

AIRPROX REPORT No 2010004

Date/Time: 12 Feb 0940

Position: 5113N 00200W
(SPTA - elev 488ft)

Airspace: SPTA DA Class: G
Reporting Ac Reported Ac

Type: DH3 UAV AH64

Operator: Army (RA) HQ AAC

Alt/FL: 300ft agl 850ft
(NK) (RPS)

Weather: VMC CLBC

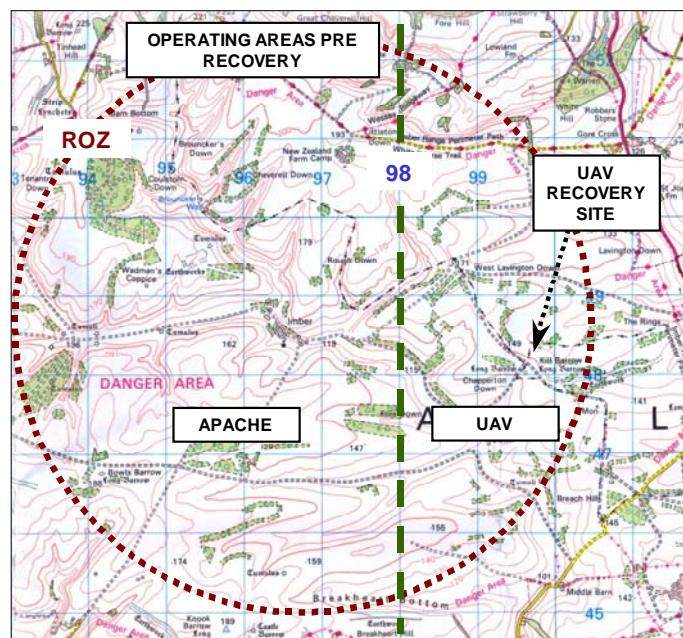
Visibility: 10km 4km

Reported Separation:

0ft V/300m H N/K

Recorded Separation:

Not Recorded



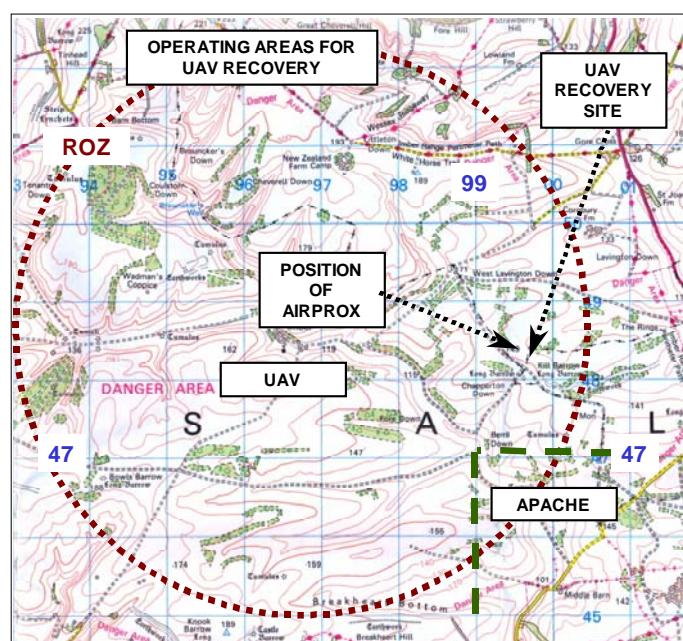
PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DH3 UAV PILOT reports that he was operating a small, non-SSR or TCAS equipped UAV in an exercise ROZ [Restricted Operating Zone], 2nm in radius from 0-1500ft amsl centred on 5114N 00203W (see diagram). Meanwhile an Apache was cleared to operate in the ROZ and was being deconflicted geographically by the Tactical Air Control Party (TACP). He understood that the Apache was cleared to operate W of the 98E 'line' and his UAV was to operate to the E.

The Tactical Commander (TAC) informed the TACP that the DH3 needed to recover due to low battery endurance, and it was planned to recover to a point at ST 997481 (see diagram); he also informed the TACP that a new de-confliction plan would have to be implemented. They agreed that the Apache would have to operate E of the 99E and S of the 47N and informed its pilot. The TACP asked the Apache pilot to confirm when he was S of the 47N deconfliction line; he replied that he was already to the S and they passed this on to the DH3 TAC.

The TAC then cleared the DH3 into the recovery pattern.

The Apache then moved to the N and the DH3 FSO (Flight Safety Officer) reported to TAC that it was breaching the deconfliction line. The TACP again asked the Apache pilot to confirm that he was S of the 47N, and he verified that he was. At this point the Apache was identified by the DH3 FSO to be at Grid ST 995479 [just under 1km N of the line and very close to the DH3 recovery point] at about 300ft agl (radar verified with Salisbury Air Ops). At this time the DH3 was in its landing pattern at 300ft agl, 300m from the Apache and on a collision course with it. The DH3 FSO instructed the UAV operator to initiate an immediate orbit to prevent collision and it was then commanded to fly to the NW, away from the Apache.



The Exercise Commander instructed the FAC to inform the Apache pilot to leave the ROZ asap and informed Salisbury Air Ops of the incident; he assessed the risk of collision as being high.

THE APACHE PILOT reports that he was flying an exercise sortie and was tasked to escort a Chinook into a Landing Zone for a simulated casualty extraction. They initially checked in with the TACP for clearance to enter the ROZ but were asked to contact another agency for subsequent tasking. They were told that a UAV was operating inside the ROZ and that it would be landed so that they could have sole use of the ROZ due to the low cloud-base. They then transferred back to the TACP to cover the pickup. About 5min later they again checked in with the TACP and were cleared into the ROZ but given holds [restrictions] of Northings and Eastings while the operators tried to land the UAV. Initially they were given an AMSL alt to fly but when he asked for the pressure setting he was told they "weren't working pressures" so they climbed to the max height they could and still maintain separation from the cloud; this was about 600-700ft agl and he assumed that the UAV was flying not above 500ft agl. They were held for approx 10min by the TACP while they tried to land the UAV and were then given clearance to route along a particular Easting where they would have freedom of movement to move closer to the landing zone.

It was at this point they were called up by the Commander who was based in Salisbury Air Ops and told to vacate the ROZ and call them on return to their base.

He did not see the DH3 at any time but was quite content that the TACP was keeping them laterally de-conflicted and that his height would have put him well above the UAV as it had entered its landing profile.

UKAB Note (1): A ROZ is defined in AJP 3.3.5(A) as:

'Restricted Operating Zone (ROZ). A ROZ is established in order to reserve airspace for specific activities in which the operations of one or more airspace users is restricted (e.g. refuelling orbits, terminal approach holding areas, landing/drop zones, etc.).

- a. A pre-planned ROZ will be published in the ACP [Airspace Co-ordination Plan].
- b. Requests for activation of ROZs are to be made to the parent/affiliated ACC.
- c. Activated ROZs will be published in the ACO.
- d. Unless defined in ACPs promulgation of such zones should include:
 - (1) Vertical and horizontal dimensions.
 - (2) Use.
 - (3) Times of activation.
 - (4) Controlling authority and frequencies (if applicable).
 - (5) Restrictions for other airspace users, e.g., WCS.'

UKAB Note (2): By delegation from the ASOC, the FAC controls a ROZ in that they approve ac entry/exit and can restrict air operations to deconflict ac therein by time or geographical sub-division. As with all Class G airspace, however, see and avoid is the principal means of collision avoidance (even for UAVs) unless the airspace is ceded exclusively to a single ac. In this case, the ROZ was established for UAV Ops but a high priority task requiring ROZ penetration took place during the period of a UAV flight.

UKAB Note (3): This incident took place during the final work-up exercise before the participating units deployed to an operational theatre. It was therefore specifically designed to be representative and challenging with some unorthodox situations.

The DH3 Aircraft Operating Authority (AOA) comments that the DH3 UAV report above contains the details of the Airprox from the operator's perspective. The AOA is content that the operators carried out their duties in accordance with the policy and direction laid down in JSP 550 and the 1 Arty Bde Flying Order Book. The Safety Team grounded the DH3 until they were assured that the

risk had been removed. This was done by contacting all the parties concerned and educating other air users on UAVs.

AOA Note: UAVs are unable to operate using the principle of 'see and avoid'. To ensure an appropriate layer of safety, in line with JSP 550 Reg 307 and 320 a 'layered safety' approach must be used for collision avoidance, which is equivalent to a manned ac. Therefore, all UAVs are flown in segregated airspace, which is achieved by operating the UAV within a ROZ - it is vital that airspace issues are coordinated and that the UAV is allocated sufficient space to manoeuvre safely. Segregation/ deconfliction from other ac when conducting non-operational flying on established ranges is the responsibility of the FAC.

HQ JHC comments that the original deconfliction plan between the Apache and the UAV would appear to have been sensible. The Apache pilot's primary focus would have been on the Chinook it was escorting, although the report does not make clear where it was to land.

The amendment to the deconfliction plan makes little sense, as the FAC would be restricting the AH to operate in less than $\frac{1}{2}$ a square kilometre within the ROZ. It would have been far simpler to either keep the Apache to the W, or push the Apache to the S, but without the Chinook LS details, it is difficult to say why the FAC made this decision. Clearly, the operation of multiple ac within a small piece of airspace needs careful thought to produce a simple but workable deconfliction plan. By overcomplicating the plan, it would appear that some element of it was misunderstood, bringing the Apache and the UAV into conflict. It is vital that clear and unambiguous clearances must be given within a ROZ. The early action by the UAV operators safely resolved this conflict.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and reports from the appropriate operating authorities.

Airprox Incidents 2010004 and 2010005 are very similar, both involving the same UAV, operating from the same location, on the same day, albeit involving different reported ac; that being the case the Board considered both incidents simultaneously, the generic discussion here applies equally to Airprox 2010005.

Seconded Advisors briefed the Board comprehensively on UAV and FAC procedures.

The Board accepted that the FAC was not available to provide a report as he was deployed overseas. The Board noted that, as the first incident the Board had considered involving Army operated UAVs, the Secretariat were breaking new ground while conducting the investigation and many lessons were learned that should ensure that more comprehensive information is made available in the future. It was agreed that, since the majority of battlefield comms are not recorded, and, in the likely absence of radar recordings due to the low altitudes involved, it was essential in future to collect reports from everyone who might contribute to the investigation. The JFACSU advisor informed the Board that Airprox reporting and investigation was not currently part of the training syllabus for FACs; the Board agreed that this should be addressed.

In the absence of RT recordings or corroboration from the FAC, Board Members were unable to determine with any confidence why the incident occurred. At face value it appeared that the Apache pilot did not comply with the restrictions placed on his movement by the FAC.

Members were informed by the Army Helicopter Member that although he was not totally familiar with the Apache, he was aware that a comprehensive Avionics suite which is capable of displaying 'holds' and 'no go' areas to the crew. That being the case he thought that the crew must have misunderstood the FAC's instructions. Without more visibility of the exercise scenario and constraints, the Board could not understand why the Apache had been constrained to such a small area of the ROZ. One Member suggested that the Apache crew might have misunderstood and 'inverted' the holds and remained to the N and W of the grid lines rather than the S and E as

intended. Another Member suggested that the FAC might have been relatively inexperienced, but no information was available to support this theory.

Members were also briefed that due to its method of control, it takes a finite time to place the UAV in an avoidance manoeuvre when it is in the landing pattern; in order to ensure safe separation, it is therefore most important that the landing pattern circuit area (about 1km in diameter) is totally free of other ac. All involved are aware of this and appropriate safety measures have been devised to ensure that this should be the case. In this incident although the primary safety measure was breached when the Apache entered the UAV landing area, this encroachment was spotted quickly and the backup measures implemented by the UAV crew ensured that there was no risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in a ROZ resolved by the UAV operator.

Degree of Risk: C.

Recommendation: The MoD ensures that FACs are instructed in Airprox reporting and investigation procedures.