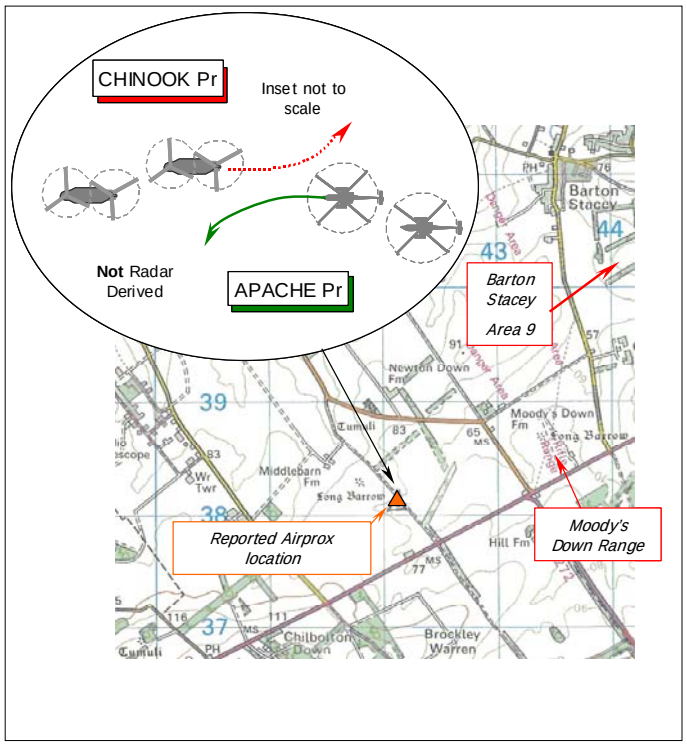
AIRPROX REPORT No 2010096

Date/Time:	21 Jul 2010 2216Z NIGHT	
Position:	5108N 00122W (6½nm E of Middle Wallop)	
Airspace:	NLFS NRR1	(*Class:* G)
	Reporting Ac	*Reported Ac*
Type:	Apache AH1 x2	Chinook HC1 x2
Operator:	HQ JHC	HQ JHC
Alt/FL:	115ft agl	250ft agl
Weather:	VMC CLBC	VMC CLBC
Visibility:	15km	20km
Reported Separation:	100ft V/nil H	100ft V/50ft H
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE APACHE AH1 HELICOPTER PILOT, a QHI, reports he was leading a pair of Apache ac, flying dual with a student as the PF, on a pairs final handling test for conversion to type. He was flying approximately 4-5 rotor spans in front of the No2 Apache. In accordance with SOPs, his lead helicopter was showing IR lighting and the No2 was fully lit; both ac were displaying glimmers [non-NVG compatible tactical lights not visible all round] and conventional navigation lights on steady bright; in addition his No 2 also had red HISLs on. He was not in receipt of an ATS but monitoring UHF LFS Common - 278·00MHz. A squawk of A2676 was selected [unverified Middle Wallop conspicuity] with Modes C & S on; TCAS is not fitted.

Whilst in a level transit at a height of 115ft, S of Moody Down range [1½nm S of Barton Stacey] prior to starting field ccts to an area 1nm W of Moody Down Range, he heard a call from Middle Wallop ATC, transmitting blind on LFS Common, that 2 Chinooks were approaching Barton Stacey from the SW. He perceived that these two helicopters were N of his formation. However, to assist the Chinook crew's situational awareness he transmitted blind that his formation of 2 Apaches were transiting S of Moody Down range to operate 1nm W of the range. A few minutes later, heading 270°(T) at 120kt, he spotted a single Chinook on Forward Looking Infra Red (FLIR), at very close range, head-on to his Apache pair. He took control from his student and rolled his ac L and down, away from the Chinook, which was high and to the R of his helicopter. He then saw the second Chinook fly 100ft directly above his Apache. At this point he transmitted blind on LFS Common declaring his position and his general concern about what had just happened. Avoidance between the 2 pairs was purely down to luck, the closing speed probably in excess of 250kt and the Risk of collision 'very high'. He noted that flying on FLIR it is not easy to see conventional lighting. His own workload was high, instructing and leading a pair, while the instructor in the No 2 ac had a very high workload monitoring his student flying in formation at low level.

He was concerned that they had no prior notice before departing Middle Wallop that there would be any low-level Chinook traffic in the area. Under normal operational conditions this would be acceptable, but the ability of QHIs to monitor a 'chat' frequency and conduct suitable instruction to train new Apache student pilots can cause considerable difficulties. If prior notice of the Chinooks routeing had been given then they would have been much more conscious of the potential for a conflict and pro-actively looking for them.

THE CHINOOK HC1 PILOT reports that he was the No2 of a pair of Chinook helicopters on a night tactical formation check conducted by his leader. They were based on Salisbury Plain and had departed Netheravon bound for Odiham. The lead helicopter had NVG formation lights on and NVG upper (IR) strobes ('Glimmer up 2 & Moonrise'); his No2 ac was displaying conventional 'white light' navigation lights and upper red HISLs as per SOP.

Approximately 1½ hours into the sortie his formation was approaching Barton Stacey from the SW at 250ft msd and receiving a BS from Middle Wallop APP. However, the lead was in the process of changing to Odiham INFORMATION on VHF, whilst retaining LFS Common set on UHF. They positively identified a red strobe in the formation's 12 o'clock in the vicinity of Barton Stacey and he called this information to his leader on air-to-air (VHF FM) who acknowledged the call. The strobe was moving slowly from L to R about 3–4nm ahead, which then became stationary indicating the other ac was now either travelling away from, or heading towards the formation. At this point he transmitted blind on LFS Common that 2 Chinooks were approaching Barton Stacey from the SW, to pass to the S and then departing to the E. This call was acknowledged by another crew who stated they were established in a cct at Barton Stacey [UKAB Note (1): A Lynx AH Mk 7 QHI was circuiting within Barton Stacey Area 9 at the time of this Airprox – the Lynx pilot's report is included below. The transcript of LFS Common revealed that another Chinook was also operating in the vicinity, it was subsequently ascertained this activity was N of the A303, circuiting to Longparish.] No other call on LFS Common was heard or acknowledged. Heading 090° at 120kt, the single red strobe then began moving from R to L before again becoming stationary, however at a closer distance and closing. He began to flash his NVG landing lamp for about 5secs as did the lead Chinook; however, the red strobe remained stationary. At this point his leader called to break L, which both Chinooks did. During the turn he saw an Apache appear out of the darkness and pass down his starboard side about 100ft below his helicopter and some 50ft away. No lights could be seen on or off 'goggles' from this ac by either the pilot or the No2 crewman. The red strobe that had been previously identified then passed a few seconds later to starboard of the formation, again lower, where it then became apparent that this was the No2 of a pair of Apache helicopters. The lead Apache pilot then called on LFS Common stating his concern, which was acknowledged with their callsign. He assessed the Risk as 'medium' and added that whilst switching from Middle Wallop to Odiham, there was a short period when the Chinook formation was 'not under a radar service' [sic].

THE LYNX AH MK 7 pilot, a QHI, was requested to provide an account and reports that he was conducting confined area training for the rear crew at Barton Stacey Area 9 when he heard a radio broadcast from Wallop APP on 278·00MHz LFS Common about a pair of Chinooks transiting to the N of Barton Stacey. Shortly after this a blind call on LFS Common was heard from an Apache pair, stating that they were operating in the area of Moody Down. He acknowledged this call with his location and intentions. Another call was then heard, again on LFS Common, from one of the Apache pilots directed at the Chinook pair that had approached the area from the S and had apparently flown very close to the leading Apache helicopter. The Apache pilot stated that he was unhappy with the proximity of the Chinook and the lack of SA.

UKAB Note (2): A transcript of LFS Common 278·00MHz and the Middle Wallop APP frequency was helpfully provided by the Unit. All relevant transmissions received on the Middle Wallop recording are included below. However, it should be noted that some UHF transmissions made by ac operating at low-level might not have been received because of terrain shielding.

THE MIDDLE WALLOP APPROACH RADAR CONTROLLER (APR) reports that the Chinook formation called Wallop APP requesting a BS and MATZ transit routeing eastbound from a position 8nm SW of Middle Wallop at a height of 250ft agl passing no closer than 4nm to the aerodrome. The Chinook formation was placed under a BS, the Middle Wallop QFE issued and a warning passed that Barton Stacey was active. He then made a broadcast [at 2209:52] on LFS Common - 278·0MHz – giving the position, route and height of the Chinook formation. [At 2210:22, APP advised the Chinook Leader, *"…I've just had* (heard) *a broadcast on 2-7-8 decimal 0 I believe there are a couple of cabs operating in the vicinity of Barton Stacey at this time"*, which was acknowledged, *"that traffics all copied* [C/S]..".] A second broadcast was transmitted by APP on LFS Common with an updated

position of the Chinook formation as they passed Stockbridge [some 3½nm SE of Middle Wallop]. [At 2213:17, APP broadcast, *"Wallop Approach blind call on 2-7-8 decimal 0 previously reported Middle Wallop MATZ transit traffic 2 Chinooks 1 mile south of Stockbridge tracking east 250 feet Wallop Q-F-E Wallop broadcast out.*" The Chinook leader reported switching en-route to LFS Common and Odiham on VHF at 2214:02]. Shortly after this there was an exchange of RT messages on LFS Common between the leader of the Apache formation and the Chinook formation, the former saying he was filing against two Chinooks that had affected their sortie activity. The Apache formation leader then called Wallop APP for the callsign of the conflicting traffic.

UKAB Note (3): At 2213:50, the Apache formation reported on LFS Common, *"L-F-A-1 2 Apaches routeing south of Moody Down range to operate to the area just west of Moody Down range by 1 mile L-F-A 1 transmitting blind".* The Lynx crew operating at Barton Stacey responded at 2214:05, *"L-F-A-1 – 1 Lynx operating in area 9 field circuits on goggles L-F-A-1".* At 2214:48, the Chinook formation broadcast, *"Barton Stacey 2 Chinooks approaching from the southwest passing south routeing east Barton Stacey",* which was followed by a transmission from another single Chinook operating N of the A303 at Longparish, *"Barton Stacey 1 Chinook operating at Barton Stacey in the circuit".* The Chinook formation then reported at 2215:04, that they were visual with traffic at Barton Stacey, *"..in your south west now".* Just over one minute later at 2216:12, the Apache formation advised, "[C/S] *south of Barton Stacey you just went head to head with me there not happy".* A further transmission was then made by the Apache formation, "[C/S] *south of Barton Stacey this is* [C/S] *formation a pair of Apaches routeing now west".* The Chinook formation responded at 2216:31, *"Apache callsign this is* [Chinook formation C/S] *on Stud 9 we were visual with you and broke left we didn't see the pair (sic) at the front we saw the trail aircraft thought we'd keep clear of that".* The formation leaders then agreed to discuss the incident after landing.

UKAB Note (4): This Airprox is not shown on recorded radar.

SATCO MIDDLE WALLOP confirmed that the formation of 2 Chinook Helicopters transited through the Middle Wallop MATZ receiving a BS from Middle Wallop APP on 280·625MHz. Meanwhile, the formation of 2 Apache helicopters was operating to the E of Middle Wallop in the vicinity of Barton Stacey on LFS Common - a frequency that was being proactively monitored by the APR. Recognising the potential for a confliction between these ac, the APR informed the Chinook formation of the activity at Barton Stacey, which was acknowledged. Then outwith his normal remit, the APR conscientiously transmitted two broadcasts on LFS Common endeavouring to assist the Apache crews' SA by informing them of the potential confliction. At 2214 the Chinook pair exited the Middle Wallop MATZ, as cleared with APP, and switched to LFS Common, checking in immediately on that frequency with a broadcast as is required. The Airprox occurred 2min later.

The Chinook pair was operating out of Netheravon as part of an exercise; therefore, they did not have advance notification of the Middle Wallop night flying routes. Similarly, the Apache crews did not have advance notification of the Chinooks routeing. None of the crews involved had the opportunity to deconflict whilst still on the ground. However, the RT transmissions should more than mitigate this fact. It should also be noted that Middle Wallop is currently trialling the Centralised Aviation Data System (CADS) [a Web based low-flying route notification tool], which is not used by all other LFA users.

However, he was puzzled as to why the Chinook pair was such a surprise to the Apache pair as the APR had done his best to pass them TI. The Apache pair had two early 'heads-up' broadcasts from the APR, followed by the call from the Chinook pair on LFS Common. If they were not visual, there was an opportunity to reply to their transmission.

ATSI had nothing further to add.

HQ JHC comments that this was a very serious event that nearly had a catastrophic outcome. There was a high degree of chance that led to this being an Airprox, rather than a mid-air collision. This head-to-head Airprox between two formations occurred in very congested airspace at night - a result of the imperative to train at night for current operations. The lack of notification of the Chinook

formation's route has been resolved through fixed and portable versions of CADS, although this measure alone will not solve all conflictions. This HQ recognises the high risks involved with multiple ac operating in the same vicinity and is actively pursuing all mitigating measures. The difficulties involved with the identification of conflicting traffic, some of whom are in formation with different light set-ups and perhaps through different media (some on NVG, some on FLIR) are well understood by crews and this Airprox will be widely publicized.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

This Airprox was one of two incidents to be considered by the Board involving Apache and Chinook helicopters operating at night with NVDs in NRR1 - the other being Airprox 2010097. Significantly in this case, however, the two formations had not spotted each other before they flew into close quarters.

The Apache pilot reports he was not aware of the Chinook's transit through NRR1 before take-off and it was apparent the Chinook formation had been operating from an exercise location within the Salisbury Plain Training Area. The HQ JHC Member advised that the Chinook crews were unable to pass details of their flight for the benefit of other NRR1 users beforehand. Board members were pleased to learn that the shortcomings in the notification system had been identified and addressed. The HQ JHC Member stressed that since this Airprox had occurred CADS was now being trialled by Odiham and other participants who operate in NRR1 so that information could now be exchanged at the flight planning stage. This would undoubtedly improve crews' SA if planned routes and timings could be adhered to. However, military pilot Members were acutely aware that many factors could intervene to upset a carefully balanced programme so that 'see and avoid' was still the essential method for averting any conflict. Indeed civilian ac might well be encountered at night with no notification whatsoever, albeit that only Police helicopters would be likely to be using NVDs or operating at the heights involved in this incident. This seemed to the Board to be quite a congested training area with 6 airframes/4 speaking units in an area of a few square miles. However, the Board's low-flying Advisor pointed out that all the crews here were flying in conformity with procedures for NRR1. The HQ AAC Member stressed the very high demands placed on Units to accomplish their training objectives and instructors were operating under a considerable workload. Training night field circuits is a difficult task demanding rapt concentration. Disturbances and distractions to this complex activity were not welcome, but these crews followed all applicable procedures in an effort to ensure the safe conduct of their sorties yet still a conflict resulted in this 'see and avoid' environment.

The HQ Air pilot Members questioned whether the ac involved here were sufficiently well lit. The JHC Member contended that the lighting displayed by the helicopters was in accordance with SOPs for such sorties and the Command had no concerns on that topic. However, he went on to explain to the Board that the FLIR used by the Apaches has a narrow field of view and for the Chinook crews, relative distance/depth perception is one of the most difficult aspects of operating with NVDs. Whilst it was accepted this was a difficult task it was imperative to train crews in the use of these devices. The HQ JHC Member stressed that night conflicts are not accepted lightly; these Airprox have been considered most seriously and the Command continues to investigate ways of minimising the potential Risk.

The Board commended the Middle Wallop APR for recognising the potential for a conflict between the Chinook formation as they transited past Barton Stacey and the other helicopters known to be circuiting there. The controller's positive stance in making blind calls on LFS Common about the Chinook formation's transit had alerted the lead Apache pilot, but the latter reported he was expecting them to transit further to the N and their appearance was a surprise when encountered to the S of Barton Stacey. The Board was briefed that there are three locations in the vicinity of Barton Stacey

that are commonly used by military helicopter units for training sorties and some confusion might have arisen over which was being referred to on the RT. The blind call from the lead Apache, which had been answered by the Lynx pilot operating in Area 9, was evidently made 1min before the Chinook pair switched to LFS Common and made their own transmission. However, the Chinook's call, "..*approaching from the southwest passing south routeing east*.." should have made it plain where they were intending to fly. This was answered in turn by the singleton Chinook crew operating at Longparish. Therefore the presence of the Apache pair, S of Barton Stacey heading SW, would not have been immediately apparent to the Chinook pair who would have only expected to see traffic circuiting further to the N. It was evident that the Chinook formation had 'positively identified' a moving red strobe at range in the formation's 12 o'clock in the vicinity of Barton Stacey, which they reported sighting on RT subsequent to the singleton Chinook's call. With a Lynx helicopter also in the vicinity of Barton Stacey the Board was unable to confirm with certainty the identity of the 'red strobe' first seen. Evidently, the Chinook pilots were not aware that another formation was flying toward them until the single red strobe subsequently bloomed into the No2 Apache, and not immediately aware that the Apache they saw was the No2 of a pair. Members noted that the flashing of the Chinooks' NVG landing lamps did not alert the Apache lead pilot who only spotted the lead Chinook on his FLIR display - at very close range he said. While it was possible that each could have done more to advertise their ac's presence, it was stressed that there was a significant amount of cultural lighting potentially affecting both crews in this vicinity from the A303, the A34, the city lights of Salisbury and Andover to the SW. The HQ AAC Member opined that as they were approaching their landing site the lead Apache crew would have been scanning the ground more, but when the lead QHI saw the leading Chinook he took control from his student, rolled L and down to avoid it, unaware that the No2 Chinook was also just about to overfly him. It seems that this was about the same time that the lead Chinook pilot recognised the situation and called the L break to his wingman, based on observation of the No2 Apache, but significantly neither the Chinook leader nor his No2 were aware of the closer leading Apache until after they had turned and the No2 Chinook pilot saw the leading Apache fly past to starboard. After a comprehensive debate, the Board concluded that this Airprox had been the result of a conflict in Night Rotary Region 1 between two helicopter formations.

The crews of both formations had eventually seen and avoided each other but, in the absence of radar data, the actual separation between them could not be determined independently. Both pilots' reports agreed that the vertical separation was a mere 100ft; from the No2 Chinook pilot's perspective the horizontal separation was no more than 50ft and he assessed the Risk as 'medium', whereas the reporting Apache pilot considered that the horizontal separation was 'nil' as the No2 Chinook overflew his ac and the Risk 'very high'. Fortuitously, both formation leaders had elected to turn L, but this was an uncoordinated manoeuvre and the Board agreed that it was a very close encounter indeed between four helicopters, where chance had played a significant part in the outcome. Members agreed unanimously and that an actual Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Night Rotary Region 1 between two helicopter formations.

Degree of Risk: A.