



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

# Aviation Investigation Final Report

|                                |   |                         |             |
|--------------------------------|---|-------------------------|-------------|
| <b>Location:</b>               | TERRELL, Texas                            | <b>Accident Number:</b> | FTW97LA327  |
| <b>Date &amp; Time:</b>        | August 24, 1997, 15:15 Local              | <b>Registration:</b>    | N8057Z      |
| <b>Aircraft:</b>               | Robinson R22 BETA                         | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         |   | <b>Injuries:</b>        | 1 Serious   |
| <b>Flight Conducted Under:</b> | 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

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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

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

## Aircraft and Owner/Operator Information

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

## Meteorological Information and Flight Plan

|   |                                  |   |          |
|---|----------------------------------|---|----------|
| <b>Conditions at Accident Site:</b>     | Visual (VMC)                     | <b>Condition of Light:</b>                  | Day      |
| <b>Observation Facility, Elevation:</b> |                                  | <b>Distance from Accident Site:</b>         |          |
| <b>Observation Time:</b>                |                                  | <b>Direction from Accident Site:</b>        |          |
| <b>Lowest Cloud Condition:</b>          | Clear                            | <b>Visibility</b>                           | 10 miles |
| <b>Lowest Ceiling:</b>                  | None                             | <b>Visibility (RVR):</b>                    |          |
| <b>Wind Speed/Gusts:</b>                | 10 knots /                       | <b>Turbulence Type Forecast/Actual:</b>     | /        |
| <b>Wind Direction:</b>                  | 100°                             | <b>Turbulence Severity Forecast/Actual:</b> | /        |
| <b>Altimeter Setting:</b>               |                                  | <b>Temperature/Dew Point:</b>               | 29°C     |
| <b>Precipitation and Obscuration:</b>   | No Obscuration; No Precipitation |   |          |
| <b>Departure Point:</b>                 | GARLAND (T57)                    | <b>Type of Flight Plan Filed:</b>           | None     |
| <b>Destination:</b>                     | TERREL (TRL)                     | <b>Type of Clearance:</b>                   | None     |
| <b>Departure Time:</b>                  | 14:00 Local                      | <b>Type of Airspace:</b>                    | Class E  |

## Airport Information

|                             |   |                                  |                       |
|-----------------------------|---|----------------------------------|-----------------------|
| <b>Airport:</b>             |   | <b>Runway Surface Type:</b>      |                       |
| <b>Airport Elevation:</b>   |   | <b>Runway Surface Condition:</b> |                       |
| <b>Runway Used:</b>         | 0 | <b>IFR Approach:</b>             | None                  |
| <b>Runway Length/Width:</b> |   | <b>VFR Approach/Landing:</b>     | Precautionary landing |

## Wreckage and Impact Information

|                            |           |                             |                           |
|----------------------------|-----------|-----------------------------|---------------------------|
| <b>Crew Injuries:</b>      | 1 Serious | <b>Aircraft Damage:</b>     | Substantial               |
| <b>Passenger Injuries:</b> |           | <b>Aircraft Fire:</b>       | None                      |
| <b>Ground Injuries:</b>    | N/A       | <b>Aircraft Explosion:</b>  | None                      |
| <b>Total Injuries:</b>     | 1 Serious | <b>Latitude, Longitude:</b> | 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.nts.gov/Docket?ProjectID=20327>

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](#).