it after the clearance. In light of this, the Board agreed that chance had not played such a major part in events, but that safety margins had nonetheless been much reduced below the normal.

After debating the existence of 'built-in' separation, members agreed that this incident demonstrated potential for a more formal examination of integration of traffic at Shoreham in order to separate IFR traffic on a known procedure from VFR traffic. The Board resolved to recommend that Shoreham considers reviewing the integration of IFR traffic with joining and transiting VFR traffic.

[4] IN-2013/111

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by both pilots.

Degree of Risk: B

ERC Score[5]: 20

Recommendation: Shoreham considers reviewing the integration of IFR traffic with joining and transiting VFR traffic.

[5] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.