
 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: SEA04LA005		Aircraft Registration Number: N86W	
		Occurrence Date: 10/14/2003		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
<b>Location/Time</b>					
Nearest City/Place Swisshome		State OR	Zip Code 97480	Local Time 1045	Time Zone PDT
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
<b>Aircraft Information Summary</b>					
Aircraft Manufacturer Bell		Model/Series 206B		Type of Aircraft Helicopter	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
<b>Narrative</b>					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
<p><b>HISTORY OF FLIGHT</b></p> <p>On October 14, 2003, about 1045 Pacific daylight time, a Bell 206B, N86W, registered to Weyerhaeuser Company as a 14 CFR Part 91 reconnaissance flight for the Oregon State Department of Forestry, collided with a 5/8 inch neutral/ground cable line strung across the Siuslaw River, near Swisshome, Oregon. Visual meteorological conditions prevailed at the accident site with patchy low fog and clouds in the immediate area. The helicopter was substantially damaged. The airline transport pilot and passenger were fatally injured. The flight departed from Eugene, Oregon, about 45 minutes prior to the accident.</p> <p>Oregon Department of Forestry personnel reported that the helicopter was a "Call-When-Needed" rental from the Weyerhaeuser Company. The purpose of the flight was to locate water holes/dip sites for future fire suppression actions.</p> <p>The proposed route of flight in the Western Lane District was from Eugene west to Triangle Lake, then to Lake Creek, then follow the Siuslaw River westerly to the town of Mapleton, Oregon. The flight was then to continue south from Mapleton to the Smith River, then northeasterly along the Smith River back to Eugene. The flight was expected to return back to Eugene about 1300.</p> <p>Department of Forestry personnel reported that due to three separate fires in the Western Lane District since 1999, the District Forester had sometime in September 2003, assigned the passenger the project of "waterhole reconnaissance" for the Western Lane District. The assignment was to fly the rivers in the district and mark global positioning system (GPS) points for potential locations where helicopters could dip water in support of fires. At the time of this assignment, the District Forester had a discussion about the safety of the flight and that it was known that numerous power lines stretch across the rivers that pose safety hazards to low flying helicopters. The passenger acknowledged the hazards and would be careful.</p> <p>On the day of the accident, a Weyerhaeuser employee reported that the flight was originally scheduled to depart about 0900. Prior to that time, the pilot had completed his preflight planning. About 0900, the pilot was observed talking on the phone to the passenger discussing the weather conditions and starting of the flight. About 0925, the passenger arrived with his helmet and maps. The passenger and pilot then went to the pilot's desk to discuss the trip. About 0940, the two were seen heading out to the helicopter which departed five to ten minutes later.</p> <p>Several individuals were in the area of the accident site when the collision occurred. Two witnesses reported seeing the helicopter as it struck the cable. One witness reported that she was walking her dog along the road above the mill site when she heard, then saw the helicopter flying westerly at a "low," but otherwise normal sounding cruise. She observed the helicopter fly into something and saw "white stuff" falling down. She initially thought that the helicopter had struck</p>					
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a tree with a bird in it as she thought the white stuff were feathers, but then she remembered the power lines strung across the river to the mill site. She observed the helicopter begin to spin around in one direction, then the engine stopped making noise. Immediately after the engine stopped, she saw the tail of the helicopter "fishtail" and then the helicopter fell into the river.

The other eye-witness reported that he heard the helicopter, then looked up to see the helicopter collide with the line. The witness stated that it happened very fast and he could not remember it all. He stated that the weather was foggy and cloudy.

The helicopter came to rest in the river about 300 feet west of the power lines in about three feet of water. The 5/8 inch neutral/ground copper/steel cable which was originally strung about 20-25 feet below three horizontally positioned power cables was entangled around the helicopter. The three remaining undamaged power cables were about 250 to 300 feet above the river. None of the lines were marked.

## PERSONNEL INFORMATION

At the time of the accident, the pilot held certificates for Airline Transport, Flight Instructor, and Commercial operations. The pilot was rated in single and multi-engine land aircraft, rotorcraft and instrument airplane. Weyerhaeuser personnel reported that the pilot's total flight time was approximately 17,500 hours. Approximately 32 hours had been flown in the make and model aircraft involved in the accident in the preceding 90 days.

Federal Aviation Administration Aeromedical records indicated that the pilot held a Class II medical certificate dated October 8, 2003, with a limitation for "must wear corrective lenses."

Company personnel further reported that the pilot was a Senior Captain of helicopter operations with primary flight duties which included fertilizing, fire fighting, spraying and supporting timberlands aerial surveying activities in western Oregon and Washington. The pilot was also a flight instructor and a 14 CFR Part 135 check airman. The pilot had been flying in western Oregon for approximately 19 years.

Oregon Department of Forestry personnel reported that the passenger was a Forest Unit Supervisor for the Western Lane District, and had "many years" of aviation and fire aviation training and experience. The passenger's duties for this flight were to direct the pilot on where to go to scout the planned route of flight in the Western Lane District to locate helicopter dip sites and water holes for fire suppression activities. The passenger also transmitted location reports to Department of Forestry dispatch every 15 minutes.

## COMMUNICATIONS


The Department of Forestry Radio Log for the day of the accident indicated that the passenger, identified in the log as number 105, reported at 1000, that they were "off airport" and heading to Lake Creek.

At 1008, 105 reported that they were at "section 4" and looking at "piles" followed by a report that no one was burning or on scene.

At 1015, 105 reported that they were south of Triangle Lake and heading southwest, following Lake Creek.

At 1040, 105 reported that they were heading to Mapleton. No further communications were received by the flight after this time.

## WRECKAGE AND IMPACT INFORMATION

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On site documentation of the accident site was provided by a Federal Aviation Administration Inspector from the Hillsboro, Oregon, Flight Standards District Office, and personnel from the Oregon Department of Forestry and Weyerhaeuser Company. The accident site location was 44 degrees 03.451 minutes north latitude, 123 degrees 48.932 minutes west longitude at an elevation of 118 feet mean sea level (msl). The helicopter came to rest in the river in approximately three feet of water, and approximately 300 feet west of the power lines. The three horizontally positioned power lines were each about 18 feet apart and about 250 to 300 feet above the river level. The lines were strung north/south, and the river at the accident site was west/east oriented. The terrain to the south rose steeply to about 1,000 feet msl and was covered with densely forested trees and underbrush. Three wooden poles measuring in height to about 85 feet were located at the top of the ridge with the dense trees in close proximity to the poles.

The elevation of the terrain on the north side of the river was about 175 msl. The wires connected to three towers at a substation owned by Central Lincoln People's Utility District. The towers were surrounded by a chain link fence. These towers measured in height to about 90 feet. Dense trees and underbrush were also in close proximity to the substation fence.

The distance between poles from the top of the ridgeline on the south side to the substation on the north side was about 1,800 to 2,000 feet.

The 5/8 inch steel/copper neutral/ground cable was positioned beneath the middle power line and was about 20 to 25 feet below. The neutral/ground cable had been pulled away from both towers.

The helicopter came to rest with the neutral/ground cable wrapped around the fuselage. The main rotor assembly separated at the mast, which was later located on the south side riverbank. The main rotor blades remained attached at the hub. The outboard five feet of one main rotor blade had separated. The other main rotor blade was intact. A section of this blade displayed a series of parallel indentations and scratch marks along the leading edge and underside section of the blade.

The tail boom was bent over to the left side. The tail rotor blades remained attached to the tail rotor gearbox. Both tail rotor blades were bent about mid-span.

The cockpit area was severely compromised and the landing skids were displaced.

## MEDICAL AND PATHOLOGICAL INFORMATION

The Lane County Health and Human Services Medical Examiner's Office performed a post-mortem on the pilot. The pilot's cause of death was listed as "Fresh blunt force injuries in head, neck, chest and abdomen..."


Toxicological samples were sent to the Federal Aviation Administration Civil Aeromedical Institute, Oklahoma City, Oklahoma, for analysis. The results of the analysis were positive for Naproxen in blood and urine.

## TESTS AND RESEARCH

The ARNAV 5000 GPS receiver and the SATLOC M3 CPU and receiver were both removed from the wreckage and sent to their respective manufacturer or service center for inspection and extraction of data. Due to water and impact damage, no data was able to be extracted from either unit.

## ADDITIONAL DATA/INFORMATION

Department of Forestry personnel reported that an acceptable dip site would be an area large enough for a helicopter to clear obstructions while operating/maneuvering with an external bucket. The

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depth of the water would depend on the type of helicopter and bucket being used. Dip site locations are recorded via global positioning system (GPS) coordinates and maintained in an Oregon Department of Forestry database.

A Department of Forestry Western Lane Forest Protection District map was located in the wreckage. The map covered the proposed route of flight. Although there were some highlight marker markings on the map, no indications of dip sites were identified along the route of flight leading up to the accident site. This map dated 1995, identified the land in the area of the accident site as private property (section 30 and 31) and did not depict the overhead transmission lines in that area. The map depicts several obstructions along the route of flight and are identified in the maps legend. The first depiction on the map of overhead transmission lines that cross the river are located near Mapleton, Oregon. The entire Western Lane District includes 250,000 acres of state, federal and private property.

The Oregon Department of Forestry Fire Aviation Procedures Manual indicated that a Flight Hazard Map "...will be maintained and kept at the respective offices or Dispatch center. Updates should be made whenever appropriate and no less than annually." A representative from the Oregon Department of Forestry reported that this map should include power lines, towers, microwave towers, commercial flight routes, military training routes, etc. The departure point of the flight was from Eugene, which is a Weyerhaeuser Company office, therefore, no flight hazard map was located at this facility. Oregon Department of Forestry personnel reported that no flight hazard maps have been located at the Western Lane District Office or dispatch center.

The helicopter pilot who accomplished the external load recovery of the wreckage later that afternoon, reported that the existing wires were very difficult to see during the approach to the accident site. The pilot reported that he utilized a 200 foot long line to lift the wreckage from the river to an open area near the mill site. The pilot reported that at times the wires were invisible even when the viewer knew the location of the wires. The pilot also reported that the wires blended in with the surrounding terrain.

Federal Aviation Administration (FAA) 14 CFR 77.23, Standards for Determining Obstructions, FAA Advisory Circular AC 70/7460-1K, Obstruction Marking and Lighting, and Oregon Department of Aviation Division 70, Physical Hazards to Air Navigation define the standards to determine whether specific objects or structures constitute a hazard to air navigation.

The lines involved in the accident are owned by Central Lincoln People's Utility District. A representative reported to the Oregon Department of Forestry that the lines have been in place since 1956 and have never been marked.

On August 3, 1974, at 1800 Pacific daylight time, a Bell 47, operating as a Public Use flight for the U.S. Department of Agriculture, was traveling southbound down the Siuslaw River for the purpose of patrolling units recently slash-burned to detect smoke or fire in those units. The pilot reported that the helicopter rounded a bend in the river and headed westerly into the sun. One of the two passengers spotted the power lines and tried to warn the pilot, however, the pilot did not observe the wires until just before the collision with the bottom "ground wire." The pilot stated that, "The lines blended in with the dark background of the ridge." The pilot was able to maintain control of the helicopter and landed. The helicopter was substantially damaged and the pilot and two passengers received minor to no injury.

Both accidents occurred at the same location and both collided with the lower ground/neutral cable.

The pilot of the Bell 47 reported that the lines were not depicted on any charts that were located in the aircraft at the time. The U.S. Department of Agriculture Supervisor's Report of Accident stated under "Action Taken to Prevent Similar Accident," reported "Flight hazard map is being prepared will be posted and updated with copies available in pre-attack plan and with Fire control officer."

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The wreckage was removed from the river later in the day on October 14, 2003, and placed in an open area near the mill. On October 15, 2003, the wreckage was transported to a secured hangar at the airport in Eugene, Oregon. The wreckage was released to Weyerhaeuser Aviation Manager on November 4, 2003.

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<b>Landing Facility/Approach Information</b>					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: None					
<b>Aircraft Information</b>					
Aircraft Manufacturer Bell		Model/Series 206B		Serial Number 4142	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Skid					
Amateur Built Acft? No	Number of Seats: 5	Certified Max Gross Wt.	3200 LBS	Number of Engines: 1	
Engine Type: Turbo Shaft	Engine Manufacturer: Allison	Model/Series: 250-C20B	Rated Power: 420 HP		
- Aircraft Inspection Information					
Type of Last Inspection 100 Hour	Date of Last Inspection 06/2003	Time Since Last Inspection 82 Hours	Airframe Total Time 5282 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes /	ELT Operated? Yes	ELT Aided in Locating Accident Site? No			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner Weyerhaeuser Company		Street Address 1500 S 184th St.			
		City Seatac	State WA	Zip Code 98158	
Operator of Aircraft Oregon Department of Forestry		Street Address 2600 State Street			
		City Salem	State OR	Zip Code 97310	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Other Work Use					
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**First Pilot Information**

Name On File	City On File	State On File	Date of Birth On File	Age 57
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Sex: M	Seat Occupied: Right	Occupational Pilot? Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport; Flight Instructor; Commercial

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

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): Airplane

Instructor Rating(s): Helicopter

Current Biennial Flight Review? 02/2003

Medical Cert.: Class 2	Medical Cert. Status: Valid Medical--w/ waivers/lim.	Date of Last Medical Exam: 10/2003
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	17500									
Pilot In Command(PIC)										
Instructor										
Instruction Received										
Last 90 Days	32	21						32		
Last 30 Days	8	3						8		
Last 24 Hours										

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? Yes	Second Pilot? No
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**Flight Plan/Itinerary**

Type of Flight Plan Filed: Company VFR

Departure Point Eugene	State OR	Airport Identifier EUG	Departure Time 1000	Time Zone PDT
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Destination Local Flight	State	Airport Identifier	
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Type of Clearance: None

Type of Airspace: Class G

**Weather Information**

Source of Wx Information:  
  
No record of briefing


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<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
EUG	1054	PDT	365 Ft. MSL	25 NM	67 Deg. Mag.
Sky/Lowest Cloud Condition: Few			3000 Ft. AGL	Condition of Light: Day	
Lowest Ceiling:		Ft. AGL	Visibility:	10 SM	Altimeter: 30.22 "Hg
Temperature: 13 °C	Dew Point: 8 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction: 180	Wind Speed: 6	Wind Gusts:			
Visibility (RVR): Ft.	Visibility (RVV) SM				
Precip and/or Obscuration:					

<b>Accident Information</b>		
Aircraft Damage: Substantial	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					
Passengers	1				1
- TOTAL ABOARD -	2				2
Other Ground					
- GRAND TOTAL -	2				2



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Administrative Information

Investigator-In-Charge (IIC)

Debra J. Eckrote

Additional Persons Participating in This Accident/Incident Investigation:

John Fisher  
FAA-FSDO  
Hillsboro, OR

Tom Gustafson  
Weyeræuser Co.  
Seatac, WA

Jim Ziobro  
Oregon Dept. of Forestry  
Salem, OR