

MILITARY AIRCRAFT ACCIDENT SUMMARY

ROYAL NAVY

Aircraft	Type	Sea King
	Mark (Mk)	7 Airborne Surveillance and Control (ASaC)
	Serial Numbers	XV650 and XV704
Time and Date:	0425C, 22 March 2003	
Parent Unit	849 Naval Air Squadron (NAS) 'A' Flight HMS ARK ROYAL	
Place of Accident	Northern Arabian Gulf, 29° 30.64N 48° 51.40E	
Casualties	7 Fatalities	
Aircraft Damage	Both Category 5 (Scrap)	

SYNOPSIS

1. Sea Kings Mk 7 XV650 and XV704 were embarked in HMS ARK ROYAL operating in the Northern Arabian Gulf. The ship was supporting coalition operations in Iraq, which had been in progress for one week. At 0422 on 22 March 2003, Sea King XV650, launched with a crew of 4 from ARK ROYAL. The aircraft was due to relieve Sea King XV704, with a crew of 3, which was returning from operations over the Al Faw peninsular. The handover had been planned to take place within the operating area to ensure seamless coverage of the task. However, XV650 was delayed on deck due to a technical fault and launched 22 minutes later than planned. Sea King XV704 continued to work to its planned sortie timings and was recovering towards ARK ROYAL as XV650 was flying out-bound below 250 ft to take up its task. At 0425 the aircraft collided approximately 5 nm southwest of ARK ROYAL killing all 7 crewmembers.

AIRCRAFT DAMAGE

2. Both of the aircraft sustained Category 5 (SCRAP) damage.

CAUSE

3. The primary cause of the accident was the lack of avoiding action from either aircraft in response to an unexplained, last minute 17 degree course alteration by the in-bound aircraft XV704 resulting in a mid air collision.

CIRCUMSTANCES

4. On 22 March 2003, one week into military operations, the crew of Sea King Mk 7 XV704 were briefed at 0015 for an overland surveillance sortie to be flown in support of Operation TELIC. The programmed launch time was 0130, with a planned recovery time of 0430. XV704 was to be relieved on

task by another Squadron aircraft, XV650, with a half hour sortie overlap planned to allow an airborne handover on task. After a short delay during start, XV704 launched at 0138 with a crew of 3 (1 pilot and 2 observers) and proceeded to the designated operating area.

5. During the course of the sortie, a warning of operational Tomahawk Land Attack Missile (TLAM) firings was reported to all aircraft, in accordance with the published procedures, to ensure that safe de-confliction of air assets was maintained. These procedures were still in force at the time XV704 was planned to leave the operating area to return to ARK ROYAL. The orders required that the aircraft remained at 1500 ft until in a designated safe area to the east of Kuwait, where a descent below 250 ft was authorised. XV704 complied with the operating instructions then commenced to route back to the ship, remaining at 230 ft. The ship had adopted a reduced and deceptive lighting configuration to enhance defensive measures.

6. The crew of XV650 were briefed at 0245 for an overland surveillance sortie, which was programmed to launch from ARK ROYAL with a crew of 4 (1 pilot and 3 observers) at 0400. During the start sequence the crew experienced a problem loading data into the Joint Tactical Information Distribution System (JTIDS) and this resulted in a 22-minute delay on deck. The crew of XV650 eventually resolved the problem and launched from the ship at 0422. There was no evidence from witnesses to suggest that the launch was in any way rushed or that there was pressure applied by the Command on the aircrew to get airborne.

7. Having launched from the ship at 0422, XV650 then transited directly towards the TLAM designated safe area at a height of approximately 200 ft under Visual Flying Rules (VFR) and a Flight Information Service (FIS) from ARK ROYAL.

8. Sea King XV704 continued to work to its planned sortie timings and was recovering towards ARK ROYAL to land on at 0430 as Sea King XV650 was flying out-bound to take up its task. At an estimated time of 0424, XV704 received traffic information from ARK ROYAL intended for XV650; this message alerted XV650 of XV704's position. The ship reported that XV650 replied "visual" and that XV704 followed this with an unsolicited call of "also visual". At 0425 on 22 March 2003 the aircraft collided approximately 5 nm southwest of ARK ROYAL.

9. An immediate search and rescue operation was initiated by a large number of ships operating in the vicinity, and surface vessels and aircraft were on site within minutes of the accident. No survivors were found and the wreckage sank in 19 m of water.

SALVAGE

10. It was recognised from the outset that the recovery of the aircraft wreckage would be challenging and influenced by a number of factors:

- a. Potential high level of airframe destruction and widespread scatter of wreckage generated by a mid-air collision.
- b. Unpredictable operational situation encountered in a hostile theatre.

- c. Restrictive diving conditions caused by poor visibility and strong tide.
- d. Limitations of the available salvage equipment.

11. In light of the fact that normal peacetime objectives for full wreckage recovery might not be achievable, aircraft systems were identified that would provide most useful benefit to the investigation or which had security implications. The main priority for the investigation was the recovery of the Airborne Video Recording System (AVRS) tapes, with potential voice and mission system data, and the Inertial Navigation/ Global Positioning System (IN/GPS) units.

12. During the search and salvage phase 6 crewmen were recovered still strapped into their respective seats. HMS RAMSEY discovered the body of the last crewman (No 7), also strapped to his seat, some 8 weeks later. The AVRS tape from the in-bound aircraft, XV704, had been recovered during the initial salvage phase and was couriered to the UK on 8 April 2003 for processing. The AVRS Sealed Video Module (SVM) from XV650 and IN/GPS Line Replacement Unit (LRU) from XV704 were recovered later in the operation, but did not produce any data. The wreckage was eventually transferred into containers and shipped back to the UK from Bahrain and finally delivered to the RNFAIC Hangar 12 at RNAS Yeovilton on 26 June 2003.

TECHNICAL INVESTIGATION

13. A detailed technical investigation of the available recovered wreckage found no evidence of contributory technical failure. Specialist processing was used to obtain crucial audio information from the AVRS tape. However, the tape had suffered severe damage as a result of saltwater immersion, and the data for the final minutes prior to the collision was missing. Nevertheless much useful information was gained. In addition, the radar tape from HMS ARK ROYAL's 996 radar was analysed by specialists, using advanced techniques, and a detailed plot of the aircraft tracks was produced. The plot provided a clear indication of the individual aircraft headings leading up to the collision. The switch positions on the recovered radar controllers from XV650 indicated that the system might have been set to a re-cycle mode as the result of a minor malfunction.

CONCLUSIONS

14. The AVRS tape recovered from the in-bound aircraft and aircrew visual site lines generated from the reconstruction of the flight tracks, utilising the 996 Radar data from ARK ROYAL, confirmed that both aircraft should have had effective visual contact with each other for at least the final 1.5 nm up to the point of impact.

15. The reason, or reasons, why the in-bound aircraft changed course onto an intercept heading with the other aircraft cannot be explained from the available evidence. The investigation must therefore conclude that the primary cause of the accident was the lack of avoiding action from either aircraft in response to an unexplained last minute 17 degree course alteration by the in-bound aircraft XV704 resulting in a mid air collision.

CONTRIBUTORY FACTORS

16. The investigation identified the following contributory factors:
 - a. Both aircraft were operating with their forward High Intensity Strobe Lights (HISLs) switched off, making the night-time assessment of distance more difficult and reducing conspicuity.
 - b. Physical and anecdotal evidence suggests that the crew of the out-bound aircraft may have been distracted by a radar malfunction, which elevated work loading at a critical phase of the sortie, reducing their ability to respond to a rapidly changing situation.

SAFETY RECOMMENDATIONS

17. The Board of Inquiry (BOI) submitted 17 safety recommendations, which included the review of specific carrier operating and recovery procedures, standardisation of HISL operating and maintenance procedures and the fitment of a Flight Data Recorder (FDR). Of these recommendations 15 were endorsed for action.

18. The lack of any FDR data seriously hampered the investigation process and considerably increased the report production timescales and cost overheads. Whilst no further specific recommendations were made as a result of this investigation, the nature of this accident has served to re-emphasise the importance of such equipment. It is therefore strongly urged that the BOI recommendation that Sea King ASaC Mk7 aircraft be fitted with an FDR should be extended to include all Royal Navy operated aircraft at the earliest opportunity.