# Aviation Investigation Final Report

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| **Location:** | SANFORD, Florida | **Accident Number:** | MIA00LA111 |
| **Date & Time:** | March 17, 2000, 13:52 Local | **Registration:** | N5304V |
| **Aircraft:** | Hiller UH-12B | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 1 Minor |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

While climbing after takeoff, the pilot stated he experienced a 1 to 1 vibration. He lowered the collective and initiated an approach the surface. The vibration got worse and as he approached the surface and raised the collective the helicopter felt like there was no response from the controls. The helicopter hit hard and rolled onto it's side. Post crash examination of the helicopter by an FAA inspector showed no obvious mechanical defects in the rotors or flight control systems. The left engine magneto 'P' lead was found loose, rendering the magneto inoperative. The threads on the 'P' lead had no damage and the magneto was not damaged from impact.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper collective and cyclic control usage during an emergency descent, following the onset of a 1 to 1 vibration for undetermined reasons, resulting in the helicopter landing hard and rolling over.

### Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CLIMB

Findings
1. ROTOR SYSTEM - VIBRATION

2. REASON FOR OCCURRENCE UNDETERMINED
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Occurrence #2: HARD LANDING
Phase of Operation: DESCENT - EMERGENCY

Findings
3. (C) CYCLIC - IMPROPER USE OF - PILOT IN COMMAND
4. (C) COLLECTIVE - IMPROPER USE OF - PILOT IN COMMAND
5. (C) DESCENT - EXCESSIVE - PILOT IN COMMAND

## Factual Information

On March 17, 2000, about 1352 eastern standard time, a Hiller UH-12B, N5304V, registered to a private owner, crashed while attempting a emergency landing at Sanford Airport, Sanford, Florida, while on a Title 14 CFR Part 91 personal flight. Visual meteorological conditions prevailed at the time and no flight plan was filed. The helicopter received substantial damage and the commercial-rated pilot received minor injuries. The flight originated from Sanford, Florida, a few minutes before the accident.

The pilot stated he was performing practice autorotations with power recoveries. While departing into the pattern, he began to experience a severe one per revolution vibration. He was climbing through about 50 feet. He immediately lowered the collective and tried to maintain an approach to the surface away from construction workers and equipment. As he got closer to the surface the vibrations intensity increased substantially to the point where he could hardly hold onto the controls or see outside the helicopter. He attempted to raise the collective as he neared the surface and felt as if there was no response or control of the helicopter at that point. After the helicopter hit the surface and rolled a few times, he unbuckled the seat belt and got out of the helicopter.

Postcrash examination of the crash site and helicopter was performed by a FAA inspector. The inspector stated the initial impact point of the helicopter was about 300 feet from the final stopping point, indicated by the two tail rotor blades lying where they had initially struck the ground and became separated from the tail rotor hub. There were skid marks from this point to the final spot where the helicopter rolled onto it's right side. There were no indications of more than one roll and no indication of a complete roll, only 90 degrees to end resting on the right side. The main rotor blades had been shattered from the impact, but the steel spar straps were intact and still attached to the rotor hub. One control paddle had been broken off at the hub from the impact. Control continuity was established for the main rotor and engine controls, but the tail rotor cables had been separated during the crash. They were still connected at the pedals and pitch change horn. No obvious mechanical defects could be detected. The "P" lead from the left magneto was hanging loose from the magneto. The threads on the "P" lead cap were not damaged and the magneto had no impact damage.

A witness located in a construction area on the airport, near the crash site, stated he observed the helicopter circle overhead practicing landings west of runway 18-36. He watched the helicopter land and then takeoff again. During takeoff and climb the helicopter sound changed and he watched the helicopter descend from about 200 feet, in level flight but coming down fast. The helicopter hit the ground and flipped over.

## Pilot Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 31,Male |
| **Airplane Rating(s):** | None | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Helicopter | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | February 1, 2000 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 3000 hours (Total, all aircraft), 30 hours (Total, this make and model), 2900 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Hiller | **Registration:** | N5304V |
| **Model/Series:** | UH-12B UH-12B | **Aircraft Category:** | Helicopter |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 575 |
| **Landing Gear Type:** | Skid | **Seats:** | 3 |
| **Date/Type of Last Inspection:** | October 1, 1999 Annual | **Certified Max Gross Wt.:** | 3100 lbs |
| **Time Since Last Inspection:** | 30 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3998 Hrs | **Engine Manufacturer:** | Franklin |
| **ELT:** | Not installed | **Engine Model/Series:** | 6V4-200-C33 |
| **Registered Owner:** | LUIS DIAZ | **Rated Power:** | 200 Horsepower |
| **Operator:** | ROBERT KIVLEN | **Operating Certificate(s) Held:** | None |
| **Operator Does Business As:** | | **Operator Designator Code:** | |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | SFB ,55 ft msl | **Distance from Accident Site:** | 1 Nautical Miles |
| **Observation Time:** | 13:53 Local | **Direction from Accident Site:** | 360° |
| **Lowest Cloud Condition:** | Scattered / 2100 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | Overcast / 2800 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 320° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30 inches Hg | **Temperature/Dew Point:** | 26°C / 17°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | (SFB ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | | **Type of Clearance:** | VFR |
| **Departure Time:** | 14:00 Local | **Type of Airspace:** | Class D |

## Airport Information

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| **Airport:** | SANFORD SFB | **Runway Surface Type:** | |
| **Airport Elevation:** | 55 ft msl | **Runway Surface Condition:** | Dry;Vegetation |
| **Runway Used:** | 0 | **IFR Approach:** | |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Simulated forced landing |

## Wreckage and Impact Information

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

## Administrative Information

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| **Investigator In Charge (IIC):** | Kennedy, Jeffrey |
| **Additional Participating Persons:** | AL KIMBALL; ORLANDO , FL |
| **Original Publish Date:** | December 4, 2000 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=48814 |