Aviation Investigation Final Report

Location:	Biggs, California	**Accident Number:**	SEA07LA154
Date & Time:	June 12, 2007, 08:05 Local	**Registration:**	N2087S
Aircraft:	Bell UH-1B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

As the helicopter lifted off from the top of a chemical truck the pilot heard a faint whining sound, which got louder and then abruptly stopped when the helicopter had cleared the truck. After the whining stopped, the helicopter flight controls locked up, but despite the restriction the pilot managed to pull a small amount of aft cyclic to help the helicopter settle to the ground. On touchdown the helicopter drifted to the right, then skidded across the ground before experiencing a dynamic rollover. The pilot reported that the hydraulic pump, which supplies hydraulic power to the flight control system servos, failed. A postaccident examination of the hydraulic pump, which sustained impact damage as result of the accident sequence, failed to reveal why the pump had failed. An FAA inspector reported that the hydraulic pump had been removed from a salvaged helicopter in 2000, and had not been used prior to being installed on the accident aircraft, about a month and a half before the accident. The inspector also reported that the pump's condition was unknown and that it was never tested prior to being installed on the helicopter.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Loss of control during hover for undetermined reasons.

Findings

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

Findings
1. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings
2. TERRAIN CONDITION - GROUND
3. DYNAMIC ROLLOVER - ENCOUNTERED - PILOT IN COMMAND

Factual Information

On June 12, 2007, approximately 0805 Pacific daylight time, a UH-1B helicopter, N2087S, sustained substantial damage after impacting terrain following a loss of control while taking off from a loading platform near Biggs, California. The certificated commercial pilot, the sole occupant of the helicopter, was not injured. Visual meteorological conditions prevailed for the aerial application flight, which was operated in accordance with 14 CFR Part 137, and a flight plan was not filed. The flight was originating at the time of the accident.

In a telephone interview with the NTSB investigator-in-charge (IIC), the pilot reported that after the helicopter lifted off from a platform on top of a chemical supply truck, he heard a "whining" sound. The pilot stated that after the "whining" noise stopped, the helicopter's flight controls became stiff and "locked up." The pilot reported that even though the flight controls were restricted, he managed to pull the cyclic back to aid the helicopter in settling to the ground as soft as possible. The pilot stated that after touching down the helicopter skidded to the right and subsequently experienced a dynamic rollover. The pilot further stated that his initial assessment of what had caused the accident was a failure of the hydraulic pump that supplies hydraulic power to the flight controls.

Maintenance records provided to the IIC by the operator revealed that the Sperry Vickers variable delivery type hydraulic pump, part number 3-044-8, serial number MX172924, was installed on May 1, 2007, at a total airframe time of 8096.9 hours; total airframe hours at the time of the accident was 8105.6. An initial damage assessment of the hydraulic pump by a certificated airframe and powerplant mechanic shortly after the accident revealed the following: there was no sign of oil seepage or leakage from the shaft seal; the drive shaft splines appeared undamaged with no heat discoloration; the shaft appeared bent at an angle; hydraulic suction, pressure and drains lines were sheared off; the pump's conical cap was sheared off.

On July 30, 2007, under the supervision of the IIC, the helicopter's hydraulic pump was examined by a hydraulic pump technician at the facilities of Spencer Power Fluid of Kent, Washington. The examination revealed the following: the stroking piston was missing; 7 pistons were removed with some particle contaminant noted, but no other anomalies observed; the swash plate was intact with no anomalies noted; the thrust plate was intact with no anomalies noted; a visual observation of the drive shaft bearing revealed some heat distress; a visual observation of the valve plate side of the cylinder block revealed some heat distress. The technician reported that based on the components of the hydraulic pump that he examined, no anomalies were observed with the pump which would have precluded normal operation.

According to a Federal Aviation Administration (FAA) aviation safety inspector, who traveled to

the accident site, the hydraulic pump was salvaged from a surplus helicopter the operator purchased in 2000. The inspector revealed that the pump was not put into operation until it was installed on the accident helicopter, and that prior to its installation it was not tested and its condition was unknown. The inspector also revealed that the pump had sustained impact damage as a result of the accident.

Pilot Information

Certificate:	Commercial	**Age:**	49,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	February 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 1, 2007
Flight Time:	24000 hours (Total, all aircraft), 4200 hours (Total, this make and model), 23950 hours (Pilot In Command, all aircraft), 500 hours (Last 90 days, all aircraft), 200 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N2087S
Model/Series:	UH-1B	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	63-8512
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	August 1, 2006 100 hour	**Certified Max Gross Wt.:**	9000 lbs
Time Since Last Inspection:	156.8 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	8105.5 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	T53-13B-22
Registered Owner:	Jones Aviation Inc.	**Rated Power:**	1500 Horsepower
Operator:		**Operating Certificate(s) Held:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MYV,62 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	165°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	20°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Biggs, CA	**Type of Flight Plan Filed:**	None
Destination:	Biggs, CA	**Type of Clearance:**	None
Departure Time:	08:05 Local	**Type of Airspace:**	

Airport Information

Airport:	Off Airport	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	Unknown
Runway Length/Width:		**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	39.415832,-121.689445

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Brian L Allen; Federal Aviation Administration; Sacramento, CA
Original Publish Date:	September 27, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65970