

AIRPROX REPORT No 2011158

Date/Time: 19 Nov 2011 1330Z (Saturday)

Position: 5050N 00017W (0.4nm
E of Shoreham Airport -
elev 7ft)

Airspace: Shoreham ATZ (Class: G)

Reporting Ac Reported Ac

Type: Diamond DA40 TB20

Operator: Civ Pte Civ Pte

Alt/FL: 2000ft 1800ft↓
QFE (1015hPa) QFE (1015hPa)

Weather: VMC CAVOK VMC CAVOK

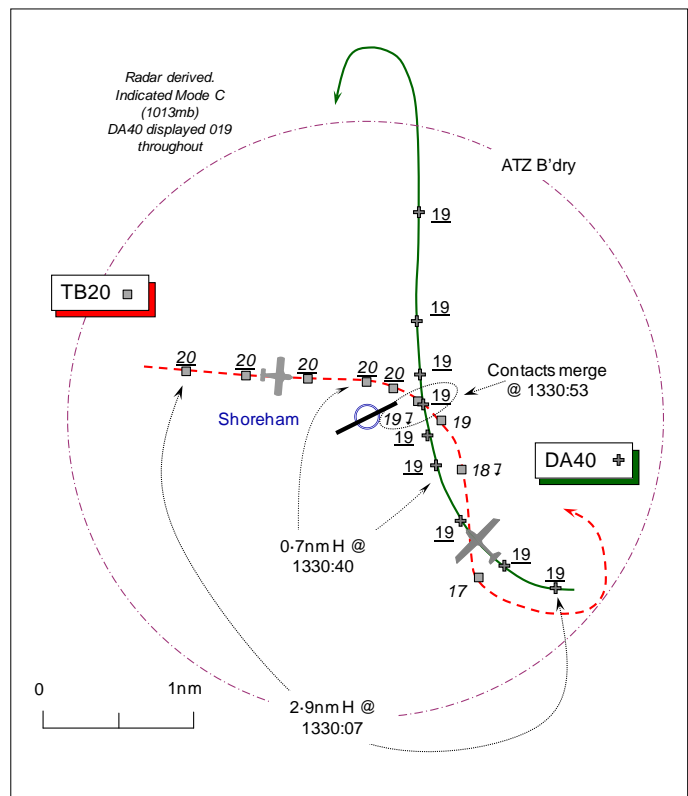
Visibility: >10km >10km

Reported Separation:

Nil V/20ft H 'Very close'

Recorded Separation:

Contacts merged



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DIAMOND DA40 PILOT reports he was returning to Shoreham A/D under VFR following a local flight and was in receipt of an Approach Control Service from Shoreham APP/TWR on 123.150MHz. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted. The ac has a blue and white colour-scheme; the ac's lighting state was not reported.

Shoreham APP 'cleared' him for an overhead join to RW07 so he proceeded along the coast and turned onto a heading of 340° to position himself above the RW25 'numbers' at 120kt. Approaching the A/D overhead at 2000ft (1016hPa) a low-wing single engine aeroplane - the TB20 - was first sighted in the left third of his windshield; he estimated that the TB20 was about 50-70ft away at this point, at the same height, flying straight and level directly towards him. To avoid the TB20 he initiated a steep turn to the R. The TB20 pilot made no attempt to alter his heading and passed 20ft away to port at the same height with a 'high' Risk of collision.

Having then flown around and over the RW07 'numbers', the TB20 was sighted again off his left wingtip. He can only assume that TB20 was performing a right hand cct overhead join against the flow of the normal traffic [variable ccts are notified at 1100ft]. The incident was reported to ATC on the RT and he subsequently landed his aeroplane.

THE TRINIDAD TB20 PILOT reports he was inbound to Shoreham from Denham under VFR and had telephoned Shoreham before leaving Denham to obtain the weather as well as to book his arrival. After he was informed that Shoreham were using the grass RW07, he asked if it would be possible to land on the hard surface RW02 if the wind permitted, to which the answer was 'yes'.

Inbound to Shoreham, just to the E of Goodwood, he changed radio frequency to Shoreham APP/TWR on 123.150MHz and realised that they were very busy so by the time they spoke to ATC they were 7nm away. The controller, who clearly still remembered their request to land on the hard runway, suggested they should position themselves on a RH base leg for RW20. However, realising how busy it was he declined the offer and instead replied that he would join the normal flow of traffic and land on RW07 as well. He reported his position as 7nm W of the aerodrome at 2000ft QNH (1016hPa). The controller instructed them to report overhead at 2000ft. When overhead the A/D at

2000ft, they reported their position and were instructed to descend on the dead-side. He turned R from a heading of 095° onto 160° toward the dead-side and commenced a descent at 120kt. Passing about 1800ft QNH in a descending R turn he saw another aeroplane pass very close to port in what appeared to be a banked turn to the R - it all happened so quickly that neither he nor his passenger was able to identify the ac type. Within a very short time they felt the 'bump effect' of the slipstream generated by the other aeroplane as they continued descending to position themselves onto the crosswind leg. At this stage the pilot of the other aeroplane reported an Airprox with a green Cessna. They responded by confirming that it was their TB20 and also confirmed they had come very close to each other. Nothing else was said on the RT and they continued in the cct to land on the grass RW07. He did not specify the minimum separation but assessed the Risk as 'high'.

His aeroplane has a green over white colour-scheme and the 'strokes' were on. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted; the ac's identity was not apparent on the radar recording.

THE SHOREHAM COMBINED AERODROME & APPROACH CONTROLLER (ADC) reports that the TB20 pilot had 'booked-in' by phone and requested to use the hard surface RW02. When the TB20 pilot called he was instructed to route to Steyning [3nm NNW of the A/D] for a R base RW20; after reporting at Steyning the TB20 pilot was instructed to hold. Following a delay, the TB20 pilot advised that he could accept RW07, therefore, he was instructed to report overhead at 2000ft. When he did so, the TB20 was instructed to descend deadside. The DA40 then reported overhead and an Airmiss (sic) with a green Cessna at 1331 UTC. No Cessna was known to be routing through the A/D overhead and initially, he believed it to be a 'rogue' ac. The DA40 pilot said the other ac missed him by 50ft laterally, whereupon, the TB20 pilot called advising that his ac was the reported ac and, '...turning R descending deadside'. All turns are supposed to be LH.

ATSI reports that the Airprox occurred at 1330:53 UTC, 0.3nm ENE of the Shoreham Aerodrome Reference Point (ARP), within Class G airspace and inside the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20, extending to 2000ft above the aerodrome elevation of 7ft.

The Trinidad TB20 (TB20) was on a VFR flight inbound to Shoreham from Denham. The TB20 pilot had previously telephoned Shoreham ATC to request the use of a hard runway into wind.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment. The ATIS frequency was promulgated out of service.

The controller considered workload levels as medium. The Shoreham controller had been operational for 1hr 31mins prior to the incident and had been on duty since 0900 UTC. The ATC watch pattern for this Saturday provided one early shift controller, starting at 0900 UTC and one late shift controller commencing duty at 1100 UTC, with an air traffic assistant in support. The two controllers shared the operational shifts rotating to provide relief breaks for each other and for the air traffic control assistant.

RW07 was in use with a LH traffic pattern. ATSI considered the workload and RT levels just prior to the Airprox as 'high'.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

- c) Circuit heights are 1100ft aal for all runways.
- d) Variable circuits at discretion of ATC.
- e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.

ATSI had access to radar recordings, provided by NATS Swanwick, together with written reports from the pilots, controller and controller interview. In order to reflect the high workload, the narrative includes a description of each ac position and RT calls.

The Shoreham 1320Z METAR: 120012KT 9000 NSC 13/11 Q1016=

At 1319:50, ATSI assessed traffic levels as medium, with a Chipmunk in the cct followed by a PA28 (1) downwind and PA28 (2). A PA28 (3) was inbound from the E to join overhead. A Stampe pilot called inbound abeam Worthing pier and the controller instructed the Stampe pilot to join overhead at 2000ft, QFE (1015hPa), RW07. The Stampe pilot was given traffic information on PA28 (3) inbound from the E joining overhead.

Traffic levels began to increase. A departure was cleared for take off and a second departure was lined up on RW07. The pilot of a previous outbound ac reported changing frequency to Goodwood.

The pilot of PA28 (3) reported overhead at 2000ft and the controller instructed the him to descend to 1600ft and report downwind, with TI on the departure climbing towards the coast at not above cct height (1100ft). The second departure was given take off clearance and was also passed TI on PA28 (3) descending on the deadside to 1600ft.

A C172 pilot contacted Shoreham Approach reporting at Bognor Regis, requesting a downwind join for RW07. The controller instructed the C172 to report at Worthing pier for a straight-in approach to RW07, not below 1600ft QFE (1015mb).

The Chipmunk and PA28 (1) were on base leg and PA28 (2), now turning downwind, was instructed to report final No 3. PA28 (2) reported contact with the two ahead.

At 1322:52, the pilot of PA28 (4), positioned 3nm NE of the A/D, called for joining instructions. The PA28 (4) pilot was instructed to report overhead for RW07 and was passed TI regarding a Stampe biplane routeing to the overhead. An outbound called changing to Farnborough.

At 1323:32, the Chipmunk was cleared for a touch and go. The pilots of two ac on the apron called for information and taxi, one of which was a PA28 (5), with a student pilot. Student pilot PA28 (5) was cleared to taxi to the holding point 'Alpha 1' via the 'Alpha Taxiway' for RW07 with QNH (1016hPa). The Stampe pilot called overhead and was cleared to descend on the deadside. The pilot of PA28 (1) was cleared to continue approach and shortly afterwards was given landing clearance. The pilot of PA28 (2) on final was instructed to continue and shortly afterwards cleared to land. A previous departure along the coast was advised no further restriction and cleared to climb with traffic information on the C172 inbound and then transferred to Goodwood.

At 1325:10, the DA40 pilot called Shoreham Approach, "[DA40 C/S] *approaching Brighton Marina 2 thousand 3 hundred feet..request rejoining instructions please.*" The controller replied, "[DA40 C/S] *report point of departure person on board.*" The pilot responded, "*..departed Shoreham 3 P O B.*" The controller transmitted, "[DA40 C/S] *roger overhead join 2 thousand feet 0-7 Q-F-E 1-0-1-5 Cherokee [PA28 (4)] to the northeast of Shoreham inbound to the overhead.*" The DA40 pilot acknowledged, "*Overhead join Q-F-E 1-0-1-5 ..looking for traffic [DA40 C/S]*".

At 1325:56, the student pilot of PA28 (5) was instructed, "[PA28 (5) C/S] *taxi ahead cross [RW] 0-2 to the holding point 0-7.*" The student pilot's readback was not complete; "[PA28 (5) C/S] *..cross..Runway to 0-7 [PA28 (5) C/S]*". The incomplete readback omitted the words "*holding point*", which was not corrected by the controller.

At 1326:10, another DA40 pilot – DA40 (B) - called inbound from Brighton at 2200ft and was instructed to join downwind lefthand for RW07. No TI was provided. The pilot of PA28 (2), was instructed to vacate the runway after landing and the Chipmunk pilot, now downwind, was cleared to final No 2 following PA28 (3) on base-leg. An ac on the Apron was cleared to taxi.

At 1327:23, the TB20 pilot established two-way contact with Shoreham Approach and reported, “..6 miles to the west at 2 thousand feet..joining instructions please.” The controller responded, “[TB20 C/S]..route towards Steyning which is to the north of the airfield and expect a right base join..right base join Runway 2-0 Q F E 1-0-1-5 but report at Steyning.” The TB20 pilot replied, “..yeah we can take 0-7 actually to fit in with the rest.” The controller cleared the pilot of PA28 (3) to land and then responded to the TB20 pilot, “[TB20 C/S]..roger in that case..report overhead 2 thousand feet 0-7 Q-F-E 1-0-1-5”. This was acknowledged by the TB20 pilot, “..on the Q-F-E 1-0-1-5 report overhead at 2 thousand feet [TB20 C/S]”. No TI was passed regarding cct activity or the DA40 joining overhead from the E, neither was the TB20 updated regarding the second DA40 – DA40 (B) - inbound from the E. An ac on the Apron was then cleared to taxi.

The controller was unable to explain why he had not passed TI to the DA40 or TB20 pilots about each others ac. The controller considered his workload at that point to be medium and remembered passing TI to the DA40 pilot regarding PA28 (4), which was approaching the overhead from the N. The controller indicated that the TB20 pilot had telephoned ATC earlier in the day, requesting a hard runway on arrival. When the TB20 pilot called, the controller initially routed the ac to hold at Steyning and considered at that point, that there was no pertinent TI to pass. However the TB20 pilot confirmed that he would accept RW07 to, “*fit in with the rest*”. The controller indicated that he had then given the pilot of PA28 (3) a landing clearance before instructing the TB20 pilot to join overhead. The controller forgot to pass pertinent TI to both the TB20 and DA40 pilots regarding each other, which he recognised was a lapse.

The UK AIP at AD-2-EGKA-1-7 states, ‘Variable circuits at discretion of ATC’. The controller was asked if the TB20 pilot should have been advised, on first contact, that the cct pattern was LH, or whether he had expected that pilots should expect a LH cct unless instructed otherwise. The controller indicated that pilots are often advised of the cct direction but thought that the TB20 had been advised that RW07 LH cct was in use during the earlier telephone conversation.

At 1328:26, a transmission from an ac at the holding point drew the controller’s attention to PA28 (5), which had lined up on RW07 and the controller instructed PA28 (3), on final approach, to go around and then asked the student pilot of PA28 (5), “..why are you on the Runway?” The student pilot of PA28 (5) responded, “..I heard..your instructions to line up..or I mistake.” It was noted that the controller used non-standard phraseology, advising the student pilot of the mistake. The controller initially instructed the pilot to vacate but then amended the instruction and gave clearance to take off. [The controller reported this as a Runway Incursion (MOR201114434), which has been investigated by the CAA.]

The pilot of PA28 (4) reported overhead and was cleared to descend on the deadside. The pilot of DA40 (B) reported at the tunnels [2nm NE of the A/D] and was instructed to report downwind. The Chipmunk pilot reported L base visual with the Stampe which was turning final and cleared to land. An ac was instructed to cross RW02 to holding point ALPHA 1 for RW07. A C152 pilot then called inbound from the NE requesting RW13. The C152 pilot was instructed to route to Steyning and to expect L base RW13. The C172 pilot reported at Worthing Pier and was instructed to maintain 1600ft for a straight-in approach.

At 1330:32, the TB20 pilot reported, “overhead now sir.” The controller instructed the pilot, “[TB20 C/S] descend deadside and report downwind 07 lefthand at circuit height 11 hundred feet.” The pilot acknowledged, “er ..descend deadside and say..circuit height again please” and the controller replied, “1 thousand 1 hundred feet,” which the pilot acknowledged.

[At 1330:40, radar recordings show the TB20, just N of the A/D tracking E and indicating 2000ft (1013hPa), with the DA40 approaching from the SE, tracking NW, indicating 1900ft (1013hPa), in the TB20’s 2 o’clock position at a range of 0.7nm.]

At 1330:48 the DA40 pilot reported, “..overhead w-er 2 thousand feet.” The Stampe had landed and its pilot was instructed to vacate R. The controller then replied to the DA40 pilot, “[DA40 C/S] hold overhead I’ll call you for descent in about another 2 minutes.”

[At 1330:53, radar recordings show the two ac 0.3nm NE of the A/D with both ac indicating 1900ft (1013hPa) - about 1990ft Shoreham QNH (1016hPa). The contacts of the two ac merge in azimuth. The DA40 was steadying on a N'y heading as the TB20 was crossing from L - R in a R turn through SE.]

At 1331:02, the DA40 pilot reported, "[DA40 C/S] *near miss.*"

There were two broken transmissions and then the Chipmunk was cleared to land. The pilot of PA28 (3) which had gone around because of the runway incursion reported downwind and was cleared to final No 3 following PA28 (4) and the C172 making a straight-in approach. The C172 pilot was instructed to continue No 2.

There were then two other crossed transmissions, "*.....hundred feet.*" and "*.....near miss in the overhead.*"

At 1331:35, the DA40 pilot reported "*????? ???? ???? near miss in the overhead.*"

The controller responded to the broken transmission, "[DA40 (B)] *if that's you d- er passing the tunnels report downwind at 16 hundred feet.*" The pilot of DA40 (B) reported downwind and was instructed to be No 4 following PA28 (3) ahead.

The pilot of PA28 (3) then called downwind and became No 4 following DA40 (B). The C172 reported at 1 mile and was instructed to continue. The pilot of another ac called and the controller then gave the C172 pilot landing clearance.

At 1332:34, there was an exchange of RT communication between the DA40 pilot and the controller:

DA40 ???? ???? ???? ???? descend deadside.

ATC [DA40 C/S] now descend deadside and report downwind.

DA40 Report downwind er we'd like to report a near miss in the overhead a green cessna.

ATC With a green cessna.

DA40 Yeah crossing I I was crossing overhead and he was coming directly towards me.

ATC I don't know of any green Cessna on my frequency or a Cessna going through the overhead that's unknown to me T- what level was he.

DA40 Er he was two thousand feet er on the sa-er on the opposing heading to me erm probably missed by about 50 feet if that.

ATC Is that vertically or laterally.

DA40 Lateral.

ATC Roger.

DA40 I have the green Cessna on my lefthand side now erm.

At 1333:31, the TB20 pilot responded, "*..that was [TB20 C/S]..yeah we..we're turning right to descend on the deadside and..we got very close.*"

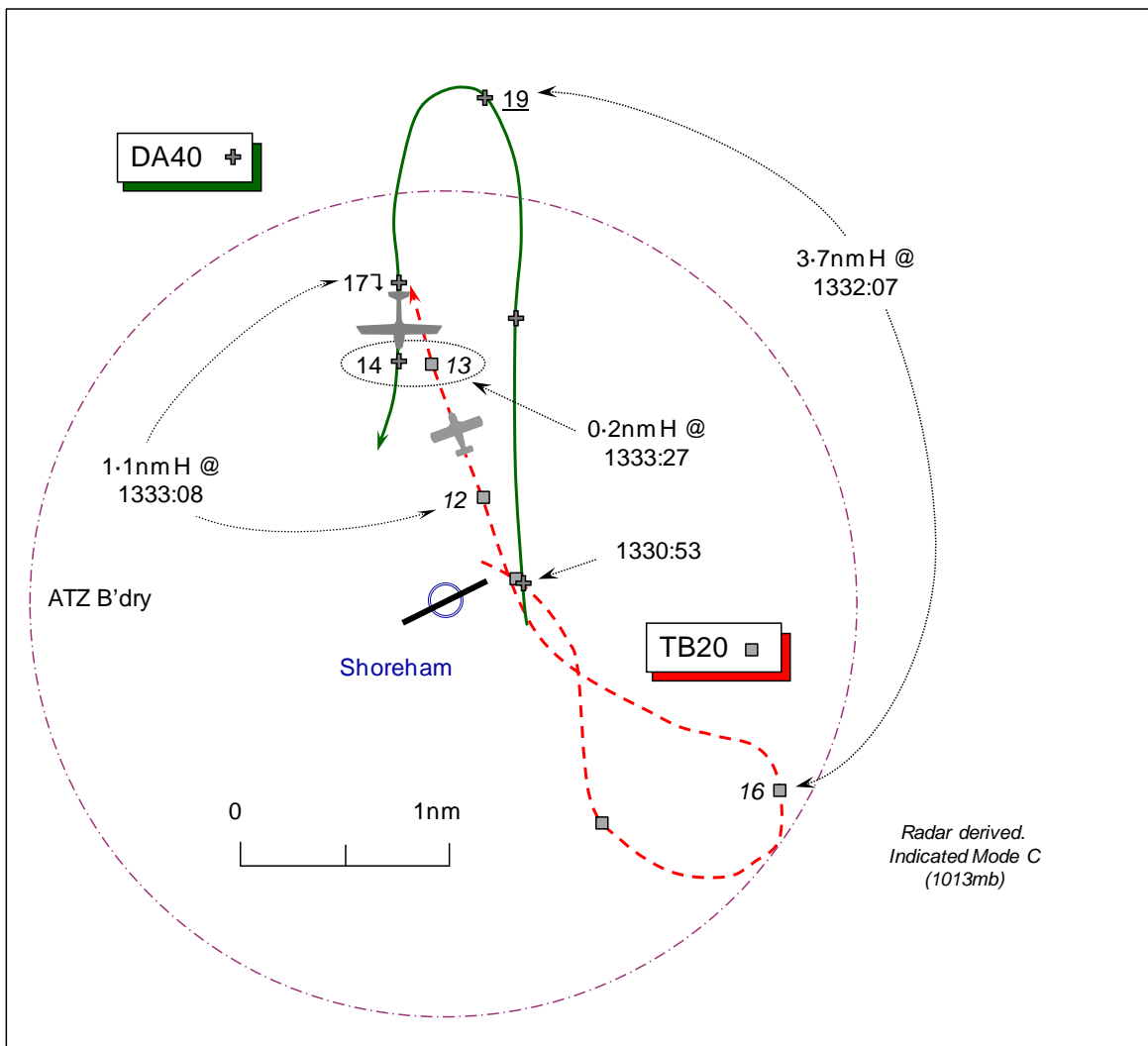


Fig 2

[UKAB Note (2): After the Airprox had occurred at 1330:53, both ac opened from the A/D overhead as illustrated at Fig 2. The two ac then turn toward the A/D and converge on broadly reciprocal headings to a range of 1.1nm at 1333:08; the TB20 indicating level at 1200ft Mode C as the DA40 descends through 1700ft Mode C. The two ac pass for the second time - port-to-port - about 1.1nm N of the A/D, the TB20 indicating 1300ft, 100ft below the DA40 that is shown descending through 1400ft Mode C.]

The controller then transmitted to an outbound ac on the Apron. The pilot of PA28 (3) called final and was instructed to continue. Another station was asked to say again. The C152 pilot reported at Steyning and was instructed to hold for a while.

At 1334:25, there was a broken transmission followed by the TB20 reporting downwind. The controller instructed the TB20 pilot, "number 4 following a Cherokee out on base leg report final". The pilot replied, "er number 2 and report final [TB20 C/S]". The controller responded, "Number 4." PA28(3) then called final and was given a land after following the C172.

The controller indicated that it was not possible to obtain a relief immediately after the incident and he continued working operationally until the normal changeover.

Shoreham MATS Pt 2, Section 10, Chapter 1, Page 1, states:

'3. Combined (Bandboxed) Operations

3.1 Although it is desirable to operate two sectors (ADC and APP) it is not always possible due to availability of staff. It is possible to operate combined during the first and last two hours of the operational day when traffic levels are usually lowest.

3.2 The combined operation uses the callsign 'Shoreham Approach' or, if the ATCO is not APP rated, 'Shoreham Tower' on frequency 123.15 MHz unless otherwise NOTAMed.

3.3 The frequencies 123.15 and 125.4 are only usually cross-coupled when the operation is being changed from two sector to combined until all aircraft are using 123.15.'

After a previous Airprox on 24 September 2011 [Airprox 2011126], the ATSU considered that workload was a factor and issued a MATS Pt2, Supplementary Instruction 01/2011, which stated:

'This SI is to be read in conjunction with Shoreham MATS 2 and serves to remind all ATS staff of the need to regulate traffic as necessary in order to avoid a traffic overload situation. This may mean for example:

Saying no to circuits or landing circuit traffic.

No to IFR training traffic.

Holding traffic outside the ATZ, asking them to call in 10 minutes, etc.

Limiting the use of runways to ONE only and advising aircraft requesting other runways of the delay or unavailability of the runway at that time as per MATS 1.

Limiting helicopter training if this impacts in a negative way

Reducing the traffic as you need to subject to your experience levels, the weather, events etc.

The traffic situation at Shoreham is highly dynamic and the complexity depends on numerous factors such as weather, the number of students involved, the mix of slow and fast traffic, etc. As such it is not appropriate to lay down a fixed number of aircraft to be worked at any one time. ATCOs and ATSAs should use their judgement, taking into consideration both present and future situations as far as practicable.'

The controller indicated that traffic levels started as light, increasing to medium but did not consider that it was necessary to introduce traffic management measures. However, the controller admitted that RT recordings showed that traffic levels prior to the Airprox gradually increased and resulted in a 'high' workload. The controller was operating a combined Aerodrome and Approach position and was unable to split the position because no staff were available.

The controller was unable to explain why he had not passed TI to either ac. When questioned about the content and method of passing TI, the controller indicated that he always passed pertinent traffic and local pilots had often complained when given too much TI. The controller was asked if he had considered the heavy RT loading to be a factor for the absence of TI. The controller indicated that it may have been, but thought at the time that the TB20 had routed towards Steyning and was approaching from the N. The controller recognised that whichever direction the TB20 was approaching from, TI should have been passed. The controller was asked about the use of non-standard RT phraseology and confirmed that standard RT phraseology should always be used.

The controller had cleared both the TB20 and DA40 to join overhead, but did not pass TI to either pilot about each other, or regarding the cct pattern. The Manual of Air Traffic Services (MATS) Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ;

b) aircraft taking-off and landing.'

MATS Pt 1 Section 3, Section 1, paragraphs 8.1 and 8.3, require that:

'Approach control shall retain all arriving VFR flights under its jurisdiction until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome control.'

Approach control must ensure that VFR flights are transferred in sufficient time for Aerodrome control to pass additional information in respect of local traffic.'

Additionally MATS Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Clearance to enter a traffic circuit is issued when an aircraft is still some distance from the aerodrome to enable the pilot to conform with the traffic circuit, pending clearance to land. Information concerning landing direction or runway in use and any other necessary instructions are given at the same time so that the pilot may intelligently position himself in the traffic pattern.'

The DA40 pilot's written report indicated that the DA40 was heading 340° to position above the RW25 numbers to join overhead for the LH traffic pattern. The TB20 approached the airfield from the W and passed N of the airfield, then turned R towards the deadside against the flow of traffic. It is not clear why the TB20 did not arrange to cross to the SW of the A/D into a LH circular flow. The controller believed that the TB20 pilot had been briefed on the telephone earlier that RW07 with a LH cct was in use at Shoreham.

The controller was an experienced Shoreham controller and believed he was accustomed to handling such levels of traffic. The controller believed that traffic levels were medium. The high workload was a significant factor as indicated by: the number of movements; the high level of RT; crossed or broken transmissions; the controller's use of 'break' in continuous transmissions; and the minimal level of TI. The controller was operating a combined position and the ATIS was out of service. An excessive workload can result in a situation when an overworked controller may: have difficulty in maintaining situational awareness; overlook a developing unsafe situation; make errors of judgement; become confused or be unable to cope with a sudden increase in workload. Although the controller considered traffic levels were medium, ATSI considered that the workload had reached an excessive level to the point where the safety of ac under his control was, or could have been, compromised. The traffic levels at Shoreham are affected by weather, seasonal factors, weekends, training and instrument training requirements, runway in use and helicopter operations. Forward planning is essential in identifying busy periods and determining the optimum traffic management measures, rather than reacting to circumstances, when it may be too late.

Notwithstanding the fact that the controller did not pass TI, both pilots were aware that the cct was busy. It is not clear why the pilots involved did not see each other's ac. CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking.'

The Rules of the Air Regulations (2007), Section 4, General Flight Rules, states:

'Avoiding aerial collisions

Rule 8 (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.

Converging

Rule 9 (3).....when two aircraft are converging in the air at approximately the same altitude, the aircraft which has the other on its right shall give way.'

The controller was responsible for issuing information and instructions to ac under his control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between ac flying in, and in the vicinity of, the ATZ. The DA40 and TB20 pilots were instructed to join overhead the airfield at 2000ft, but the controller did not provide TI that would have aided the situational awareness of each pilot, thereby assisting them in acquiring an earlier visual sighting of each other's ac.

The following were considered to be contributory factors:

The controller was not aware and did not recognise that traffic levels were increasing to the point when traffic management measures were appropriate.

The passing of minimal TI was not sufficient in general terms, to aid the situational awareness of pilots in, or joining the cct.

The two ac approached the overhead with the DA40 positioning to join a LH traffic pattern, but the TB20 turned R against the flow of traffic.

Notwithstanding the absence of TI, the two pilots did not obtain a visual sighting of each other's ac until they were in close proximity.

ATSI Recommendations

It is recommended that the ATSU in consultation with SRG, review the levels of staffing and service provision, to ensure that Aerodrome and Approach control services can be provided from split positions when warranted.

It is recommended that the ATSU in consultation with SRG, ensure that the controller is suitably apprised of the issues raised by this Airprox.

It is recommended that the ATSU review the guidance for operational staff in predicting, managing and limiting traffic levels, with an emphasis on the human factors aspects of overloads, highlighting the need for early planning and preventative measures.

It is recommended that the ATSU remind controllers of the requirement to pass TI to arriving flights on initial contact regarding the general traffic situation, runway in use, cct direction and joining instructions, together with the number of ac in the cct. This should then be updated as ac approach the airfield in order to provide additional TI in respect of local traffic.

It is recommended that the ATSU remind controllers regarding the importance of ensuring that incomplete readbacks are corrected and that they use correct and precise standard phraseology in accordance with MATS Pt1, Appendix E, Page 2, Paragraph 1.1, which states:

'Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasised.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, together with reports from the air traffic controller involved and the appropriate ATC authority.

The ATSI report had reveals the extreme amount of traffic that the combined Shoreham ADC/APP controller was dealing with during the period leading up to this Airprox. It was apparent that his workload had increased markedly to an excessive level over the period immediately before the Airprox occurred and the Board agreed that the controller was indeed overloaded, although he had not recognised this himself at the time. The Board discussed the SI issued by the Unit following Airprox 2011126, which laid out various traffic management measures that could have been implemented to reduce the traffic flow to more manageable proportions, and it was unfortunate that the controller had not recognised beforehand that such action was indeed warranted. Controller Members understood that once traffic had reached an excessive level it was a very difficult situation to resolve alone and it was clear there was no additional controller available to assist him at this stage. It seemed to some Members that there were not enough controllers on watch at Shoreham to meet the requirements of the two operating positions of ADC and APP when it got very busy. In the Board's view, this excessively busy and complex traffic scenario had a direct impact on the controller's ability to perform his primary duties as the ADC. Here, the controller was responsible for issuing information and instructions to achieve a safe, orderly and expeditious flow of A/D traffic. After first instructing the DA40 pilot approaching from the E to join overhead the airfield at 2000ft and just over one minute later instructing the TB20 pilot from the W to also join overhead, the controller did not provide TI to either pilot about the other ac. This he was required to do, and it would have warned the pilots to look out for each other as they flew into the A/D overhead from opposite directions to join the pattern for RW07. Thus neither the TB20 pilot nor the DA40 had been provided with any TI to forewarn them to look out for the other ac, or indeed about other cct traffic. The Board agreed that the lack of TI to either pilot from the overloaded controller was the first part of the Cause.

Whilst operating on the same frequency, only the DA40 pilot could potentially have gleaned any indication from the RT alone that another ac was joining overhead at the same height when the TB20 pilot called joining about 2min afterwards. Conversely, the DA40 pilot had made no further transmissions until after the TB20 pilot reported overhead and was instructed by the controller to *"..descend deadside and report downwind 07 lefthand..."*, which the pilot acknowledged. About 16sec later the DA40 pilot gave the same report *"..overhead w-er 2 thousand feet"* and was instructed by the ADC to *"..hold overhead I'll call you for descent in about another 2 minutes."* These transmissions would have been the first indication to the TB20 pilot of any other ac in the immediate vicinity at his height but, possibly as a result of the rapidity and quantity of RT, it appeared that the other pilot's call had not registered with him. However, for the same reason it would have also made it difficult for the DA40 pilot to anticipate the appearance of the TB20 until he suddenly saw it flying directly towards him just left of the nose about 50-70ft away at the same height having turned R in the overhead. Members agreed that the TB20 did not arrange his join in the overhead well for the specified LH cct to RW07. By overflying the upwind end of the runway in a SE direction he was flying against the flow of ac positioning for an overhead join to RW07 LH. Members considered that he should either have arrived overhead the RW07 threshold ready to commence a LH descending turn on the deadside or offset the join further S allowing a L turn over the A/D. The Board agreed that the second part of the Cause was that the TB20 pilot did not position appropriately to join RW07 LH.

With this level of traffic, the ADC had not spotted the TB20 overhead turning R and was unable to intervene before the conflict with the DA40 occurred. However, in the prevailing good weather in this 'see and avoid' environment both pilots should have been looking out for other ac. Without the benefit of prior warning, when the DA40 pilot first saw the TB20 he initiated a steep avoiding turn to the R as the TB20 passed 20ft away to port at the same height. Even so, it was difficult to determine if this had any appreciable affect on the eventual separation. Due to the limitations of the radar data update rate and the very close quarters geometry, the recording does not replicate the DA40 pilot's avoiding action turn, but it does reflect that both ac contacts merged at the same indicated level, confirming both pilots' reports that vertical and horizontal separation was minimal. Also unaware that

another ac was approaching the overhead, by the time the TB20 pilot saw the DA40 pass 'very close' to port, it was too late to take any avoiding action. In the Board's view, neither pilot had seen the other's ac in time to take to action that might affect the outcome and Members agreed the final part of the Cause was effectively, non-sightings by both pilots. Moreover, this was a very close quarters encounter indeed and with little further debate Members agreed unanimously that an actual Risk of collision had existed in these circumstances.

Following their assessment of this incident, the Board discussed the series of Airprox that had occurred at Shoreham recently. The ATSI Advisor briefed Members on the recommendations made to address the staffing levels at Shoreham and that ATC manning is being closely monitored by CAA SRG, especially the Unit's capacity to split the combined ADC/APP positions when appropriate. Also central to the Members' concerns was the intensity and the complexity of the traffic scenarios revealed by the investigation of these Airprox; specifically the size of the A/D pattern with variable ccts L and R, coupled with the diversity of joins flown by pilots at Shoreham and all set against a background of flying training with a great diversity of experience amongst the GA pilots who operate at this busy A/D. Whilst Members were keen to translate their concern into action, to ensure that the Board was informed of action already in hand the SRG Standards and Policy Advisor undertook to brief the Chairman on the current status of work undertaken by ATSD Southern Region relating to Shoreham. Pilot Members were also concerned, in general terms, at the manner in which visual ccts were being flown at other GA A/Ds as revealed by recent Airprox. With a view to engendering better flying practice, the GA pilot Member also undertook to publish some advice about cct flying in popular GA magazines.

PART C: ASSESSMENT OF CAUSE AND RISK

- Cause:
1. The overloaded controller did not pass TI to either pilot.
 2. The TB20 pilot did not position appropriately to join RW07 LH.
 3. Effectively, non-sightings by both pilots.

Degree of Risk: A.