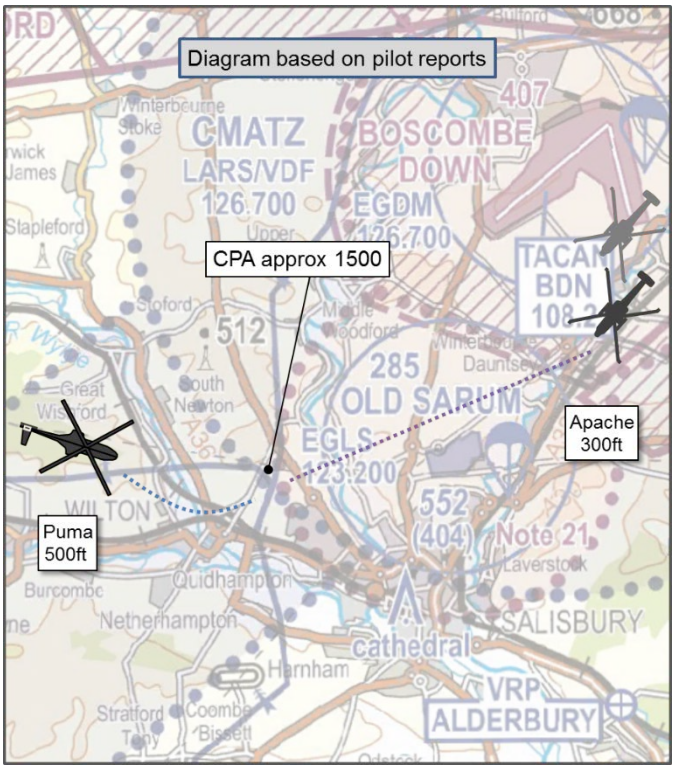
AIRPROX REPORT No 2017241

Date: 06 Oct 2017 Time: 1500Z Position: 5105N 00151W Location: Boscombe Down

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Puma	Apache
Operator	MoD ATEC	HQ AAC
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Boscombe ADC	Boscombe Zone
Altitude/FL		
Transponder	A, C, S	A, C, S
Reported		
Colours	Green	
Lighting	Position lights, Strobe	
Conditions	VMC	VMC
Visibility	10km	>10km
Altitude/FL	500ft	300ft
Altimeter	QFE (1012hPa)	QFE (1012hPa)
Heading	050°	SW
Speed	NK	110kt
ACAS/TAS	Not fitted	Unknown
Alert	N/A	Unknown
Separation		
Reported	200ft V/200m H	NK V/500m
Recorded	NK	



THE PUMA PILOT reports that he was recovering to Boscombe, and had requested an ILS against the stream, but ATC had refused due to traffic levels, so they continued to transit west discussing what to do in-cockpit. Another aircraft was recovering for a PAR, and so they decided to recover for a PAR to RW05. However, after a few manoeuvres ATC asked whether they really needed to recover for a PAR because their staffing levels were low (it had been mentioned at morning brief that ATC had a sickness bug going around and manning was tight). Although they needed the instrument approach for training, the other recovering aircraft needed the approach for currency, so they agreed to go VFR. They asked for a recovery via Wilton and proceeded to the VRP in a gradual descent, reaching Wilton at 500ft QFE. During this time, the traffic levels in the circuit were passed as '3 in'. He tried to contact App to tell them he was changing frequency but the frequency was busy so at Wilton, he changed to the Tower frequency and called to join for Southside. Just after passing Wilton, the LHS pilot said that there were two Apaches crossing approximately 200ft below in the opposite direction. The Apaches were transiting on the Grateley-Wilton transit route and would have been on the Zone frequency at or below 500ft QFE. Thinking they may have missed a call, they queried the Tower controller about whether they had been told about the traffic, they said they had not. The vertical separation occurred by chance, because the Apaches could have legitimately been co-altitude and there was a danger of head-on collision, they were unable to turn right due to the proximity of Old Sarum, so they reported the Airprox and continued Southside. He noted that the Wilton VRP/joining point had previously been highlighted through DASOR that there was a potential for aircraft to be on 3 different frequencies (Tower/App/Zone), more if a VHF only aircraft was involved. Whilst Boscombe ATC operate all 3 frequencies, it is reliant on controllers pushing out information, which in this case was difficult to achieve due to high traffic workload. Finally, he noted that this aircraft was not fitted with a TAS; had it been, the Apaches would have triggered a TA.

He assessed the risk of collision as 'Medium'.

THE APACHE PILOT reports that he was the patrol commander for a pair of Apaches tasked with supporting a role-demo on the Salisbury Plain Training Area. They were transiting along the Grateley-Wilton low-level route in line-astern formation. They had been cleared to transit the route not above 500ft. After they had diverged from the railway line, at Wilton, both crews identified an incoming rotary on their Fire Control Radar (which was in Air Surveillance mode) at a range of 6km, and very shortly afterwards the Puma was spotted visually. They were transiting at 300ft and biased to the right hand side of the low-level route, which provided lateral and vertical separation. After subsequently speaking to all members of the patrol, a group average estimated that the Puma came no closer than 500m and none of the patrol thought the safety of their aircraft was compromised. It did seem odd at the time that the Boscombe controller had not notified them about the opposing traffic, and given that they were lower than the Puma and against a backdrop, he could understand why it might have been a late spot by the Puma crew.

He assessed the risk of collision as 'None'.

THE BOSCOMBE ADC CONTROLLER reports that she was working a busy circuit, with radar traffic inbound and two Tutors departing. The Puma was pre-noted inbound for a radar recovery; however, the Tower was extremely short of manpower and busy, so instead the pilot was asked to carry out a visual recovery because the weather conditions were BLU. He agreed and the pre-note was changed to a VFR recovery via Wilton. When the pilot called for a visual join, he was instructed to join south side, given the QFE, and told about the visual circuit traffic. She then went back to controlling the circuit traffic. She had been told earlier about traffic on the Grateley-Wilton low-level route and, at that time had had no traffic to affect. The Puma pilot asked whether she had called the 2 Apaches on the low-level route, she replied that she had not, and he said he would be reporting an Airprox.

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

THE BOSCOMBE SUPERVISOR reports that he was in the VCR during a very busy period of flying. There were numerous aircraft in the visual circuit and a number of pre-notes for radar recoveries. Pre-noted inbound for radar recovery was a Merlin and Puma, an Alphajet was on PAR, and an RJ70 expected to recover very shortly. The App controller contacted him to ask whether they should hold off the helicopters for their recoveries, initially he said yes, because the visual circuit was so busy. There was limited manning in the Tower due to sickness and he had contacted the squadrons earlier that morning to ask them not to conduct IFR recoveries. Following a discussion on the RT, it transpired that the Merlin pilot needed to do a radar recovery, but the Puma pilot agreed to convert to a visual join via Wilton. The pilot came onto the Tower frequency to join southside via Wilton. He was given joining clearance and the current circuit state, but not passed information on the low-level route. The Puma pilot then queried whether he had been given Traffic Information on 2 Apaches transiting along the low-level route, to which the ADC responded 'negative'. The pilot then replied that he would be reporting an Airprox. Further discussion after the event revealed that Zone had passed Traffic Information on the low-level route to ADC a few minutes before the Puma joined, but an 'all-stations' broadcast had not been made on the Tower frequency because there was no traffic on the southside at that time. The Tower frequency had been very busy, with pilots transmitting at the same time and making different requests, which increased the workload of the ADC. In normal circumstances on being informed that the low-level route is active the ADC would broadcast this information; however, they are not usually informed of aircraft type; low-level route traffic is not normally included on joining clearance, but Traffic Information may be passed if required.

Factual Background

The weather at Boscombe Down was recorded as follows:

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METAR EGDM 061450Z 29006KT 9999 FEW040 BKN300 14/06 Q1027 BLU NOSIG=
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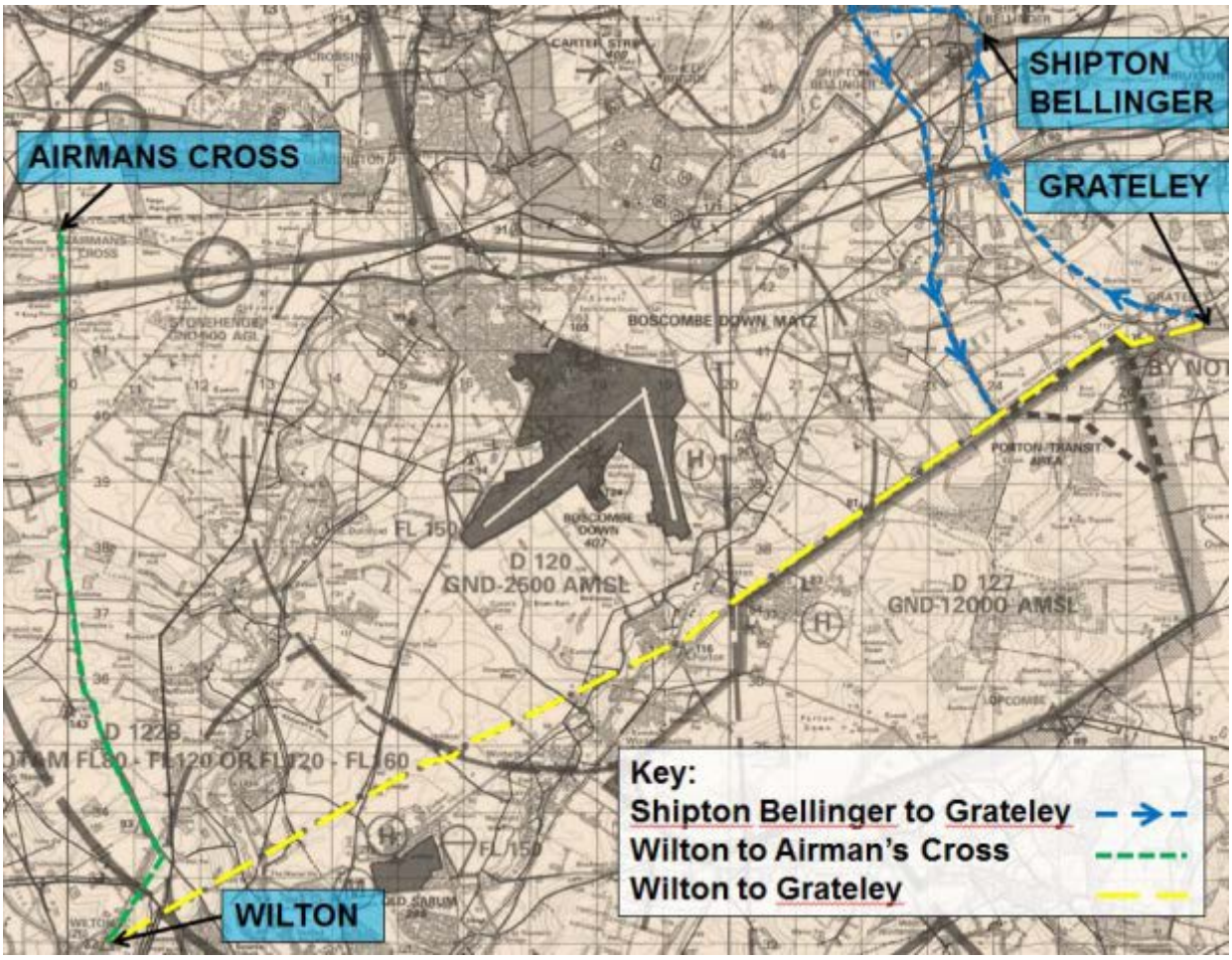
Aircraft following the Grateley to Wilton low-level procedure follow the route as shown below:



Analysis and Investigation

Military ATM

At MOD Boscombe Down, there is a low-level (LL) route procedure that primarily enables rotary-wing aircraft from Middle Wallop to transit through the Boscombe Down ATZ, avoiding D127, which is the shortest transit to the Salisbury Plain Danger Area. The LL route runs between Wilton and Grateley, following the railway line, with a top-height restriction of 500ft QFE. Aircraft in transit on the LL route receive a Basic Service from the Boscombe Zone Controller and aircraft inbound visually, via the LL route, to Boscombe Down receive a Basic Service from the Boscombe Approach Controller. There was no requirement for the Boscombe Zone and Approach Controllers to notify each other of traffic on or routing via the LL route; however, a requirement for the Zone and Approach Controllers to liaise regarding LL transits has now been introduced.

At the time of the Airprox there was a requirement for the Boscombe Zone Controller to inform the Boscombe ADC of the Apache traffic transiting the LL route, but it was then at the ADC's discretion whether to broadcast Traffic Information (TI) if deemed relevant, such as if there was traffic operating south-side of the airfield. As there was no relevant traffic when the Zone Controller notified the ADC, no broadcast was made, and due to high workload, the ADC did not assimilate that the LL transit traffic would then be relevant to the joining Puma.

Under a Basic Service, there is no requirement for the controller to pass TI to a pilot unless there is an identified risk of collision, and, on this day, both radar controllers had a high task-load due to the good weather conditions. In such circumstances, it is not reasonable to assume that a

controller will monitor Basic Service traffic or have the capacity to pass specific TI. Had the Approach Controller been made aware of the Apache traffic on the LL route, it would have been reasonable for him to inform the Puma pilot so as to prompt lookout. Similarly, the Zone Controller was not aware of the inbound Puma, but could have passed generic TI to the Apaches had he been made aware.

The Puma pilot did not notify the Boscombe Approach Controller that he was changing frequency to continue the visual approach with the Boscombe ADC. Had he done so, this may have prompted the Boscombe Approach controller to scan and pass TI prior to release.

The week after the incident, a Working Group was held at Boscombe Down in order to review LL route operations, with ATC and flying-squadron representatives present from both Boscombe Down and Middle Wallop. A Safety Assessment was initiated, which proposed possible changes to the procedure to improve safety. One proposed change has been implemented on a trial basis; the ADC pin board, an aide-memoire for the ADC, has been amended to include a box denoting LL route traffic, and there is now a requirement for the ADC to both broadcast all LL route transits, and notify any aircraft that subsequently become relevant i.e. aircraft joining or south side. This, in addition to the extra liaison between the Zone and Approach Controllers, will help to improve wider Situational Awareness within ATC, which can also then be passed on to relevant pilots.

UKAB Secretariat

The Puma and Apache pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[1]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[2].

Comments

HQ Air Command

This incident occurred during an extremely busy period at Boscombe Down. This particular Puma aircraft was not fitted with a CWS (though it is programmed for TAS embodiment), thus denying this barrier to the Puma crew. Additionally, although the Puma pilot had agreed a Traffic Service (TS) with the Approach controller, he had switched frequency to Tower – seemingly without informing the Approach controller – and so was no longer in receipt of a TS. As noted within the Military ATM report, had the Puma pilot announced that he was leaving the Approach frequency this may have prompted the Approach controller to scan ahead and possibly pass Traffic Information on the transiting Apache formation. That said, this low-level transit route is regularly used and traffic recovering visually to the southside at Boscombe Down should always consider the likelihood of traffic being on the low-level transit route. Once on the Tower frequency, and notwithstanding the high workload of the ADC, there was very little opportunity for the ADC to pass Traffic Information on the Apaches in a timely manner.

The Apache formation reports having contact on the Puma at 6km and becoming visual with the Puma shortly afterwards; however, with the Apaches and Puma being on different frequencies there was no opportunity for the Apache pilot to reassure the Puma pilot that he was visual. It is likely that the lack of contrast between the Apaches and the background hindered their visual acquisition by the Puma pilot.

The unit investigation has made several recommendations including a modification to the pin board (an *aide memoire*) used by the ADC to include an indication of when there is traffic on the low-level transit route. In addition, a working group has been formed and a safety assessment is being conducted to establish whether it is feasible to place aircraft on the low-level transit route on the Boscombe Down Tower frequency.

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on.

JHC

The pair of Apaches were following the low-level route in accordance with published procedures. Having identified the Puma, the Apache callsign elected to continue on the published route whilst ensuring safe separation as judged by the patrol commander; HQ JHC assess this was appropriate at the time. The lack of traffic information being passed by ATC to the crews about a potential conflict during a busy phase of flight appears to be the principle failed barrier - the crews would have expected accurate and timely traffic information when following a published transit route and when joining a busy airfield. HQ JHC note that ATC procedures required LL route aircraft and VFR joining traffic to be on different frequencies, yet the procedures allowed them to converge to a common VRP at potentially the same height; this increased the dependence on ATC relaying traffic information to maintain situational awareness – a barrier that will always be susceptible during high workload scenarios.

Summary

An Airprox was reported when a Puma and a pair of Apaches flew into proximity near Boscombe Down at 1500hrs on Friday 6th October 2017. Both pilots were operating under VFR in VMC, the Puma pilot in receipt of a Basic Service from Boscombe ADC and the Apache pilot in receipt of a Basic Service from Boscombe Zone.

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 first looked at the actions of the Puma pilot. He was joining the visual circuit through the Wilton VRP at 500ft QFE and had not expected to see the Apaches routing in the opposite direction. The Board noted that although the App frequency was busy, the pilot had autonomously switched frequencies from App to ADC and agreed with the HQ Air Command assessment that, in doing so, he had denied the App controller the opportunity to pass him Traffic Information prior to leaving the frequency. Not only would this have directed the App controller's attention to his position, it may also have prompted the controller to call the Apaches. Noting also that ATC were busy and had asked for pilots to avoid IFR approaches unless absolutely necessary, the Board wondered if the Puma pilot's initial call for an ILS against the stream may also have increased the controller's workload and distracted him through the need to then liaise with the supervisor. Although the ADC did not tell him about the Apaches on the low-level route once he had switched to the Tower frequency, some members with experience of flying at Boscombe Down opined that, as a station-based pilot joining VFR, he should be well aware that the LL route was frequently active and that Wilton was its exit point; knowing that there was a potential conflict, the Puma pilot might have been better placed by taking measures to deconflict himself until he could confirm either way, although his options were limited due to the proximity Old Sarum and the geography in the area. Members noted that this Puma was not fitted with a CWS, and the Board agreed with the pilot's comments that had it been fitted with one, he may well have received an electronic warning about the traffic; the Board were heartened to hear that TAS embodiment was programmed in future for the aircraft.

For their part, members noted that the Apache pilots were aware of the Puma, first on radar and then visually, from some 6km away. Despite not receiving Traffic Information themselves, they were clearly content with the situation and did not consider it to be an Airprox. Having ensured that they were below the maximum height for the LL route (and hence deconflicted from Boscombe traffic), the Board thought that there was little more that they could have done to influence events.

Turning to the ATC aspects, the Board noted that Boscombe ATC were busy, and that sickness had affected overall manning in the tower. However, noting that all relevant positions were appropriately manned with respect to this incident, the Board concluded that, other than imposing a degree of

pressure on ATC overall, the sickness issue was probably not specifically relevant to this event. Acknowledging that a call to App by the Puma pilot would have been beneficial before switching to Tower frequency, the key issue seemed to the Board to be that the Puma pilot had expected the ADC to provide him with Traffic Information on the Apaches on first contact. Members debated this at length, and noted that, at the time of the Airprox it was not a requirement for the ADC to call any traffic routing along the low-level route to aircraft joining, unless the controller deemed it necessary. The Board also wondered whether the ADC may have thought the Apaches had already been called to the Puma pilot by App, or may simply have been very busy and forgotten about the low-level route traffic. Notwithstanding the previous comment about station-based pilots anticipating the route being active, the Board were heartened to hear that Boscombe were changing their procedures to ensure that such Traffic Information was passed in future (which would be particularly relevant to non-station-based pilots), and that the ADC's *aide memoire* had been modified to include the presence of LL route traffic. Although noting that a working group had been formed to establish whether it was feasible to place aircraft on the low-level transit route on the ADC's frequency, controller members with Boscombe Down experience were mindful of the fact that the Boscombe ADC is an extremely complex and busy position, and they cautioned that adding an extra responsibility may well not be the best course of action. Ultimately, it was the fact that the LL route was in potential conflict with Boscombe Down southside traffic that was the issue, and the Board wondered if the working group might be better focused on how the transits might be achieved in a fundamentally different manner or routing.

Finally, the Board discussed the cause of the Airprox. A debate ensued about whether it had been the fact that the ADC had not given TI to the Puma pilot that had caused the Airprox, or whether it was for the Puma pilot to ensure that he was deconflicted from any potential LL route traffic given that he was conducting a VFR recovery and had yet to enter the MATZ/ATZ when the incident occurred. Given that the Apache pilots had seen the Puma early and were relatively unconcerned by the encounter, the Board agreed in the end that the Puma pilot's later sighting of the Apache's meant that the incident was probably best described as the Puma pilot being concerned by the proximity of the Apaches. In assessing the risk, the Board quickly agreed that because the Apaches were visual with the Puma from 6km with 200ft height separation, this was a Category C incident; although safety had been degraded, there had been no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Puma pilot was concerned by the proximity of the Apache formation.

Degree of Risk: C.

Safety Barrier Assessment[3]

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

ANSP:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because Boscombe Down Procedures at the time did not require the ADC controller to pass TI.

Situational Awareness and Action were assessed as **ineffective** because ATC collectively did not identify the conflict and therefore did not give TI to the Puma pilot.

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

Flight Crew:

Situational Awareness and Action were assessed as effective because the Apache pilots detected the Puma on radar and saw that there was no conflict despite the fact that situational awareness was not available for the Puma pilot.

Warning System Operation and Compliance were assessed as effective, although only the Apache pilots received a warning, and that from their radar.