



# National Transportation Safety Board Aviation Accident Final Report

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|--------------------------------|--------------------------------------|-------------------------|-------------|
| <b>Location:</b>               | INDIANAPOLIS, IN                     | <b>Accident Number:</b> | CHI00LA002  |
| <b>Date &amp; Time:</b>        | 10/02/1999, 1040 EST                 | <b>Registration:</b>    | N602H       |
| <b>Aircraft:</b>               | Enstrom EN-28                        | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         |                                      | <b>Injuries:</b>        | 2 Minor     |
| <b>Flight Conducted Under:</b> | Part 91: General Aviation - Personal |                         |             |

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## Analysis

The pilot said that prior to initiating the flight he conducted a 'run-up.' He said, during the magneto check the engine ran rough and exceeded the normal magneto drop. He said he continued to run the engine at high RPM and leaned the fuel mixture for a minute. He said he then conducted another 'run-up' and the magneto drop was within specified limits.. He stated that during the initial climb the engine began to 'pop' and the rotor RPM was dropping. He said he elected to attempt a turn to the heliport; however, due to the continued loss of power he elected to conduct an autorotational landing in a gravel construction area. During the autorotational landing the helicopter landed hard and received substantial damage. Subsequent to the accident an examination of the helicopter and engine was conducted. The magneto and harness were examined and no discrepancies were found. All the spark plugs were removed and examined. The bottom spark plug from the #2 cylinder was oil fouled and did not test fire. The top spark plug from the same cylinder (#2) fired with a weak and intermittent spark. All the other spark plugs test fired. No additional anomalies were found in the helicopter or engine.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's attempted operation of the helicopter with known deficiencies, and his improper autorotation to landing. Factors were one fouled spark plug and another partially failed spark plug in the same cylinder, and the construction area.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (F) IGNITION SYSTEM, SPARK PLUG - FOULED
2. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - ATTEMPTED - PILOT IN COMMAND
3. (F) IGNITION SYSTEM, SPARK PLUG - FAILURE, PARTIAL

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

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Occurrence #3: HARD LANDING  
Phase of Operation: EMERGENCY LANDING

### Findings

4. (F) TERRAIN CONDITION - CONSTRUCTION AREA
5. (C) AUTOROTATION - IMPROPER - PILOT IN COMMAND

## Factual Information

On October 2, 1999, at 1040 eastern standard time, an Enstrom EN-28, N602H, sustained substantial damage during an autorotational landing in a construction area, near the Downtown Indianapolis Heliport, in Indianapolis Indiana, following a partial loss of engine power. The pilot and one passenger reported minor injuries. The personal 14 CFR Part 91 flight was operating in visual meteorological conditions. No flight plan was on file. The flight was originating at the time of the accident.

The pilot said that prior to initiating the flight he conducted a "run-up." He said, during the magneto check the engine ran rough and exceeded the normal magneto drop. He said he continued to run the engine at high RPM and leaned the fuel mixture for a minute. He said he then conducted another "run-up" and the magneto drop was within specified limits.. He stated that during the initial climb the engine began to "pop" and the rotor RPM was dropping. He said he elected to attempt a turn to the heliport; however, due to the continued loss of power he elected to conduct an autorotational landing in a gravel construction area. During the autorotational landing the helicopter landed hard and received substantial damage.

Subsequent to the accident an examination of the helicopter and engine was conducted. The flight and engine controls were found to work correctly and have continuity. Both magnetos and harnesses were examined and no discrepancies were found. All the spark plugs were removed and examined. The bottom spark plug from the #2 cylinder was oil fouled and did not test fire. The top spark plug from the same cylinder (#2) fired with a weak and intermittent spark. All the other spark plugs test fired. No additional anomalies were found in the helicopter or engine.

## Pilot Information

|                                  |   |  |                            |
|----------------------------------|---|--|----------------------------|
| <b>Certificate:</b>              | Commercial  | <b>Age:</b>                              | 62, Male                   |
| <b>Airplane Rating(s):</b>       | Multi-engine Land; Single-engine Land   | <b>Seat Occupied:</b>                    | Right                      |
| <b>Other Aircraft Rating(s):</b> | Helicopter  | <b>Restraint Used:</b>                   | Seatbelt, Shoulder harness |
| <b>Instrument Rating(s):</b>     | Airplane  | <b>Second Pilot Present:</b>             | No                         |
| <b>Instructor Rating(s):</b>     | None  | <b>Toxicology Performed:</b>             | No                         |
| <b>Medical Certification:</b>    | Class 2 Valid Medical--w/ waivers/lim.  | <b>Last FAA Medical Exam:</b>            | 06/21/1999                 |
| <b>Occupational Pilot:</b>       |   | <b>Last Flight Review or Equivalent:</b> |                            |
| <b>Flight Time:</b>              | 4758 hours (Total, all aircraft), 147 hours (Total, this make and model), 4758 hours (Pilot In Command, all aircraft), 87 hours (Last 90 days, all aircraft), 23 hours (Last 30 days, all aircraft) |  |                            |

## Aircraft and Owner/Operator Information

|                               |                    |                                |                 |
|-------------------------------|--------------------|--------------------------------|-----------------|
| Aircraft Make:                | Enstrom            | Registration:                  | N602H           |
| Model/Series:                 | EN-28 EN-28        | Aircraft Category:             | Helicopter      |
| Year of Manufacture:          |                    | Amateur Built:                 | No              |
| Airworthiness Certificate:    | Normal             | Serial Number:                 | 1077            |
| Landing Gear Type:            | Skid               | Seats:                         | 2               |
| Date/Type of Last Inspection: | 03/29/1999, Annual | Certified Max Gross Wt.:       | 2350 lbs        |
| Time Since Last Inspection:   | 59 Hours           | Engines:                       | 1 Reciprocating |
| Airframe Total Time:          | 3272 Hours         | Engine Manufacturer:           | Lycoming        |
| ELT:                          | Not installed      | Engine Model/Series:           | HIO-360-E1BD    |
| Registered Owner:             | HAWK, ROBERT H.    | Rated Power:                   | 205 hp          |
| Operator:                     | HAWK, ROBERT H.    | Operating Certificate(s) Held: | None            |

## Meteorological Information and Flight Plan

|                                  |                          |                                      |                  |
|----------------------------------|--------------------------|--------------------------------------|------------------|
| Conditions at Accident Site:     | Visual Conditions        | Condition of Light:                  | Day              |
| Observation Facility, Elevation: | IND, 797 ft msl          | Distance from Accident Site:         | 7 Nautical Miles |
| Observation Time:                | 0956 EST                 | Direction from Accident Site:        | 250°             |
| Lowest Cloud Condition:          | Scattered / 15000 ft agl | Visibility                           | 10 Miles         |
| Lowest Ceiling:                  | None / 0 ft agl          | Visibility (RVR):                    | 0 ft             |
| Wind Speed/Gusts:                | 10 knots /               | Turbulence Type Forecast/Actual:     | /                |
| Wind Direction:                  | 210°                     | Turbulence Severity Forecast/Actual: | /                |
| Altimeter Setting:               | 30 inches Hg             | Temperature/Dew Point:               | 18° C / 7° C     |
| Precipitation and Obscuration:   |                          |                                      |                  |
| Departure Point:                 | , IN (IN03)              | Type of Flight Plan Filed:           | None             |
| Destination:                     |                          | Type of Clearance:                   | None             |
| Departure Time:                  | 1040 EST                 | Type of Airspace:                    | Class G          |

## Wreckage and Impact Information

|                     |         |                      |             |
|---------------------|---------|----------------------|-------------|
| Crew Injuries:      | 1 Minor | Aircraft Damage:     | Substantial |
| Passenger Injuries: | 1 Minor | Aircraft Fire:       | None        |
| Ground Injuries:    | N/A     | Aircraft Explosion:  | None        |
| Total Injuries:     | 2 Minor | Latitude, Longitude: |             |

## Administrative Information

**Investigator In Charge (IIC):** STEPHEN A WILSON **Report Date:** 01/18/2001

**Additional Participating Persons:** JAMES D KING; INDIANAPOLIS, IN

**Publish Date:**

**Investigation Docket:** NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at [pubinq@ntsb.gov](mailto:pubinq@ntsb.gov), or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.

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