MINISTRY OF DEFENCE

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE PUMA HC1s XW211 & XW218

AIRCRAFT:	RAF Puma HC1s XW211 & XW218
DATE:	15 April 2007
LOCATION:	Iraq
PARENT UNIT:	RAF Benson
CREW XW211:	3
CREW XW218:	3
DEATHS:	2 Dead

Issued by: Business Secretariat, Headquarters Air Command, RAF High Wycombe, Bucks, HP14 4UE

SYNOPSIS

1. On 15 April 2007, XW211 and XW218 were part of a formation of Puma HC Mk 1 tasked in support of a routine operation in Iraq. They were tasked to transport troops to a landing site, which was a field location in Iraq. Pumas 1 (XW211), 2 (XW218) and 3 were required to reposition at the landing site. Shortly after Puma 1 had repositioned and landed, and all its troops had deplaned, Puma 2 came abeam Puma 1 to land in turn. As Puma 2 descended, its main rotor blades came into contact with Puma 1's main rotor blades. XW211 remained in contact with the ground and upright. XW218 came to rest on its right side. The remaining aircraft in the formation were not involved in the accident.

2. Several troops and crewmembers from XW211 and XW218 were injured. Three people were trapped under XW218, two of whom died of their injuries. The accident area was secured by the troops from the other helicopters and the casualties were evacuated by helicopter, once they had been stabilised. The rest of the Puma aircrew and troops were evacuated before daylight back to the ground troops' main operating base.

BACKGROUND

3. In the early morning of 15 April 2007, a formation of Puma helicopters planned to carry out a landing at field landing site in Iraq for a routine tactical deployment of troops. They planned to land line abreast and the troops simultaneously leave the aircraft. All aircraft in the formation got airborne as briefed and made an uneventful transit to the area of the planned landing site.

4. At the Initial Point, as briefed, the formation prepared for landing. The rear element of the formation spaced back from the lead element to allow a short delay between their arrival to avoid the downwash and possible dust clouds created by the lead aircraft. Puma 1 made a straight-in approach to what the crew believed to be the planned landing field, but was in fact a field one forward and right of the planned landing site. Puma 2's crew realised that Puma 1 was landing long too late to adjust their own approach easily, and decided to stay with Puma 1 to keep their troops together on the drop-off. Puma 3 correctly identified, and was flying his approach to make, the planned field but elected to stay with Puma 1 and 2 to concentrate troop deployment.

5. Pumas 1-3 came to the hover in the field one forward and right of the planned field. The remaining aircraft in the formation made their approaches to and landed in the planned field as originally briefed. Puma 1 then elected to move back and right, crossing a raised earth berm, into what Puma 1's Non Handling Pilot believed to be the original planned landing site (but which was actually two fields to the right and abeam the correct landing site). Pumas 2 and 3 followed Puma 1 in turn, again to maintain concentration of troops.

CIRCUMSTANCES

6. Puma 1 repositioned back and right and landed. Puma 2 also manoeuvred back and right, remaining on Puma 1's left hand side to reposition and land in turn. Shortly after all the troops had deplaned from Puma 1, Puma 2 came abeam Puma 1 and descended to land. As Puma 2 was nearing the ground, the main rotor blades of the two aircraft hit each other. A loud bang was heard by both crews and by troops on the ground, and vibration was felt through both Puma 1 and Puma 2.

AIRCRAFT DAMAGE

7. The tailboom of Puma 1 broke but remained attached by the outer skin, with the tips of the tail rotor touching the ground. The main rotor blades sheared off. The aircraft yawed left and moved laterally right around three feet. Its wheels dug in but it remained upright.

8. Puma 2 was very close to landing. It started to yaw left and roll right. Sections of blade and tip weights broke off and flew through the air as a result of the collision between the main rotor blades. A dynamic rollover occurred and the aircraft rolled fully onto its right hand side. The tailboom was severed and was flung over the top of the aircraft. Puma 2 came to rest on its right hand side, on the same fore-aft orientation as its original landing direction, but with its tailboom lying some 13 metres away directly ahead of the aircraft.

INJURIES/EVACUATION

9. The troops had all deplaned from Puma 1 before the accident occurred. The front aircrew both egressed the aircraft using their primary escape routes through their respective cockpit doors. The crewman egressed through a cabin door, which was already open. Some crewmembers and passengers suffered injuries that ranged from bruising and abrasions to severe lacerations.

10. The two pilots in Puma 2 both egressed through the left hand cockpit door having sustained minor injuries. The crewman fell out of the open right hand cabin door and was found under the rear fuselage of the aircraft. Two passengers also fell out of the right hand cabin door; one of these men and the crewman died at the accident site. The other man was trapped under the aircraft, conscious. After approximately 45 minutes, the aircraft was lifted enough to extract him. The remainder of the surviving troops had all egressed through the left hand cabin door. Apart from the three personnel that were trapped under the aircraft, the remaining passengers and crew reported no injuries other than bruising and minor abrasions.

11. Puma 3 put out an immediate MAYDAY call on the air traffic network as soon as they realised what was happening. The Combat Search and Rescue (CSAR) assets were scrambled soon after the accident occurred. CSAR personnel treated the casualties who were evacuated by the remaining helicopters from the formation to hospital as soon as they were stable to travel.

RECOVERY

12. Both aircraft remained fully guarded at the accident site. They were transported by road initially to a secure base and subsequently returned to the UK. They received some additional damage in transit as the recovery team did not have access to the Puma lifting schedule nor the aircraft specific equipment i.e. the lifting sling.

CONCLUSIONS

13. The Board of Inquiry discounted a number of possible causes during the course of the investigation. These included environmental factors including weather; aircraft performance or technical failure; hostile action; debris or obstructions; and deliberate actions by the pilots.

14. The Board concluded that the accident was caused by Puma 2 being positioned too close to Puma 1 such that the rotors meshed as Puma 2 descended to land.

RECOMMENDATIONS

15. The Board recommended that a full investigation is undertaken to determine what distance can safely be used between aircraft when landing at an unmarked landing site. This investigation should examine the ability to judge distances to and from a rotating disc and whether technical aids could assist the judgement of small distances. It should also establish training requirements.

16. The Board further recommended that an interim minimum distance is specified to ensure that aircraft can land safely next to each other at unmarked landing site.

17. Further recommendations were made which included modifications to safety equipment and working practices for crewmen and troops; enabling the cockpit voice recorder at all times; crash protection; record keeping of aircrew and aircraft documentation; the utilisation of Night Vision Goggles on the ground; and the transportation of unserviceable aircraft.