

## **AIRPROX REPORT No 2014093**

Date/Time: 13 Jun 2014 1210Z

Position: 5101N 00236W  
(RNAS Yeovilton)

Airspace: Yeovilton ATZ (Class: G)

Aircraft 1                      Aircraft 2

Type: Sea King                      Hawk T1

Operator: RN                      RN

Alt/FL: 350ft                      NK  
QFE (1022hPa)                      NK

Conditions: VMC                      VMC

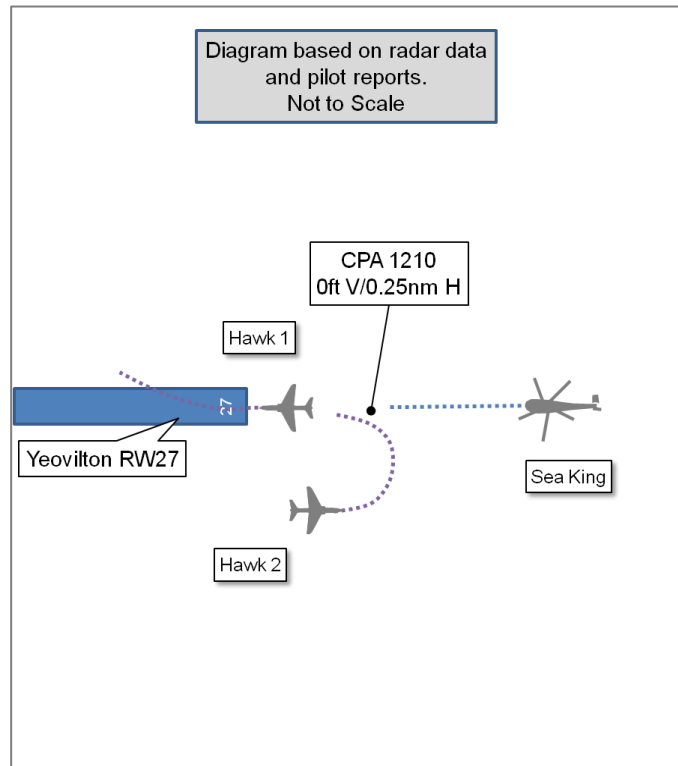
Visibility: 30km                      10km

Reported Separation:

1300ft V/400m H 350ft V/1000m H

Recorded Separation:

0ft V/0.25nm H



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

**THE SEA KING PILOT** reports conducting an ILS approach to RW27 as part of an Instrument Rating Test. The dark-green camouflaged aircraft had upper and lower HISLs, steady bright position lights, floodlights and spotlights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was not equipped with an ACAS or TAS. The crew was operating under IFR, (the PF with sole reference to instruments and the examiner conducting look-out), in receipt of a Traffic Service from Yeovilton TDN. At approximately 4 miles range from Yeovilton, two Hawk aircraft were observed passing well clear to the right of the approach path, tracking west. They were then seen to break left into the visual circuit. As the Hawks were downwind, a clearance to continue was provided by ATC. The Hawks then turned finals, in turn, inside the approach track. The first Hawk was assessed to be comfortably clear, but the second Hawk passed in front of them onto their approach track as the DME range indicated approximately 1 mile, and continued to land. The examiner was concerned with the degree of separation from the second Hawk, and elected to break off the approach by initiating a modified missed approach procedure. An Airprox report was logged on the in-use frequency.

He assessed the risk of collision as 'Low'.

**THE HAWK PILOT** reports operating as number 2 of a Hawk 2-ship formation. The strobes lights were selected to red but the SSR transponder was not selected on, as per formation SOPs. The fitment of an ACAS or TAS was not reported. The pilot was operating under VFR in VMC, in communication with Yeovilton TWR. On recovery to Yeovilton, the formation joined through initials<sup>1</sup> and were visual with a Sea King that they passed 1000ft above, displaced to its right. The Sea King was 4-5 miles from the RW27 threshold. The formation encountered heavy interference on the radio when passing through initials, which was extremely distracting. The lead pilot called a break to land and, on turning downwind, the interference seemed to get worse with no communications with tower when turning onto finals. The No 2 pilot turned finals with the appropriate radio call, which he transmitted twice 'but to no avail'. About halfway round the finals turn he saw the lead hawk go-around. The pilot then saw a green flare and transmitted "[C/S] finals gear down, with a green flare sighted, clear land". He assessed that the Sea King was 1000m away when he was halfway round

<sup>1</sup> A point 1-2nm short of, and displaced to one side of, the extended centreline of the runway in use.

the finals turn. The pilot stated that he was not informed an Airprox had been filed until the following week.

He assessed the risk of collision as 'Low'.

**THE YEOVILTON TWR CONTROLLER** reports the Hawk formation had been pre-noted to join the visual circuit via the initials point; a joining call was successfully made with the Hawks. TWR had also received a pre-note of instrument traffic (the Sea King) approaching six miles. The Hawks were informed, and reported visual with the instrument traffic. At this point both the UHF and VHF communications started to produce feedback. TWR looked at the communications panel and it appeared both frequencies were on permanent transmit. TWR checked that the transmit buttons were not being pressed, they were not, and changed to the UHF standby; the sound continued. The Hawk pilots had both tried to raise TWR on the UHF frequency; however, they were readability one / two. TWR continued to attempt to control the visual circuit by transmitting on the UHF frequency but the Hawk pilots were struggling to hear the instructions as they were also experiencing the feedback noise. TWR prepared the runway for the Hawks and asked the DATCO to use the land-line to break off the instrument traffic with PAR, which by this point was approaching two miles. TWR also asked GND to instruct the caravan controller to fire a green flare as he attempted to transmit a clearance to land to the first Hawk pilot. The green was not fired in time for the first Hawk pilot, who also couldn't hear the clearance and initiated a go around. The green was fired in time for the second Hawk pilot who was then issued with a clearance to land. Once the second Hawk landed, the feedback noise ceased, and TWR could transmitted normally on both the UHF and VHF frequencies.

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

**THE YEOVILTON DATCO** reports there was a permanent transmit on TWR frequency shortly after the Hawk formation joined the circuit for a run and break. At the time a Sea King crew was conducting an ILS for a low approach to RW27. The DATCO moved to assist the TWR controller and prepared the Aldis Lamps for use if required. As the TWR controller was busy, the DATCO liaised with the PAR controller for the Sea King to continue its approach as he assessed there was sufficient room for the Hawk formation to land ahead of the Sea King conducting a low approach. The Hawk formation was given a green lamp signal and the caravan controller was instructed to fire a green flare. Due to a delay in firing the 1st flare, the formation leader was seen to go around. The number 2 landed after being given a green flare and, at the same time, DATCO liaised with PAR to break-off the Sea King. Shortly afterwards, the Sea King was observed maintaining runway track in the climb but did not call TWR. The permanent transmit ceased as the Hawk number 2 was on short final to land.

## Factual Background

The weather at Yeovilton was recorded as follows:

METAR EGDY 131250Z 29007KT 9999 FEW035 23/13 Q1025 BLU NOSIG

The PAR RT transmission were transcribed as follows:

From	To	Speech Transcription	Time	Remarks
Sea King	PAR	Talkdown, [Sea King C/S] with you, one zero two three set	12:05:44	
PAR	Sea King	[Sea King C/S], Yeovil Talkdown, identified, seven and a half miles, well right of centre-line correcting nicely, QFE correct, do not acknowledge further instructions unless requested.	05:51	
PAR	Sea King	Seven and a half miles	06:01	
PAR	Sea King	Two five zero the heading	06:04	
Sea King	PAR	Errr talkdown, confirm this is for ILS	06:06	
PAR	Sea King	Roger, in that case turn left heading two three zero, report localiser established	06:11	

Sea King	PAR	Err left two three zero roger	06:15	
PAR	Sea King	[Sea King C/S] descend to height one thousand seven hundred feet	06:22	
Sea King	PAR	Descending one thousand seven hundred	06:24	
Sea King	PAR	[Sea King C/S] established	07:13	
PAR	Sea King	[Sea King C/S] report glide-path descending	07:15	
Sea King	PAR	[Sea King C/S] say again	07:21	
PAR	Sea King	Report glide-path descending	07:22	
Sea King	PAR	[Sea King C/S]'s glide-path descending	07:25	
PAR	Sea King	[Sea King C/S] roger, two fast jet hawks, seven and a half miles finals and clear down your right hand side	07:26	
Sea King	PAR	Talkdown, [Sea King C/S] you are very difficult to understand, can you slow down a bit	07:32	
PAR	Sea King	Roger, visual recovery, two hawks cleared down your right hand side, slightly above	07:35	
Sea King	PAR	[Sea King C/S] roger	07:41	
PAR	Sea King	[Sea King C/S] final clearance delayed, continue the approach	08:58	
Sea King	PAR	Continue [Sea King C/S]	09:01	
VCR Landline	PAR	Tower, break off the approach, one ahead	10:01	Multiple tones are heard of a landline ringing and unanswered for approximately 10 seconds. When the landline is answered the conversation is stepped on by the aircraft transmitting at 12:10:05
Sea King	PAR	[Sea King C/S] we're going to overshoot to turn in behind the second hawk	10:05	
PAR	Sea King	[Sea King C/S] roger no clearance obtained, break off the approach and er continue channel three	10:08	
Sea King	PAR	Channel three [Sea King C/S]	10:13	
Sea King	PAR	Err [Sea King C/S] I'd like to file an airprox please on the err hawk descending finals in front of us	10:20	
PAR	Sea King	[Sea King C/S] roger	10:26	
Sea King	PAR	[Sea King C/S] is err channel three please	10:48	
PAR	Sea King	[Sea King C/S] roger continue channel three	10:51	

The TWR (ADC) RT transmission were transcribed as follows:

From	To	Speech Transcription	Time	Remarks
Hawk 2	ADC	[Hawk two C/S], Tower [Hawk formation C/S] join	1207:30	
ADC	Hawk	[Hawk C/S] Yeovil Tower, join runway two seven, QFE one zero two three, circuit's clear, radar traffic approaching five miles	07:34	
Hawk	ADC	Two seven, one zero two three, visual with traffic, [Hawk C/S]	07:40	At this point a permanent high pitched tone is observed on Channel 1 and continues 12:10:27. Transmissions can still be heard over the tone although reduced in clarity and volume
Hawk	ADC	[Hawk C/S] request a low break	07:59	
Hawk	ADC	Tower [Hawk C/S] late initials break	08:28	

From	To	Speech Transcription	Time	Remarks
ADC	Hawk	[Hawk C/S] low break approved, circuit's clear	08:32	
Hawk	ADC	Tower there is a lot of breakthrough coming on this frequency	08:34	
ADC	Hawk	[Hawk C/S] I'm not sure where it's coming from	08:36	
Hawk	ADC	[Hawk C/S] roger	08:38	
Hawk	ADC	Hawk, two aircraft on the break, land	08:58	
ADC	Hawk	[Hawk C/S] wind is err calm	09:00	
Hawk 1	ADC	[Hawk 1 C/S], break, land	09:03	
Hawk 2	ADC	[Hawk 2 C/S], break, land	09:05	
Hawk 1	ADC	Tower [Hawk 1 C/S] finals, gear down	09:32	
ADC	Hawk 1	[Hawk 1 C/S] cleared to land	09:36	
Hawk 1	ADC	Tower [Hawk 1 C/S], you're broken unreadable, say cl, say again	09:39	
ADC	Hawk 1	[Hawk 1 C/S] Tower, you're cleared to land	09:43	
Hawk 1	ADC	I need a green verey if I'm cleared to land because I can't hear you	09:47	
Hawk 2	ADC	[Hawk 2 C/S] finals, gear down	09:53	
Hawk 2	ADC	[Hawk 2 C/S] finals gear	10:03	
Hawk 2	ADC	[Hawk 2 C/S] finals, gear down	10:06	
ADC	Hawk 1	Tower [Hawk 1 C/S] going around	10:12	Dual Transmission
Hawk 2	ADC	[Hawk 2 C/S] err cleared to land	10:12	Dual Transmission
ADC	Hawk 2	[Hawk C C/S] short finals, gear down, cleared land with green flare	10:17	
Hawk 2	ADC	[Hawk 2 C/S] cleared to land	10:22	
ADC	Hawk 2	Cleared to land [Hawk 2 C/S]	10:24	
ADC	Hawk 1	[Hawk1 C/S] going around	10:27	Permanent tone now ceased
Hawk 1	ADC	[Hawk 1 C/S] Tower roger, confirm my readability now	10:29	
ADC	Hawk 1	You're five now [Hawk 1 C/S]	10:32	
Hawk 1	ADC	[Hawk 1 C/S] roger	10:33	

## Analysis and Investigation

### Military ATM

All heights/altitudes are based upon SSR Mode C from the radar replay unless otherwise stated.

At 1207:03, the PAR controller liaised with TWR to provide the 6-mile call on instrument traffic inbound, "Sea King six miles low approach runway two seven.", see Figure 1.

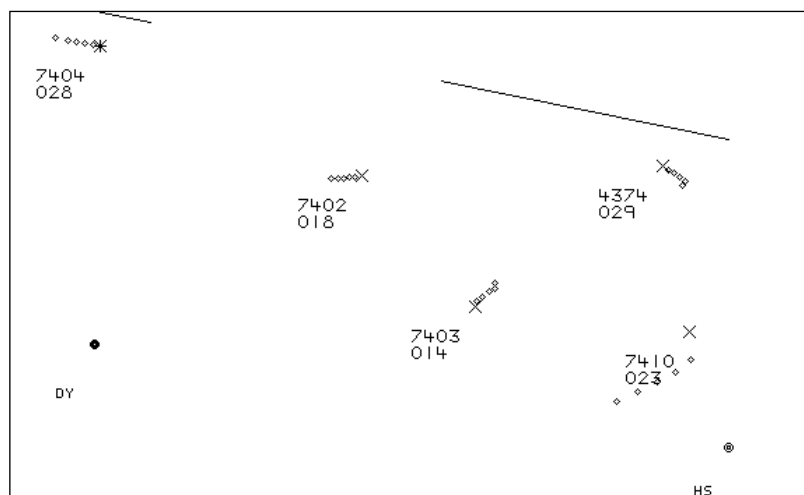


Figure 1: Sea King 6-mile call at 1207:03 (Sea King 7403; Hawks 7410)

The Sea King pilot was informed of the Hawks passing down their right hand side. At 1207:34, (see Figure 2), the ADC transmitted, “[Hawk C/S] Yeovil Tower, join runway two seven, QFE one zero two three, circuit’s clear, radar traffic approaching five miles.” The Hawk pilot called visual with the radar traffic and, at 1207:40, the high pitched tone was heard on the RT replay. The transcript described that transmissions can still be heard although reduced in volume and clarity.

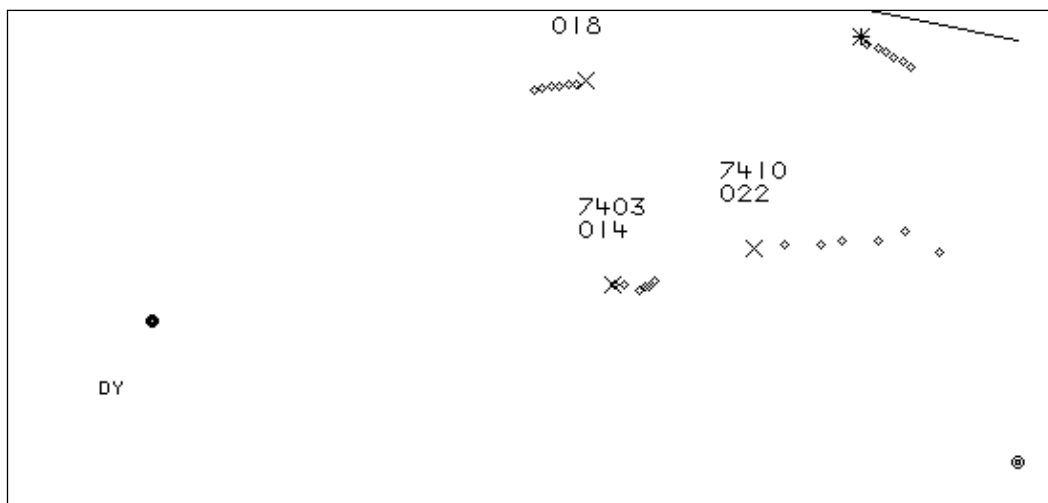


Figure 2: Geometry at 1207:34 as Hawks were given visual circuit join

At 1208:28, (see Figure 3), the Hawk pilot called initials for a low break into the circuit, and the ADC approved the low break and announced the circuit as clear. Both tracks disappear from radar shortly afterwards.

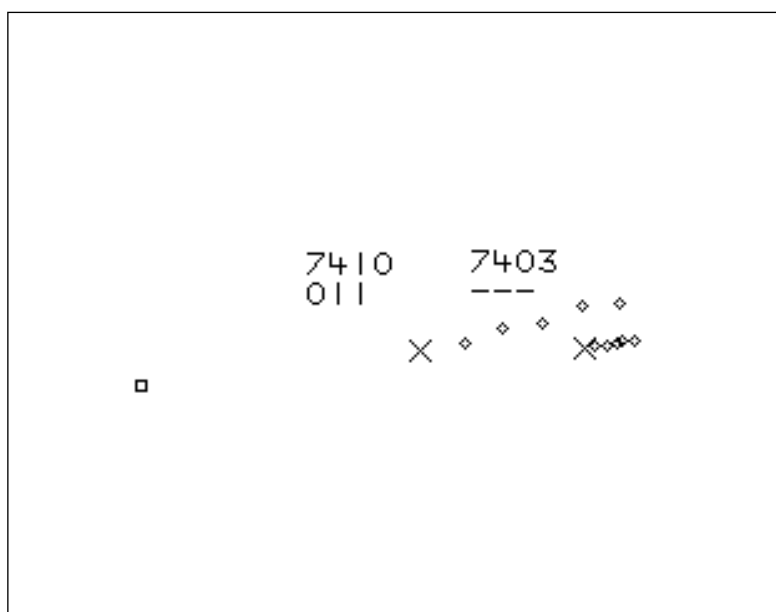


Figure 3: Geometry at initials call at 1208:28

At 1208:58, the Sea King pilot was told, “*final clearance delayed, continue the approach.*” At 1209:36, Hawk 1 called for landing clearance and was immediately provided clearance to land; Hawk 1 did not hear the clearance because, at 1209:47, the pilot transmitted, “*I need a green verey if I’m cleared to land because I can’t hear you.*” Hawk 2 called finals, with gear, at 1209:53 and on two further occasions.

At 1210:01, a landline call was made from ADC to PAR to inform, “*break off the approach, one ahead.*” The Sea King pilot replied with, “*we are going to overshoot to turn in behind the second Hawk.*” At 1210:08, PAR replied with, “*no clearance obtained, break off the approach and*

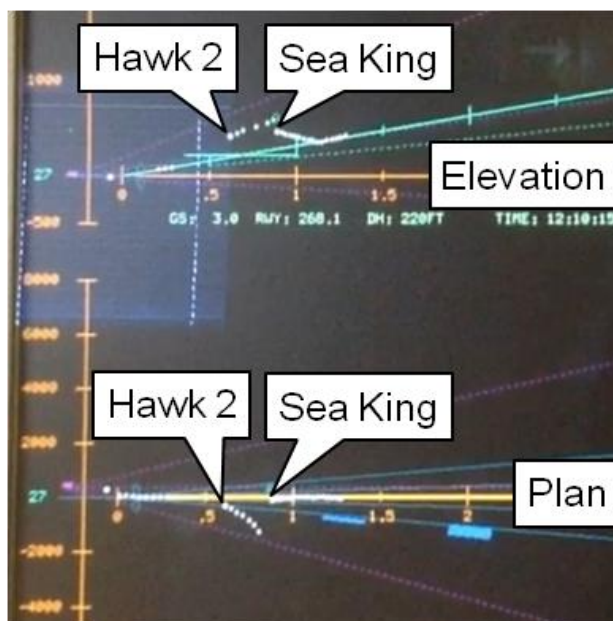
*continue channel three.*” Hawk 1 declared ‘going around’ at 1210:12 and at 1210:17, Hawk 2 declared, “[Hawk 2 C/S] *short finals, gear down, cleared land with green flare.*” At 1210:20, the Sea King pilot responded with, “*I’d like to file an Airprox please on the er Hawk descending finals in front of us.*”

A unit investigation highlighted the cause and contributory factors that led to this incident and produced a suitable recommendation. The controllers had passed Traffic Information and the crews were aware of the other aircraft. The feedback on the Tower frequency caused a major distraction for all involved, even the PAR controller, and this hampered the essential flow of information and rapidly increased the workload in the VCR. All controllers and crews followed a recognised local procedure to allow rotaries to proceed to 1nm finals without a positive clearance. The unit investigation noted that this potentially placed RW aircraft at 1nm against fast-jets turning finals at 0.75nm, as occurred in this Airprox. The recommendation from the investigation was to review this procedure. An earlier go-around from the Hawks may have averted the Airprox and, by not requesting if the Sea King was visual, the PAR controller was not following the correct procedure. To add context, the Hawk pilot had a number of unusual inputs during a critical stage of flight, and the PAR controller had attempted to help the crew knowing that the TWR frequency had become unusable. Furthermore, the control team were working within the local procedures and, by continuing the Sea King approach (Sea King broken-off at 1.25nm), the DATCO had generated extra time to control the Hawks through lamps/verveys, address the R/T noise issue and satisfy all elements with their type of approach.

Normal barriers to an airprox involving instrument and visual circuit traffic would include Traffic Information, visual lookout and safe procedures for deconfliction. Traffic Information and lookout were present and the unit is conducting a review of the procedure to ensure a safe and workable solution can be found.

### UKAB Secretariat

Both pilots shared an equal responsibility for collision avoidance and not to fly into such proximity as to create a danger of collision<sup>2</sup>. A video frame of the PAR controller’s display was provided, which was used to estimate the recorded separation of 0ft V/0.25nm H. The CPA of 1210 was deduced from the TWR tape transcript.



<sup>2</sup> Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).

## Comments

### Navy Command HQ

This event was engineered by a flawed procedure that became apparent with the permanent transmit on Channel 1 (TWR). The PAR controller was permitted, by a local procedure, to continue station based IFR RW traffic through 2nm to 1nm without positive input from the VCP. This procedure created a situation whereby Hawk 2 flew close enough to the IFR traffic to cause concern. This local procedure has since been changed and a break-off will be initiated by the PAR controller at 2nm unless it is deemed safe to continue by the ADC and a positive instruction to 'continue the approach' has been issued.

## Summary

An Airprox was reported when a Sea King and Hawk flew into proximity at about 1210 on Friday 13<sup>th</sup> June 2014. Both pilots were operating in VMC, the Sea King pilot under IFR in receipt of a Traffic Service from Yeovilton Talkdown and the Hawk pilot under VFR, in receipt of an Aerodrome Control Service from Yeovilton Tower.

### **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 photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities. Notwithstanding, the Board were disappointed to note that despite the Sea King examiner declaring an Airprox on the PAR frequency at the time of the occurrence, the Hawk pilot was not informed until the following week.

The Board first considered the Sea King pilots' actions. The Sea King PF was flying with reference to instruments and therefore could only acquire SA from radio transmissions and in-cockpit discussion. The PM, the examiner, saw the Hawks pass down his right-hand side and break into the circuit and so had better SA as to the Hawks' position. As the second Hawk turned final, the PM perceived that it would fly into conflict, and initiated a modified missed approach procedure.

Turning to the Hawk pilots, the Board considered that their approach to the circuit was normal up until the advent of heavy interference on the RT frequency as they broke into the circuit. The Hawk pilots were aware of the Sea King's position and its crew's intentions, and the second Hawk pilot assessed that he had sufficient separation to land ahead of it; it transpired that this was not the case. The first Hawk pilot was unable to hear a clearance to land and overshot before the caravan controller was able to fire a green flare. Although the second Hawk pilot received a green flare and landed, he was still responsible for ensuring safe separation with the Sea King. Board members felt that the second Hawk pilot had most likely been distracted by the heavy interference and loss of effective radio communication, and that this had been contributory to the Airprox. Pilot members were of the opinion that the second Hawk pilot had misjudged the range and closure rate of the Sea King, and that it was common practice for traffic on an instrument approach to have priority over traffic in the visual circuit. The Board was informed that this was not always the case at Yeovilton, but that it had been the case in this instance. The Board therefore agreed that the cause of the Airprox had been that the second Hawk pilot had turned onto 'finals' and into conflict with the Sea King, which was on an instrument approach.

Turning to the controllers, the Board agreed that control had been exercised correctly but that the procedure to allow the Sea King to approach to 1nm without input from the Tower set the stage for the conflict to occur; members were heartened to hear that the procedure had since been modified such that the 2nm decision was now 'fail safe' rather than 'fail unsafe'. As further background context, the Board was informed that an aircraft not involved with the Airprox had just declared an emergency at the time, which significantly added to the workload in the Tower. Additionally, the Board were informed that the runway caravan was equipped with 2 Verrey pistols, both of which are loaded with red flares. Although this sensibly allows for the 'fail safe' situation of being able to

prevent someone landing if required after one pistol malfunctioning, it explained the small but appreciable amount of time that had been required to unload one of the pistols and reload it to fire a green flare.

As regards risk, the Board agreed that the Sea King examiner had sufficient SA such that he took effective and timely action to prevent aircraft collision; they therefore agreed that the risk had been Category C

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

Cause: The Hawk pilot turned into conflict with the Sea King on an instrument approach.

Contributory Factor(s): Communications were compromised by the radio interference.

Degree of Risk: C.

ERC Score<sup>3</sup>: 4.

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<sup>3</sup> 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.