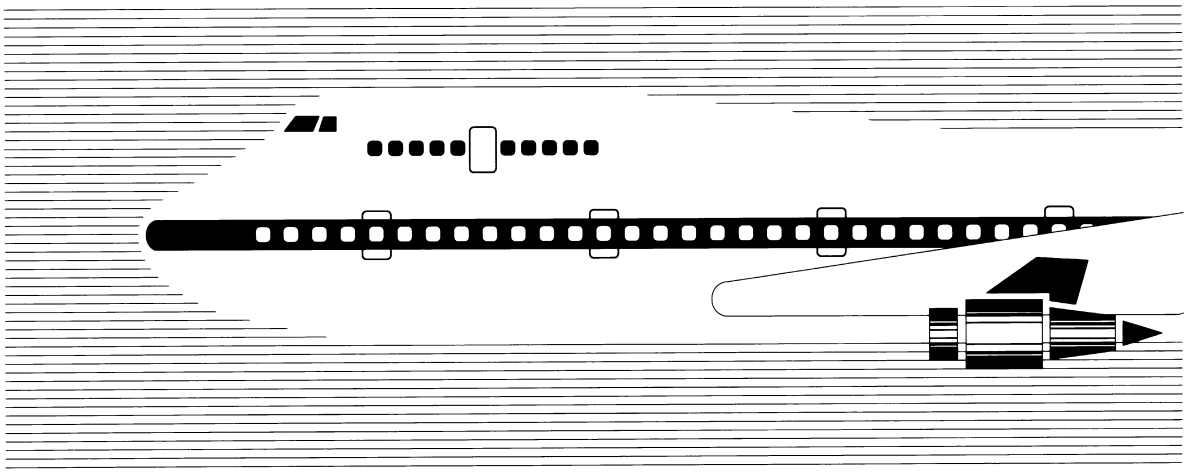
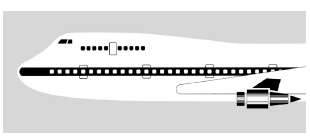
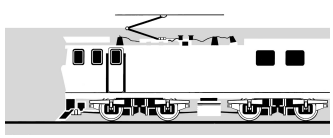


AVIATION OCCURRENCE REPORT

01-012 Robinson R44 Astro, ZK-HTK, collision with terrain, Urewera National Park 3 December 2001


TRANSPORT ACCIDENT INVESTIGATION COMMISSION
NEW ZEALAND

The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Accordingly it is inappropriate that reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

The Commission may make recommendations to improve transport safety. The cost of implementing any recommendation must always be balanced against its benefits. Such analysis is a matter for the regulator and the industry.

Report 01-012

Robinson R44 Astro

ZK-HTK

collision with terrain

Urewera National Park

3 December 2001

Abstract

On Monday 3 December 2001 at about 1430, Robinson R44 helicopter ZK-HTK was on a commercial transport flight from a remote campsite in the Urewera National Park to Ruatahuna, carrying two hunters whose recovery had been delayed by bad weather. While flying over the highest terrain en route, where the weather was probably worst, the helicopter collided with trees, fell to the ground and burned. One survivor was rescued 2 days later.

The pilot's low experience probably contributed to his perseverance with the flight in conditions of low cloud and poor visibility.

Contents

Figures

Abbreviations

Avgas	Aviation gasoline
CAA	Civil Aviation Authority
CAR	Civil Aviation Rule
ELT	Emergency locator transmitter
GAWX	General aviation forecast
GPS	Global positioning system
hPa	hectopascal
kg	kilogram
km	kilometre
m	metre
METAR	Aviation routine weather report
nm	nautical mile
RPM	revolutions per minute
VHF	Very high frequency

Data Summary

Aircraft registration:	ZK-HTK
Type and serial number:	Robinson R44 Astro
Number and type of engines:	one Lycoming O-540-F1B5
Year of manufacture:	1995
Date and time:	3 December 2001**,** about 1430[1]
Location:	in the Te Rake Range, Urewera National Park latitude: 38° 34.84' south longitude: 177° 09.18' east
Type of flight:	commercial air transport, charter
Persons on board:	crew: 1 passengers: 2
Injuries:	crew: 1 fatal passengers: 1 fatal 1 minor
Nature of damage:	helicopter destroyed
Pilot's licence:	commercial pilot licence (helicopter)
Pilot's age:	42
Pilot's total flying experience:	894 hours 350 hours on R44 type
Investigator-in-charge	J J Goddard

[1] All times in this report are New Zealand Daylight Time (Co-ordinated Universal Time + 13 hours).

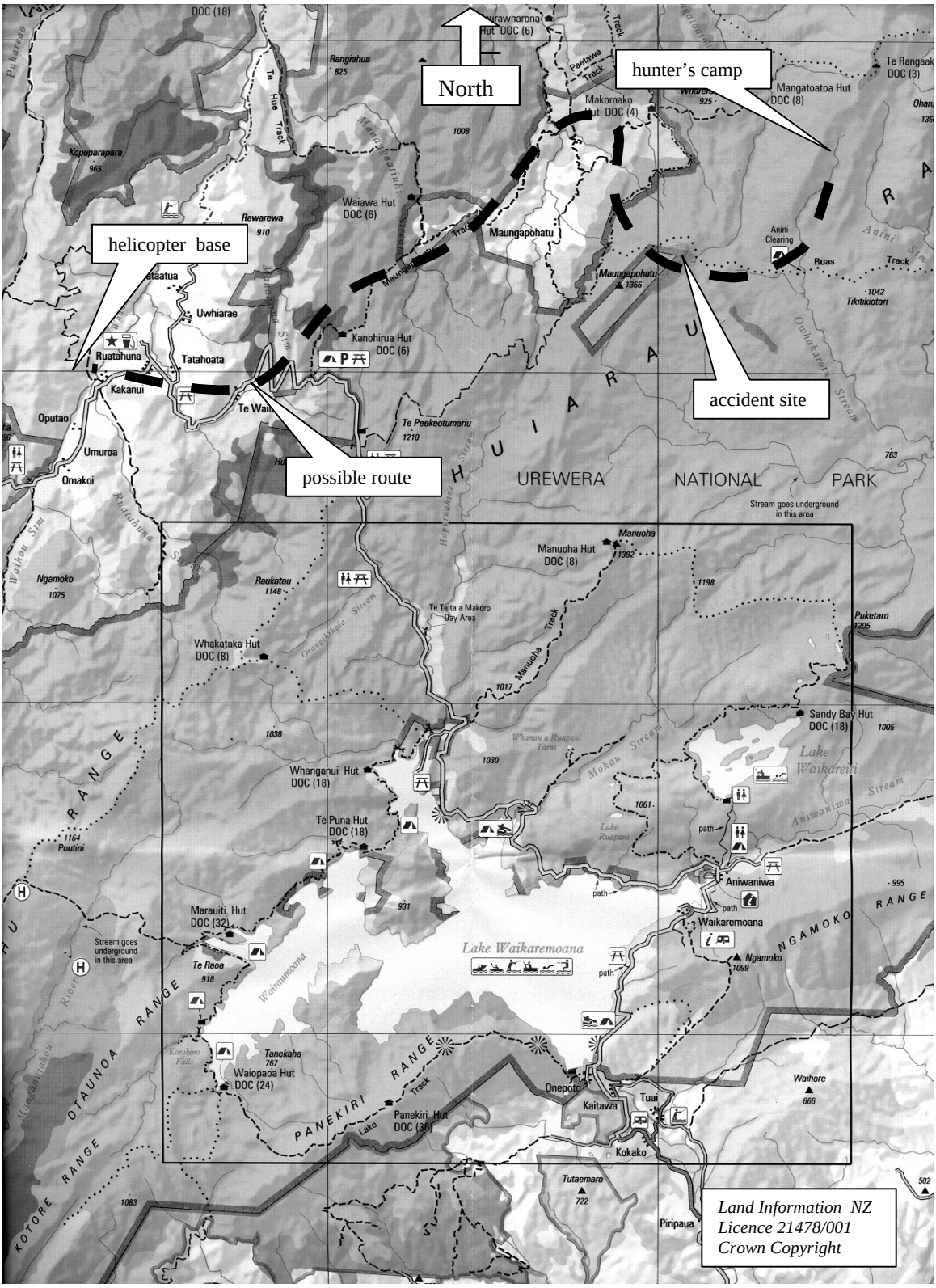


Figure 1
General area and accident site

1 Factual Information

1.1 History of the flight

1.1.1 On 3 December 2001 the pilot of ZK-HTK was operating from his secondary base near Ruatahuna, on the western side of Urewera National Park, where he had positioned the helicopter the previous day to facilitate the recovery of 2 hunters from the Park. He had flown the hunters into their campsite by the Anini River, 13 nautical miles (nm) east of Ruatahuna, on 25 November, and had been due to fly them out on 30 November. Bad weather had subsequently prevented his flying into the area.

1.1.2 At about 0600 the pilot had taken off in ZK-HTK to try to reach the hunters' campsite. He had returned about 2 hours later, having landed by the Makomako hut some 10 nm to the north-east, where he had waited without success for an improvement in the weather. Flying conditions had been in reduced visibility and with overcast low cloud on the high ground.

1.1.3 After returning to Ruatahuna, he borrowed a vehicle and drove with his partner to their main base at Waiotapu, 10 nm south of Rotorua, to get fuel for the helicopter. He returned alone at about 1230, with five 20-litre jerry cans of Avgas.

1.1.4 At 1330 he telephoned his partner to say that he was off to the Anini campsite. His partner was to carry out flight following, and he advised her not to expect to hear from him for a while as he might land and wait. She estimated that ZK-HTK departed at about 1345.

1.1.5 The hunters were in their tent when the helicopter arrived in the Anini valley. They quickly struck camp to make space for the helicopter to land. After landing the pilot shut the helicopter's engine down before the hunters' gear was loaded into the left rear of the cabin. One empty 20-litre jerry can and a rubbish bag were in front of the left front seat. The pilot told the hunters he had to "sneak in" through the fog, and that he would try to fly them out, but if conditions were too bad they would return to the campsite and wait for better weather. The hunters were seated in the left front and right rear seats; the rear passenger carried a large box of gear on his lap.

1.1.6 The helicopter was started, and lifted off at about 1420. The approximate route followed was initially to the south, down the Anini river valley, then to the south-west up a tributary stream, then over generally rising terrain to the west, in the vicinity of Rua's track.

1.1.7 The rear passenger had a restricted view during the flight because of the box on his lap. He described the helicopter climbing, following valleys or ravines, and turning to avoid "fog banks" while keeping beneath the low cloud. He saw that they were at tree top level just before he heard a "bleep" sound, and saw the main rotor taking off the top of a tree on his left. He heard the pilot say "sorry, guys", and saw that they were falling alongside the tree.

1.1.8 After the helicopter came to rest on the ground, the survivor found that he was lying on his side in his seat. He released his lap belt, and saw that a fire had started behind the cabin. He climbed out of his door, which was now uppermost, and moved to the front of the helicopter where he released the pilot's harness and roused him. By then the fire had spread into the front of the cabin. The pilot escaped vigorously, and the survivor laid him on his back a few metres away to extinguish his burning clothing. The survivor returned to the helicopter but was unable to assist the unconscious second passenger in the left front position because of the fire.

1.1.9 As the fire increased, with explosions from gas canisters and ammunition, the pilot and survivor each moved some metres further away. The survivor reported that the pilot died about 15 minutes after the accident.

1.1.10 The survivor spent 2 nights by the helicopter without equipment or provisions, which had been destroyed by the fire. The accident site was found by searching helicopters at about 1100 on 5 December 2001. The survivor was rescued by helicopter winch, and taken to hospital. He was released from hospital on the following evening.

1.2 Injuries to persons

Injuries	Crew	Passengers	Others
Fatal	1	1	
Serious	-	-	-
Minor/nil	-	1	

1.3 Damage to aircraft

1.3.1 ZK-HTK was destroyed by collision with trees and the ground, and by fire.

1.4 Other damage

1.4.1 Nil.

1.5 Personnel information

1.5.1

pilot:	male, aged 42 years
licence:	commercial pilot licence (helicopter)
helicopter type ratings:	Hughes 269, Robinson R22, R44
medical certificate:	class 1, valid to 25 March 2002
last annual pilot competency check:	29 September 2001
last biennial flight review:	29 September 2001
flying experience:	total, helicopter 894 hours total, R44 type 350 hours total, last 90 days 74 hours
duty time:	9 hours
rest before duty:	about 12 hours

1.5.2 The pilot was one of two principals of Heli-Kiwi Limited and, since June 2001, was also chief executive, operations manager and maintenance controller of the company.

1.5.3 He had completed his commercial pilot licence (helicopter) in February 1998. The majority of his flying had been on the Hughes 269 type, but after completing Robinson R44 type conversion training in November 2000 he had only flown R44 ZK-HTK.

1.5.4 He had commenced flying commercially in April 1999, and his predominant flying activity was on local scenic flights from the company base at Waiotapu. In March 2000 he also started flying commercial transport operations, which mostly involved flying hunters in and out of Urewera National Park. His total of such operations was not established, but from March 2000 to December 2001 his logbook recorded such commercial transport operations on 45 separate days, on the Hughes 269 and Robinson R44. The detail of these flights was not recorded.

1.6 Aircraft information

1.6.1 ZK-HTK was a Robinson R44 Astro single-engine helicopter, serial number 0156, manufactured in 1995. It was imported to New Zealand from Australia in November 2000, at which time it had flown 804 hours. It was registered to Heli-Kiwi Limited, and issued with a non-terminating Airworthiness Certificate in the standard category.

1.6.2 ZK-HTK was maintained by Rotor and Wing Maintenance Limited in accordance with the Heli-Kiwi Limited operator's maintenance manual. The last scheduled maintenance, a 100-hour inspection, had been completed on 30 November 2001, at a total time in service of 1297 hours. The next scheduled maintenance was due at 1348 hours, and the next annual maintenance review was due on 15 November 2002.

1.6.3 A review of maintenance documents showed that all scheduled maintenance had been recorded and all significant defects rectified. No outstanding airworthiness directives were found.

1.6.4 The helicopter had accumulated a total time in service of 1299 hours.

1.6.5 The Lycoming O-540-F1B5 engine, serial number L24821-40A had run a total of 1299 hours. It had been installed in the helicopter since new.

1.6.6 The loaded weight of ZK-HTK on the accident flight was estimated to have been 1050 kg with the centre of gravity located approximately 2.35 m aft of datum.

1.6.7 The maximum permitted weight was 1089 kg, and the permitted longitudinal centre of gravity range at 1050 kg was from 2.35 to 2.51 m aft of datum.

1.6.8 The fuel quantity in the helicopter was not established accurately, but was probably about 55 litres on departure from Ruatahuna; this was the amount calculated for the earlier flight, and included the 20 litres from the empty jerry can. The other 4 full jerry cans were left behind at Ruatahuna. This would have provided an endurance of about 65 minutes. The planned flight time for the return trip was 35 minutes.

1.7 Meteorological information

1.7.1 An aftercast of likely weather conditions was produced by MetService NZ Limited. It included:

> A slow-moving area of high pressure to the east of the Chatham Islands produced a moist north-east airflow over North Island. The situation was slow to change.
>
> Estimate of weather conditions in the vicinity of the accident site at around 1430:
>
> > Cloud: Patches of cumulus/stratocumulus at approximately 1500 feet. Overcast stratocumulus base approximately 3000 feet and areas of high cloud above 8000 feet.
> >
> > Weather: Drizzly rain, with patches of stratus in drizzle below the main cloud base.
> >
> > Visibility: Reduced visibility to approximately 1500 metres in drizzle/rain.
> >
> > Wind: Northerly winds of approximately 15-20 knots at 3000 feet, with little or no wind shear.

1.7.2 Aviation routine weather reports (METAR) included:

Taupo:	1400:	Surface wind 030°/11 knots, visibility 17 km, cloud scattered at 2000 feet, broken at 3000 feet, temperature 20°, dewpoint 14°, pressure 1023 hPa.
	1500:	Surface wind 020°/11 knots, visibility 12 km, cloud scattered at 2000 feet, broken at 3000 feet, temperature 19°, dewpoint 14°, pressure 1022 hPa.
Rotorua:	1400:	Surface wind 020°/13 knots, visibility 25 km, cloud scattered at 1500 feet, broken at 3500 feet, temperature 19°, dewpoint 16°, pressure 1023 hPa.
	1500:	Surface wind 020°/10 knots, visibility 25 km, cloud scattered at 1600 feet, broken at 3000 feet, temperature 19°, dewpoint 16°, pressure 1023 hPa.
Gisborne:	1400:	Surface wind 340°/13 knots, visibility 60 km, cloud few at 2500 feet, scattered at 4000 feet, temperature 25°, dewpoint 16°, pressure 1021 hPa.
	1500:	Surface wind 340°/13 knots, visibility 60 km, cloud few at 2500 feet, scattered at 4000 feet, temperature 25°, dewpoint 16°, pressure 1021 hPa.
Napier:	1400:	Surface wind 310°/17 knots, visibility 80 km, cloud few at 4000 feet, scattered at 15000 feet, temperature 28°, dewpoint 16°, pressure 1019 hPa.
	1500:	Surface wind 330°/19 knots, visibility 80 km, cloud few at 4000 feet, scattered at 15 000 feet, temperature 27°, dewpoint 16°, pressure 1018 hPa.

1.7.3 The general aviation forecast for North Island (GAWX NI), issued at 0438, and valid until 1800, stated (in part):

> Situation: A moist north-northeasterly flow covers the North Island with an active trough just west of the island.
>
> Forecast weather: (Bay of Plenty): scattered rain showers or patchy rain/drizzle. Areas of broken cumulus/stratocumulus 2000-3000, tops 8000 feet. Scattered altostratus/altocirrus above 8000 feet. Areas of broken stratus 400-1400 feet.
>
> Visibility: 30 km, reducing to 1500-4000 m in rain/drizzle/thunderstorms with rain, and to 4000-7000 m in scattered showers of rain.
>
> Wind forecast: (for 3000 feet): Rotorua 355°/30 knots; Gisborne 345°/23 knots.

1.7.4 The subsequent GAWX NI, issued at 1214, and valid to 2400, stated (in part):

> Situation: A moist northerly flow covers the island.
>
> Forecast weather: (Bay of Plenty): Occasional rain and drizzle. Areas of broken stratus 800 feet lowering to 400 feet in rain and drizzle. Layers of broken cumulus, stratocumulus and alto cirrus above 1800 feet.

Visibility: 30 km reducing to 2000 m in rain, drizzle/ heavy rain showers, and 3000 m in rain showers.

Wind forecast: (for 3000 feet): Rotorua 010°/31 knots; Gisborne 360°/23 knots.

1.7.5 There was no record to show whether the pilot had either GAWX forecast.

1.7.6 Another helicopter company, based in Murapara (northwest of Ruatahuna), had hunting parties in the Ruakituri River area (5 nm southeast of the Anini), whose recovery was also overdue. Its pilot reported that he had tried to fly across the Maungapohatu Saddle area to the Ruakituri area at about 1000 on 3 December 2001, but low cloud precluded this, so he returned to Murupara. During the afternoon he was able to circumnavigate the Urewera high country and Lake Waikaremoana by flying south down the Waiau river, then east and north up the Ruakituri River, to recover the parties to Tuai (near Waikaremoana). He reported that he did not fly in the Anini/Maungapohatu area, but looked towards it and considered it unsuitable at the time, with low cloud and a strong northerly wind.

1.8 Aids to navigation

1.8.1 ZK-HTK was equipped with a GPS (global positioning system) receiver. The pilot was reported to have stored landing sites, such as the Anini campsite, as waypoints in the GPS.

1.9 Communication

1.9.1 ZK-HTK was equipped with normal aircraft VHF radios, and a cellphone.

1.9.2 No communications from ZK-HTK were reported on the accident flight or the flight earlier in the day. Neither VHF radio nor cellphone communication from low altitude in this area of Urewera National Park was likely to reach any ground-based station because of terrain masking.

1.9.3 In remote area operations beyond radio communication range, the company flight following procedure was for the pilot to ensure that the designated flight following person had a record of the due time for re-establishment of contact. For this flight, the pilot's advice that he might land and wait was understood to indicate a possible overnight delay because of weather.

1.10 Aerodrome information

1.10.1 Not applicable.

1.11 Flight recorders

1.11.1 No flight recorders were installed or required to be installed in ZK-HTK.

1.11.2 The GPS from ZK-HTK was severely damaged by fire, and no data was recovered. GPS equipment has proved to be of significant value in recording recoverable track and time data in several recent investigations.

1.12 Wreckage and impact information

1.12.1 The fuselage of ZK-HTK was lying on its left side on a heading of 300° magnetic, on forested terrain which sloped down to the north at 20°. The accident site was at an elevation of 3300 feet on a broad saddle just north of the north-facing Te Rake Range, and 1 nm east of Maungapohatu, 4480 feet high. The area was covered with mature native beech forest of moderate density. The limited tree damage indicated that the helicopter had descended vertically through the trees. Pieces of separated tree up to 20 cm in diameter showed evidence of rotor blade slashes.

1.12.2 A severe local fire, fuelled by the contents of the fuel tanks, had burnt out in the cabin, engine and main transmission area, consuming most light alloy components of the helicopter.

1.12.3 The main rotor showed evidence of high-energy rotational tree strikes, and also of low energy or static ground impacts. The tail rotor blades were creased, probably from sideways ground impact, but with no evidence of rotational damage. The tail boom, empennage, gearbox and tail rotor were essentially in place on the rear fuselage, with the transmission shaft complete between the tail rotor and the main transmission. The vertical and horizontal stabilizers showed minor trailing edge damage, consistent with a rearward collision with trees.

1.12.4 All major components were accounted for at the site, but the integrity of the control systems could not be established because of fire damage. No instrument or switch position evidence remained. The engine and main transmission were in place, although substantially burnt away. The engine fan cage showed no evidence of rotational rub marks. The front passenger's seat belt buckle was found in a closed position, indicating that he had been restrained in his seat. Both other occupants had released themselves and escaped from the fire. The cargo hook was closed and empty.

1.13 Medical and pathological information

1.13.1 The post-mortem and toxicological examinations of the pilot did not disclose any abnormalities that might have affected his ability to conduct the flight.

1.13.2 He survived the ground impact, and was helped to exit the aircraft. However he had sustained severe chest injuries which led to his death some 15 minutes later. He had also sustained severe burns.

1.13.3 Post-mortem examination of the front passenger was limited because of extensive burning. The injuries sustained in the impact were not established.

1.14 Fire

1.14.1 Fire erupted a short but undetermined time after ground impact, and spread through the cabin of the helicopter. It was principally fuelled by some 40 litres of Avgas in the fuel tanks, and continued until the fuel source was exhausted. The source of the fire was not established because of fire damage, but may have been from the hot engine exhaust, or from the battery. Gas canisters and ammunition were reported to have exploded during the fire, but not before it had become established. Fire damage to the forest was local and limited.

1.15 Survival aspects

1.15.1 The impact forces involved in the ground collision were probably moderately severe, as indicated by the injuries sustained by the pilot. The front passenger was likely to have received the most severe injuries because of his location, but this could not be confirmed. He was probably knocked unconscious, because no response was noted by the survivor. The survivor, in the right rear seat, was probably cushioned from some impact forces by the location of the baggage to his left. All 3 occupants were properly restrained by lap/diagonal harnesses.

1.15.2 The helicopter was reported missing to Search and Rescue at 0700 on 4 December 2001 by the pilot's partner, who acted in accordance with the information she had received from him before departure. She then drove to Ruatahuna where she confirmed the helicopter's non-return. The search, by ground and air, was commenced promptly, but was restricted by bad weather until the following day, when the accident site was found at about 1100. The delay in notification did not affect the outcome of the accident.

1.15.3 The emergency locator transmitter (ELT) was prevented from functioning by the onset of fire, which consumed it shortly after the accident. The ELT probably survived the ground impact, but its location by the main transmission was near the seat of the fire. A better alternative location for the ELT was not evident for the R44 helicopter type.

1.15.4 The survivor commented that he escaped from the helicopter without any of his equipment or provisions, which were then destroyed in the fire. He thought that the personal carriage of some survival equipment in a waist bag rather than in his pack, while travelling in the helicopter, would have been of assistance to him during the subsequent 2 days before rescue. Neither hunter carried a personal locator beacon.

1.16 Tests and research

1.16.1 Nil.

1.17 Organisational and management information

1.17.1 Heli-Kiwi Limited was formed in 1998 by the pilot and a business partner. An initial Air Operator Certificate was issued by the Civil Aviation Authority (CAA) and flying operations started in April 1999 from the base at Waiotapu, near Rotorua. Most flying was carried out by the pilot, under the supervision of the company operations manager who was based in Tauranga.

1.17.2 In June 2001 the pilot had achieved a total flight time of 750 hours and, with the recommendation of the operations manager, he applied to CAA for, and was granted, approval of himself as the company chief executive, operations manager and maintenance controller. The former operations manager continued as assistant operations manager and assistant maintenance controller, essentially to facilitate other company operations in Tauranga with a Hughes 369 helicopter. The previous chief executive, the pilot's business partner, had not played an active role in the day-to-day business of the company, and general management had been carried out by the pilot from the inception of the company.

1.17.3 The company operation at Waiotapu had in effect been a predominantly one-man operation, supported by the pilot's partner, who was the company administration officer, and by a local part-time pilot, enabling the pilot to take regular time off.

1.18 Additional information

1.18.1 The deceased hunter needed to take medication for a heart condition. He had carried sufficient tablets for 3 extra days, in case of delays in their return. The pilot was aware of this. The survivor subsequently said that his companion's heart condition was mild, and the medication was not critical.

1.18.2 The regulatory minima for weather and minimum heights for visual flight rules (VFR) flights were published in Civil Aviation Rules (CAR) Part 91.

91.301 stated, in part (table 4):

> in class G airspace, at or below 3000 feet or 1000 feet above the terrain whichever is the higher: clear of cloud and in sight of the surface, with a flight visibility of 5 km.

91.301(c)(1) stated:

> each pilot-in-command of a helicopter may operate in class G airspace with a visibility of less than 5 km if manoeuvred at a speed that will give adequate opportunity to observe other traffic or any obstructions in order to avoid collisions.

91.311(a) stated, in part:

> No pilot-in-command of an aircraft shall operate an aircraft under VFR-… (3) over any other area, at a height of less than 500 feet above the surface.

91.311(c) stated, in part:

> Paragraph (a)(3) shall not apply to a pilot-in-command of an aircraft if the bona fide purpose of the flight requires the aircraft to be flown at a lower height, and …

2 Analysis

2.1 The circumstances of this accident involved a short helicopter flight into difficult forested and mountainous terrain, during a prolonged period of bad weather. The prolonged bad weather was evident from the pilot's inability to do the flight during the previous 3 days; from his aborted flight attempt earlier in the day; from the survivor's account of the accident flight; and from the subsequent search, which was unable to find the accident site until 2 days after the accident.

2.2 Evidence from the wreckage, and also from the survivor, indicated that the first event in the accident sequence was the helicopter main rotor striking tree tops. There was nothing to indicate that any control system or power failure had occurred before the first tree strike. The "bleep" noise reported was probably the low rotor RPM warning immediately following the tree strike, indicating a rapid decrease in rotor speed from the collision. There was similarly no indication of speed or direction of flight beforehand. However, given the poor weather, the likelihood is that the pilot was flying slowly towards the west at low level, probably with a large drift angle to the left resulting from the northerly wind.

2.3 After this tree strike, little or no control of the helicopter would have been available to the pilot, and it fell nearly vertically some 80 feet from tree top height. Further tree strikes probably occurred, slowing or stopping the rotors and engine as it fell, as indicated by the absence of damage to the tail rotor and engine fan. The minor damage to the trailing edges of the stabilizers may have occurred during some rearward movement into the tree tops, but more probably resulted from tree collisions during the fall, and with little rotor speed, as indicated by the lack of matching damage to the adjacent tail rotor blades.

2.4 The ground collision was with the helicopter's left side, and probably nose-down, resulting in severest injury to the front passenger and pilot. The rear passenger was protected from major injury by baggage stowed effectively between him and the ground, and he was able to escape before the fire spread significantly.

2.5 The survivor's account of the flight confirmed that they were in conditions of low cloud and variable poor visibility, flying at low level above the forest and getting closer to the tree tops as they flew into higher terrain to the south-west. His view was limited, but sufficient to indicate that some outside view was probably available to the pilot right up to the first tree strike. While they had not flown into cloud, it was likely that they were very close to cloud base, and close above the forest canopy. In such a position, transpiration from trees often produces local lower cloud patches. In addition, they were approaching a north-facing slope with a moist 20 knot northerly wind blowing, where orographic lifting of the air would have been likely to produce thicker and lower cloud. There was a probability that the pilot's visibility was compromised, and that he was constrained to fly very low to keep beneath cloud while unable to see well enough to prevent the helicopter from flying into the tree tops. A further possibility is that some condensation occurred on the inside of the helicopter's bubble from the effects of three damp people and their wet gear in the cabin, with reducing temperature as the helicopter climbed into cooler air. There is no evidence to support this further hypothesis, however. The helicopter was equipped with a demister, which could have alleviated the problem.

2.6 The reason why the pilot persevered with the flight was not obvious. Having managed to fly in to the Anini campsite, he would have known what specific low cloud and visibility conditions were likely along his route, so it may have been reasonable to decide to fly out, with the option of returning to the campsite, as he had planned. However, the ability to make reliable judgement decisions about marginal weather depends on experience, and the pilot was of low experience. Although he had been running the helicopter business for 2½ years with some success, he was still a low-time pilot, only just out of supervision. He probably needed to have set a higher threshold of bad weather minima for himself, which would have helped him to decide when to turn back or decline to fly on commercial transport operations of this nature.

2.7 The pilot's motivation for trying to make the flight was that the hunters were 3 days overdue to be picked up from Urewera National Park; in addition one of them would have been running out of his medication. This probably caused the pilot to treat the flight as an emergency flight, and the overall circumstances would have been likely to cause him some stress. While so responding to these factors was to some extent commendable, the pilot had a greater duty to ensure that he operated in a reliably safe manner. Deciding not to fly, or deciding to turn back in good time in marginal weather was one part of this duty for which his level of experience probably had not yet sufficiently prepared him. The hunters, as with anyone camping in remote areas, needed to be able to cope with enforced delays, so any perceived urgency to fly them out may not have been necessary.

2.8 The action of the helicopter pilot from the other company, who at about the same time was able to fly south around the Urewera high country and Lake Waikaremoana to recover hunting parties from an adjacent area, is of interest. He had made an aborted earlier flight similar to ZK-HTK, and had observed the weather in the area where the accident happened and considered it unsuitable. However he knew where an alternative lower route would enable his flight to be made.

2.9 Information on the route or routes taken by the pilot of ZK-HTK on both of his flights was limited; the first flight terminated at the Makomako hut, before returning to Ruatahuna. On the second flight the detailed route out used by the pilot is not known, but it was likely that he would try to follow a similar route back. If that was the case, he may have observed on the way that the area of the subsequent accident was the most likely to have the worst weather; it was the highest terrain en route, a broad saddle exposed to the northerly wind. He may have known that once past it, the flying conditions were likely to improve as he descended.

2.10 Any additional factors which could have led to the accident on the return rather than the flight out were not established, but may have included:

- a local slight lowering of the cloud
- a slightly different route across the saddle, perhaps over higher terrain
- the possibility of interior misting
- and the drift being to the left rather than to the right - the pilot's right seat would have afforded him a better view when drifting right.

2.11 The helicopter's performance, while reduced by the extra load, should have had sufficient margin at 3300 feet on the day not to be a significant factor.

3 Findings

3.1 The pilot was appropriately licensed and fit to conduct the flight.

3.2 The helicopter had a valid Airworthiness Certificate, and records indicated that it had been appropriately maintained.

3.3 The helicopter was loaded within normal limits.

3.4 The pilot was not experienced in conducting this type of operation in weather conditions of low cloud and poor visibility.

3.5 The pilot probably treated the flight as an emergency flight because he understood that a passenger was running out of his medication.

3.6 The pilot's probable perception of urgency was not necessary.

3.7 The flight was carried out in local weather conditions of low cloud and poor visibility.

3.8 The helicopter was being flown over the highest terrain en route, where the weather was probably worst, when it collided with trees.

3.9 The collision with trees probably resulted from the pilot's visibility being reduced while he was flying the helicopter at a very low height above the forest canopy.

3.10 The helicopter was functioning normally when the collision occurred.

3.11 The helicopter was probably under control when the collision occurred.

3.12 After the initial collision with trees the helicopter was not capable of normal control.

Approved for publication 07 August 2002

Hon. W P Jeffries
Chief Commissioner

Recent Aviation Occurrence Reports published by the Transport Accident Investigation Commission

00-008 Aerostar S81 A hot air balloon ZK-SKY, power line incident, near Methven, 6 July 2000

00-009 MD 369E ZK-HFT, loss of engine power, near Te Anau, 17 October 2000

00-011 Cameron A180 hot air balloon ZK-FAS, collision with power line, Taupo, 28 October 2000

00-012 temporary loss of air traffic control communications system, Christchurch main trunk air traffic services centre, 25 October 2000

00-014 Piper PA23 Aztec, ZK-DIR, nose undercarriage collapse after landing, Gisborne Aerodrome, 14 December 2000

00-015 Piper PA28-140, ZK-CIK, loss of control and impact with terrain, Amuri Range, near Hanmer Springs, 19 December 2000

01-002 Fairchild SA227-AC Metro III, ZK-RCA, bird strike and loss of both engines, Tauranga Aerodrome, 9 March 2001

01-003 Hughes 369D ZK-HMN, in-flight engine flameout, 12.5km northwest of Milford Sound, 23 March 2001

01-005 Bell UH-1H Iroquois ZK-HJH, tail rotor failure and in-flight break-up, Taumarunui, 4 June 2001

01-007 P-68B Partenavia ZK-DMA, double engine power loss, North Shore Aerodrome, 20 July 2001

95-008 Addendum to Report 95-008, Piper PA 28-161, ZK-MBI, missing after departing from Gisborne, 21 May 1995

01-004 B767-300 ZK-NCH, in-flight loss of flap component, Auckland, 19 May 2001

01-009 Bell 206B Jetranger, ZK-HWI, perceived engine power loss and heavy landing after takeoff, Mt Pisa Station, Cromwell, 11 September 2001

01-010 Embraer EMB-820C Chieftain ZK-RDT, door open in flight, near Auckland, 31 October 2001

01-011 Cessna A185E Skywagon, ZK-JGI, forced landing following power loss after take-off, near Motueka, 29 November 2001

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