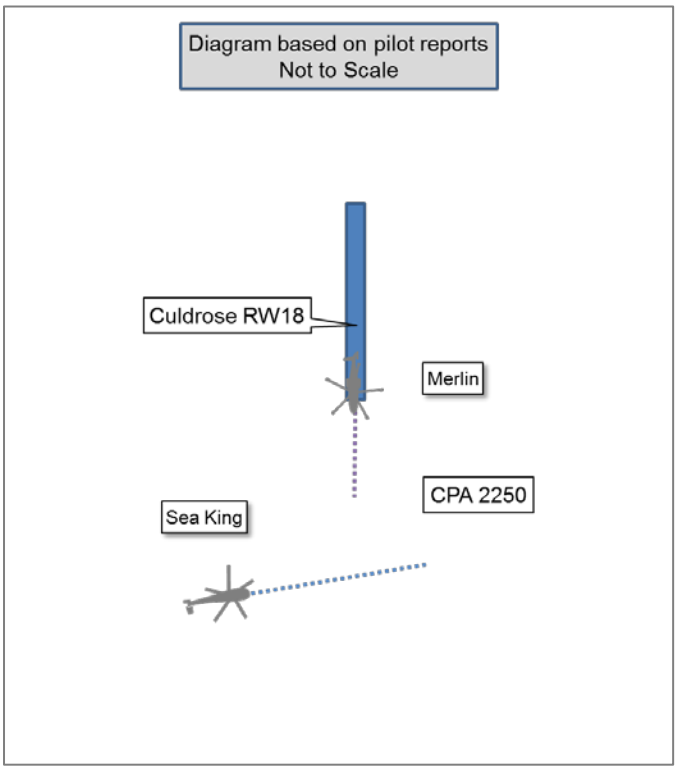
AIRPROX REPORT No 2014081

Date/Time:	20 May 2014 2250Z (Night)	
Position:	5004N 00512W (Culdrose)	
Airspace:	Culdrose ATZ	(*Class*: G)
	Aircraft 1	*Aircraft 2*
Type:	Merlin HM1	Sea King ASaC.7
Operator:	RN	RN
Alt/FL:	1000ft QFE (1000hPa)	1000ft QFE (1000hPa)
Conditions:	VMC	VMC
Visibility:	20km	20km
Reported Separation:		
	NK V/0.5nm H	400ft V/1nm H
Recorded Separation:		
	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports climbing away after a GCA and low approach to RW18 at Culdrose. The grey camouflaged aircraft had navigation lights and red HISLs selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under IFR in VMC, in receipt of a Traffic Service from Culdrose APR. The HP (handling pilot), in the left seat, was overshooting on instruments, heading 180° at 80kt climbing through 1000ft, in accordance with ATC instructions (climb to 2100ft, on passing 1500ft turn left 030°) when the right seat NHP (non-handling pilot) called visual with RW traffic closing from the 2 o'clock position. He was not able to give a range due to the dark conditions. From observation of the other aircraft's lights, it appeared to manoeuvre and then continued to close and 'drop down' in the cockpit windscreen. APR then reported the traffic in the 1 o'clock position at a range of 2½nm. The HP decided to delay the left turn to allow the other aircraft to pass ahead as it appeared much closer than reported. When the other aircraft was observed to be clear in the 11 o'clock the left turn to 030° was commenced.

He assessed the risk of collision as 'Low'.

THE SEA KING PILOT reports recovering to Culdrose from the local area. The grey camouflaged aircraft had navigation lights and red HISLs selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under VFR in VMC, in receipt of a Basic Service from Culdrose APR. On recovering from Mounts Bay at 1300ft QNH, Culdrose APR passed a QFE of 1000hPa, which was set with about 1-2nm to go, after completing pre-landing checks. At this time they could not see anyone in the visual circuit and therefore called 'coasting in at Halzephron' instead of 'stepping aside' a further 2-3nm to the west (away from the visual circuit). Halzephron is 1nm laterally displaced to the west of the RW18 climb-out lane. The pilot called to transfer to TWR and was informed by APR that the QFE was 996hPa and that the circuit was clear. He was about 1nm from the coast at that point and could see the green navigation light only of an aircraft climbing out from the airfield, at a range of 3nm. He requested confirmation that the circuit was clear and for confirmation that the QFE was 1000hPa (as previously passed by APR). He was informed that there was an aircraft on climb-out from low approach, but it was not made clear whether it was joining the visual circuit, and that QFE of 1000hPa was correct. He attempted to gain situational awareness on the intended flight path of the other aircraft so requested the heading it was to be turned on to. He was told that it was turning onto 030°. He made the assumption that it would

turn to the right due to the close proximity of a local HIRTA[1]. With this in mind, and with the other aircraft clearly some distance away, the pilot made the decision to turn right to join the RW18 LH visual circuit on the crosswind leg, therefore crossing ahead of the other aircraft, now with clear vertical and lateral clearance (visibly sky-lined). The pilot stated that there was clearly no conflict.

He assessed the risk of collision as 'Low'.

THE TWR CONTROLLER did not submit a report due to a local misunderstanding as to the military Airprox process.

THE CULDROSE SUPERVISOR reports that he observed [Merlin C/S] conducting a practice missed approach from PAR to RW18 and climbing for a further radar pattern. As [Merlin C/S] flew over the RWY, [Sea King C/S] called on the TWR frequency and reported "Coasting In" at Halzephron. The TWR gave a joining clearance, reporting the circuit clear. As [Sea King C/S] had joined from a nonstandard position, the SUP switched his attention to the Sea King's position relative to the climbing [Merlin C/S]. At the same time, [Sea King C/S] requested the intentions of the departing traffic and the direction he was going to turn in order to position himself downwind. As part of the joining call the TWR had passed an incorrect QFE; the correct QFE was passed to [Sea King C/S] as he commenced the downwind leg.

Factual Background

The weather at Culdrose was recorded as follows:

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METAR EGDR 202250Z 20003KT 9999 FEW020 10/08 Q1009 BLU NOSIG
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Neither aircraft was observed on area radar replay but PAR controller reported that on his display the aircraft were 2 miles apart, and Mode C indicated a separation of 300ft.

Analysis and Investigation

Military ATM

The Merlin pilot had conducted a Precision Approach Radar (PAR) to RW18 during a night-flying sortie. The conditions were VMC with low light levels; night-vision systems were not in use by the Merlin crew. Following the overshoot, APR reported traffic 1 o'clock at 2.5nm; the handling-pilot delayed the left-hand turn to allow the other aircraft to pass clear. The Sea King pilot was recovering visually to conduct visual circuits at Culdrose; again, night-vision systems were not in use by them either. The crew were recovering from Mounts Bay with about 1-2nm to run to Culdrose after completing pre-landing checks. No other traffic was apparent in the visual circuit and the crew elected to continue inbound from Halzephron (1nm laterally displaced to the west of the climb-out lane) instead of routing 2-3nm to the west to route in via Looe Bar (the standard coast-in point for a visual recovery to RW18). Culdrose TWR initially informed the Sea King crew that the circuit was clear, but the green navigation light of another aircraft became apparent. The Sea King crew requested Traffic Information and were informed that a Merlin was on a low approach, but further intentions were not passed. After a further request, TWR informed the Sea King pilot of the Merlin's next planned heading. The controller/unit workload and task severity was described as 'low'. The PAR controller recalled providing Traffic Information to the Merlin pilot as he was climbing out. The profile for a PAR at Culdrose, RW18 is at Figure 1.

[1] High-intensity Radio Transmission Area. An area of intense RF transmissions which may interfere with aircraft flight control systems and hence requires avoidance minima.

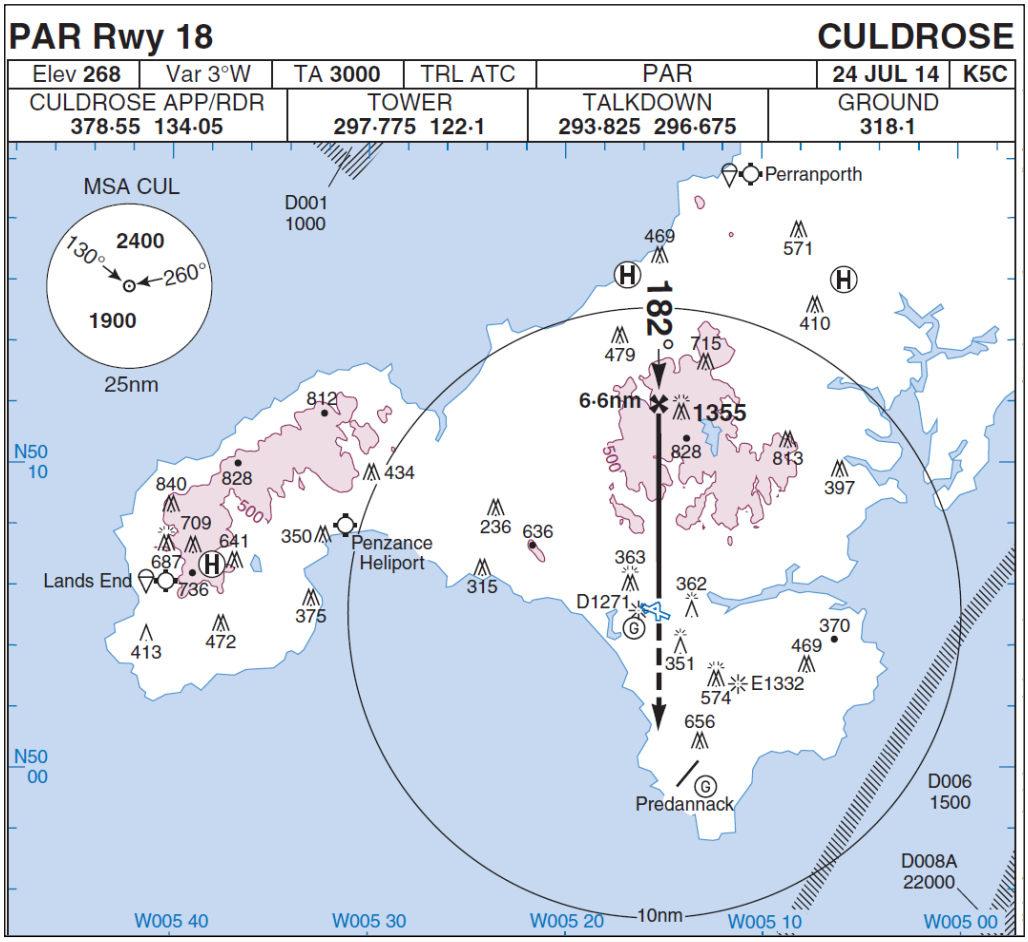

Figure 1: RNAS Culdrose PAR RW18

At 2145:24, the Sea King pilot informed APR that he was complete at Mounts Bay and inbound for visual recovery. At 2148:11, the Sea King pilot declared, "*Radar* [Sea King C/S] *coasting in Halzephron to Channel one*." APR passed the squawk 7030 and confirmed the channel for Culdrose Tower.

The TWR tape transcript is reproduced below:

From	To	Speech Transcription	Time
Sea King	TWR	? Tower good evening [Sea King C/S] joining at ah Halzephron ah to remain circuits	21:48:43
TWR	Sea King	? Roger join, Duty Runway 18 Q F E Nine Nine Six Hectopascals, the circuit is clear	21:48:50
Sea King	TWR	Ah just confirm the circuit is clear I've got ah one aircraft that looks like it's climbing out?	21:48:57
TWR	Sea King	Affirm he's ah missed approach he's going to Approach for a P A R	21:49:01
Sea King	TWR	Ah Roger what's his ah turning heading please I don't want to turn in to him?	21:49:07
TWR	Sea King	Standby	21:49:11
TWR	Sea King	Zero Three Zero degrees	21:49:15
Sea King	TWR	Sorry say again?	21:49:17
TWR	Sea King	Turning on to Zero Three Zero	21:49:18
Sea King	TWR	Roger O K I'll er um turn ahead, we're ah he should be turning right hopefully anyway so	21:49:21
Sea King	TWR	Ah can you just confirm the Q F E please is ah One Thousand we were passed that by Radar	21:49:47
TWR	Sea King	Apologies it's One Thousand	21:49:53
Sea King	TWR	Ah Roger ah [Sea King C/S] established and ah now downwind ah red	21:49:56
TWR	Sea King	Roger	21:50:03

The normal barriers to an Airprox would be information derived from controllers, lookout, safe procedures and onboard Airborne Collision Avoidance Systems (ACAS). Neither aircraft was fitted with an ACAS. The published procedure was not followed, and lookout was hampered by it being night operations.

The TWR controller received a call from the Sea King joining from a non-standard entry gate and passed a circuit state and QFE. The circuit state was correct because no aircraft were in the visual circuit (the Merlin was in the Radar Circuit) and no Traffic Information was passed on the Merlin climbing out from an instrument approach. To add context, the controller passed the correct circuit state and may not have deemed the aircraft as potentially being in confliction. If the aircraft were not on an apparent collision course there may have been less of a need to request that a pilot adheres to a procedure, and less of a need to pass information.

The Merlin pilot was on an instrument approach and mentioned in the occurrence report that the right-hand seat pilot had become visual with the Sea King. The assessment of 0.5nm separation may explain why the Merlin crew felt that the separation minima needed reporting through an Airprox and the human factors issues of judging distances at night helps to explain the different perceptions, especially for a crew that is instrument flying.

At 2148:11, the Sea King crew were at Hazelphron and at 2148:50 they were informed that the circuit was clear. The crew may have deemed it more expedient to route in from Hazelphron, rather than route away from the airfield to re-enter via Looe Bar, especially if there was no other traffic to affect. Once the Merlin was spotted, there was a slight delay in getting their further intentions, but the Sea King crew deemed that they had enough vertical and lateral separation to cross in front of the Merlin to position for downwind.

The unit conducted a local investigation and produced a number of contributory factors from the incident, which would be used to brief aircrew and controllers. The issue of flexibility versus strict adherence to the procedures was discussed. More effective communication was viewed as the key to preventing such an incident happening again.

UKAB Secretariat

Both pilots shared an equal responsibility to avoid collision and not to fly into such proximity as to create a danger of collision[2]. Radar recordings were not available in order to assess formally the CPA but, as part of the investigation process, the PAR controller had reported that the aircraft were 2 miles apart, and Mode C indicated a separation of 300ft.

Comments

Navy HQ

In this instance perceived severity was low from both crews; however, there are issues raised through the investigation that need to be addressed to ensure a similar scenario does not occur again. Education for the Culdrose RW Sqns on the importance of timely and accurate coasting in calls has already happened. As an additional point ATC have been reminded that accurate QFEs are essential for effective and safe control.

Summary

An Airprox was reported when a Merlin and a Sea King flew into proximity at about 2250 on Tuesday 20th May 2014. Both pilots were operating in VMC at night, the Merlin pilot under IFR, in receipt of a Traffic Service from Culdrose APR and the Sea King pilot under VFR, in receipt of a Basic Service from Culdrose TWR.

[2] Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions) and as reflected in Military Flying Regulations

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 video recordings (on which the aircraft did not appear), reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board quickly agreed that this Airprox was the culmination of a number of factors. Firstly, ATC had not informed the Sea King pilot of the Merlin on overshoot, and the absence of this information prompted him to expedite a circuit rejoin by transiting from Halzephron; with the mental model that the circuit was clear, this course of action was entirely reasonable in order to expedite his recovery. The Sea King pilot's routing thus took him into proximity with the departing Merlin, who's pilot perceived a conflict due to human factors issues associated with range estimation when viewing isolated lights at night. The situation was exacerbated by the passing of incorrect QFE, and the lack of clear, concise and complete Traffic Information from ATC. Although members agreed that, technically, the Merlin was not in the visual circuit, they were unanimously of the opinion that any traffic inside approximately 4nm was a factor to other traffic joining the circuit, especially at night, and that ATC should have passed this information on. In this case a call to the Sea King pilot to the effect of 'circuit clear but radar traffic overshooting for further' would have been highly appropriate.

The Board agreed that the Airprox was caused by the Merlin pilot's perception that the Sea King had flown close enough to be a collision risk (based on his viewing the Sea King's lights in proximity at night), exacerbated by a lack of timely Traffic Information from ATC. Considering the subsequent actions of the helicopter pilots, the Board was satisfied that they had maintained non-conflicting flight paths, and that normal safety standards had applied.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of appropriate Traffic Information, the Sea King pilot flew close enough to the Merlin to cause its pilot concern.

Degree of Risk: E.

ERC Score[3]: 2

[3] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.