



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	New Port Richey, FL	<b>Accident Number:</b>	MIA03TA036
<b>Date &amp; Time:</b>	01/02/2003, 1951 EST	<b>Registration:</b>	N317LC
<b>Aircraft:</b>	Hughes OH-6	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Public Aircraft		

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## Analysis

The pilot stated that after takeoff while in a left turn climbing through 600 feet at 60 knots indicated airspeed, he heard a loss of engine power. He stopped the turn and noted that the engine was at flight idle as indicated by the dual tachometer. He verified the throttle was full open, and maneuvered the helicopter towards an open area. He bled off main rotor rpm to clear obstacles that were ahead, and decelerated at 10 feet above ground level. The helicopter touched down with little forward movement, coming to rest upright with the skids and tailboom separated. The helicopter was found to contain a sufficient quantity of fuel to sustain engine operation; no contaminants were reported. Examination of the engine revealed the fuel inlet line "B" nut was found loose by 2 1/2 flats at the fuel inlet nozzle. The fuel inlet line was drained and found to contain approximately 1 teaspoon of fuel while the fuel filter was full of fuel. The engine control rigging was found to be in limits. An abnormal sound was heard during testing of the aircraft fuel shutoff valve. Operational testing of the valve revealed it was operational but rotation of the valve body occurred with rotation of the valve. The engine was removed from the helicopter and transported to the manufacturer's facility. Prior to the engine run, the bleed air valve was found failed in the closed position; the internal spring was found unwound. The engine was operated in the presence of an FAA airworthiness inspector with a new bleed valve and the accident bleed valve installed; no appreciable difference was noted with respect to starting temperature, acceleration times, or stabilized operation. A customer bleed line that attaches to the scroll was found loose, it was tightened followed by engine operation. The line was loose when checked following the engine run. No significant findings were noted during the engine runs. Safety concerns prevented operation of the engine with the as-found position of the loose "B" nut at the fuel nozzle; however, a valve was installed to divert fuel from the fuel nozzle simulating the as-found position of the loose "B" nut. During the engine run, the valve was opened 1/4 and the engine operated normally. The valve was opened to 1/2 then 3/4, the engine continued to operate normally though the fuel flow increased. The valve was then fully opened and the engine flamed out. Several hours before the accident, a mechanic performed a compressor wash. It was common practice for the mechanic to clean the fuel nozzle when he performed a compressor wash.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate preflight of the helicopter following maintenance he observed, and failure of maintenance personnel to tighten the "B" nut at the fuel nozzle following a compressor wash resulting in the total loss of engine power. Also, the pilot's intentional decay of main rotor rpm while attempting to clear obstructions and unsuitable terrain encountered during the forced landing resulting in a hard landing.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL

Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. FUEL SYSTEM,LINE - LOOSE
2. (C) MAINTENANCE - INADEQUATE - OTHER MAINTENANCE PERSONNEL
3. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

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Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

### Findings

4. AUTOROTATION - PERFORMED - PILOT IN COMMAND

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Occurrence #3: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

### Findings

5. ROTOR RPM - INTENTIONAL - PILOT IN COMMAND
6. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND

## Factual Information

On January 2, 2003, about 1951 eastern standard time, a Hughes OH-6, N317LC, registered to and operated by Pasco County Sheriff's Office, landed hard during an autorotative landing following a loss of engine power after takeoff from Hidden Lake Airport, New Port Richey, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed for the public use flight. The helicopter was substantially damaged and there were no reported injuries to the commercial-rated pilot or observer. The flight originated about 6 minutes earlier from the Hidden Lake Airport.

The pilot stated that earlier that day after arriving at work, the mechanic had prepared the helicopter for a compressor wash. He motored the engine while the mechanic pumped the engine cleaner into the engine. He and the mechanic waited 5 minutes, then the engine was flushed with clean water. The mechanic then prepared the helicopter for an engine run-up while he was about 10 feet away. He did observe the mechanic remove a wedge from the bleed air valve. He checked the engine and checked all bleed air, and fuel lines that had been disconnected which included the main fuel line, though he did not put his hand on that line. Shortly after takeoff, while in a left turn climbing through 600 feet at 60 knots indicated airspeed, he heard a loss of engine power. He stopped the turn and noted that the engine was at flight idle as indicated by the dual tachometer. He verified the throttle was full open, and maneuvered the helicopter towards an open area. He bled off main rotor rpm to clear obstacles that were ahead, and decelerated at 10 feet above ground level. The helicopter touched down with little forward movement, coming to rest upright.

The mechanic stated that with respect to compressor cleaning, he removed then cleaned the fuel drain valve and fuel nozzle, dried and set them aside for reinstallation later. He performed a compressor wash and following that procedure, reinstalled the fuel nozzle, and reconnected the fuel line. The fuel system was purged of air and the drain valve was then reinstalled. The engine was started and allowed to stabilize while he looked for fuel and oil leaks; none were reported. A leak check was performed on the bleed and fuel lines, no leaks were reported. The engine was then brought up to full power (100 percent) with no discrepancies reported. The engine allowed a 2-minute cool down period, then secured.

The observer stated that he witnessed the mechanic perform a compressor wash which included disconnect the fuel line at the fuel nozzle, but he did not observe the mechanic tighten the inlet fuel line "B" nut. The mechanic then had the accident pilot perform a post maintenance run-up at full throttle. During the run-up, he observed the mechanic perform a leak check by brushing a solution on several fittings; he did not recall having any leaking fittings. The helicopter was then placed on the flight-line.

Examination of the helicopter revealed the skids and tailboom were separated. The helicopter was found to contain a sufficient quantity of fuel to sustain engine operation; no contaminants were reported. The helicopter was recovered for further examination.

Examination of the engine following recovery revealed the fuel inlet line "B" nut was found loose by 2 1/2 flats at the fuel inlet nozzle. The fuel inlet line was drained and found to contain approximately 1 teaspoon of fuel while the fuel filter was full of fuel. The engine control rigging was found to be in limits. An abnormal sound was heard during testing of the aircraft fuel shutoff valve. Operational testing of the valve revealed it was operational but rotation of the valve body occurred with rotation of the valve. The engine was removed from the helicopter

and transported to the manufacturer's facility.

The engine was test run in the presence of an FAA airworthiness inspector. Prior to the test cell run, the bleed air valve was found failed in the closed position; the internal spring was found unwound. The engine was operated with a new bleed valve and the accident bleed valve; no appreciable difference was noted with respect to starting temperature, acceleration times, or stabilized operation. A customer bleed line that attaches to the scroll was found loose, it was tightened followed by engine operation. The line was loose when checked following the engine run. Safety concerns prevented operation of the engine with the as-found position of the loose "B" nut at the fuel nozzle; however, a valve was installed to divert fuel from the fuel nozzle simulating the as-found position of the loose "B" nut. During the engine run, the valve was opened 1/4 and the engine operated normally. The valve was opened to 1/2 then 3/4, the engine continued to operate normally though the fuel flow increased. The valve was then fully opened and the engine flamed out.

The helicopter minus the retained engine was released to Jim P. Greene, the Chief Pilot for Pasco County Sheriff's Office, on January 8, 2003. The retained engine was also released to Jim P. Greene on March 1, 2004.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	52, Male
<b>Airplane Rating(s):</b>	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; Helicopter	<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>	03/04/2002
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	01/19/2002
<b>Flight Time:</b>	5810 hours (Total, all aircraft), 1015 hours (Total, this make and model), 121 hours (Last 90 days, all aircraft), 38 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Hughes	<b>Registration:</b>	N317LC
<b>Model/Series:</b>	OH-6	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>		<b>Serial Number:</b>	68-17310
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	10/29/2002, 100 Hour	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>	49.8 Hours	<b>Engines:</b>	1 Turbo Shaft
<b>Airframe Total Time:</b>	5649.3 Hours at time of accident	<b>Engine Manufacturer:</b>	Allison
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	T63-A-700
<b>Registered Owner:</b>	Pasco County Sheriff's Office	<b>Rated Power:</b>	317 hp
<b>Operator:</b>	Pasco County Sheriff's Office	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual Conditions	<b>Condition of Light:</b>	Night/Dark
<b>Observation Facility, Elevation:</b>	KTPA, 26 ft msl	<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>	1953 EST	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Few / 3000 ft agl	<b>Visibility</b>	10 Miles
<b>Lowest Ceiling:</b>	Overcast / 25000 ft agl	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	4 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	190°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.99 inches Hg	<b>Temperature/Dew Point:</b>	18° C / 17° C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	New Port Richey, FL (FA40)	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	New Port Richey, FL (FA40)	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	1945 EST	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 None	<b>Latitude, Longitude:</b>	28.274722, -82.632222

## Administrative Information

**Investigator In Charge (IIC):** Timothy W Monville **Report Date:** 04/28/2004

**Additional Participating Persons:** James B Minary; FAA Flight Standards District Office; Tampa, FL  
Douglas Tate; FAA FSDO; Indianapolis, IN  
Robert Ketchum; Rolls-Royce Corporation; Indianapolis, IN  
Jim P Greene; Pasco County Sheriff's Office; New Port Richey, FL

**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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