# National Transportation Safety Board
# Aviation Accident Data Summary

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| **Location:** | Seminole, OK | **Accident Number:** | CEN13FA121 |
| **Date & Time:** | 01/02/2013, 1245 CST | **Registration:** | N334AM |
| **Aircraft:** | EUROCOPTER EC130 B4 | **Injuries:** | 4 Serious |
| **Flight Conducted Under:** | Part 91: General Aviation - Positioning | | |

## Analysis

The pilot reported hearing a sound like something had struck the helicopter shortly after departure while about 1,600 to 1,700 feet mean sea level. The engine lost power, and the pilot performed an autorotation to a field. While maneuvering to land, he saw a barbed wire fence obstructing the intended landing area, so he maneuvered the helicopter to clear the fence. The helicopter subsequently cleared the fence and landed hard in a field.

Engine examination revealed that the four axial compressor blades exhibited significant deformation on the outboard tips of their leading edges in the direction opposite of normal rotation consistent with the ingestion of soft body foreign object debris, such as ice. A subsequent engine run did not detect any preimpact anomalies that would have precluded normal operation. For 3 days before the accident flight, the helicopter was parked outside without its engine cover installed and was exposed to light drizzle, rain, mist, and fog. The engine inlet cover was installed the day before the accident at an unknown time. The helicopter remained outside and exposed to freezing temperatures throughout the night until 2 hours before the flight. Although the helicopter was maintained in a ready status on the helipad and maintenance personnel performed daily preflight/airworthiness checks, the inlet to the first-stage of the axial compressor was not inspected to ensure that it was free of ice in accordance with the Aircraft Maintenance Manual. Based on the weather conditions that the helicopter was exposed to during the 3 days before the accident, it is likely that ice formed in the engine air inlet before the flight and that, when the pilot increased the engine power during takeoff, the accumulated ice separated from the inlet and was ingested by the engine and damaged the compressor blades.

## Flight Events

Prior to flight - Miscellaneous/other
Prior to flight - Preflight or dispatch event
Enroute-climb to cruise - Loss of engine power (total)
Autorotation - Hard landing

## Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The loss of engine power due to ice ingestion. Contributing to the accident was maintenance personnel’s delayed decision to install the helicopter's engine inlet cover until after the engine had been exposed to moisture and freezing temperatures and their inadequate daily preflight/airworthiness checks, which did not detect the ice formation.

## Findings

Aircraft-Aircraft structures-Nacelles/pylons structure-(general)-Not specified - C
Aircraft-Aircraft handling/service-Maintenance/inspections-(general)-Inadequate inspection - F
Aircraft-Aircraft power plant-Power plant-Air intake-Inadequate inspection - F

Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Maintenance personnel - F
Personnel issues-Task performance-Inspection-(general)-Maintenance personnel - F
Environmental issues-Conditions/weather/phenomena-Temp/humidity/pressure-Low temperature-Effect on equipment - F
Environmental issues-Conditions/weather/phenomena-Ceiling/visibility/precip-Drizzle/mist-Effect on equipment - F
Environmental issues-Conditions/weather/phenomena-Ceiling/visibility/precip-Rain-Effect on equipment - F
Environmental issues-Physical environment-Object/animal/substance-Fence/fence post-Effect on operation

## Pilot Information

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|---|---|---|---|
| **Certificate:** | Flight Instructor; Commercial | **Age:** | 58 |
| **Airplane Rating(s):** | Single-engine Land | **Instrument Rating(s):** | Helicopter |
| **Other Aircraft Rating(s):** | Helicopter | **Instructor Rating(s):** | Helicopter |
| **Flight Time:** | 9708 hours (Total, all aircraft), 663 hours (Total, this make and model), 9500 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft) | | |

## Aircraft and Owner/Operator Information

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|---|---|---|---|
| **Aircraft Manufacturer:** | EUROCOPTER | **Registration:** | N334AM |
| **Model/Series:** | EC130 B4 | **Engines:** | 1 Turbo Shaft |
| **Operator:** | AIR METHODS CORP | **Engine Manufacturer:** | TURBOMECA |
| **Air Carrier Operating Certificate:** | On-demand Air Taxi (135) | **Engine Model/Series:** | ARRIEL 2B1 |
| **Flight Conducted Under:** | Part 91: General Aviation - Positioning | | |

## Meteorological Information and Flight Plan

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| **Observation Facility, Elevation:** | KSNL, 1073 ft msl | **Weather Information Source:** | Weather Observation Facility |
| **Conditions at Accident Site:** | Visual Conditions | **Lowest Ceiling:** | None |
| **Condition of Light:** | Day | **Wind Speed/Gusts, Direction:** | 8 knots, 280° |
| **Temperature:** | 4°C / 0°C | **Visibility** | 10 Miles |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Seminole, OK (KSRE) | **Destination:** | Okemah, OK |

## Wreckage and Impact Information

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| **Crew Injuries:** | 4 Serious | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | N/A | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |

## Administrative Information

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| **Investigator In Charge (IIC):** | Jason T Aguilera | **Adopted Date:** | 05/08/2014 |
| **Investigation Docket:** | http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=85938 | | |

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