



MINISTRY OF DEFENCE

Military Aircraft Accident Summaries

6/90

30 April, 1990

AIRCRAFT ACCIDENT TO ROYAL AIR FORCE JAGUAR GR1A XZ359

Date: 13 April 1989
Parent Airfield: RAF Coltishall
Place of Accident: 2½ nms WNW of St Abbs Head
Crew: 1
Casualties: 1 Fatal

CIRCUMSTANCES

1. On the afternoon of 13 Apr 89, Jaguar GR1A XZ359 took off from RAF Coltishall as the No 2 of a pair. After a medium level transit to the Newcastle area, the 2 aircraft descended to low level and flew an overland route before coasting out over the sea near North Berwick. Heading inland once again, the leader crossed the coast near St Abbs Head and realised he had lost contact with the other aircraft. The No2, in XZ359, had crashed into fogshrouded cliffs on coasting in.
2. The pair let down to low level with Newcastle ATC and, although the cloud was thicker than expected, achieved their planned low level start point at the north-east corner of the Newcastle SRA. They flew the first, overland, portion of the route in good weather and coasted out to the west of North Berwick, heading north across the Firth of Forth. Throughout this part of the route, the leader had difficulty in maintaining visual contact with his No2 because XZ359 was painted in Norwegian camouflage and blended in very well with the background. This difficulty was compounded by the covert formation, 2-3 nms line abreast, being flown in the good weather conditions.
3. The formation turned east out of the Firth but, approaching the Isle of May, encountered a fog bank and climbed to fly above it at about 1300 ft above the sea. They then followed planned track above the fog layer. As they approached the turning point prior to coasting back in near St Abbs Head, they were heading south with the No2 on the left of the formation. He correctly initiated the cross-over turn on to a heading of 234°T for the coast-in. After this turn, the No2 was seen by the leader to be in his 3:30 position, flying level as expected.
4. As the pair approached the coast, the leader could see that the fog was breaking up inland and that the weather would be fit for the planned low level route ahead. As he coasted in, to the south of St Abbs Head, he found that the cloud was sufficiently broken to allow him to descend back to low level and transmitted that he was descending. This call was acknowledged confidently by the No2 and the leader duly let down and continued on track.

5. He did not see the No2 while letting down or when established at low level; this did not cause him immediate concern in view of the problems experienced earlier in the sortie. Nevertheless, after a few minutes, he transmitted a radio call to the No2 to ask his position as he did not see him initiate the turn, as expected, at the next turning point. Not receiving a reply, he tried several more times before becoming concerned and eventually decided to fly back along his track.

6. The leader found no obvious sign of his No2 but, in the area of the coast-in point, he noticed an ominous white cloud that had formed above and just inland of the fog bank. He then contacted Newcastle ATC to determine if his No2 had spoken to them. Receiving a negative reply, he appraised them of his concern that a mishap had occurred. He was then forced to return to Coltishall because of his fuel state.

7. A land and sea search revealed that XZ359 had flown into the cliff face above Lumsdaine Beach some 2¼ nms WNW of St Abbs Head. The aircraft had impacted approximately 100 ft below the top of the 500 ft high cliff. The pilot had been killed instantly and the aircraft wreckage was scattered over a wide area.

CAUSE

8. Investigation of the accident was made difficult by the extreme fragmentation of the wreckage, the lack of eyewitnesses and the absence of an Accident Data Recorder (ADR). Moreover, the crash site was 400 ft up a granite cliff face and 100 ft down from the top. Nevertheless, the distribution of the wreckage allowed the assessment to be made that the aircraft was upright and level when it hit the cliff, although a slight climb or descent could not be ruled out. Also, it was concluded that the aircraft was flying normally with the undercarriage and flaps up, the slats and airbrakes in and the engines running at high RPM without reheat.

9. Examination of the main gun and other pieces of the ejection seat revealed that the pilot had not attempted to eject. It was, therefore, assumed that the aircraft was flying normally and that the pilot was unaware of the impending crash right up to impact. Efforts were consequently concentrated on examining the sequence of events leading to the accident in an attempt to establish the cause.

10. The pilot of XZ359 was highly regarded as both a Jaguar pilot and a Qualified Flying Instructor (QFI) and had amassed some 5580 flying hours during his career, most of them on fast jets. On the sortie itself, he appeared to be performing to his usual high standard. There was no indication that he was uncertain of his position at any time, indeed, he had correctly initiated the last turn before coast-in without the benefit of geographic features. This also indicated that XZ359's Navigation and Weapon Aiming Sub-System (NAVWASS) was working reasonably well.

11. The No2 had made a fuel state call in the expected position and had responded to the leader's "letting down" call. It was assumed, therefore, that both he and his aircraft were performing normally up to that stage. An estimate of the time of the impact was made from Newcastle ATC voice tapes and a local seismological report and investigation was then directed on to the last few seconds of flight in an effort to determine why the aircraft had descended from 1300 ft to 400 ft, entered cloud, and impacted with the cliff.

12. Considering the position of the No2 when he was last seen above the fog and the shallow impact angle with the cliff, it was concluded that the descent had started at about the time of the leader's radio call. In an effort to establish why the aircraft had descended in the first place, various possibilities were investigated and considered in the light of the evidence available.

13. Consideration of the No2 pilot's character, his demeanour on the day of the accident, and his flying and medical records allowed several of these possibilities to be discounted as improbable. Several more were considered to be unlikely in view of the recollections of the lead pilot regarding the precise weather conditions and observed bird activity. Finally, taking into account the examination of the wreckage and its distribution, the most likely possible causes of the accident were considered to be either pilot incapacitation or pilot distraction.

14. Incapacitation could not be positively ruled out, although, as the time between the last radio calls and impact was so short, toxic fumes were considered an unlikely cause. Close attention was given to the possibility of pilot distraction. While it was quite conceivable that the pilot had descended deliberately from 1300ft to the cloud tops, it was difficult to envisage why he should have unwittingly entered cloud, with a distinct horizon and the land in clear weather ahead to give him peripheral cues, unless something distracted him long enough to descend into the cloud at the very edge of the fog bank.

15. It was determined that, at impact, the 'Set Waypoint' (SWP) light was illuminated on the NAVWASS. This light illuminates when the SWP button is pressed and extinguishes following the entry of a two-digit waypoint number. It was considered unlikely that the pilot would have pressed the button without following it up immediately with the required waypoint number; this would break the normal chain of actions and leave the NAVWASS in an 'untidy' condition. It was concluded that there was little doubt that the pilot was engaged in NAVWASS management just prior to the crash, and this could have distracted him long enough to enter cloud unintentionally. His peripheral vision should have told him that he was entering cloud, why it did not in this instance will never be known.

16. It was concluded that, although there was insufficient evidence to deduce a definite cause, the most likely cause of the accident was that the pilot of XZ359 was distracted by NAVWASS management just prior to coast in, and inadvertently entered cloud and crashed into the cliff.

SUBSEQUENT ACTION

17. A feasibility study into the retrofitting of ADRs to older RAF aircraft types is being conducted within the Ministry of Defence.

CLAIMS

18. Claims have been settled totalling some £2,736 in respect of damage caused by this accident.

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