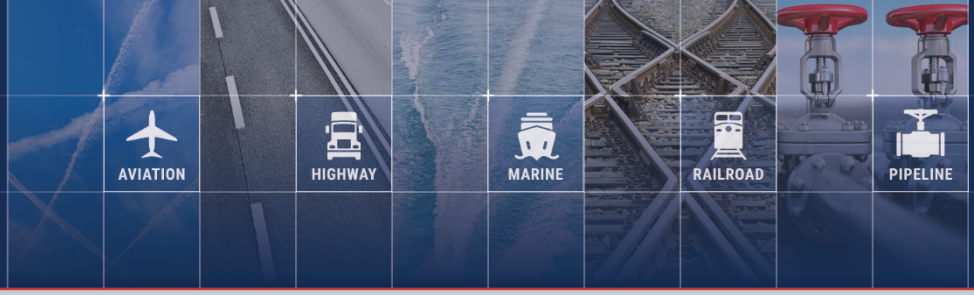

Aviation Investigation Final Report

Location:	Pilar, New Mexico	**Accident Number:**	DEN05LA053
Date & Time:	January 29, 2005, 19:56 Local	**Registration:**	N351LG
Aircraft:	Eurocopter AS 350 B3	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The helicopter pilot was conducting a positioning flight in night visual meteorological conditions, wearing night vision goggles. He was following the road separating the place of departure and his destination. He could see the vehicle traffic and the surrounding terrain clearly. Approximately 15 minutes into the flight, he felt that something was wrong. The attitude indicator showed that the helicopter was in a 60-70 degree left descending turn. The altimeters and airspeed indicators showed the same trend. The pilot attempted to correct the flight attitude, but became disoriented. The helicopter impacted terrain and rolled onto its right side. A postimpact fire destroyed the helicopter.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to maintain control of the helicopter, and his improper use of night vision goggles (NVG). Contributing factors were the pilot's spatial disorientation, his self-induced pressure to return the helicopter to its home base, his lack of experience in the use of NVG's, his use of exterior lights on a dark night light, under overcast skies, and against snow-covered terrain.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
2. (F) SPATIAL DISORIENTATION - PILOT IN COMMAND
3. (C) PROCEDURES/DIRECTIVES - IMPROPER USE OF - PILOT IN COMMAND
4. (F) SELF-INDUCED PRESSURE - PILOT IN COMMAND
5. (F) LACK OF TOTAL EXPERIENCE IN TYPE OPERATION - PILOT IN COMMAND
6. (F) IMPROPER USE OF EQUIPMENT/AIRCRAFT - PILOT IN COMMAND
7. (F) LIGHT CONDITION - DARK NIGHT

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CRUISE - NORMAL

Findings
8. TERRAIN CONDITION - GROUND

Factual Information

On January 29, 2005, at 1956 mountain standard time, a Eurocopter AS 350 B3, N351LG, operated by Petroleum Helicopters Inc., and piloted by a commercial pilot, was substantially damaged when it impacted terrain near Pilar, New Mexico. A postimpact fire ensued. Night visual meteorological conditions prevailed at the time of the accident. The cross-country positioning flight was being conducted under the provisions of Title 14 CFR Part 91, and a company VFR flight plan had been filed and activated. The pilot reported no injuries. The flight originated from Espanola, New Mexico, at 1941, and was en route to Taos, New Mexico.

The following is based on documents submitted by Petroleum Helicopters, Inc. (PHI). The helicopter had been returning from an emergency medical service (EMS) flight to Albuquerque when its crew encountered deteriorating weather 14 miles south of Taos. The pilot turned around and landed at Espanola Hospital. He telephoned his dispatch office and told them that darkness was approaching and he didn't have his night vision goggles (NVG). Dispatch notified the company's lead pilot at 1730 and, after checking the weather and consulting with the chief pilot, the lead pilot elected to drive to Espanola and ferry the helicopter back to Taos. When he arrived in Espanola, he told the EMS crew to drive his vehicle back to Taos and he would ferry the helicopter. The EMS pilot "highly recommended" that he not attempt the flight, but to secure and the leave the helicopter in Espanola for the night. The EMS pilot told him there was "a wall of weather" south of Taos, and weather at Espanola was "marginal VFR." The lead pilot told him he was concerned about the poor weather conditions forecast for the next three days, and he wanted to get the helicopter back to base where a scheduled 1000-hour maintenance inspection could be performed during the inclement weather. His final check of the Taos weather, recorded at 1915, revealed a 6,500-foot overcast ceiling and 10 miles visibility. The lead pilot departed Espanola Hospital at 1941 in a light drizzle, which he said soon dissipated. The flight nurse watched the helicopter for about 10 miles before it disappeared from her sight.

Although he could see the lights of Taos and the normal route would be to fly direct, the pilot --- after discussing the situation with the EMS manager --- elected to follow State Highway 68 because he could keep safe landing areas in sight. The pilot used night vision goggles (NVG). The landing and taxi lights were on. The nite sun (high-intensity searchlight mounted on the bottom of the fuselage at the tail boom junction) was pointed at the mountains to the right, and the nose searchlight was pointed at the road below. Although he had never flown NVG in these lighting conditions before, he felt it would be beneficial being so close to the mountains and road. After flying for about 15 minutes, the pilot "began to feel a strange sense ('confused and disoriented') that something was wrong." He could see the terrain through the NVG (aided), and could see traffic on the road and the Rio Grande River (unaided, i.e. looking below the NVG through the chin bubble). The attitude indicator showed an approximate 60 to 70 degree left descending turn, the airspeed indicator registered an increase in airspeed, and both

the barometric and radar altimeters indicated a decrease in altitude. He corrected by applying right aft cyclic and increase collective.

The pilot said he felt the instrument panel "was getting farther away" from him. He could "see [himself] from above and behind, making the corrections and watching the instruments at the same time," but felt nothing he was doing was working. He didn't feel panicky, only a sense of urgency. Although he could still see vehicles below, he "could not get everything back into perspective." At this point, the pilot raised the NVGs, looked around at the terrain for 15 to 30 seconds, then lowered the NVGs and returned to the instruments. He felt the attitude indicator was not responding to his control inputs. He showed the helicopter to 40 to 60 knots. It felt like the helicopter was going backwards and doing a 360-degree spin.

The helicopter struck the ground and rolled over on its right side. The pilot secured the engine, and then transmitted an emergency message. Albuquerque Air Route Traffic Control Center (ARTCC) received the message at 1956. After exiting the helicopter, the pilot saw that the engine was on fire. He completely discharged the on-board fire extinguisher, and then began walking. About an hour later, he came upon State Highway 68. Shortly thereafter, a New Mexico State Police trooper found him and transported him to a hospital.

According to the operator, the pilot was instrument rated in both helicopters and airplanes. His total flight time was 6,109 hours. He had accrued 8 hours of NVG training and 47 total NVG hours. The training vendor was Aviation Specialties Unlimited, Inc., Boise, Idaho, one of a few certified by FAA to give such training.

Pilot Information

Certificate:	Commercial	**Age:**	37,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 1, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	November 1, 2004
Flight Time:	6109 hours (Total, all aircraft), 258 hours (Total, this make and model), 5545 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Eurocopter	**Registration:**	N351LG
Model/Series:	AS 350 B3	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3722
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	January 1, 2005 100 hour	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	899.8 Hrs at time of accident	**Engine Manufacturer:**	Turbomeca
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	Arriel-2B
Registered Owner:	Petroleum Helicopters Inc	**Rated Power:**	557 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	HEEA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	SKX,7091 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	20:15 Local	**Direction from Accident Site:**	45°
Lowest Cloud Condition:	Thin Overcast / 200 ft AGL	**Visibility**	0.75 miles
Lowest Ceiling:	Overcast / 200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	0°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Espanola, NM	**Type of Flight Plan Filed:**	Company VFR
Destination:	Taos, NM	**Type of Clearance:**	None
Departure Time:	19:41 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	36.246665,-105.848335

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	Bryan C Hanson; FAA Flight Standards District Office; Albuquerque, NM
Original Publish Date:	October 3, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60931