Aviation Investigation Final Report

Location:	TERRELL, Texas	**Accident Number:**	FTW97LA327
Date & Time:	August 24, 1997, 15:15 Local	**Registration:**	N8057Z
Aircraft:	Robinson R22 BETA	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student was certificated as a single-engine land airplane pilot, and was taking instruction in a Robinson R22 helicopter. According to him, while on a solo cross-country flight, the helicopter began to experience engine vibrations with a loss of engine rpms. He initiated an autorotation to an open field, and approximately 40 feet above ground level, he began the landing flare, pulling up on the collective at the same time. He stated that he noticed 'the aircraft feeling funny,' and reduced 'some' of the collective. Approximately 8 feet above ground level, the helicopter 'just dropped' to the ground. The pilot received a back injury during the accident. He had difficulty egressing from the helicopter, noting that that his right side was numb. Examination of the engine revealed no abnormalities or deficiencies. The engine was placed on a test stand and operated for 15 minutes. The engine operated normally throughout all parameters.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the student pilot's premature flare for landing from an autorotation, and the ensuing loss of rotor rpm, which resulted in a hard landing. A factor relating to the accident was: partial loss of engine power for undetermined reason(s).

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: CRUISE

Findings
1. (F) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: HARD LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
2. PRECAUTIONARY LANDING - INITIATED - PILOT IN COMMAND
3. AUTOROTATION - PERFORMED - PILOT IN COMMAND
4. (C) FLARE - PREMATURE - PILOT IN COMMAND
5. (C) ROTOR RPM - NOT MAINTAINED - PILOT IN COMMAND

Factual Information

On August 24, 1997, at 1515 central daylight time, a Robinson R-22 Beta helicopter, N8057Z, was substantially damaged after impacting terrain following a partial loss of engine power and autorotation landing to an open field 4 miles west of Terrell Municipal Airport (TRL), Terrell, Texas. The student pilot, sole occupant, received serious injuries. Visual meteorological conditions prevailed for the solo cross country flight which was conducted under Title 14 CFR Part 91. The flight originated from the Garland/DFW Heloplex Heliport (T57) in Garland, Texas, at 1400.

The pilot reported to the FAA representative that the cross country flight was from Garland to the Terrell Municipal Airport, then on to Ennis Municipal Airport (F41), Ennis, Texas and returning to Garland.

The pilot stated that the helicopter began experiencing engine vibrations with a loss of engine RPM and he decided to perform an autorotation. Approximately 40 feet above ground level (AGL), he initiated the landing flare pulling up on the collective at the same time. He stated that he noticed "the aircraft feeling funny" and reduced some of the collective. At about 8 feet AGL, the helicopter "just dropped" to the ground. The helicopter came to rest in the upright position.

The pilot reported the following weather conditions at the time of the accident: clear skies, visibility 10 miles and winds from the south/southeast at 10 knots.

According to the Pilot/Operator Aircraft Accident Report (NTSB form 6120.1/2), the pilot had accumulated a total of 638 hours, of which 89 hours were in the R-22.

Examination of the helicopter at the site by the FAA inspector revealed that the rotor mast and shaft separated from the helicopter. The main rotor blades were bent upward. The tail rotor and aft 2 feet of the boom section separated from the helicopter. The right skid was bent and broken. The right fuel tank was full and the left tank was 3/4 full.

On September 25, 1997, the engine was examined at Air Salvage of Dallas, Lancaster, Texas. No abnormalities or deficiencies were noted. The engine was mounted on a test stand the same day and operated for 15 minutes. The engine operated normally throughout all parameters.

Pilot Information

Certificate:	Private	**Age:**	61,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 1, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	638 hours (Total, all aircraft), 89 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	**Registration:**	N8057Z
Model/Series:	R22 BETA R22 BETA	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2396
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	2400 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O-320-B2C
Registered Owner:	SKY HELICOPTERS INC.	**Rated Power:**	131 Horsepower
Operator:	CARL W. HOUSER	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

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:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	29°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GARLAND (T57)	**Type of Flight Plan Filed:**	None
Destination:	TERREL (TRL)	**Type of Clearance:**	None
Departure Time:	14:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	32.729064,-96.289169(est)

Administrative Information

Investigator In Charge (IIC):	Borson, Timothy
Additional Participating Persons:	RICHARD EILINGER; DALLAS , TX
Original Publish Date:	June 26, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=20327