Aviation Investigation Final Report

Location:	Hilo, Hawaii	**Accident Number:**	LAX04LA256
Date & Time:	July 8, 2004, 12:30 Local	**Registration:**	N196BH
Aircraft:	Eurocopter AS350 B2	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 6 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Sightseeing		

Analysis

The pilot encountered instrument meteorological conditions during an air tour flight. The helicopter's main rotor contacted trees as the pilot was attempting to reverse course; the helicopter then hit hard and rolled over during an emergency landing. During the flight, the pilot heard reports of poor weather conditions along his intended flight path. He chose to fly along a different flight path to avoid the weather. He flew above a scattered, thin layer of clouds, and the weather began changing rapidly and clouds formed and closed in on the helicopter. The pilot descended through a hole trying to regain visual conditions underneath the cloud deck. Once below the clouds, the weather continued to worsen as the clouds and fog continued to surround and engulf the helicopter. Now in instrument conditions, the pilot was attempting to reverse course and climb when the main rotor impacted a tree. The helicopter began vibrating severely and an emergency landing was initiated. During the touchdown, the right skid struck a boulder, and the helicopter rolled onto its side. No mechanical malfunctions were reported with the helicopter. A witness reported that just prior to the accident, weather conditions were sunny and clear, then the fog rapidly came in and surface visibility decreased to 4 feet. She further stated that the rapidly changing weather is common to the area.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's inadequate planning/decision by his VFR flight into IMC, and his failure to maintain obstacle clearance which resulted in an in-flight collision with a tree. A low ceiling and fog were contributing factors.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. WEATHER CONDITION - LOW CEILING
2. WEATHER CONDITION - FOG
3. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
4. (C) VFR FLIGHT INTO IMC - CONTINUED - PILOT IN COMMAND
5. EMERGENCY PROCEDURE - INITIATED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

Findings
6. OBJECT - TREE(S)

Occurrence #3: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #4: ROLL OVER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
7. TERRAIN CONDITION - ROCK(S)/BOULDER(S)

Factual Information

On July 8, 2004, at 1230 Hawaiian standard time, an Eurocopter AS350 B2, N196BH, landed hard in a pasture on the north slope of Mauna Kea Volcano, Hilo, Hawaii. Blue Hawaiian Helicopters, Inc., was operating the helicopter as an on-demand air tour flight under the provisions of 14 CFR Part 135. The commercial pilot and five passengers were not injured, one passenger sustained minor injuries. The helicopter sustained substantial damage. A combination of instrument and visual meteorological conditions (IMC) prevailed along the route of flight, and a company flight plan was in effect. The helicopter departed the Waikoloa Heliport at 1216, en route through Volcanoes National Park, with a planned arrival to Hilo at 1320.

The operator submitted a written statement on July 23 in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2). The pilot heard reports of poor weather conditions along his intended flight path and he chose to fly along a different flight path to avoid the weather. During the flight he flew above a scattered, thin layer of clouds, and the weather began changing rapidly. The cloud layer began rising and the pilot descended beneath the clouds through a hole. During the descent, the pilot decided to make an emergency landing in a pasture. The clouds continued to surround the helicopter, and the main rotor struck an object. The helicopter was vibrating and an emergency landing was initiated. During the touchdown, the right skid struck a boulder and the helicopter rolled onto its side. No mechanical malfunctions were reported with the helicopter.

In addition to the statement from the operator, the pilot submitted a statement on July 27. He reported that he departed Waikoloa Heliport about 1220. Due to weather, the pilot chose a different route than he normally flew during the tour flight. Weather worsened during the flight, and he decided to turn around and return to the clear weather. However, the entire area became covered by clouds almost instantaneously. The pilot climbed the helicopter into partial IMC attempting to find an area clear of clouds. The visibility was restricted, and the main rotor blade impacted an object that the pilot believes was a tree. Just following the impact, the pilot saw the ground and made a precautionary landing. Upon touchdown, the helicopter rolled onto its right side.

The Federal Aviation Administration (FAA) inspector conducted a group interview of the passengers following the accident. All six passengers indicated that towards the end of the flight they were no longer able to see the ground and that they were operating in clouds. They all expressed deep concern about their safety and wondered how the pilot was navigating. A passenger seated in the right rear seat next to the helicopter window asked her husband a question, who then relayed the question to a passenger seated next to the pilot. The front seat passenger asked the pilot, "Do you have radar?" The pilot did not respond and moments later the rear seat passenger near the window saw a main rotor blade strike a tree. The helicopter

began vibrating and the pilot broadcasted a "MAYDAY" call. The passengers reported only seeing the ground just prior to impact.

A witness, a former flight attendant, was walking her dog when the accident occurred. The day was hot, sunny, and clear, when between 1200 and 1230, the weather changed rapidly and the fog closed in. She decided to take the dog out because the temperature decreased. As she was transitioning downhill near a tree line, she heard "blade chopping" that "sounded like a large lawnmower." It was so loud that she grabbed her dog and jumped into a ravine. The sound lasted for about 45 seconds and became louder during the last 15 seconds. She did not hear any impact sounds. She walked to the end of the parcel in attempts to see what made the noise; however, the ground visibility was about 4 feet and she was unable to determine the cause of the sound. At 1600, she was returning from town when she saw a police car parked on a road. She stopped and was advised that a helicopter had crashed and that all of the occupants were okay. The accident site was approximately ¼ to ½ -mile from her location in the ravine. The weather was clear and sunny. The witness noted that the rapidly changing weather conditions were common for that area.

The helicopter was equipped with a custom designed and installed video and audio recording system intended to provide customers with a video record of their tour flight. The video system included two VHS format tape recorders, four cameras, a pilot controlled camera switching unit, and an interface to record music from a CD changer along with intercom audio from the pilot's microphone.

The video portion the recording system has one internal cockpit camera mounted in the front of the cockpit, facing rearward, with a view of the passengers inside the cockpit/cabin. There are four passengers seated in the rear seating row, and two passengers in the front seating row, to the pilot's left. All passengers are wearing headsets, but they do not appear to have microphones. While primarily an internal view of the helicopter, small portions of the side and overhead windows are visible in the view. The pilot is generally not visible, though occasionally his left arm/shoulder is visible. No controls or instruments can be seen in the view. The remaining three cameras are mounted in fairings on the lower portion helicopter's fuselage, and provide external views. One camera is pointed forward, one pointed left, and one pointed right. No portion of the helicopter airframe is visible in any of these views.

Only one camera view is recorded at a time; the pilot can actively select which one of the four cameras is recorded by the set of VCRs. The view is switched continually throughout the flight. The VCRs record multiple copies of the same video, as selected by the pilot.

Audio is recorded from the helicopter's intercom system, and generally consists of communication from the pilot to the passengers, describing the landmarks and sights on the tour. Outgoing radio transmissions from the pilot can be heard twice, but no incoming radio messages were heard. None of the passenger voices can be heard.

Two videos were retrieved from the accident helicopter and sent to the National

Transportation Safety Board Vehicle Recorders Division. The Vehicle Recorders Division engineer performed a study of the onboard video recording along with representatives from the FAA, American Eurocopter, Turbomeca, and Blue Hawaiian Helicopters, Inc., all parties to the investigation. The audio and video images retrieved from the video cassettes were consistent with statements given by the pilot, operator, and passengers of the accident events. The full factual report is available in the docket for this accident.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	35,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	May 15, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 12, 2004
Flight Time:	9376 hours (Total, all aircraft), 5100 hours (Total, this make and model), 9246 hours (Pilot In Command, all aircraft), 280 hours (Last 90 days, all aircraft), 124 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Eurocopter	**Registration:**	N196BH
Model/Series:	AS350 B2	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3036
Landing Gear Type:	Skid	**Seats:**	7
Date/Type of Last Inspection:	June 23, 2004 Continuous airworthiness	**Certified Max Gross Wt.:**	4960 lbs
Time Since Last Inspection:	77.1 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	10144.1 Hrs	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, not activated	**Engine Model/Series:**	Ariel 1D1
Registered Owner:	Nevada Helicopter Leasing LLC	**Rated Power:**	732 Horsepower
Operator:	Blue Hawaiian Helicopters, Inc.	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	HCMA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ITO,38 ft msl	**Distance from Accident Site:**	28 Nautical Miles
Observation Time:	11:53 Local	**Direction from Accident Site:**	120°
Lowest Cloud Condition:	Few / 2000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	13 knots / 19 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	27°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wiakoloa Heli, HI	**Type of Flight Plan Filed:**	Company VFR
Destination:	Hilo, HI (ITO)	**Type of Clearance:**	None
Departure Time:	12:16 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor, 5 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 6 None	**Latitude, Longitude:**	20.020555,-155.425277

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	Michael Spencer; Federal Aviation Administration; Honolulu, HI Joe Syslo; American Eurocopter; Grand Prairie, TX Archie Whitten; Turbomeca; Grand Prairie, TX William E Lincoln; Blue Hawaiian Helicopters; Kahului, HI
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Investigation Class:	Class
Note:	
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