		NTSB ID: CEN12TA550		Aircraft Registration Number: N551CP	
		Occurrence Date: 08/16/2012		Most Critical Injury: None	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Columbus	State OH	Zip Code 43215	Local Time 0150	Time Zone EDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer MD HELICOPTER		Model/Series 369/E		Type of Aircraft Helicopter	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>*** Note: NTSB investigators may not have traveled in support of this investigation and used data provided by various sources to prepare this public aircraft accident report. ***</p> <p>On August 16, 2012, at 0150 eastern daylight time, an MD Helicopters, Inc. 369E, N551CP, impacted terrain during a forced landing near Columbus, Ohio. The certificated commercial pilot and an observer, who was also a commercial pilot, were not injured. The helicopter sustained substantial damage. The helicopter was registered to the City of Columbus and operated by the Columbus Police Department under the provisions of 14 Code of Federal Regulations Part 91 as an aerial observation flight. Night visual meteorological conditions prevailed for the local flight that had originated from the Columbus Police Heliport (OH52), Columbus, Ohio.</p> <p>The pilot reported that he leveled off at 1,500 ft mean sea level (msl) and had completed a turn to the west when he heard a "loud exploding noise" from the rear of the helicopter, followed by a long sustained "whining" noise coming from the engine and a constant warning tone in the background. The pilot saw that the gas producer (N1) and power turbine (N2) gauge needles were a falling "rapidly." The pilot performed an autorotation and touched down on a street where the helicopter slid and rotated counter-clockwise about 1 1/2 turns. The helicopter's tail fin, stabilizer, and tail rotor were broken off, and the main rotor blades were substantially damaged from contact with a utility pole adjacent to the street.</p> <p>The helicopter was powered by Rolls Royce M250-C20B, serial number CAE-837045, turboshaft engine. The engine accumulated a total time of 4,667 hours and to cycles of 2,987. The engine was overhauled on May 25, 2011 and accumulated a total time since overhaul (TSO) of 1,023 hours and cycles since overhaul (CSO) of 529. During the last overhaul, new turbine wheel stages 1-4 were installed. The engine was removed on June 13, 2012 for a compressor bearing problem at TSO 832.1 hours and CSO 529.</p> <p>The helicopter's engine was examined by a National Transportation Safety Board powerplants specialist. The N1 drive train turned free and continuous between the compressor and the starter generator pad. The N2 drive train was locked. The left-hand compressor discharge tube was undamaged. The right-hand compressor discharge tube was pierced in one location and dented in one location. The hole and dent locations and direction were in the plane of the 4th stage turbine rotor. The hole was located at the 6 o'clock to 9 o'clock location with reference to the tube and was about 2-1/2 inches long with the width varying from 1/2 inch to 1 inch. The edge material condition of the hole at 9 o'clock was 'petaled' inwards; consistent with a high-speed particle entering the tube and the edge material condition at the 6 o'clock location was 'petaled' outwards, consistent with a high-speed particle material exiting the tube. The dent location was between the 12 o'clock and 9 o'clock location with reference to the tube and was approximately 2 inches in axial length and 3 inches wide. There were two rectangular shaped impressions within the dent surface, each approximately 3/8 inch square.</p> <p>The 3rd stage turbine nozzle was intact and undamaged. The 3rd stage turbine wheel was intact. The curvic coupling was undamaged.</p>					
FACTUAL REPORT - AVIATION					
					Page 1

National Transportation Safety Board

FACTUAL REPORT

AVIATION

NTSB ID: CEN12TA550

Occurrence Date: 08/16/2012

Occurrence Type: Accident


Narrative (Continued)


The outer shroud was intact; however, a 90-degree segment of the outer rim was heavily scored, consistent with contact against the shroud.

The 4th stage turbine nozzle was generally intact; however a 4-inch segment of the 4th stage turbine shroud was fractured in the plane of the 4th stage turbine wheel, consistent in location with the fracture of the exhaust collector housing. The 4th stage shroud showed heavy rotational scoring. All the nozzle vanes were present and undamaged. The 3rd stage turbine shroud showed heavy rotational scoring. The 4th stage turbine was missing one blade. The missing blade was fractured near the inner platform. An examination of the fracture surface showed high cycle fatigue. A 3-blade span of the related segment of the rim was also missing. The two adjacent blades were fractured near the tips. One adjacent blade was missing the entire rim segment and was twisted, while the other adjacent blade was partially attached to the remaining rim. All other blades were present and appeared to be undamaged. The curvic coupling was intact and undamaged.

The N2 bearing set consisted of the No. 3, No. 4, No. 5 and No. 6 bearings. The No. 5 bearing snap ring was found dislodged from its groove. The power turbine inner shaft was intact; however, the No. 6 bearing inner race was heavily deformed at the roller bearing contact surface.

Updated on Feb 4 2015 2:52PM

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: CEN12TA550			
		Occurrence Date: 08/16/2012			
		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name N/A	Airport ID:	Airport Elevation Ft. MSL	Runway Used N/A	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: Forced Landing					
Aircraft Information					
Aircraft Manufacturer MD HELICOPTER		Model/Series 369/E		Serial Number 0571E	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Skid					
Amateur Built Acft? No	Number of Seats: 4	Certified Max Gross Wt. 3000 LBS	Number of Engines: 1		
Engine Type: Turbo Shaft	Engine Manufacturer: Rolls Royce	Model/Series: 250-C20B	Rated Power: 420 HP		
- Aircraft Inspection Information					
Type of Last Inspection Annual	Date of Last Inspection	Time Since Last Inspection Hours	Airframe Total Time 4667 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type No	ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner City of Columbus		Street Address			
		City Columbus	State OH	Zip Code	
Operator of Aircraft Columbus Police		Street Address			
		City Columbus	State OH	Zip Code	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Public Use					
Type of Flight Operation Conducted: Public Aircraft - Local					
FACTUAL REPORT - AVIATION					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: CEN12TA550
	Occurrence Date: 08/16/2012
	Occurrence Type: Accident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 44
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Sex:	Seat Occupied: Left	Occupational Pilot? Yes	Certificate Number: On File
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Certificate(s): Commercial

Airplane Rating(s): None

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): None

Instructor Rating(s): None

Current Biennial Flight Review? 04/2012

Medical Cert.: Class 2	Medical Cert. Status: With Waivers/Limitations	Date of Last Medical Exam: 05/2012
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	2500	2450			2296			2500		
Pilot In Command(PIC)	2450	2450			2296			2450		
Instructor										
Instruction Received										
Last 90 Days	306	306			306			306		
Last 30 Days	48	48			48			48		
Last 24 Hours	0	0								

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? Yes
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Flight Plan/Itinerary

Type of Flight Plan Filed: Company VFR

Departure Point Same as Accident/Incident Location	State	Airport Identifier	Departure Time 0150	Time Zone EDT
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Destination Local Flight	State OH	Airport Identifier	
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Type of Clearance: None

Type of Airspace:

Weather Information

UAT/CA Source of Wx Information:


Automated Report; National Weather Service; TV/Radio Weather

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: CEN12TA550
	Occurrence Date: 08/16/2012
	Occurrence Type: Accident

Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
CMH	0151	EDT	815 Ft. MSL	8 NM	90 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			Ft. AGL	Condition of Light: Night	
Lowest Ceiling: None		Ft. AGL	Visibility: 10	SM	Altimeter: 30.00 "Hg
Temperature: 21 °C	Dew Point: 16 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction:		Wind Speed: Calm		Wind Gusts:	
Visibility (RVR): Ft.		Visibility (RVV) SM			
Precip and/or Obscuration: No Obscuration; No Precipitation					

Accident Information		
Aircraft Damage: Substantial	Aircraft Fire: Ground	Aircraft Explosion: None

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew				1	1
Passengers					
- TOTAL ABOARD -				2	2
Other Ground					
- GRAND TOTAL -				2	2

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: CEN12TA550
	Occurrence Date: 08/16/2012
	Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Mitchell F. Gallo

Additional Persons Participating in This Accident/Incident Investigation:

Jon Jefferies
Federal Aviation Administration
Columbus, OH

Harald Reichel
National Transportation Safety Board
Washington, DC

Dave Riser
Rolls-Royce Corporation
Indianapolis, IN

Scott Hendrickson
MD Helicopters, Inc.
Mesa, AZ

John Cooper
Columbus Police Department
Columbus, OH

Victor Speroni
Helicopter Minit Men Inc
Columbus, OH