MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

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3 June 1982

AIRCRAFT ACCIDENT INVOLVING ROYAL AIR FORCE NIMROD MR2 XV256

Date:	17 November 1980
Parent Airfield:	RAF Kinloss, Forres, Morayshire
Place of Accident:	RAF Kinloss
Crew:	Twenty (20), including 5 checking crew and one additional Air Engineer
Casualties:	Two fatal (Pilots) One major (Air Electronics Operator) One minor (Air Engineer) Three slight (2 Air Electronic Operators and a Navigator)

CIRCUMSTANCES

1. Just before 0730 hrs on the morning of 17 November 1980 a crew took off in semi-darkness on the final sortie of their conversion from the Nimrod MR1 to the Nimrod MR2 aircraft. Being the final sortie, the normal crew was increased to 20 by 5 checking crew and an additional Air Engineer. The surface wind was 070°/02 kts, with 8 kms visibility in rain and a main cloud base of 3000 ft. Engine response and indications during the take-off run were normal, but shortly after take-off, at an estimated height of 20 ft, the aircraft flew through a dense flock of sea birds and suffered numerous bird-strikes. Almost simultaneously the No 1 engine surged violently, suffering a catastrophic internal failure. The low pressure compressors on the Nos 2 and 3 engines were also damaged and, although they continued to run, they produced little thrust. Effectively the fully laden aircraft was being powered by only the No 4 engine which itself may have been damaged.

2. The captain, a Royal Australian Air Force pilot on exchange duties with the Royal Air Force, endeavoured to maintain what little height and speed he had by ordering full power on the live engines and raising the undercarriage. However, with only limited power available he was soon faced with no alternative but to attempt a controlled crash landing. Some 27 seconds after take-off the aircraft came down on the relatively soft tree-tops of a forest area 1300 yards from the end of the runway and was quickly engulfed in flames. Eighteen crew members managed to evacuate the wrecked and burning aircraft, but both the pilot and co-pilot were killed. The aircraft was destroyed. There were no civilian casualties and damage was confined to Forestry Commission property.

CAUSE OF THE ACCIDENT

3. The investigation into the accident established that the cause was a multiple birdstrike which occurred at a critical stage of flight. The aircraft suffered such a severe loss of thrust that maintenance of height and flying speed quickly became impossible. It was the captain's skill in keeping the stricken aircraft airborne long enough to make a very smooth and controlled crash at minimum speed into the tree-tops that undoubtedly saved the lives of the 18 crew members. After the accident 77 dead sea birds were found on or near the runway. It is not known how many others were ingested by the aircraft engines.

SURVIVAL ASPECTS

4. The captain called the crew to crash stations and, despite the short time available, the crew members were able to respond and brace before impact. There was considerable bumping and jolting as the aircraft went through the trees but the deceleration was insufficient to initiate the inertia crash switches; the emergency lights did not come on, nor did the fire bottles discharge. However, the normal cabin lights stayed on for a short time after impact, together with the locking indication lights for the sonobouy fixed launchers and illumination was also provided by the flames outside.

5. Early in the emergency the captain had warned the crew that he might have to ditch and this, together with the relatively slow deceleration, initially caused some confusion. Although shocked and dazed, the crew started to evacuate the aircraft as soon as it came to rest, only to find that they had not ditched in water but were surrounded by blazing forest. Inside the fuselage conditions were appalling. The protruding beam windows had broken during the crash and burning fuel entered through the starboard window, burning a crew member's flying suit. Heat had caused the decomposition of the PVC sheeting laced over the cabin sound-proofing material so that volumes of dense, acrid smoke rapidly built-up, making conditions intolerable within 2 minutes. Various loose articles, such as documents, galley equipment and 2 hand-held fire extinguishers, were thrown forward during the impact; fortunately nobody was hit. The removable floor panels, covering access to the hydraulic, aileron and elevator bays, broke free leaving large holes in the floor which considerably hindered movement inside the aircraft; at least one crew member stumbled blindly into such a hole as he searched for an escape route.

6. In these terrible conditions most of the crew made their way rearwards where, after some difficulty with the starboard door, both entrance doors were opened but the way seemed blocked by flames. In the ever worsening situation some of the crew started to move forward again but it was quickly realised that the flames would have to be braved. Despite the many hazards in the burning, smoke-filled fuselage,

5 crew members escaped - 12 through the port rear entrance door, 1 through the starboard overwing escape hatch, 2 via the starboard frong door and 3 via the broken beam windows. Of those who used the beam windows, 1 had suffered a broken leg in the impact when the fuselage side wall hit a tree and another became stuck half-way through the hole and had to be dragged clear by a crew member who had already cleared the wreckage. Other injuries received consisted of 1 crew member who had severe bruising to a leg and a bruise to his head and 2 who had slight burns; all the survivors suffered from smoke inhalation.

7. Not surprisingly, the front of the aircraft bore the brunt of the impact. Because conventional protective helmets are unsuitable for Nimrod operations, the pilots were not wearing them and they both received blows to the head causing severe injuries which completely incapacitated them. The rapidly deteriorating conditions both inside and outside the fuselage made their rescue impossible.

SUBSEQUENT ACTIONS

8. This was the first Nimrod major accident in over 11 years of service and was caused by a massive birdstrike. Birds present a major hazard to aircraft, particularly at coastal airfields such as Kinloss, and the methods of bird detection and control are under constant review as new information is acquired on birds' habits and new equipment is tried out to plot and control their movements. A close liaison is maintained with the ornithologists of the Aviation Bird Unit (ABU) who provide specialist advice to both the Civil Aviation Authority and the Royal Air Force and who have regularly visited this airfield over the years. Since this accident the ABU was requested to make a further bird activity survey of Kinloss and its report is awaited. The methods of bird control used at this Station were standard and had been reviewed several times without anything suggesting a need for change. Prior to every aircraft movement an airfield search for birds was made and on this occasion the search, made in semi-darkness, did not reveal any roosting birds.

9. To reduce the bird hazard further, Kinloss airfield drainage has been improved, much reducing the amount of standing water which would otherwise make the airfield attractive to particular species. Active bird control measures are taken before any planned aircraft movement by day or night, and during the periods 30 minutes before and after first and last light, take-offs and landings are not permitted unless operationally essential. A searchlight is on trial to assist in the location and

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persal of birds on the airfield at night and the effectiveness of low-light TV and infra-red sensing equipment as bird detection aids is being separately evaluate In addition, long grass will be grown in those areas not under gorse and heather in a combined attempt to make the airfield even less hospitable to flocks of birds.

10. Three other measures are being pursued. First, the Institute of Aviation Medicine is investigating the possibility of developing a comfortable lightweight head protection suitable for use in Nimrods. Second, the loose article hazard is being examined and steps are being taken to improve the security of such things as the floor access panels. Finally, the major hazard presented by the rapid build-up of smoke will be lessened as the lagging material around the sound-proofing of Nimrods is replaced with an improved type.

CLAIMS

11. A claim was received from the Forestry Commission in respect of damage to trees and it has now been settled.

GENERAL

12. Finally, the example of the captain, aided by the co-pilot, must not go without mention. Their professionalism and outstanding skill in handling the aircraft in the face of an impending catastrophe were in the finest tradition of both the RAAF and the RAF. It is a tragedy that both pilots died in the wreckage for there is no doubt that their exemplary airmanship and presence of mind saved the lives of their 18 crew members.

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