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# AIRCRAFT ACCIDENT REPORT

**No. 92-008**

**Hughes 269C**

**ZK-HHJ**

**Upper Reaches of Wooden Creek, Olivine Range,  
South Westland**

**9 March 1992**

**Transport Accident Investigation Commission  
Wellington • New Zealand**

TRANSPORT ACCIDENT INVESTIGATION COMMISSION  
AIRCRAFT ACCIDENT REPORT No. 92-008

Aircraft Type, Serial Number and Registration:	Hughes 269C, 1030244 ZK-HHJ
Number and Type of Engines:	One Avco Lycoming HIO-360D1A
Year of Manufacture:	1973
Date and Time:	9 March 1992, 0725 hours NZDT
Location:	Upper reaches of Woodhen Creek, Olivevine Range, South Westland Latitude: 44°13'S Longitude: 168°32'E
Type of Flight:	Aerial Work Deer Hunting
Persons on Board:	Crew: 2
Injuries:	Crew: 1 Nil 1 Serious
Nature of Damage:	Nil
Pilot in Command's Licence:	Commercial Pilot Licence — (Helicopter)
Pilot in Command's Age:	46
Pilot in Command's Total Flying Experience:	8230 hours
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr D G Graham



## 1. NARRATIVE

1.1 The pilot and shooter had departed in ZK-HHJ from their base at Haast at 0650 hours to search for deer in the Cascade River area before conducting a commercial flight later in the morning. The shooter, who held a Commercial Pilot Licence (Helicopter), obtained in 1989, had begun flying with the operator a week earlier and the hunting sortie was part of his introduction to the various activities in which he would be involved.

1.2 Some 30 minutes after departure, while searching the headwaters of Woodhen Creek, a tributary of the Cascade River, at an elevation of about 3700 feet, the crew sighted two deer. The helicopter was being operated with both doors removed and the shooter, who occupied the right seat, was wearing the installed standard "tongue and buckle type" lap belt assembly. This type of seatbelt was released by lifting the flap of the buckle.

1.3 An initial shot brought one animal down and the pilot then manoeuvred ZK-HHJ in pursuit of the other animal. This deer was shot, but in the meantime the first deer got up and began to run down the hill so the pilot turned and descended the helicopter and approached the hillside again, coming to a hover adjacent to the steep slope suitably positioned to enable the shooter to fire at the escaping animal.

1.4 The next moment the pilot saw the shooter "flying out the door" and falling straight down towards the tussock and scrub covered slope some 30 feet to 40 feet below. He was clutching the rifle as he fell. The pilot saw the shooter strike a large "leatherleaf" bush and then remain motionless.

1.5 There was no landing site nearby so after circling overhead for several minutes and observing no movement from the shooter, the pilot, who had tried unsuccessfully to establish a radio contact, decided to leave the area temporarily to seek assistance. He landed at Neil's Beach and awoke a property owner who agreed to return with him immediately to the accident site while the latter's wife contacted the Police to arrange for another helicopter to proceed to the area with appropriate rescue equipment.

1.6 As ZK-HHJ approached the accident location, the pilot, who did not know if the shooter had survived the fall, was reassured to observe a flare fired from the ground. He had difficulty at first in locating the injured shooter who had rolled from his previous position and was hidden by some bushes in a gully. He subsequently hovered the helicopter adjacent to a ridge to enable the passenger to disembark and make his way downslope to render assistance.

1.7 The pilot returned to the Cascade River to await the arrival of the second helicopter. On learning that the doctor from Whataroa had been hunting in the area but was due to leave that morning, the pilot used his helicopter to locate the doctor's camp, picked up the doctor and flew him directly to the accident scene.

1.8 The shooter, who had sustained severe injuries to his back and lower limbs, was flown by helicopter to Carter's Mill and then taken by ambulance to Grey Hospital. He was later flown in an RNZAF F27 aircraft from Greymouth to Christchurch, and transferred to Burwood Hospital for long-term care.

1.9 The shooter remembered fastening his lap belt at the commencement of the flight, and that the length was adjusted to be "slack", to enable him to move around freely in the seat. He recalled sighting the deer and the sequence of shots fired but could not recall any precise event leading to his fall from the helicopter. He had flown as a shooter with other helicopter operators, both in the Hughes 269 type, and the Robinson R22.

1.10 The shooter was wearing a protective "flight suit" in which the material forming the cuff of the left sleeve was fairly hard. While the circumstances could not be established conclusively, it was likely that as the shooter swung his body around to obtain the most effective shot, the flap of the seatbelt buckle was caught inadvertently and lifted, possibly by the sleeve of his flight suit, and the lap belt released. The momentum of the shooter's body movement was then sufficient to cause him to fall out of the aircraft.

1.11 The seatbelt assembly, (American Safety, metal buckle and tongue P/N 501360) had been installed new in ZK-HHJ approximately 37 hours prior to the accident. There was no indication of any defect in the engagement action of the tongue and buckle. When fastened the tongue was securely held. The seatbelt released as intended when the flap was lifted.

1.12 The use of this type of seatbelt had proven satisfactory for both pilot and passenger restraint in a variety of aircraft types. However, for operations in which an aircraft was flown with the doors removed, and the seat occupant required some freedom of body movement, a "lifting flap" buckle arrangement presented a potential for inadvertent release. In deer hunting activity in particular, accidents had occurred on previous occasions as a result of some item of clothing or equipment "snagging" and lifting the flap on this type of seatbelt assembly. Serious consequences, similar to those in this accident, resulted. (See Aircraft Accident Briefs 80-049 and 84-073).

1.13 Various "field improvisations" were devised and used, (albeit without authorisation) in an attempt to eliminate the hazard to shooters who relied on this type of lap belt for restraint while engaged in deer recovery operations. Most of these modifications involved the use of karabiners in place of the left and right portions of the lap belt to avoid the risk of inadvertent release. Some made provision for adjusting the length of the lapstrap. Other innovations included a strap attached to the helicopter structure and clipped to the shooter's waistbelt, or other similar arrangement. (Such a system, employing a suitable harness, had been developed for use by cameramen and been regarded as mandatory when filming from helicopters).

1.14 After the accident in 1984 (84-073) it was recommended to the Civil Aviation Division that they:

"Review the adequacy of restraint systems installed in aerial work helicopters for use of shooters, firstly, to provide security for the individual when shooting and secondly, to enable a person to be restrained firmly when seated in the helicopter".

1.15 The Director of Civil Aviation responded as follows:

"Your recommendations have been carefully considered and amendment action to CASO 9, part 2 concerning safety belts and safety harnesses has been initiated. A temporary CAIC-GEN will be issued on 8 December 1986, effective 15 December 1986, advising of the proposed amendment and will seek comment from interested parties.



The amendment will contain the following statement:

Unless an approved General Purpose Safety Harness is worn in addition to the normal safety belt or harness, each safety belt or safety harness for each seat adjacent to an opened or removed door of a helicopter in flight shall be of a type which cannot be released except by the positive gripping and turning action of a hand. A release mechanism requiring a rotary action of at least 45 degrees for release, and with an unobtrusive control handle unlikely to be moved except by the deliberate action of the wearer would be suitable for the purpose.

The standards for the general purpose safety harness will be prescribed in NZCAR C-4.. This is also mentioned in the CAIC".

However, the above action had not been completed at the time of this accident.

1.16 It was evident that no approval or concession had been sought from the Air Transport Division to sanction officially the use of a more appropriate and/or safer lap belt restraint system, in place of the "lifting flap" buckle assembly, by shooters acting as crew members in deer recovery work. Accordingly, a further recommendation was made to the Air Transport Division of the Ministry of Transport in relation to this subject. See Section 3, Safety Recommendations.

## **2. FINDINGS**

2.1 The pilot in command held a valid Commercial Pilot Licence (Helicopter) and Type Rating for the Hughes 269 type.

2.2 The pilot in command had considerable experience in deer hunting operations.

2.3 The shooter held a valid Commercial Pilot Licence (Helicopter) and had previous experience as a shooter in deer hunting operations.

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

2.5 The doors had been removed from the helicopter in accordance with normal practice during deer recovery sorties.

2.6 A tongue and buckle type lap belt assembly, which could be released by lifting the buckle flap, was installed as the system of restraint for the right seat occupant.

2.7 The shooter had fastened the lap belt before departure and was wearing it loosely while carrying out his duties during the flight.

2.8 While attempting to shoot an escaping deer, the shooter fell from the helicopter and sustained serious injuries when he struck the ground.

2.9 It was likely that the flap of the lap belt buckle was caught inadvertently and lifted, releasing the lap belt, as the shooter swung around to obtain the most effective shot.

2.10 This accident and previous accidents indicated that a lap belt restraint assembly, released by lifting the buckle flap, was inappropriate for use by shooters in deer hunting operations.

## **3. SAFETY RECOMMENDATIONS**

3.1 As a result of the recent accident it was recommended that:

The adequacy of existing restraint systems installed in aerial work helicopters for the use of shooters be considered as a matter of urgency and,

In cooperation and consultation with the aviation industry, appropriate seatbelt modification or other restraint system to provide an appropriate degree of shooter safety during hunting operations be developed and authorised.

7 August 1992

M F Dunphy  
Chief Commissioner



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