



**NO. 93-016**

**AEROSPATIALE AS350B**

**ZK-HGO**

**9 KM EAST OF FRANZ JOSEF**

**13 NOVEMBER 1993**

## **ABSTRACT**

On 13 November 1993 weather conditions were deteriorating rapidly at the snow landing site, and the pilot was hover-taxiing ZK-HGO to return to his original landing position when the helicopter became enveloped in cloud. The pilot landed immediately but the helicopter was drifting sideways at touchdown and rolled over.

# TRANSPORT ACCIDENT INVESTIGATION COMMISSION

## AIRCRAFT INCIDENT REPORT 94-016

<b>Aircraft Type and Serial Number and Registration:</b>	Aerospatiale AS350B, 2182, ZK-HGO
<b>Number and Type of Engines:</b>	1 Turbomeca Arriel 1B
<b>Year of Manufacture:</b>	1989
<b>Date and Time:</b>	13 November 1993, 1500 hours*
<b>Location:</b>	Snow landing area, 2.5km west of McFetrick Peak, (9km east of Franz Josef Village) Latitude: 43°24'S Longitude: 170°17'E
<b>Type of Flight:</b>	Air Transport—Scenic
<b>Persons on Board:</b>	Crew: 1 Passengers: 6
<b>Injuries:</b>	Crew: Nil Passengers: Nil
<b>Nature of Damage:</b>	Substantial
<b>Pilot in Command's Licence:</b>	Commercial Pilot Licence (Helicopter)
<b>Pilot in Command's Age:</b>	31
<b>Pilot in Command's Total Flying Experience:</b>	702 hours (29 on type)
<b>Information Sources:</b>	Transport Accident Investigation Commission field investigation
<b>Investigator in Charge:</b>	Mr D G Graham

\* All times in this report are NZDT (UTC + 13 hours)

## 1. NARRATIVE

1.1 On 13 November 1993 the pilot and six passengers departed in ZK-HGO from Franz Josef at 1430 hours on a glacier scenic flight which was to include a snow landing. Conditions were clear over Franz Josef Glacier with some layer cloud to the north. The pilot followed a normal scenic route climbing above the glacier and the Geikie snowfield. The weather was good over the Main Divide so he extended the flight slightly, climbing to about 8000 feet in the vicinity of Climber Col. He then descended via the Spencer Glacier to make a snow landing before returning to Franz Josef.

1.2 The area used by the operator for snow landings was on a long spur which extended several kilometres to the west from McFetrick Peak (7150 feet) in the Tartare Range. A large snow basin, at an elevation of about 6000 feet, lay between two high points on the spur, Mount Downe (6500 feet) to the east, and an unnamed knob (6250 feet) to the west. The snow basin merged with a plateau on top of the spur and landings on this essentially level area provided panoramic views of the impressive mountain scenery to the east and south.

1.3 Although there was some layer cloud in the area, the pilot had experienced no problem during his landings on the snowfield earlier in the day. On this flight he noted cloud building up to the west and south-west but the sun was still shining in the snowbasin. He made a normal left circling approach and landed uneventfully, positioning the helicopter for the usual departure towards the south. In accordance with standard practice, the engine was left running, and the passengers disembarked to spend a few minutes enjoying the snowy surroundings.

1.4 The pilot recognised that although weather conditions had been stable at the time of his earlier flights, the situation was now changing and the extent of cloud build-up was rapidly increasing. A video record, filmed by one of the passengers, showed the accumulation of heavy cloud around the northern edge of the snow basin. Broken cloud had formed over the basin itself. Because of the rapidly deteriorating conditions the pilot recalled the passengers, ensured they were properly seated, and prepared for departure without further delay.

1.5 From the landing site the ground sloped

gently downwards toward the south, gradually curved over the side of the spur, and eventually fell steeply below the snowline to the deep valley of the Tartare Stream. At lift-off, the lower southern edge of the plateau was still clear of cloud so the pilot hover-taxied towards the south to reconnoitre the possibility of descending into the valley. However, having proceeded about 200 m downslope from the landing point, it became evident that cloud was rapidly rolling up the valley from the west, precluding a safe exit by that route.

1.6 The pilot decided to return to his original landing area and wait for conditions to improve. He carried out a turn to the left, and commenced a return hover-taxi, initially maintaining a height of about 8 to 10 feet above the snow slope. By this time, cloud was "pouring over the basin" and coming in very fast. Fading light due to the cloud cover reduced surface definition to a minimum. The pilot maintained direction towards the landing site but the flat light, and the absence of footprints or other ground reference, slowed progress.

1.7 As the pilot hover-taxied ZK-HGO slowly up the slope, the cloud came in from behind and enveloped the helicopter creating a complete "white-out". The pilot lowered collective to land immediately but the combined loss of visual reference and the effect of the south-westerly quartering tailwind resulted in touch-down with drift to the right. The right skid dug into the soft snow and the helicopter rolled through 270° coming to rest on its left side. The tailboom was severed by the main rotor blades, separating the tail rotor assembly from the remainder of the structure.

1.8 During the roll-over, the right door was dislodged but the occupants of ZK-HGO were held securely by their seatbelts. The pilot checked that no one was injured, then assisted the passengers to vacate the helicopter. The radio was still serviceable and the pilot alerted the pilot of an aeroplane on a scenic flight over Franz Josef Glacier concerning the accident.

1.9 Arrangements were made promptly for the stranded pilot and passengers to be uplifted by helicopter as soon as cloud covering the snow landing site had cleared sufficiently. Survival equipment satisfying the relevant Civil Aviation Regulations and the requirements of the

Department of Conservation for the scenic flight operation was carried on board ZK-HGO. This equipment was stowed beneath the rear seats and remained readily accessible following the accident. Seat cushions from the helicopter were used to provide ground insulation and mountain survival bags and additional items of clothing as required were made available to the passengers to assist them to keep warm while awaiting pick-up. Persistent cloud cover with a base of 5500 feet amsl delayed helicopter access, but the cloud lifted shortly after 1700 hours, enabling the pilot and passengers to be flown from the site some two hours after the mishap.

1.10 The pilot had operated in the Fox Glacier/ Franz Joseph Glacier region for about two years, flying a Hughes 369 series helicopter. He had landed on the McFetrick Peak snow landing area many times. He had converted to the Aerospatiale AS350B helicopter type some two weeks before the mishap. His conversion training, including a Regulation 76 check, had been conducted on the West Coast by a CAA Approved Instructor. This flying had included snow landings at the McFetrick Peak site. Subsequent consolidation flights on the AS350B with the Company Chief Pilot had also included several snow landings in the same area. On the day of the accident the pilot had flown 2.3 hours in ZK-HGO prior to the afternoon scenic flight.

1.11 In recent years snow landings have become an established and popular feature of helicopter tourist flying in the mountains. While the accident to ZK-HGO could be considered essentially an operational mishap, the general circumstances emphasised the benefit of continual caution in regard to rapid and unexpected weather changes, the provision and accessibility of appropriate survival equipment and the desirability of pilot awareness and experience in relation to typical hazards such as “white-out” and blowing snow, likely to be associated with mountain landings.

1.12 An additional indirect consideration related

to the selection and approval of landing sites. The accident flight was undertaken by the operator of ZK-HGO as an “overflow” flight on behalf of an unrelated helicopter company based at Franz Josef. The operator held a Concession Licence, issued by the Department of Conservation (DOC), allowing regular landings at approved sites in the Westland National Park by another of his helicopters but this Licence did not include ZK-HGO. As a result, the pilot did not have authorization to make a snow landing within the Park although the weather was good in this area.

1.13 At the time of the accident ZK-HGO was being flown under the conditions of a Trial Permit for Irregular Landings also issued to the operator by DOC. This Permit provided authorization for landings on the McFetrick Peak spur, or for landings elsewhere, outside the boundaries of Westland National Park, subject to a specified limitation in the total number of such landings.

1.14 The significant factors associated with the accident to ZK-HGO were of an operational nature, and the conditions of the Permit, under which the snow landing was approved, did not contribute to the mishap. However, during the investigation it became evident that potential existed amongst operators for a perceived and/or actual limitation in regard to landing sites, related to their Licences and Permits. The accident circumstances suggested that appropriate discussion and liaison should continue between operators and DOC staff in regard to existing Licences and Permits, and any future issues or amendments, to maintain and ensure, wherever possible, sufficient flexibility in landing site location and authorization to take account of likely weather variations in a particular area.

(Note: Clearly in an emergency a pilot can land wherever necessary. The Department of Conservation has stated, however, that it would reserve its right to investigate any such landing to ensure there was no abuse of the Licence and Permit system used to allocate landing sites and privileges.)

## 2. FINDINGS

2.1 The pilot was licensed appropriately for the flight and was in current flying practice.

2.2 The flight was conducted in accordance with the appropriate route, altitude and landing site requirements.

2.3 The pilot was familiar with scenic flying in the area and was well acquainted with the snowfield used for snow landings.

2.4 The aircraft had a valid Certificate of Airworthiness and Maintenance Release.

2.5 The aircraft's weight and centre of gravity were within the specified limits.

2.6 The pilot had carried out several uneventful snow landings earlier in the day. No difficulty was experienced in making a subsequent snow landing.

2.10 The right drift and "digging-in" of the skid in the soft snow caused the helicopter to roll over.

2.11 The survival equipment carried on board remained accessible and was adequate for the flight being undertaken.

2.12 The principal factor in the accident was a touch-down with drift. A causal factor was the loss of all visual reference in "white-out" conditions due to cloud as the pilot hover-taxied slowly over the snowslope. Contributing factors included the rapidity with which cloud developed and approached the area, the effect of wind associated with the incoming cloud, and the softness of the snow.

29 June 1994

M F Dunphy  
Chief Commissioner