



MINISTRY OF DEFENCE
MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO
SEA HARRIER F/A 2 ZH805

AIRCRAFT:	Sea Harrier F/A 2 ZH805
DATE:	11 June 2003
LOCATION:	Bristol Channel
PARENT UNIT:	Defence Aviation Repair Agency, St Athan
CREW:	One
INJURIES:	Minor

Issued by: Directorate of Air Staff, Main Building, Ministry of Defence, Whitehall, London SW1A 2HB



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SYNOPSIS

1. On 11 June 2003, Sea Harrier F/A 2 ZH805 was undertaking a test flight from RAF St Athan, when the aircraft went into an uncontrolled spin. The pilot attempted to regain control, but the aircraft was showing no signs of recovery and he ejected, suffering minor injuries and landing in the Bristol Channel. He was picked up by a Search and Rescue helicopter some 20 minutes later. The aircraft crashed into the sea and was destroyed. The Inquiry concluded that the accident was caused by the aircraft departing from controlled flight and entering a spin, but were unable to identify the reasons for this.

BACKGROUND

2. ZH805 was being flown on a full air test sortie following the completion of a major service known as a Scheduled Base Maintenance at the Defence Aviation Repair Agency (DARA) at St Athan. As part of the test sortie the pilot, an experienced Sea Harrier Maintenance Test Pilot, was required to test the aircraft's stall characteristics.

CIRCUMSTANCES

3. ZH805 successfully completed engine checks at 40,000 ft and descended to 24,000 ft to commence stalling checks. The aircraft showed a slight tendency to yaw so the pilot abandoned the first stall attempt. On the second attempt, the right wing suddenly dropped and the aircraft yawed rapidly to the right. The pilot attempted stall recovery. However, it was immediately apparent that the aircraft had departed from normal flight and was in the incipient stage of a spin. At this point, he carried out the incipient spin recovery procedure and then full spin recovery actions. However, despite attempting a number of spin recovery techniques it became apparent that the aircraft was showing no signs of recovery. At 10,000 ft and with no signs of recovery, he made a MAYDAY call to Cardiff Approach, adopted a good posture, and ejected.

RESCUE OPERATION

4. The ejection sequence appeared normal but on deployment of his parachute, the pilot realised he was in an unusual face down position some 20-30 degrees from vertical. The parachute had not deployed fully and the pilot approached the water at an excessive speed. The SAR helicopter had difficulty in receiving the signal from his Personal Locator Beacon as the aerial had fallen into a horizontal position. However, once located, the helicopter transported him to hospital. The pilot had sustained minor injuries consistent with ejection.

AIRCRAFT DAMAGE

5. The aircraft was destroyed on impact with the water.

INVESTIGATION

6. The investigation was hampered by a lack of an Accident Data Recorder, Head Up Display video, or an eye witness and the impact damage suffered by ZH805 when it struck the sea. However, the Board was able to conclude that neither the engine, the nozzles, or undercarriage were a factor in the accident. A number of errors were found in the DARA maintenance documentation which caused the Board some concern, but none were thought to have contributed to the accident. The Board also concluded that fuel contamination and poor tool control could be ruled out as causes.

7. The pilot was highly experienced on Sea Harriers and was considered to be the Royal Navy's leading authority on maintenance test flying of the aircraft type. Without the benefit of an ADR, and as far as can be confirmed from the pilot's memory, his recovery actions appear to have been reasonable. However, the incident highlighted the need to ensure pilots take the necessary recovery action the instant the aircraft reacts in a manner not in accordance with the pilots own commands. Furthermore, the Board was satisfied that the pilot's actions once the spin had developed were correct, although it may have been prudent to maintain the full spin recovery controls for longer as high rotational spins may take some time to recover. The injuries sustained by the pilot were consistent with ejection. It was found that the pilot's face down attitude in the parachute harness was the result of incorrect strapping in procedure.

SAFETY RECOMMENDATIONS

8. The Board recommended that:
 - a. The new Flight Test Schedules for Sea Harrier F/A 2 and Harrier T Mk8 are ratified as a matter of priority.

- b. The Sea Harrier Aircrew Manual is expanded to contain more information on spinning and the existing sections on stalling, departure and spinning are reviewed.
- c. The Sea Harrier operating documentation is amended to specifically prohibit stalling in an asymmetric configuration, i.e. with the lateral centre of gravity displaced.
- d. The key findings of the 1999 Radley Report into RAF In-Service Flight Testing of Aircraft should be advertised and distributed throughout all of the MoD and military organisations involved in flight testing and regulating flight testing of aircraft.
- e. DARA should review the documentation processes used on the Harrier Maintenance Facility.
- f. DARA St Athan's Quality Management System is reviewed.
- g. Aircrew should use the correct strapping in procedures as outlined in the relevant aircrew manual.
- h. During servicing, it is ensured that the Personal Survival Pack lowering line is not twisted when fitted in the stowage loops.
- i. Aircrew are to undertake the published recovery technique for their aircraft type the moment an aircraft responds in a way that was not deliberately commanded.