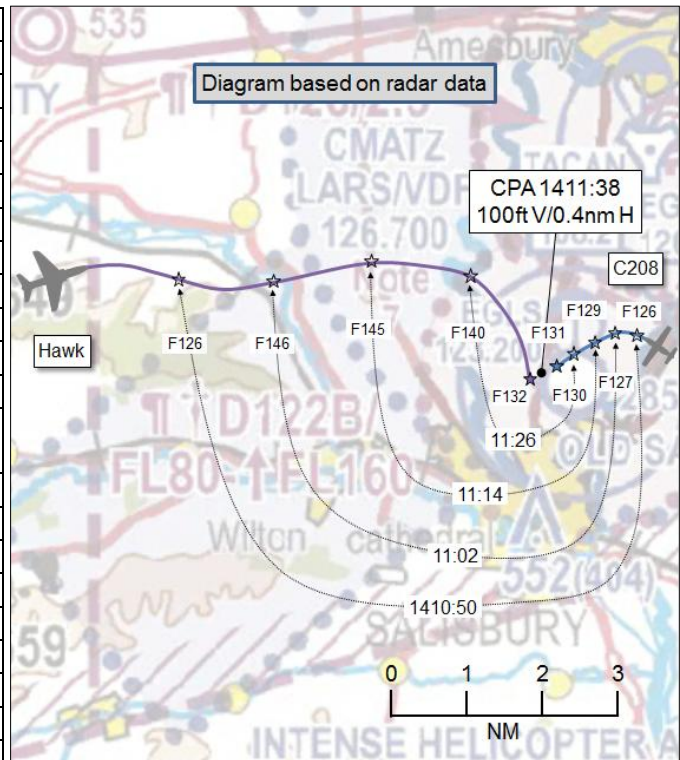


AIRPROX REPORT No 2017198

Date: 04 Aug 2017 Time: 1412Z Position: 5106N 00148W Location: Overhead Old Sarum aerodrome

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	C208	Hawk T1
Operator	Civ Comm	MoD ATEC
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	IFR
Service	Basic	Traffic
Provider	Boscombe Zone	Boscombe Radar
Altitude/FL	FL131	FL132
Transponder	A, C, S	A, C, S
Reported		
Colours	Blue/white	Black
Lighting	Strobes, nav, taxi	Anti-col, landing taxi
Conditions	VMC	NK
Visibility	10km	NK
Altitude/FL	FL130	NK
Altimeter	SPS	NK
Heading	240°	NK
Speed	110kt	NK
ACAS/TAS	Not fitted	Not fitted
Separation		
Reported	0ft V/0.5nm H	Not seen
Recorded	200ft V/0.4nm H	



THE C208 PILOT reports conducting a parachute dropping sortie from Old Sarum aerodrome. Before take-off, he requested a climb to FL150 for para-drop overhead Old Sarum on Boscombe Zone frequency, and was cleared for the climb up to FL150. He called Boscombe Down again 2 mins before dropping with 'ready to drop in 2 minutes'. Boscombe Down responded with 'Roger' and no traffic was seen or reported. He had climbed to FL127 by about 9-10 mins after take-off when Boscombe Down advised 'Traffic 1 o'clock, FL140'. He looked in that direction and saw a black Hawk jet approaching, crossing his nose from right to left. As he reached FL130, the Hawk passed through his 12 o'clock position at the same level. The Hawk made a right turn, and he made a left turn and reported to Boscombe Down that the traffic was there and very close.

He assessed the risk of collision as 'High'.

THE HAWK PILOT reports he was the rear-seat non-handling pilot, conducting an IRT on the front-seat occupant. He was solely responsible for lookout with the front-seat occupant concentrating on instrument flying. Due to the elapsed time between the Airprox report request and the flight, he was unable to recall anything specific. However, conversely, he also did not recall anything specifically out of the ordinary. The flight profile ran as per a normal IRT profile and they were in contact with ATC throughout. Neither occupant recalled observing another aircraft in proximity, nor being notified by ATC of another aircraft.

THE BOSCOMBE ZONE/LARS CONTROLLER reports they were unaware at the time that an Airprox had occurred and were notified 3 weeks after the event. The C208 pilot had departed Old Sarum and was climbing to the west prior to commencing a paradrop. The controller had observed a Hawk transiting eastbound, to the north of the C208, which was being worked by the Boscombe Radar controller. She knew the Hawk pilot had requested a TACAN approach so was expecting him to continue on his track toward the Boscombe overhead. On that track she did not expect it to pass

close to the C208. The Hawk pilot then unexpectedly turned south towards the C208. As soon as she noticed this the controller called the traffic. The Hawk was at FL140 at the time, and she thought the C208 was climbing towards FL130. Shortly after she called the traffic, the Hawk Mode C dropped off radar; when it reappeared it showed FL130. The C208 was also around FL130 but, by this time, the Hawk was to the west and transiting away. The Zone controller confirmed with the Radar controller that the Hawk would be remaining to the west, and the C208 pilot went on to complete his drop.

She perceived the severity of the incident as 'Low'.

THE BOSCOMBE RADAR CONTROLLER reports she was controlling a Hawk in the Boscombe Down (BDN) TRA in the block FL50-FL240. At approximately 13:50L, the Hawk pilot requested a TACAN approach to BDN. As far as she could recall, the Hawk was at approximately FL140 and the C208 was 6-7nm to the southwest, within a few hundred feet. She passed Traffic Information to the Hawk, who acknowledged and confirmed he was inbound for the TACAN. The Hawk was on 'own navigation' and she instructed the pilot to fly not below FL50 initially. She passed Traffic Information on the C208 to the Hawk pilot again, who acknowledged. She was then informed by the LARS controller that the C208 pilot was visual with the Hawk and passed that information to the Hawk pilot. The Zone controller noted that, due to the incident occurring some 3 weeks previously, she unfortunately could not recall specific details. An Airprox was not reported on frequency and therefore no report was submitted at the time.

THE BOSCOMBE SUPERVISOR reports he did not witness the C208 and Hawk fly into proximity because the Unit work levels were high to medium at the time and his attention was focused elsewhere. Tapes were not impounded or the Unit Cdr informed at the time of the incident because no action was believed to be required. As Supervisor, he was informed by Zone that the C208 had reported a fast-jet get close to his proximity. Shortly afterwards, he received a phone call from the operator at Old Sarum explaining that his para-dropping aircraft had come close to a fast jet. The Supervisor explained that Traffic Information had been passed to both pilots. The call did not lead him to believe there were any major concerns. He expressed that if the pilot wished to file anything on landing then to let Boscombe know.

Factual Background

The weather at Boscombe Down was recorded as follows:

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METAR EGDM 041350Z 27013KT 9999 SCT035 BKN060 19/11 Q1012 BLU NOSIG=
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Analysis and Investigation

Military ATM

An Airprox occurred on 4 Aug 17 at approximately 1412UTC, 10nm southwest of Boscombe Down, between a C208 and a Hawk. The C208 pilot was on frequency with Boscombe LARS while conducting para-dropping at Old Sarum; the Hawk pilot was in receipt of a Traffic Service from Boscombe Radar while positioning for the 'HI TAC Rwy 23' TACAN approach.

Figures 1-6 show the positions of the C208 and Hawk at relevant times in the lead-up to and during the Airprox. The screen shots are taken from a replay using the Pease Pottage radar, which is not utilised by Boscombe Down ATC and therefore is not representative of the picture available to the Boscombe controllers.

At 1409:17 (Figure 1), the Boscombe Radar controller passed Traffic Information to the Hawk pilot on traffic 5nm east, indicating FL50. At the same time, the C208 pilot reported 2 mins to drop at Old Sarum.

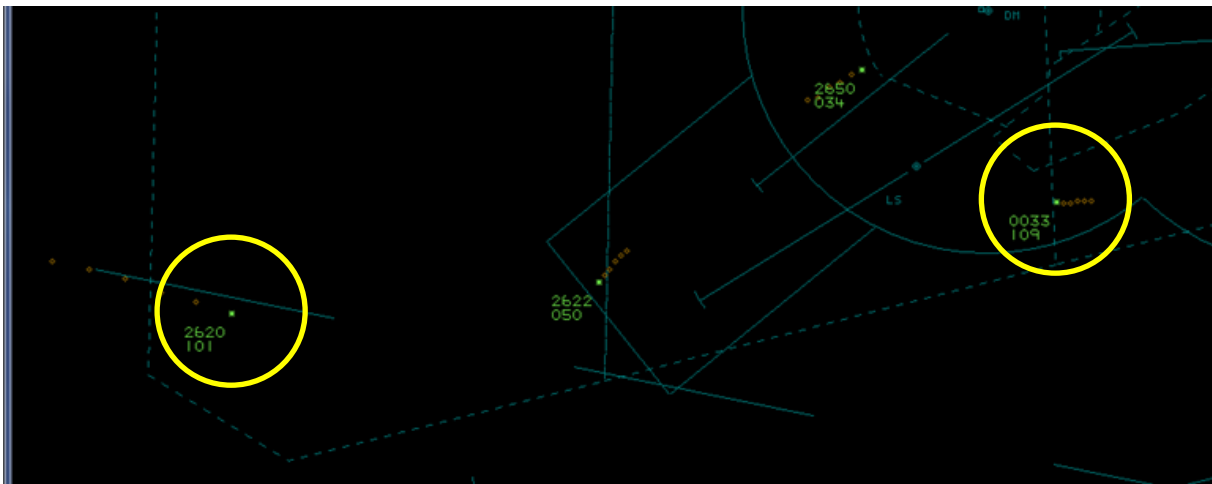


Figure 1: Geometry at 1409:17 (C208 0033; Hawk 2620)

At 1409:59 (Figure 2), the Hawk pilot stated that he would be ready for recovery in one minute, having been told that Netheravon traffic was holding on the ground to facilitate his TACAN approach.

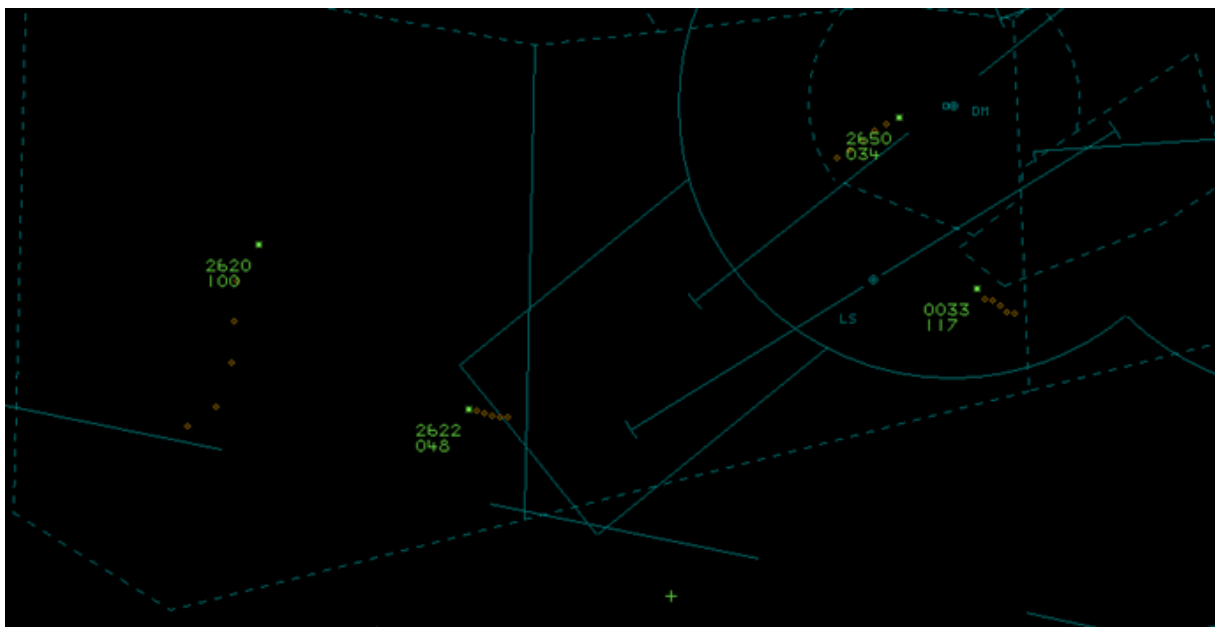


Figure 2: Geometry at 1409:59 (C208 0033; Hawk 2620)

At 1410:39 (Figure 3), the Hawk pilot stated that he was still one minute to recovery.

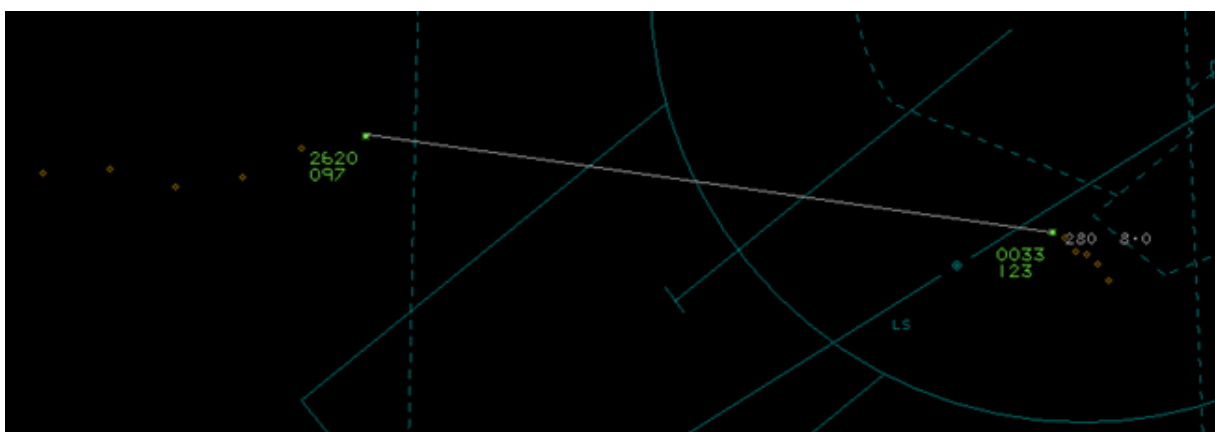


Figure 3: Geometry at 1410:39 (C208 0033; Hawk 2620)

At 1411:09 (Figure 4), the Boscombe Radar Controller passed Traffic Information to the Hawk pilot on the C208 as “traffic southeast, 3nm, manoeuvring, FL130 climbing, para-dropper Old Sarum”. The Hawk pilot acknowledged but did not say whether he was visual with the traffic.

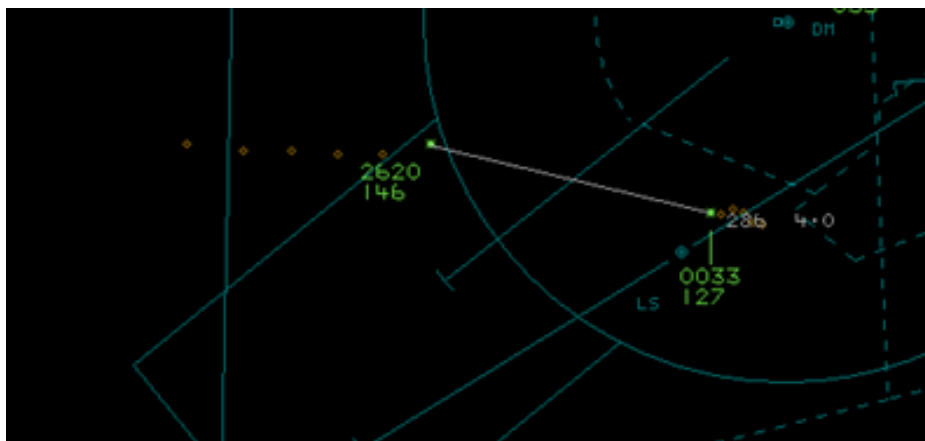


Figure 4: Geometry at 1411:09 (C208 0033; Hawk 2620)

At 1411:23 (Figure 5), the Boscombe Zone/LARS Controller passed Traffic Information to the C208 pilot as “traffic north, half a mile, manoeuvring, indicating FL140, Hawk”. The C208 pilot reported visual with the Hawk. At the same time, the Boscombe Radar Controller passed Traffic Information to the Hawk pilot as “para now south east, err 1nm, FL130 Climbing”. The Hawk pilot responded that they were complete in that area and would head west for a TACAN recovery, but did not call visual with the C208.

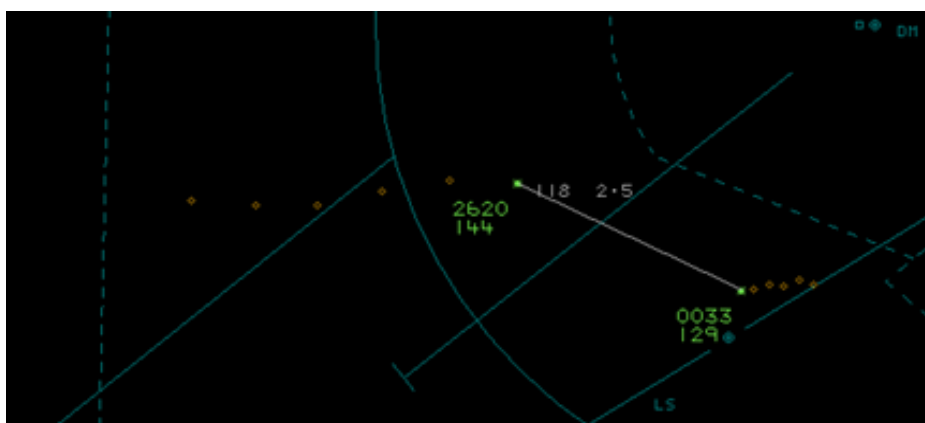


Figure 5: Geometry at 1411:23 (C208 0033; Hawk 2620)

At 1411:37 (Figure 6), the two aircraft were at CPA, with 0.4nm lateral separation and 200ft vertical separation. One sweep later, the Hawk was at FL130 and the C208 at FL132 with a lateral separation of 0.8nm

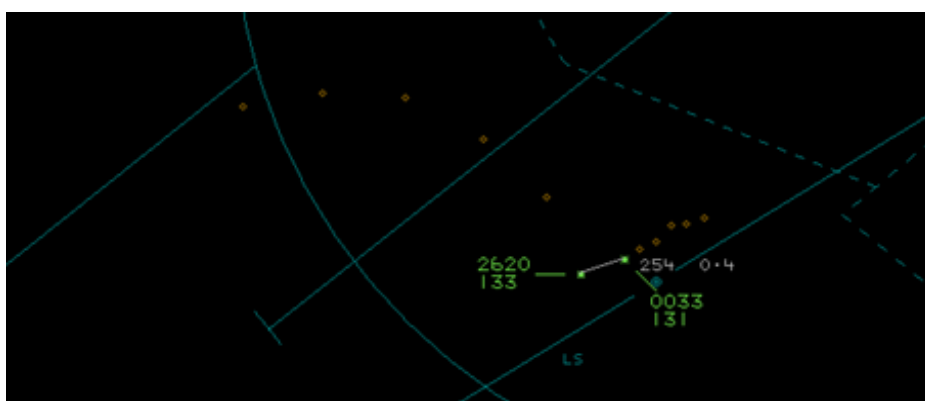


Figure 6: Geometry at 1411:37 (C208 0033; Hawk 2620)

The standard procedure for control of para-dropping aircraft operating at Old Sarum is detailed in a Letter of Agreement (LoA) between Boscombe Down ATC and the para-drop operator. Although the LoA states that the para-drop pilot is to report 5 mins to drop, the controllers routinely ask for a call at one min to drop as that is a better time to assess the local traffic situation that might prevent the drop. In addition, the LoA states that the para-dropping aircraft can be provided with any UK FIS, but controllers generally apply a Basic Service unless an alternative request is made. The Boscombe Zone/LARS Controller then passes Traffic Information to colleagues for increased situational awareness of the activity, enabling them to factor it into their own plans. In this case, there was no agreement of a type of service on frequency, but it is believed that the Boscombe Zone/LARS Controller was applying a Basic Service.

The Boscombe Zone/LARS Controller observed the Hawk in transit towards the C208 and was aware that the Hawk was carrying out a TACAN approach. She anticipated that the Hawk's track would be the standard profile, via the overhead and at 3000ft, and would therefore not affect the para-dropping activity. When the Hawk, still operating at approximately FL140, turned onto a more southerly track towards the C208, the Boscombe Zone/LARS Controller passed Traffic Information to the C208 pilot, who was then able to visually acquire the Hawk. CAP 774 states that a warning shall be issued to the pilot if there is a definite risk of collision, therefore the Zone Controller fulfilled their responsibilities in providing a Basic Service to the C208 pilot.

The Boscombe Radar Controller liaised with Netheravon to deconflict the Hawk's TACAN approach. Traffic Information was passed to the Hawk pilot on separate traffic in transit at FL50, due to it being at the bottom of his operating block, followed by an initial Traffic Information call on the C208. This call was slightly late, as the C208 was 4nm away at the time (TI stated 3nm) and CAP 774 details that controllers shall aim to pass Traffic Information by 5nm, if traffic will pass within 3nm, in order to give the pilot sufficient time to meet his collision avoidance responsibilities. When the Hawk pilot reported complete with general handling and routing to the west for a TACAN approach to RW23, his choice of right hand turn, coupled with descent, routed the aircraft towards the C208. Further Traffic Information was passed to the Hawk pilot on the C208, though at no time did he report visual with the C208. The Hawk pilot was under own navigation throughout.

UKAB Secretariat

The C208 and Hawk pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right² notwithstanding their responsibility for collision avoidance. If the incident geometry is considered as converging then the C208 pilot was required to give way to the Hawk³.

The C208 pilot submitted his Airprox report just over 2 weeks after the event. Consequently, the other parties involved could not be notified earlier. The front page diagram was derived from Swanwick multilateration radar and displays slightly different parameters at CPA from those shown in the Military ATM report.

Comments

HQ Air Command

The fact that this Airprox was not formally declared as an Airprox on the in-use frequency at the time has unfortunately hampered investigative efforts as some 3 weeks elapsed before the Hawk

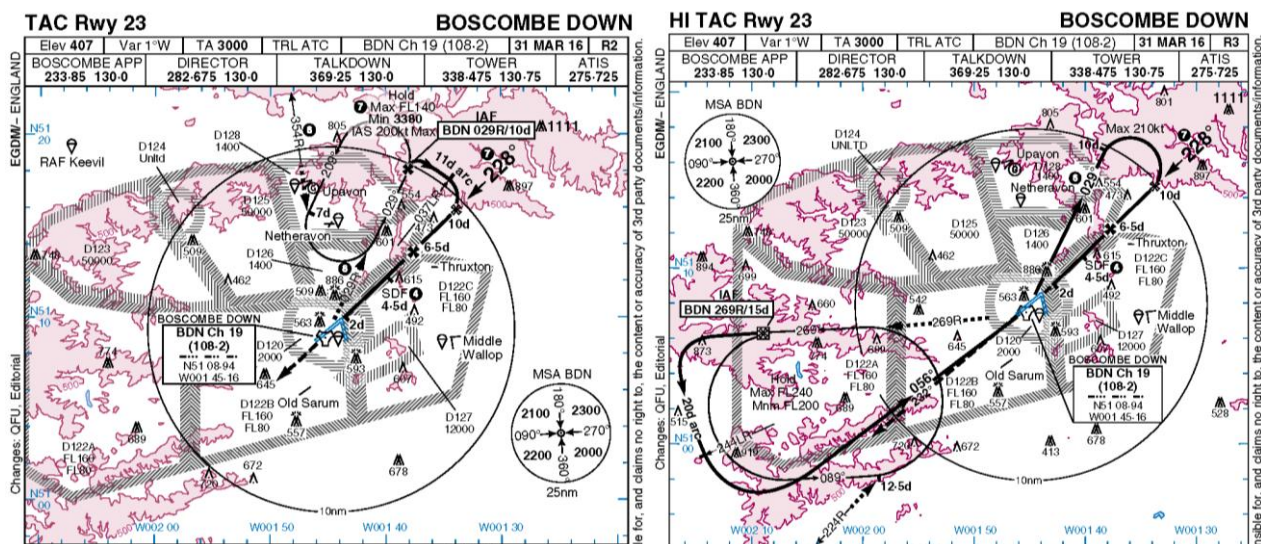
¹ SERA.3205 Proximity.

² SERA.3210 Right-of-way (c)(1) Approaching head-on.

³ SERA.3210 Right-of-way (c)(2) Converging.

pilot and Boscombe Down controllers were informed; thus, controller and pilot recollection of the event was limited.

Although the Hawk crew had pre-briefed the possibility of carrying out a HI TAC procedure during this sortie (due to activity at Netheravon) the intention as briefed to ATC was to conduct the 'more usual' TACAN approach to RW23 which, at the time, included a holding pattern through the Netheravon overhead. Thus, the controller had arranged with Netheravon to keep an aircraft on the ground to facilitate this.



When the Hawk pilot stated that he was ready to recover via the TACAN approach the controller expected him to home to the Boscombe Down overhead but the Hawk pilot then turned right, towards the climbing Cessna, in order to increase track miles to lose height in a controlled manner. This then led to separation being eroded and necessitated issuing Traffic Information to both aircraft at a reduced range, albeit the Hawk pilot (under a Traffic Service) had already received Traffic Information at a greater range. With neither aircraft fitted with ACAS this barrier was not available. Furthermore, the Hawk pilot was conducting an Instrument Rating Test and so his lookout would have been markedly reduced (although this is mitigated by increased lookout from the examiner in the rear seat). It seems that the Hawk crew simply had not assimilated the position of the Cessna from the Traffic Information calls provided by ATC. This would not be unusual in a high workload situation (the pilot under examination and the examiner both required to devote a high degree of attention to the accuracy of the instrument flying) and so, without the mental model that the airspace into which he intended to turn was occupied by the Cessna and without any on-board warning, the Hawk pilot unwittingly eroded separation between the 2 aircraft.

Summary

An Airprox was reported when a C208 and a Hawk T1 flew into proximity at 1412 on Friday 4th August 2017. Both pilots were operating in VMC, the C208 pilot under VFR in effect in receipt of a Basic Service from Boscombe Zone and the Hawk pilot under IFR in receipt of a Traffic Service from Boscombe Radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, 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 first considered the controllers' actions and noted that the Radar controller had passed Traffic Information to the Hawk crew slightly late (required by 5nm, and stated as 3nm, but actually at

4nm) but had passed Traffic Information again at 1nm as the Hawk pilot had unexpectedly started a descending right turn towards the C208. However, it was apparent that neither pilot in the Hawk had assimilated the C208 Traffic Information, despite acknowledging it and, crucially, had not assimilated that the C208 was passing FL130 in a climb. The Board considered that this lack of assimilation was contributory to the Airprox.

For their part, the Boscombe Zone/LARS controller was working under the assumption that the Hawk would fly towards the Boscombe overhead and consequently did not consider it a factor to the C208, which was effectively under a Basic Service. As the Hawk pilot was inbound eastwards towards the airfield he then informed the controller that he was 'complete in the area and would head out west for a TACAN recovery'. The controller acknowledged this and cleared the Hawk pilot to descend not below FL50. However, the direction of turn onto west was not given by the Hawk pilot and, when he unexpectedly turned right towards the C208, she passed Traffic Information to the C208 pilot (although, by the nature of the unfolding situation, at a late stage). The C208 pilot then saw the approaching Hawk, albeit very shortly before CPA. Members discussed whether the C208 pilot should have given way to the Hawk approaching from his right, but agreed that, in this circumstance, the dynamics of the situation meant that it was not practical for him to do so given the relative speed of the Hawk as it turned.

Given that Traffic Information had been passed to them, and acknowledged, the Board considered that the cause of the Airprox had been that the Hawk crew had turned into conflict with the C208. The fact that the Traffic Information was not assimilated was a timely reminder for pilots to ensure that they guarded against becoming task-focused to the extent that vital information was overlooked. Finally, members considered the risk and discussed the closing geometry, speed and separation at CPA. They concluded that these factors, combined with the lack of visual acquisition by either Hawk pilot and the late visual acquisition by the C208 pilot, had resulted in a situation where safety had been much reduced below the norm.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

Cause: The Hawk crew turned into conflict with the C208.

Contributory Factors: The Hawk crew did not assimilate the Traffic Information concerning the C208.

Degree of Risk: B.

Safety Barrier Assessment⁴

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

ANSP:

Situational Awareness and Action were assessed as **partially effective** because the unexpected turn by the Hawk pilot meant that the Boscombe Zone/LARS controller was only able to pass late Traffic Information to the C208 pilot.

Flight Crew:

Tactical Planning was assessed as **partially effective** because the Hawk pilot did not communicate his intention to the Boscombe controller to turn right as he set himself up for the TACAN procedure.

⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Situational Awareness and Action were assessed as **ineffective** because the Hawk crew did not assimilate the proximity of the C208 and hence did not take action on the basis of the Traffic Information passed to them.

See and Avoid were assessed as **partially effective** because the Hawk crew did not see the C208 and the C208 pilot saw the Hawk at a very late stage, when his options for avoiding action were limited, given the closing speed of the Hawk.

