National Transportation Safety Board

FACTUAL REPORT AVIATION

NTSB ID: DEN02GA016	Aircraft Registration Number: N280SP
Occurrence Date: 12/27/2001	Most Critical Injury: Fatal
Occurrence Type: Accident	Investigated By: NTSB

Location/Time

Nearest City/Place	State	Zip Code	Local Time	Time Zone	
Park City	UT	84115	1241	MST	

Airport Proximity: Off Airport/Airstrip

Distance From Landing Facility:

Aircraft Information Summary

Aircraft Manufacturer	Model/Series	Type of Aircraft
Hughes	369E	Helicopter

Revenue Sightseeing Flight: No

Air Medical Transport Flight: No

Narrative

Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:

*** Note: : NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this public aircraft accident report. ***

HISTORY OF FLIGHT

On December 27, 2001, at 1241 mountain standard time, a Hughes 369E, N280SP, registered to and operated by Helicopters by Oz, Inc., dba Helicopter Capture Services of Marysvale, Utah, struck electrical transmission wires and impacted water while maneuvering 15 miles northwest of Park City, Utah. The commercial pilot, another company employee, and a Utah Division of Wildlife Resources employee were fatally injured. Instrument meteorological conditions prevailed, and no flight plan had been filed for the public use flight being conducted under Title 14 CFR Part 133/135. The flight originated from a staging area about 5 miles east of the accident site approximately 1230.

The helicopter had been contracted by the State of Utah to relocate moose from Parleys Canyon to an area 5 miles east, where they would be less hazardous to traffic on Interstate Highway 80. According to the pilot's son and rescuers, the pilot was in the left front seat, the net gunner was in the right front seat, and the Utah Division of Wildlife Resources employee was in the right rear seat. An animal net capturing device was installed in the left front skid. He said the crew had transferred four moose to the staging area that morning. The helicopter landed and the crew had lunch, and then the pilot gave a brief interview to a local television station. They departed the staging area and returned to the reservoir, where the pilot's son disembarked. He watched as the crew attempted to herd a moose off the frozen Mountain Dell Reservoir and back towards the shoreline. When they had done so, the helicopter turned and flew into the power lines.

According to a PacifiCorp spokesman, there was a total of five cables: two static cables on top and three phase (transmission) cables below. The latter cables were 397.5 ACSR (aluminum coarse steel reinforced) and 3/8-inch EHS (extra high strength steel), each carrying 80,000 volts phase-to-ground, and 138,000 volts phase-to-phase. The power lines were supported by two twin towers, each about 400 feet tall, and 921 feet apart. The point of impact was 108 feet above the frozen surface. The first recorded circuit breaker trip was at 1241:00.

Witnesses said it appeared the helicopter initially struck the lower of the two static wires, nosed over, and fell in a near-inverted attitude to the surface of the frozen reservoir. It broke through the ice, sank, and then floated back to the surface. The tail rotor and aft portion of the tail boom remained entangled in the wires. Rescuers were able to attach a line and winch the helicopter ashore.

The accident occurred during daylight hours at a location of 40 degrees, 45'05" north latitude, and 111 degrees, 43'18" west longitude.

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Narrative (Continued)

Mountain Dell Reservoir is at an elevation of 5,505 feet msl.

PERSONNEL INFORMATION

The 49-year-old pilot possessed a commercial certificate with a single-engine land, multiengine land and helicopter ratings. His second class airman medical certificate, dated August 23, 2001, contained no restrictions or limitations, but a waiver for color vision had been issued. His last 14CFR135 check ride was accomplished on April 17, 2001. His most recent logbook, containing entries from December 5, 2000, to December 21, 2001, contained the following flight times:

Total time	6,542.3
Pilot-in-command	6,418.3
Helicopter	6,129.4
Solo	6,391.3
Cross-country	609.4
Hughes 369E	563.3
Night	38.9

AIRCRAFT INFORMATION

N280SP, a model 369E (s/n 0169E), was manufactured by the Hughes Helicopter Corporation in 1986. It was equipped with an Allison 250-C20R2 engine (s/n CAE-295277), rated at 450 shaft horsepower. The last 100-hour airframe and engine inspections were accomplished on December 18, 2001, at a Hobbs meter reading of 191.3 hours. At that time, the airframe had accrued 8,398.3 hours. and the engine had accumulated 2,529.55 hours since new. Total engine cycles were 1,778. The last daily Aircraft Flight and Maintenance Log sheet, filled out on the morning of the accident, indicated the Hobbs meter read 203.0 hours, total engine hours were 2,542.2, and total engine cycles were 1,784.

METEOROLOGICAL INFORMATION

According to ground witnesses, the weather at Mountain Dell Reservoir at the time of the accident was, visibility approximately 1 mile in fog.

WRECKAGE AND IMPACT INFORMATION

The on-scene investigation commenced and terminated on December 28, 2001. Investigators from Boeing (formerly Hughes and McDonnell Douglas) Helicopters and Rolls-Royce (formerly Allison and Allied Signal) Engines examined the stored wreckage at Spanish Fork, Utah, on March 21, 2002, under the supervision of an inspector from FAA's Flight Standards District Office in Salt Lake City. According to Boeing's report, the cockpit area -- from F.S. (fuselage station) 0.0 aft to F.S. 64.37 -- was crushed and separated and the fuselage, to F.S. 102.23, was buckled and crushed. The right forward landing gear leg and skid tube exhibited "chatter" marks, similar to abraded wire scuffing. The tail boom was severed into three segments, with fractures at F.S. 221.0 and 253.0. There were paint transfer marks around this fracture area similar to the paint on the main rotor blade. There were also gashes in the tail boom consistent with main rotor blade strikes.

The empennage (tail rotor transmission, tail rotor, gear box, horizontal stabilizer and vertical stabilizers) remained attached to a 27-inch section of the aft portion of the tail boom. It was severed at F.S. 253.0. There were burn marks on the upper portion of the vertical stabilizer, around the tailskid mount, and at the horizontal stabilizer's right tip cap. There was extensive structural damage to the entire airframe. This was the section that was entangled in the power lines.

Power continuity was established from the main transmission to the tail rotor. The main transmission rotated when the main rotor system was turned by hand, and drive from the transmission to the tail rotor output pinion and drive shaft continued when the main transmission was turned by hand. The tail rotor gearbox appeared normal when rotated by hand.

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Narrative (Continued)

The main rotor hub assembly and components exhibited damage commensurate with sudden stoppage. The main rotor blades were bent, cut, and gouged, and the spars were fractured. The blade surfaces were wrinkled and delaminated, and there were trailing edge separations. There were numerous paint transfer and wire contact marks.

All cyclic, collective, and anti-torque control linkages forward of C.S. (canted station) 78.50 were fractured, crushed, or absent. Lateral and longitudinal cyclic control continuity was lost due to numerous breaks in the linkage. The throttle twist grip could not be rotated. Collective pitch control continuity was established to the bellcrank. Anti-torque control continuity between F.S. 78.50 to F.S. 221.0 and aft of F.S. 253.0 was established.

None of the engine mounts were damaged and the engine remained in place, exhibiting no visible damage. A fuel system vacuum check produced no noticeable loss of pressure. Fuel was present in the fuel filter, pump, and nozzle. There was oil in the engine. Engine control continuity could only be established between F.S. 78.50 and F.S. 84.0.

MEDICAL AND PATHOLOGICAL INFORMATION

On December 28, 2001, an autopsy was performed on the pilot by the Utah State Medical Examiner's Office. Death was attributed to blunt force injuries. Both the medical examiner's office and FAA's Civil Aeromedical Institute (CAMI) conducted toxicological screens. Both reports disclosed no evidence of ethanol, cyanide, carbon monoxide or drugs.

TESTS AND RESEARCH

The engine installed in N280SP was a "loaner" engine. Because it had a reported history of compressor stalls, it was decided to functionally test the engine at Rolls-Royce's facilities in Indianapolis, Indiana. This was done on May 3, 2002, under the supervision of an inspector from FAA's Flight Standards District Office in Indianapolis. According to Rolls-Royce's report, the engine was successfully started five times. Stabilized running, time accelerations, and a power calibration were conducted. The engine met or exceeded new engine specification in all parameters. "Type II" wave offs were conducted several times in an attempt to induce compressor stalls. No stalls were noted.

The overrunning clutch assembly, part number 369A5350-41, was removed and shipped to Boeing in Mesa, Arizona, where, on May 21, 2002, it was disassembled and examined under the supervision of an inspector from FAA's Flight Standards District office in Scottsdale, Arizona. According to Boeing's report, the clutch housing and seal were damaged by impact. Disassembly revealed clean, dark green oil with no odor of burning. The component passed the "4-way" check indicating the sprags functioned properly. The bearings contained plenty of grease with no discoloration or contamination. There was no evidence of wear.

ADDITIONAL INFORMATION

In addition to the Federal Aviation Administration, parties to the investigation included Rolls-Royce Engines and Boeing Helicopters.

At the conclusion of all tests, the wreckage was released to the insurance company adjuster on May 21, 2002.

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Landing Facility/Approach Information

Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used	Runway Length	Runway Width

Runway Surface Type: Unknown

Runway Surface Condition: Unknown

Approach/Arrival Flown: Unknown

VFR Approach/Landing: Unknown

Aircraft Information

Aircraft Manufacturer	Model/Series	Serial Number
Hughes	369E	0169E

Airworthiness Certificate(s): Restricted (Special)

Landing Gear Type: Skid

Amateur Built Acft?	Number of Seats:	Certified Max Gross Wt.	Number of Engines:
No	5	3000 LBS	1

Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:
Turbo Shaft	Allison	250-C20R/2	450 HP

- Aircraft Inspection Information

Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time
100 Hour	12/2001	Hours	8398 Hours

- Emergency Locator Transmitter (ELT) Information

ELT Installed?/Type	ELT Operated?	ELT Aided in Locating Accident Site?
Yes /		No

Owner/Operator Information

Registered Aircraft Owner	Street Address	City	State	Zip Code
Helicopters by Oz, Inc.	P.O. Box 95	Marysvale	UT	84750

Operator of Aircraft	Street Address	City	State	Zip Code
Helicopters by Oz, Inc.	P.O. Box 95	Marysvale	UT	84750

Operator Does Business As: Helicopter Capture Services

Operator Designator Code: H80L

- Type of U.S. Certificate(s) Held:

Air Carrier Operating Certificate(s): On-demand Air Taxi

Operating Certificate:

Operator Certificate: Aircraft External Load

Regulation Flight Conducted Under: Public Use

Type of Flight Operation Conducted: Public Use

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First Pilot Information

Name	City	State	Date of Birth	Age
On File	On File	On File	On File	49

Sex: M | Seat Occupied: Left | Occupational Pilot? Civilian Pilot | Certificate Number: On File

Certificate(s): Commercial

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): None

Instructor Rating(s): None

Current Biennial Flight Review? 04/2001

Medical Cert.: Class 2 | Medical Cert. Status: Valid Medical--w/ waivers/lim. | Date of Last Medical Exam: 08/2001

- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Mult-Engine	Night	Instrument Actual	Instrument Simulated	Rotorcraft	Glider	Lighter Than Air
Total Time	6542	563						6129		
Pilot In Command(PIC)	6418									
Instructor										
Instruction Received										
Last 90 Days	164	164						164		
Last 30 Days	83	83						83		
Last 24 Hours										

Seatbelt Used? Yes | Shoulder Harness Used? Yes | Toxicology Performed? Yes | Second Pilot? No

Flight Plan/Itinerary

Type of Flight Plan Filed: None

Departure Point	State	Airport Identifier	Departure Time	Time Zone
Same as Accident/Incident Location		NONE	1230	MST

Destination	State	Airport Identifier
Local Flight		

Type of Clearance: None

Type of Airspace: Class G

Weather Information

Pilot's Source of Wx Information:

Unknown

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Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
			Ft. MSL	NM	Deg. Mag.

Sky/Lowest Cloud Condition: Partial Obscuration Ft. AGL

Condition of Light: Day

Lowest Ceiling: Overcast Ft. AGL

Visibility: 1 SM

Altimeter: 30.22 "Hg

Temperature: -3 °C

Dew Point: -7 °C

Weather Conditions at Accident Site: Instrument Conditions

Wind Direction: 330

Wind Speed: 3

Wind Gusts:

Visibility (RVR): Ft.

Visibility (RVV) SM

Precip and/or Obscuration:

Accident Information

Aircraft Damage: Destroyed

Aircraft Fire: None

Aircraft Explosion None

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew	1				1
Passengers	1				1
- TOTAL ABOARD -	3				3
Other Ground					
- GRAND TOTAL -	3				3

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Administrative Information

Investigator-In-Charge (IIC)

Arnold W. Scott

Additional Persons Participating in This Accident/Incident Investigation:

Thomas R Dufresne
FAA Flight Standards District Office
Salt Lake City, UT