



Military Aircraft Accident Summary

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE

HARRIER T4A XZ147

Date: 25 September 1991

Parent Airfield: RAF Wittering

Place of Accident: 3 miles north of Great Driffield

Crew: Two

Casualties: 2 Major

INTRODUCTION

1. The pilot of XZ147 was programmed to fly a female University Air Squadron (UAS) cadet who was attached to his squadron. The low level flight progressed normally until the pilot unexpectedly suffered a blow to the face and was incapacitated. Unable to maintain control of the aircraft, the pilot ejected and was quickly followed by the passenger. Although both ejections were successful, the passenger landed in the post-accident fire, suffering major burns and other injuries. The aircraft was destroyed.

CIRCUMSTANCES

2. The passenger was a flying member of the UAS and had flown in Harrier aircraft five times in the previous two weeks in the course of her attachment. On this sortie, she had been allowed to handle the aircraft, under supervision, by the pilot in the front seat. The aircraft was flying at low level when, about 3 nautical miles to the north of Great Driffield, there was a loud crashing sound and the pilot was struck directly in the face by an object. He slumped forward in a semi-conscious state, unable to see, speak or take control of the aircraft. He could hear his alarmed passenger frantically questioning him on the situation but was unable to respond. He soon became concerned with the aircraft's proximity to the ground and ejected. The passenger, seeing the pilot eject, did likewise about a second later.

3. Both ejections were successful, with the pilot's being initiated some three seconds after the initial incident and about three seconds before the aircraft hit the ground. This equates to aircraft heights of approximately 125 feet and 90 feet at the times of ejection of the pilot and passenger respectively; it also placed the passenger's ejection marginally outside the seat limits. The pilot



tumbled through the air, unable to see, until his parachute opened and he found himself looking at the ground from a height of about 15 feet. The passenger has no recollection of her ejection or parachute descent.

4. The aircraft struck the ground approximately 1.3 km after the initial incident and caught fire, also setting fire to parts of two stubble fields. The pilot landed 15 metres short of the impact point and the passenger landed about 75 metres beyond it, within an area of thick smoke, intense heat and flame. About one minute after landing, the pilot managed to sit up and disconnect himself from his survival equipment. He was suffering from a badly bleeding mouth and was unable to put any weight on his right heel. He looked for his passenger but heard her screams coming from the area of thick smoke and fire. After some difficulty in locating her, he discovered her 50 metres inside the fire, sitting upright, without a helmet on and with much of her flying clothing on fire. Her hands appeared uncovered and she was fully conscious. The pilot reassured her whilst he beat out the flames with his gloved hands and disconnected or tore burning equipment from her. It was apparent that she had broken her leg and needed moving from the surrounding smoke and fire. After extinguishing the flames on her, the exhausted pilot dragged the casualty clear of the fire and gave her reassurance. He was met by a civilian who had attempted to find the crew in the fire and gave assistance in moving them to safety. About 8 minutes after the accident, the local emergency services were on the scene, accompanied by a local doctor. The RAF Leconfield Search and Rescue helicopter arrived soon afterwards. Vital first aid was rendered to the passenger before she was transferred to hospital by helicopter.

CAUSE

5. The investigation found a significant quantity of fresh, Black-Headed Gull remains at the start of the wreckage trail and the first items to fall from the aircraft were fragments of canopy, most of which were smeared with bird remains on the inside. The canopy was reconstructed and it was determined that most of the front transparency broke from the aircraft at the instant of the birdstrike. Bird remains were found to have swept across the pilot's visor and bent his oxygen mask attachment hooks. The accident was caused by pilot incapacitation following the birdstrike which broke the front canopy. There had been ploughing in progress in a field close to the aircraft's path just before the accident and, on the day afterwards, several hundred gulls were seen following each working tractor. There was evidence of birdstrikes on other parts of the aircraft. Therefore it was concluded that the aircraft was hit by more than one bird. Control of the aircraft by the passenger under close supervision at the time of the birdstrike was considered as legitimate and her subsequent actions were regarded as correct.

SUBSEQUENT ACTIONS

6. Future designs for UK military aircraft will require a much greater birdstrike resistance for forward-facing transparencies. The

requirement for a strengthened canopy for the Harrier TMk10 is also under examination. The MOD is examining the potential of an automated radar-based bird hazard warning system to reduce the birdstrike risk in the United Kingdom Low Flying System.

7. This accident put the fire protection afforded to aircrew by their equipment to a severe test. The equipment is primarily designed to help aircrew escape from the source of fire rather than protect them from prolonged exposure to it. The protection afforded to the pilot by his flying clothing enabled him to do this and rescue his passenger from the fire. Unfortunately, the equipment did not fully protect the passenger, who sustained significant burns. Prior to this accident, the use of nylon based materials in all flying clothing and equipment was being reduced to give increased personal fire protection. However, the burns suffered by the passenger have concentrated attention on particular items. In particular, a Life-Saving Jacket with a reduced nylon content is already being introduced into service and a design review of the anti-G suit was already under way at the time of the accident.

8. The ejection of a lightweight female raised the question of weight constraints for ejection seat occupants. The policy is currently being reviewed. The question of the availability of appropriate sized flying clothing was also raised after this accident. At present, smaller sizes of flying clothing required for female aircrew are being supplied in small numbers by individual fitting. In the longer term, stock sizes will be extended.

OBSERVATIONS

9. The pilot displayed a total disregard for his own safety and a high degree of personal courage in his rescue of his passenger from the fire.

10. The civilian also played a prominent and praiseworthy part in the rescue.