

## **AIRPROX REPORT No 2010038**

Date/Time: 26 Apr 2010 (Monday) 1527Z

Position: 5525N 00137W (0.6nm  
SW of Boulmer HLS -  
elev 75ft)

Airspace: Scottish FIR (Class: G)

Reporting Ac Reported Ac

Type: Sea King HAR3 Hawk

Operator: HQ Air (Ops) HQ Air (Trg)

Alt/FL: 3000ft 3000ft  
QNH (1016mb) QNH (1022mb)

Weather: VMC CLOC VMC NR

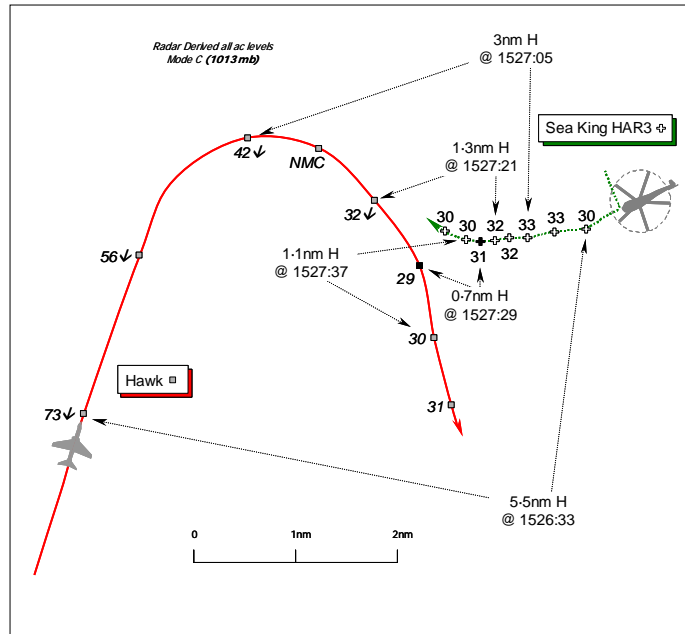
Visibility: 20km 35km

Reported Separation:

Nil V/<1nm H 1.5-2nm H

Recorded Separation:

200ft V @ 0.7nm Min H



## **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE WESTLAND SEA KING HAR3 PILOT** reports that he had departed from Boulmer VFR to conduct an air test with a crew of 2 pilots and was in receipt of a TS from Newcastle RADAR (RAD) on VHF - 124.375MHz. A squawk of A3760 was selected with Mode C; neither Mode S nor any form of TCAS is fitted. The helicopter has a yellow high-conspicuity colour-scheme and the upper and lower HISLs were on.

The Airprox occurred whilst executing the 'maximum contingency portion' of the air test, flying level at 3000ft QNH (1016mb) in VMC, heading 300°(T) at 70kt. They were just about to complete the check for the No 1 ECU, with one engine driving at close to maximum, when they heard RAD calling a Hawk pilot. The Hawk pilot was advised of the location of his helicopter - to the SE of the Hawk at close range. He and his co-pilot looked to their 12 o'clock and saw a black Hawk ac about 1nm away at about the same altitude that appeared to be flying straight towards them on a reciprocal heading. The Hawk pilot then told RAD he was visual with his helicopter and made a sharp turn onto S and crossed less than 1nm ahead from R - L and descending with a 'high' Risk of a collision. No avoiding action was taken and he maintained his NW'ly heading due to the very late sighting, the configuration of his helicopter for the air test and confirmation that the other aircraft was manoeuvring to deconflict. He added that the cockpit workload was 'high' because of the demands of the air test, which required the crew be 'heads-in' rather more than normal. The minimum crew was carried because of the nature of the flight but a TS had been obtained to assist the reduced lookout and increase the crew's SA. However, they had not been given any TI nor made aware of the Hawk by RAD at any time, he thought.

**THE HAWK T1 PILOT**, reports he was conducting an advanced instructional sortie VFR whilst in receipt of a TS from Newcastle RAD on UHF - 284.6MHz. An allocated squawk of A3751 was selected with Mode C; neither Mode S nor any form of TCAS is fitted. His ac has a black colour-scheme and the upper and lower HISLs were on.

He was descending VMC under 'own navigation' to below cloud about 6nm NW of Boulmer on a northerly heading at 400kt, with an in-flight visibility of about 35km. When clear below cloud descending through an altitude of about 3500ft, a RH turn was initiated. Turning through 090°, RAD

informed them of rotary-wing traffic 3nm E of their position at a similar altitude, which was the first information about the possible confliction. The rear seat pilot sighted the yellow Sea King about 3nm away as they turned; no avoiding action was taken as the R turn had resolved the confliction. The R turn was continued onto a SE'ly heading and the helicopter passed 1½-2nm away to port with no Risk of a collision.

**THE NEWCASTLE APPROACH RADAR CONTROLLER (RAD)** reports that the Hawk pilots were receiving a TS and requesting a low-level letdown in Northumberland; the Sea King pilots were also receiving a TS operating just NW of Boulmer. The Hawk pilot said that he wished to descend towards Amble and then route northwards, so an initial descent was given to an altitude of 5000ft to keep the ac terrain-safe and above some other ac – including the Sea King. He was just about to pass TI on the Sea King to the Hawk pilot when the latter requested a L turn. The Hawk then tracked northwards passing about 4nm W of the Sea King descending through FL70. At this point he believed the Hawk was flying away from the Sea King so he gave a further descent instruction to the Hawk pilot and advised him to maintain his own terrain clearance below 4300ft. Very soon after this the Hawk turned hard R, whereupon he issued TI, first to the Hawk pilots and then to the Sea King pilots. After passing 1nm W of the helicopter the Hawk routed to Amble.

The Newcastle 1520 Weather was given as: 270/15kt; >10km nil Weather; FEW at 4500ft; QNH 1022mb.

**ATSI** reports that the Airprox occurred in Class G airspace. The town of Amble is situated on the coast, 6nm SSE of Boulmer. The Sea King was operating VFR, conducting an air test in the vicinity of Boulmer. The Hawk was routing from the SW and intended to carry out a let down from medium to low-level. The crews of both ac were in receipt of a TS from Newcastle RAD on cross-coupled frequencies: 124.375MHz (VHF) for the Sea King and 284.6MHz (UHF) for the Hawk. [This allows all VHF transmissions to be heard on UHF and vice versa.]

The Sea King pilots first contacted Newcastle RAD at 1452:50 to operate VFR in the Boulmer area in receipt of a BS. At 1512:24, the Sea King pilots made a request to Newcastle, "...[Sea King C/S]..would it be possible to get a Traffic Service please we'll be operating..about 3 thousand feet in the local Boulmer area". Newcastle replied, "[Sea King C/S] for Newcastle then squawk 3-7-6-0 ident" which the Sea King crew read back correctly. At 1515:25 Newcastle advised, "[Sea King C/S] you're now positively identified 2-5 miles to the 2-4 miles north of Newcastle it is a Traffic Service with your own terrain clearance the Tyne pressure..setting is still 1-0-1-6". The Sea King pilot read back, "Traffic Service..with our own terrain clearance 1-0-1-6 copied [Sea King C/S]".

At about 1520 the Newcastle controller handed over responsibility for the provision of the radar service to another radar controller.

At 1521:34, radar recordings show the Hawk 16nm SW of Durham Tees Valley Airport tracking towards Newcastle displaying a code callsign converted SSR label indicating FL230. After a radar handover from London Military, the Hawk descended to FL190 and changed to the Newcastle assigned SSR code of A3751. At 1523:45 the Hawk crew called Newcastle, "...[Hawk C/S] on handover flight level 1-9-0 Traffic Service". The controller replied "[Hawk C/S] Newcastle RADAR good afternoon you're identified Traffic Service report ready for further descent", to which the pilot then responded, "...ready for descent". Newcastle enquired, "[Hawk C/S] are you hoping to go..low level in Northumberland" and the Hawk pilot replied, "[Hawk C/S] VMC at Amble and moving north." Newcastle then instructed the Hawk crew to, "[C/S] descend initially altitude 5 thousand feet on the Newcastle Q-N-H 1-0-2-2", which was read-back accurately. The controller's written report states that the Hawk was given initial descent to 5000ft to remain terrain-safe and also to keep the Hawk above some light ac in the vicinity, including the Sea King.

The controller was now aware that the Hawk crew was intending to let down in the Amble area and also aware of the Sea King in that vicinity. RAD reported that he was about to pass TI to the Hawk when, at 1524:55, the pilot requested "[Hawk C/S] request..left turn through 10 degrees", whereupon Newcastle replied, "...own navigation approved". At 1526:33, the radar recording shows the Hawk

was 5.5nm SW of the Sea King, passing FL73 in the descent. The controller states that the Hawk passed 4nm W of the Sea King at about 7000ft. In the belief that the Hawk would continue on the northerly track, at 1526:40 Newcastle advised, “[Hawk C/S] *there’s no traffic to affect your further descent so descend further but anything below altitude 4 thousand 3 hundred feet you’re taking your own terrain clearance report V-M-C below*”, to which the reply was, “[Hawk C/S] *V-M-C below*”. Newcastle then sought clarification “..[Hawk C/S] *apologies was that V-M-C below now*”; at this point a transmitter is switched but with no modulation.

As the Hawk passed 3.7nm WNW abeam the Sea King, the controller observed the Hawk commencing a R turn and immediately passed TI on the Sea King at 1527:10, “[Hawk C/S] *Newcastle RADAR see you turning right traffic is a helicopter 3 miles southeast of you slightly below*”. The Hawk pilot responded, “[Hawk C/S] *looking*”. There is a further transmission believed to be from the Hawk [words doubtful but possibly] *“got it”* and then another believed to be from Newcastle *“roger”*, before Newcastle passed TI to the Sea King pilots at 1527:20, “...[Sea King C/S] *traffic is a Hawk has you in sight 2 miles northwest of you 1 mile west*”. At 1527:21 radar recordings show the Hawk converging 1.3nm NW of the Sea King with both ac indicating FL32 Mode C [about 3470ft Newcastle QNH (1022mb)]. The Sea King pilot reported, “..*crossing right to left in front of us now..visual.*” At this point radar recordings show the Hawk passing 0.7nm SW of the Sea King and 200ft below it. Newcastle advised the Sea King pilots, *“has you in sight as well”*. Shortly afterwards the Sea King pilot advised at 1527:30, *“Hello Newcastle...we’re air testing so we’ve got a slightly limited lookout at the moment”*, which was acknowledged, *“roger”*.

About 3min after the Airprox occurred the Sea King pilot enquired about the minimum separation that had obtained. Newcastle advised that there was about 1nm separation as the Hawk passed ahead, whereupon the Sea King pilot advised that he would contact Newcastle when back at base.

The Hawk pilot reported VMC below, routeing low-level W and then N. Newcastle advised the Hawk about the helicopter, now just to the NW of Boulmer. The Hawk pilot reported switching en-route at 1530:46 and was instructed to squawk A7000.

MATS Pt1, Ch11, P5, 4.1.1 states that a traffic service is:

‘..a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot’s responsibility.’

MATS Pt1, Ch11, P6, 4.5.1 states that:

‘The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.’

‘Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft’s observed flight profile indicates that it will pass within 3 NM and, where level information is available, 3000ft of the aircraft in receipt of the Traffic Service. However, controllers may also use their judgement to decide on occasions when such traffic is not relevant, e.g. passing behind or within the parameters but diverging. Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 NM, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered necessary. Distances displayed on ATS surveillance systems can be at variance to the actual distances between aircraft due to the limitations in accuracy of surveillance systems. Furthermore, some aircraft may not be displayed at all by ATS surveillance systems.’

MATS Pt1, Ch11, P6, 4.6.1 states that:

'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller. If after receiving traffic information, a pilot requires deconfliction advice, an upgrade to Deconfliction Service shall be requested. The controller shall make all reasonable endeavours to accommodate this request as soon as practicable and provide deconfliction advice at the earliest opportunity.'

'When providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced by the instructions passed. However, the controller is not required to achieve defined deconfliction minima.'

During the Hawk's descent from medium to low-level the controller had asked the pilot if he was hoping to go low-level in Northumberland. In response the Hawk pilot had reported his intention to be flying in VMC at Amble moving N. The controller's written report stated that he was about to pass traffic information on the Sea King, when the Hawk requested a L turn. At this point the controller judged that the Hawk would continue N to pass 4nm W of the Sea King and would continue to fly N away from the Sea King. The Hawk, having already passed well to the W of Amble, was advised that there was no traffic to affect further descent and the Hawk reported VMC below. However, as the Hawk passed 3.7nm WNW abeam the Sea King, the controller observed the ac making a turn to the R. The controller recognised that the two ac were now in potential conflict and passed late TI, which may have assisted both pilots in achieving collision avoidance. Had the controller passed TI earlier, the situational awareness of both pilots would have been significantly improved.

**HQ AIR (OPS)** comments that the Hawk pilots were made aware of the Sea King in good time to see and avoid it, which they did. If an air test cannot be conducted whilst manoeuvrability and a good lookout is maintained, perhaps an area of sanitised airspace should be booked for the purpose.

**HQ AIR (TRG)** comments that the unannounced R turn by the Hawk appears to have caught out the Newcastle Controller regarding the timing of the TI. However, both ac were being operated VMC in Class G airspace. The relatively late sighting of the Hawk by the Sea King crew caused them concern particularly as their flight regime at that time limited their manoeuvrability. On the other hand the Hawk crew did not consider flying avoiding action because their turn had already broken the conflict. As the Sea King crew were conducting an air test requiring the crew to be 'heads-in' more than normal obtaining a DS may have been a more appropriate ATS.

## **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 ATC and operating authorities.

The HQ JHC Members confirmed that it was normal to reduce the crew compliment on an air test and thus, commonly, no aircrewman was carried for such flights. Although this reduced their lookout capability, the Sea King Captain had taken this into account and obtained a TS to supplement the lookout scan of the two pilot crew. He was mistaken in reporting that they had not been given any TI nor made aware of the Hawk by RAD at any time; the Hawk was called to the helicopter pilots by RAD, "*..2 miles northwest of you 1 mile west*", albeit after the Hawk pilot reported the helicopter in sight and when the range was closing fast. Therefore for all practical purposes the earliest the Sea King pilots were aware of the Hawk was when it crossed into their 12 o'clock about 1nm away at about the same altitude. The Sea King crew would undoubtedly have received TI earlier if RAD had not misconstrued the Hawk crew's intentions from their requested 10° L turn. It was plain to controller Members that RAD did not expect the Hawk to turn sharply in the opposite direction towards the Sea King and when it did just that, with both flights under a TS from the same controller, RAD had a choice of which to call first. Without doubt, the controller's choice of priorities at this late stage were

correct and the agile Hawk could more easily avoid the slower helicopter. Thus with the benefit of TI, the Hawk pilots were able to judge that their intended manoeuvre towards Amble would take them clear of the Sea King without more robust avoiding action being needed.

In the clear light of hindsight it was evident to the Members that the Newcastle RADAR controller had not anticipated the Hawk crew's R turn towards Amble. It appeared that the Hawk crew's L turn reinforced an assumption by RAD that, although the Hawk crew had declared that Amble was the intended low-level entry point, as the jet had already flown past this point northbound, the crew would not be turning towards it and thus would not fly close to the helicopter. The advice that there was no traffic to affect further descent also subsequently proved to be misleading. With further traffic in the vicinity perhaps a more cautious choice would have been to check the Hawk crews intended heading before releasing the crew to continue under their own navigation. Plainly RAD was endeavouring to provide a helpful TS during the Sea King crew's air test, but unbeknownst to RAD the Hawk crews requested L turn had belied their actual intentions. Nevertheless, the alert controller detected the jet's turn very swiftly and almost as soon as it had started RAD quickly issued TI to the Hawk crew, which enabled them to sight the helicopter, albeit perhaps later than ideal, but thereby ensuring they could steer clear of it. On balance, the Board considered that the controller had done a good job in providing TI to the Hawk crew once their intentions became clear.

Whilst some controller Members considered this to be a commonplace encounter in Class G airspace, it was readily understood that with a Hawk jet at close quarters, not knowing exactly what the crew was doing, the helicopter pilots would have felt quite vulnerable. With a myriad of test functions to perform and for which the resultant figures needed to be noted accurately, the air test was undoubtedly concentrating their minds inside the cockpit. Consequently, controller Members suggested that a DS would be the more appropriate ATS under these circumstances, which would assist the crew in fulfilling their mutual responsibility for maintaining separation against other Class G traffic. Other pilot Members agreed, but whether a DS was compatible with the flight parameters of this air test only the crew could gauge.

In determining the Cause and Risk, the Board noted that whilst the Sea King crew were informed about the presence of Hawk, it was at very short notice as it crossed ahead. However, the Hawk crew had been warned about the helicopter and had descended below it at a range of 1-3nm, closing to a minimum of 0.7nm laterally, albeit by a margin that the Sea King crew might have considered less than ideal. The Board concluded therefore, that this was a sighting by the Sea King crew of traffic manoeuvring clear, with no inherent Risk of a collision.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Sighting Report.

Degree of Risk: C.