



Aviation Investigation Final Report

Location:	SULPHUR, Oklahoma	Accident Number:	FTW94LA166
Date & Time:	May 18, 1994, 18:30 Local	Registration:	N933B
Aircraft:	BELL 47G	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

A TOTAL LOSS OF ENGINE POWER OCCURRED AT 50 FEET ABOVE THE GROUND DURING THE INITIAL PHASE OF A TURN-AROUND MANEUVER. TREES HINDERED THE PILOT'S COMPLETION OF THE AUTOROTATION. THE HELICOPTER BOUNCED DURING THE LANDING AND THE MAIN ROTOR BLADE FLEXED AND SEVERED THE TAILBOOM. AN EXAMINATION OF THE ENGINE BY THE OPERATOR REVEALED THE FAILURE OF AN ENGINE ACCESSORY OIL PUMP GEAR.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE LOSS OF ENGINE POWER DUE TO THE FAILURE OF AN ENGINE ACCESSORY OIL PUMP GEAR. A FACTOR WAS THE LACK OF SUITABLE TERRAIN FOR THE AUTOROTATION.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: MANEUVERING - AERIAL APPLICATION

Findings

1. (C) ACCESSORY DRIVE ASSY,DRIVE GEAR - FAILURE,TOTAL

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: HARD LANDING

Phase of Operation: DESCENT - EMERGENCY

Findings

2. AUTOROTATION - INITIATED - PILOT IN COMMAND
3. (F) TERRAIN CONDITION - NONE SUITABLE
4. OBJECT - TREE(S)

Factual Information

On May 18, 1994, at 1830 central daylight time, a Bell 47G, N933B, sustained substantial damage during a forced landing near Sulphur, Oklahoma. The commercial pilot did not receive injuries. Visual meteorological conditions prevailed for the local aerial application flight.

The pilot reported a total loss of engine power at 50 feet above the ground during the initial phase of a turn-around maneuver. He further said that trees in the area and the height of the helicopter hindered his completion of a successful autorotation. The helicopter bounced during the hard landing and the main rotor blade flexed and severed the tailboom.

During a telephone interview the operator reported the total loss of engine power was due to the failure of the oil pump drive gear in the accessory case.

Pilot Information

Certificate:	Commercial	Age:	27, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Helicopter; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	March 15, 1994
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	1618 hours (Total, all aircraft), 1164 hours (Total, this make and model), 1488 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BELL	Registration:	N933B
Model/Series:	47G 47G	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	662
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	May 5, 1994 Annual	Certified Max Gross Wt.:	2350 lbs
Time Since Last Inspection:	21 Hrs	Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	FRANKLIN
ELT:	Not installed	Engine Model/Series:	6V-335-A
Registered Owner:	B & S FLYING SERVICE, INC.	Rated Power:	210 Horsepower
Operator:		Operating Certificate(s) Held:	
Operator Does Business As:		Operator Designator Code:	SNMG

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	3 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	60°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	00:00 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	Forced landing

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:	34.500545,-96.96949(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Joyce
Additional Participating Persons:	BOB DIPPI; OKLAHOMA CITY , OK
Original Publish Date:	November 14, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=19061

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).