# Aviation Investigation Final Report

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| **Location:** | Corpus Christi, Texas | **Accident Number:** | CEN12LA228 |
| **Date & Time:** | April 3, 2012, 15:55 Local | **Registration:** | N3042D |
| **Aircraft:** | Enstrom 280FX | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Sys/Comp malf/fail (non-power) | **Injuries:** | 1 Minor, 1 None |
| **Flight Conducted Under:** | Part 91: General aviation - Other work use | | |

## Analysis

After an uneventful flight, the pilot slowed the helicopter into a stable hover about 15 feet above the landing point. Although the engine continued to operate, the main rotor rpm suddenly decayed and the helicopter landed hard. The pilot, who had over 5,600 flight hours in helicopters, stated that there was no warning before the loss of main rotor drive. The helicopter was in a position whereby power to the rotor system was essential to conducting a safe landing. Examination of the helicopter revealed that the bolt that retains the clutch drive rod end in the clutch pivot fork had sheared, resulting in the clutch disengaging. Once the clutch disengaged, there was no drive to the rotor system, and the helicopter's descent could not be arrested. With the exception of the failed bolt, examination of the entire drive system did not show any preexisting mechanical malfunction or abnormalities that would have precluded normal operation. The helicopter had operated about 1,350 hours since it was new, and the retaining bolt was the original installation. The reason for the failure of the bolt could not be determined.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the bolt that retained the clutch drive rod end, which resulted in a loss of main rotor drive and a subsequent hard landing.

## Findings

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| **Aircraft** | Engine/transmission coupling - Failure |

# Factual Information

## History of Flight

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| **Approach** | Sys/Comp malf/fail (non-power) (Defining event) |

On April 3, 2012, approximately 1555 central daylight time, an Enstrom 280FX helicopter, N3042D, registered to Travland Helicopters Intl INC., of Alpine, Texas, was substantially damaged during a hard landing after a loss of power at the Corpus Christie Airport (CRP), Corpus Christie, Texas. The commercial pilot received minor injuries and his passenger was not injured. Visual meteorological conditions prevailed and a flight plan was not filed for the flight. The business flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. The flight originated from Edinburg, Texas, and Corpus Christie was its intended destination.

After an uneventful flight from Edinburg, Texas, and set up for landing at CRP, the pilot slowed the helicopter into a stable hover about 15 feet above the landing point, the rotor RPM suddenly decayed and the helicopter landed hard, resulting in substantial damage to the tailboom. The pilot, who had over 5,600 flight hours in helicopters, stated that there was no warning prior to the loss of main rotor drive. The helicopter was in a position whereby power to the rotor system was essential to effect a safe landing.

Examination of the helicopter by an FAA inspector revealed that the bolt that retains the clutch drive rod end in the clutch pivot fork had sheared. The ears of the pivot fork were worn on the inside, but not bent. The rod end to the clutch drive was not bent. The bolt was elongated and the pivot fork bushing was worn. The head of the bolt was not found. Examination of the entire drive system did not show any preexisting mechanical malfunction or abnormalities. The bolt was the proper hardware for the installation. The helicopter had about 1,350 hours since it was new, and the retaining bolt was the original installation.

## Pilot Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 68,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | |
| **Instrument Rating(s):** | Airplane; Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | August 1, 2011 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | June 1, 2011 |
| **Flight Time:** | 18000 hours (Total, all aircraft), 200 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft), 14 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Enstrom | **Registration:** | N3042D |
| **Model/Series:** | 280FX | **Aircraft Category:** | Helicopter |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | | **Serial Number:** | 2128 |
| **Landing Gear Type:** | | **Seats:** | 3 |
| **Date/Type of Last Inspection:** | January 12, 2012 Annual | **Certified Max Gross Wt.:** | |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 1350 Hrs at time of accident | **Engine Manufacturer:** | LYCOMING |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | HIO-360-F1AD |
| **Registered Owner:** | TRAVLAND HELICOPTERS INTL INC | **Rated Power:** | 190 Horsepower |
| **Operator:** | TRAVLAND HELICOPTERS INTL INC | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | CRP,44 ft msl | **Distance from Accident Site:** | |
| **Observation Time:** | 15:15 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 7 miles |
| **Lowest Ceiling:** | Broken / 3600 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 7 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 160° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29.89 inches Hg | **Temperature/Dew Point:** | 29°C / 22°C |
| **Precipitation and Obscuration:** | | | |
| **Departure Point:** | Edinburg, TX (EBG ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Corpus Christi, TX (CRP ) | **Type of Clearance:** | None |
| **Departure Time:** | 16:30 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Corpus Christie CRP | **Runway Surface Type:** | |
| **Airport Elevation:** | 44 ft msl | **Runway Surface Condition:** | |
| **Runway Used:** | | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Full stop;Straight-in |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Minor | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 None | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Minor, 1 None | **Latitude, Longitude:** | 27.770277,-97.501113(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Lemishko, Alexander |
| **Additional Participating Persons:** | Carlos F Gallardo; FAA FSDO San Antonio; San Antonio, TX |
| **Original Publish Date:** | September 12, 2013 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=83305 |