MINISTRY OF DEFENCE

MILITARY AIRCRAFT ACCIDENT SUMMARY

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE NIMROD XV230

AIRCRAFT:	RAF Nimrod XV230
DATE:	2 September 2006
LOCATION:	Afghanistan
PARENT UNIT:	120 Sqn RAF Kinloss
CREW:	Twelve plus two passengers
INJURIES:	Fourteen fatalities

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

SYNOPSIS

1. On 2 September 2006 Nimrod XV230 took off from its Deployed Operating Base at 0913Z[1] en route to Southern Afghanistan. At 1111:33, approximately 90 seconds after receiving 22 000 lbs of fuel from a Tristar tanker, the crew experienced almost simultaneous bomb bay fire and elevator bay smoke warnings. Smoke was observed in the cabin coming from both the elevator and aileron bays, and shortly afterwards the aircraft depressurised. The crew commenced emergency drills immediately and at 1114:10 transmitted a MAYDAY and turned to head for Kandahar airfield. At 1116:54, the aircraft was observed by a Harrier GR7 pilot, apparently in a controlled descent, with flames emitting from the starboard wing root and starboard aft fuselage. Members of a Canadian army unit also observed the aircraft as it passed to the south of their position. At 1117:39, the

[1] All times are in Zulu (Z) (Greenwich Mean Time), which equates to local Afghan time minus 4½ hours.

Harrier GR7 pilot reported that the aircraft had exploded and he observed wreckage striking the ground. The crash was not survivable.

BACKGROUND

2. The Nimrod was on a routine operational flight providing essential support to Coalition forces at the time of the crash. The crew were all on duty and were properly trained, qualified and authorised. They had arrived at their Deployed Operating Base on 21 August and had flown three sorties since their arrival, the last being on 27 August. The crew were all declared medically fit and considered to have been adequately rested prior to the sortie. The aircraft had not exhibited any significant faults whilst in theatre.

CIRCUMSTANCES

3. The Nimrod took off from its Deployed Operating Base at 0913 and headed for southern Afghanistan. The aircraft transmitted a MAYDAY at 1114:10 and the Harrier GR7 pilot reported that the aircraft exploded at 1117:39. The Harrier GR7 pilot transmitted an accurate position of the crash and two American F18s were appointed as Scene of Action Commander until the crash site could be secured.

RESCUE/SALVAGE OPERATION

4. A Combat Search and Rescue (SAR) team deployed to the site at 1207 and confirmed that there were no survivors. At 1257 the Canadian unit which had observed the aircraft's descent arrived and secured the crash site. At 1430, they were reinforced by a 22 man patrol from 34 Squadron RAF Regiment. The crash site lay in a depression, surrounded by higher ground containing housing and, as such, was not easy to defend. The crew's bodies, personal effects and classified items were recovered as a priority.

5. The following morning the Canadian unit was withdrawn to support other Coalition units engaged in fighting with the Taliban, at which point several hundred locals began to enter the site. The security situation began to deteriorate rapidly and at 0910 the RAF Regiment patrol was withdrawn by air. The majority of the wreckage was removed within a short period of time, probably by local nationals.

AIRCRAFT DAMAGE

6. The aircraft suffered Category 5 damage (destroyed in the crash).

INVESTIGATION

7. A Board of Inquiry (BOI) was convened to investigate the crash with an experienced Wing Commander nominated as its President, supported by two Squadron Leaders from the Nimrod Force Headquarters at RAF Kinloss. The Board members were not able to visit the crash site due to the security situation in the area and were instead reliant on evidence collected by the units who initially secured the crash site and interviews with key witnesses. Crucially, the Accident Data Recorder and a badly damaged section of the mission tape were recovered. This allowed the Inquiry team to reconstruct as far as possible the events leading up to the crash.

8. The Board, using a combination of evidence collected in theatre and expert analysis, concluded that, as AAR drew to a close fuel escaped. This was either as a result of a pressure-release device in the main fuel tank, leading to an overflow of fuel during air-to-air refuelling, or from a leak in a fuel coupling within the fuel system. This fuel moved rearwards, either internally or along the outside of the fuselage. It was then ignited following contact with an element of the aircraft's hot air system. The fuel probably gained access to the pipe at a gap between two types of insulation. The subsequent fire penetrated the pressure hull, causing the aircraft to depressurise and also probably began to weaken the starboard wing. The

aircraft's hydraulic systems probably failed in the latter stages of the incident as a result of the fire and the flying controls were probably similarly affected.

9. After about five minutes, the fuel in the tank located at the base of the starboard wing, having been subjected to intense heat, began to boil. The tank began to breach and eventually ruptured, provoking a boiling liquid, expanding vapour explosion (BLEVE). At a height of about 1000 feet above ground level the weakened aircraft began to break apart into four large parts, which struck the ground within close proximity to each other. The Board was unable to determine whether the BLEVE provoked the aircraft's break up, or whether the BLEVE was a result of the aircraft's break up.

SAFETY RECOMMENDATIONS

10. As a result of its investigation, the Board of Inquiry made 33 recommendations in total relating to policy, fuel system, hot air system, air to air refuelling, operational issues, aircraft modifications, post crash management, engineering and personnel.