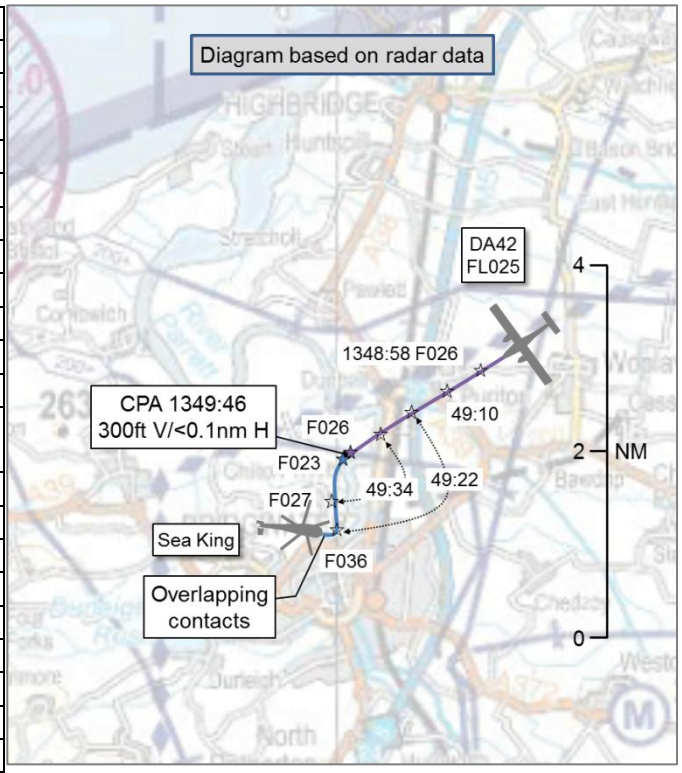
AIRPROX REPORT No 2015089

Date: 28 May 2015 Time: 1350Z Position: 5109N 00259W Location: 1nm N Bridgewater

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Sea King	DA42
Operator	HQ JHC	Civ Trg
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Yeovil Approach	Yeovil LARS
Altitude/FL	↓2200ft	2600ft
Transponder	A, C, S	A, C, S
Reported		
Colours	Green	White/blue
Lighting	Strobe, nav, nose spotlight	NK
Conditions	VMC	VMC
Visibility	25km	NK
Altitude/FL	↓3000ft	2500ft
Altimeter	RPS (1011hPa)	RPS (1011hPa)
Heading	360°	218°
Speed	100kt	140kt
ACAS/TAS	Not fitted	NK
Alert	N/A	Unknown
Separation		
Reported	0ft V/400m H	Not seen
Recorded	300ft V/<0.1nm H	



THE SEA KING PILOT reports conducting an air test in the vicinity of Bridgewater, in a right turn through north at 5000ft, when ATC called traffic 5nm northeast, 2000ft below. The call was acknowledged, but neither pilot could see the traffic. The Handling Pilot (HP) thought that ATC had reported the traffic as tracking southeast. He elected to continue the right turn through 270° to roll out on west in preparation for a low-speed autorotation test profile, leading directly into a second autorotation test profile, thinking that the reported traffic would be well clear astern and tracking away. During the turn the aircraft was climbed to 5500ft to check the radar altimeter 'OFF flag' and the area below and to the right (north) of the aircraft was cleared in preparation for the autorotation. The aircraft was established in a low-speed autorotation and yawed 90° to the right iaw the test schedule. The HP then selected and held 20° nose down to accelerate to 100kt; the rate of descent was in the region of 3000fpm. The HP had just raised the nose to about 5° nose down, and stabilised the aircraft at 100kt, when ATC called traffic 1nm north, 200ft below. A white, slender-winged, twin-engined aircraft was seen slightly low in the 1 o'clock, belly up to the Sea King in a turn to the right, crossing rapidly right-to-left. Although the conflicting traffic was initially slightly below the Sea King, both pilots were looking down and ahead into the autorotation flight path and had to look up to see the conflicting traffic. In addition, in the moments before the Airprox, both pilots had increased their scan of the rotor rpm-gauge as the aircraft was flared in autorotation. It was not possible to determine if the conflicting aircraft was climbing or descending. The HP initiated a turn to the right, although the confliction had passed before the aircraft responded. CPA was assessed to be as the Sea King descended through the level of the other aircraft. The Non-Handling Pilot (NHP) assessed the minimum separation to be 600m; the HP thought it was closer, perhaps as little as 250m. The aircraft was recovered to level flight at 2500ft and the right turn was continued in an effort to regain visual with the conflicting traffic but it could not be seen. An Airprox was reported to ATC and the sortie continued. The pilot noted that the Sea King crew assumed that the conflicting traffic was that initially reported at 5nm northeast. The pilots did not see the conflicting traffic in time to make any

effective contribution to avoiding a collision. However, since the conflicting traffic was seen to be taking appropriate action, the perceived severity was assessed as Medium.

He assessed the risk of collision as 'Medium'.

THE DA42 PILOT reports conducting an instructional sortie but was unable to recollect the event. At the Airprox position he was possibly talking to Yeovil Radar on a Basic Service. He stated that it was possible that the other traffic was reported to them, but neither he nor the student saw it or, if they did, it was far enough away that no avoidance action was required. The instructor contacted the student, who could not remember the event either.

THE YEOVIL APPROACH CONTROLLER reports the Sea King pilot was conducting a Check Test Flight operating approximately 16nm northwest of Yeovilton in the block from 2000ft to 6000ft on the Portland RPS. A LARS track was observed to close with the relative position of the helicopter from the north, with Mode C readout of A27. This aircraft was a DA42 in receipt of a Basic Service from Yeovilton LARS and was reported at 2500ft on the Portland RPS. The Approach controller called the traffic as the Sea King's Mode C readout indicated it was within 3000ft of the conflicting traffic. The Sea King was observed to climb as the DA42 changed course towards the Sea King, which now had Mode C readout of A57. As the tracks merged the Sea King was observed to descend and traffic was again called, as a definite hazard was judged to exist. The Sea King pilot responded by informing the controller that he was taking avoiding action, and shortly after called an Airprox on the conflicting traffic.

He perceived the severity of the incident as 'Medium'.

THE YEOVILTON SUPERVISOR reports that the Yeovilton Approach controller was observed calling conflicting traffic to the Sea King pilot who, whilst in receipt of a Traffic Service, had begun to descend quickly whilst in close proximity to another aircraft. After the conflicting traffic had been called, the Sea King pilot informed the controller that he was taking avoiding action. Once the pilot had resolved the confliction, he informed the controller that he wished to report this incident as an Airprox.

Factual Background

The weather at Yeovilton and Cardiff was recorded as follows:

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METAR EGDY 281350Z 29012KT 9999 SCT040 BKN250 15/04 Q1016 BLU NOSIG
METAR EGFF 281350Z AUTO 27015KT 9999 FEW026 13/07 Q1016
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Analysis and Investigation

Military ATM

The incident occurred on 28 May 15 at 1350 between a Sea King and a DA42. The Sea King pilot was under a Traffic Service with Yeovilton Radar and the DA42 pilot under a Basic Service with Yeovilton LARS. The DA42 pilot was subsequently transferred to Exeter at 1353:48.

At 1346:47 (Figure 1), Yeovilton Approach called traffic to the Sea King as, "*north east at 5 miles, tracking south-easterly 2000 feet below*." The crew responded that they were looking for the traffic.

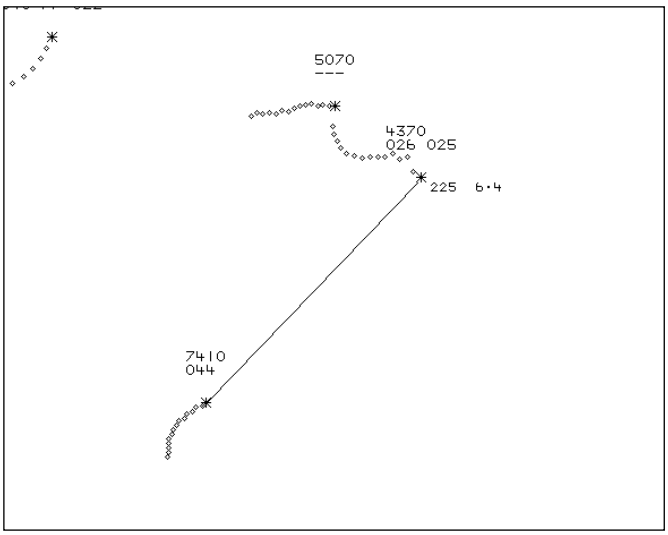

Figure 1: Traffic Information at 1346:47 (Sea King squawk 7410; DA42 squawk 4370)

At 1349:31 (Figure 2), Approach transmitted, "*previously called traffic now 1 mile, north, tracking south west 200 feet below*."

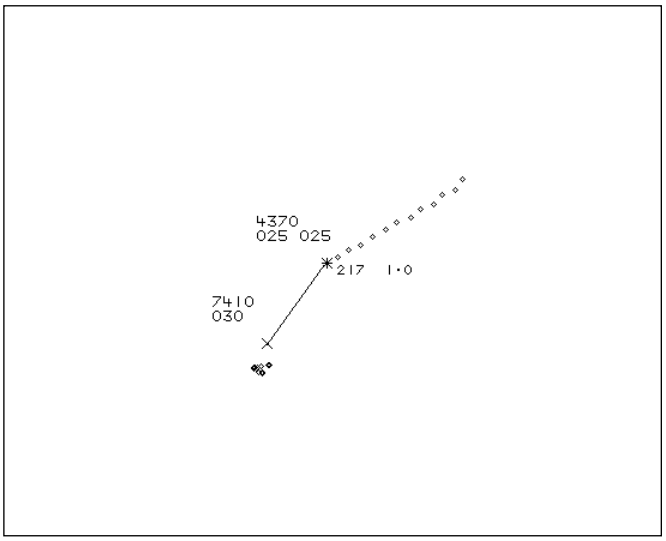

Figure 2: Traffic Information update at 1349:31

The crew responded at 1349:38 (Figure 3), that they were taking avoiding action.

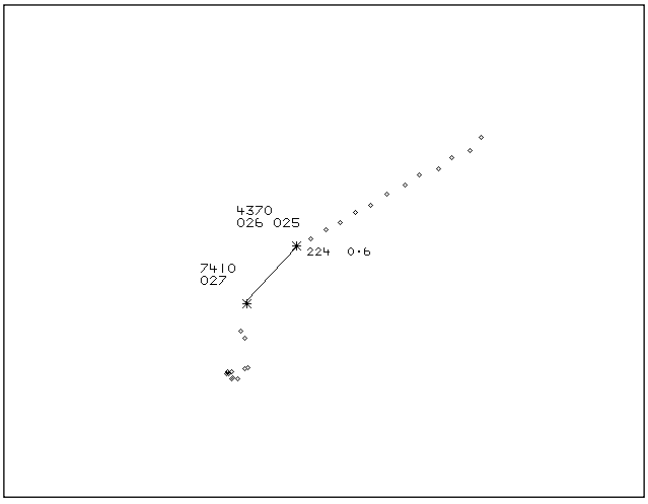

Figure 3: Avoiding action taken at 1349:38

At 1349:42, the aircraft were at the same height with 0.3nm horizontal separation. The CPA was estimated at 1349:50 (Figure 4) with <0.1nm horizontal separation and 200ft height separation and the Airprox was declared at 1349:58.

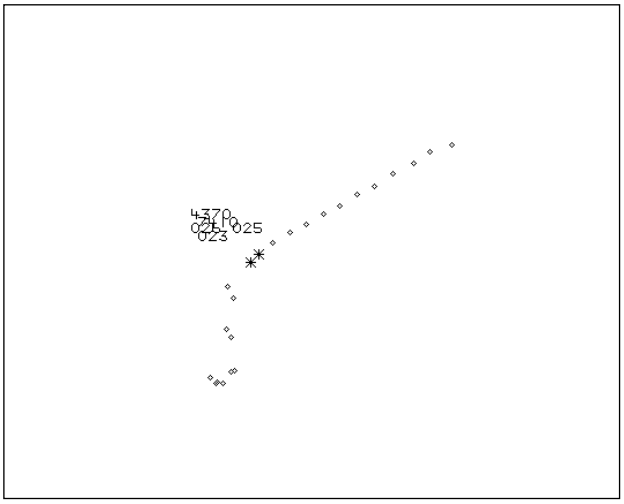

Figure 4: CPA estimated at 1349:50

Traffic Information had been passed to the Sea King at 5nm and the crew responded with a westerly heading, with the conflicting traffic on a southeasterly track. The Sea King crew had decided to conduct two flight test profiles back-to-back, from a zero-speed autorotation to the 100-knot autorotation and, to mitigate against loss of safe separation, they had requested a Traffic Service and had manoeuvred away from the last traffic report. The excellent visibility on the day also aided crew lookout. The Sea King pilot believed the DA42 to be to the east, tracking southeast and, believing to be clear of the traffic, the autorotation was initiated with a 3000fpm descent. The autorotation manoeuvre reduced the Sea King crew's situational awareness and capacity to maintain an effective lookout.

The DA42 altered course to the southwest and, at CPA, were believed to be taking avoiding action to miss the Sea King; however, the DA42 crew were unable to recollect the incident. The DA42 was under a Basic Service with Yeovilton LARS and both crews were responsible for their own collision avoidance, as per UK FIS.

The Approach controller was vectoring for an ILS recovery and calling traffic to another rotary prior to the update to the Sea King pilot. The DA42 was within the altitude block being used by the Sea King upon taking the southwest heading but still had 3000ft height separation.

The normal barriers to an Airprox would be lookout, Traffic Information and ACAS/TAS. Neither aircraft were fitted with ACAS/TAS. The Yeovilton investigation considered the combined factors that may have reduced the lookout for the Sea King crew, and the DA42 crew did not recall the event. Traffic Information was provided and updated immediately prior to the Sea King avoiding action and the investigation also considered the factors behind the timing and update of information from the Approach controller.

UKAB Secretariat

The Sea King and DA42 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]. The incident geometry was converging and the Sea King pilot was required to give way to the DA42[2].

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

Comments

JHC

This was a complex test profile which required significant capacity to monitor cockpit indications. The Sea King crew had mitigated the MAC risk by obtaining a Traffic Service. However, they could have informed ATC that they planned to fly a dynamic manoeuvre resulting in rapid height change. This would have allowed further Traffic Information to be provided.

Summary

An Airprox was reported when a Sea King and a DA42 flew into proximity at 1350 on Thursday 28th May 2015. Both pilots were operating under VFR in VMC, the Sea King pilot in receipt of a Traffic Service from Yeovil Radar, and the DA42 pilot in receipt of a Basic Service, from Yeovil LARS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first discussed the actions of the pilots. The Sea King crew were in a high workload environment, maintaining accurate dynamic control of the aircraft whilst simultaneously monitoring and assessing critical performance parameters. The crew had chosen to fly two test points concurrently, in order to expedite the air test, and some Board members expressed their opinion that the demands of this activity may have adversely affected their ability to maintain an effective lookout. Members recalled previous Airprox involving aircraft undergoing an air test where lookout may have been compromised by the demands of the air test itself, and that it appeared to members to be particularly prevalent in helicopter air tests. Previously suggested mitigations had been to carry extra crew to act as additional lookout, to tailor the air test to the weather conditions and level of Air Traffic Service available, or to conduct the air test in segregated airspace, if at all possible. It was acknowledged by the Board that the crew were appropriately in receipt of Traffic Information, and had made a reasonable decision based on the information they had. Unfortunately, they were not able to visually acquire the DA42 before CPA, effectively a non-sighting.

For his part, the DA42 pilot reported that neither he, nor his student, recalled seeing traffic in close proximity. Members were perplexed that the Sea King, descending through the DA42's level in the 12 o'clock at less than half a mile, was not seen on the VFR training flight by either of the DA42 crew, or if it was, that it was perceived to be far enough away as to merit no recollection. That the DA42's track turned sharply right at CPA indicated that there may have been an interaction of some kind, but the DA42 crew evidently did not consider it merited recollection or reporting and so it could have been simply a coincident manoeuvre.

Turning to the controllers' actions, the Yeovilton Approach controller initially passed Traffic Information on the DA42 to the Sea King crew 'as the Sea King's Mode C readout indicated it was within 3000ft of the conflicting traffic'. He observed the DA42 change course towards the Sea King, which climbed to 5700ft in a right hand orbit as the DA42 approached, with Mode C indicating between 2400ft and 2700ft. The Board noted that he did not pass Traffic Information until he detected the Sea King crew start the descent. To that end, some members commented that the Sea King pilot should have been passed Traffic Information on all relevant traffic within his stated operating block (2000-6000ft). In this respect, it was pointed out by a military controller member that CAP774 (UK Flight Information Services)[3] defines the provision of Traffic Information under a Traffic Service as 'The controller shall pass traffic information on relevant traffic, …' and that relevant traffic was defined as follows:

[3] Second Edition incorporating amendments to 13 November 2014, Section 3.5, page 29 dated October 2014.

> '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, 3,000 ft of the aircraft in receipt of the Traffic Service or its level-band if manoeuvring within a level block. However, controllers may also use their judgment 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.'

Clearly, the Approach controller could hardly have been expected to anticipate the Sea King's rapid descent, and many members felt that passing Traffic Information 'within the level-band' would not be achievable with a large block of airspace such as is used by high performance aircraft. Nevertheless, members agreed that the Approach controller could have passed Traffic Information earlier than when he perceived the Sea King's rapid descent, and that his view of when to pass Traffic Information seemed to have been based only on the 3000ft height separation criterion. It was also agreed that the Sea King crew could have usefully assisted themselves by declaring their imminent intentions to descend rapidly during autorotation to the Approach controller, who would then have been able to warn them of the approaching DA42, below them.

In the event, neither crew reported seeing the other aircraft before CPA. Members discussed the risk and agreed that safety margins had been much reduced below normal. After some debate, it was also agreed that the high descent rate of the Sea King, and lack of SA of either crew, meant that chance had played a major part in events.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the DA42 pilot and effectively a non-sighting by the Sea King crew.

Degree of Risk: A.