MINISTRY OF DEFENCE

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE PUMA HC1 XW225

DATE:	15 February 1997
PARENT UNIT:	No 18(B) Squadron, RAF Laarbruch
LOCATION OF ACCIDENT:	Southern Bavaria
CREW:	3 Crew + 5 Passengers
CASUALTIES:	1 Fatal, 7 Minor Injuries

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CASUALTIES:	1 Fatal, 2 Minor Injuries, 5 Slight

SYNOPSIS

1. On the evening of 15 February 1997, Puma HC1 XW225 was flying seven students from the RAF Survival School in Southern Bavaria to a field-landing site to undertake survival training. The landing site was snow covered and, during the final stage of the helicopter's approach, the aircraft became enveloped in a cloud of snow blown up by the downdraft from its rotors. The helicopter overshot its approach and struck trees in a small wood on the edge of the landing site and crashed. The co-pilot and other crew member, along with the passengers escaped from the wreckage with minor injuries. However, the crash caused several trees to fall across the cockpit, trapping and fatally injuring the pilot.

2. The Board concluded that the accident occurred because a safe overshoot was not executed following an unsuccessful attempt to land in 'White Out' conditions.

BACKGROUND

3. During the latter stages of a helicopter's landing on a snow covered site a pilot is likely to have difficulty maintaining his view through the snow cloud created by the downdraft from the rotors. The snow recirculates through the rotors, and can be thick enough to obscure the pilot's view. This is known as a 'White Out'. How quickly the snow cloud envelopes the aircraft depends on the type and depth of snow and on the

wind. The propensity for 'White Outs' is higher when landing on deep, fresh, powder snow with a tailwind than on shallow, packed snow with a headwind.

CIRCUMSTANCES

4. The sortie was carried out using Night Vision Goggles (NVGs). The crew of Puma XW225 were experienced in NVG use but were relatively inexperienced in landing on fresh powder snow. About ten centimetres of powder snow had fallen over southern Bavaria the day before the accident but, by the time the sortie began, it had stopped snowing and weather conditions were suitable for the flight. The sortie had included landings at other sites that night, and although the crew had experienced difficulty landing at these, they had eventually been successful. A large, distant marker was selected and the aircraft began a direct approach to the landing site with a light tailwind. As the aircraft descended to land, it became enveloped in White Out conditions, and the crew lost sight of the marker. With the possibility that the aircraft was drifting to the left an overshoot of the landing site was executed and as the aircraft did so, it collided with nearby trees and crashed.

RESCUE OPERATION

5. Local emergency services and the RAF personnel who had escaped from the wreckage assisted at the crash scene. After releasing the trapped pilot from the wreckage, he and the other injured occupants of the aircraft were evacuated to hospital. In spite of surgery at the hospital, the pilot's injuries proved fatal and he died later that night.

AIRCRAFT DAMAGE

6. The aircraft was seriously damaged by the crash and was later assessed to be of value only as scrap.

INVESTIGATION

7. RAF Pumas are not fitted with Accident Data Recorders (ADRs) or Cockpit Voice Recorders (CVRs). The cockpit structure had been badly affected both by the crash, and by the attempts to rescue the pilot. The Board of Inquiry's investigation therefore took longer than normal because of the need to reconstruct the final moments of the flight solely from witness statements. The Board was able to dismiss a number of potential factors in the accident, including crew fatigue, medical unfitness, major aircraft technical malfunction, visual illusion or NVG failure and weather conditions.

8. Initially, evidence in the wreckage suggested that power to the attitude indicator and automatic pilot may have been lost during the attempted landing. Tests were undertaken to investigate this but the Board considered that the possibility of a power loss was very remote, and therefore was unlikely to have contributed to the accident. The Puma crew had little experience of snow landings, and the Board considered carefully the actions of their superiors. The Board believed that it was impractical to prepare aircrew for every eventuality, and there would always need to be latitude for individual judgement. Whilst the authorisation for the tasking omitted to specify that the pilot, because of his inexperience at landing at night in snow, should be limited to certain operating conditions, it might equally have been reasonable to expect that he would recognise the conditions were beyond his experience.

SAFETY RECOMMENDATIONS

9. The Inquiry's principal recommendation was that RAF Support Helicopter aircrew should receive improved training for night landings in snow; a recommendation that is being implemented.