

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: ERA09LA460		Aircraft Registration Number: N527BB	
		Occurrence Date: 08/12/2009		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Acworth		State GA	Zip Code 30101	Local Time 1000	Time Zone EDT
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer MCDONNELL DOUGLAS HELICOPTER		Model/Series 369E		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 aircraft accident report. ***</p> <p>On August 12, 2009, about 1000 eastern daylight time, a McDonnell-Douglas 369E, N527BB, lost engine power during a descent and landed hard during an autorotation landing in Acworth, Georgia. The commercial rated pilot received minor injuries, and the passenger was seriously injured. The helicopter was substantially damaged by impact forces. The flight was operated as an aerial observation flight under the provisions of 14 Code of Federal Regulations Part 91, and no flight plan was filed. Visual meteorological conditions prevailed at the time of the accident.</p> <p>The pilot stated that he and an observer were conducting an aerial observation of power lines. He climbed to 1,400 feet mean sea level, and was awaiting clearance from McCollum Field, Georgia (RYY) to enter its airspace. After receiving the clearance to enter RYY, he began a descent. Approximately 5 to 10 seconds into the descent he heard a "'bang and braking" noise. Subsequently, he received an "ENG OUT" audio and caution lights. He then made an emergency autorotation into a field.</p> <p>Examination of the helicopter by a Federal Aviation Administration inspector revealed that the helicopter collided with a runoff ditch behind residential homes. Examination of the airframe and flight control system components revealed no evidence of preimpact mechanical malfunction. The helicopter was recovered from the ditch and an examination was conducted on the engine.</p> <p>Examination of the engine revealed no evidence of impact damage or fire, and all engine mounts were intact. The gas producer fuel control lever operated, and the power turbine governor control lever traveled freely, and after the engine was removed from the airframe both control levers operated fully. All fuel, lube and pneumatic lines, coupling nuts and B-nuts were checked for security and were found tight and marked with torque paint. Inspection of the inlet plenum chamber did not reveal any evidence of foreign material or missing hardware. Inspection of the compressor inlet showed no signs of erosion or foreign object damage. The compressor rotated freely by hand. The accessory gearbox was undamaged, and both gear trains turned freely and smoothly by hand. Drive train continuity was confirmed throughout.</p> <p>Examination of the turbine section revealed rub marks throughout the turbine section consistent with an out-of-balance condition caused by a third stage turbine airfoil release. The third stage wheel airfoil fractured in fatigue near the root of the airfoil, progressing approximately 0.55 inch from the trailing edge prior to the final separation in overload. No anomalies were found at the fatigue origin. Damage observed on the other turbine components was consistent with secondary damage after the third stage airfoil separation. The microstructure, hardness, and chemistry of the third stage turbine wheel met the engineering drawing requirements. The fracture surface of the failed third stage blade revealed high cycle fatigue failure of an extended period of time. The crack propagation is estimated to be greater than 2000 cycles. No additional cracks were found on the other third stage wheel airfoils.</p>					
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Narrative (Continued)

Review of the logbook pages revealed that the airframe total time was 4,257 hours, and the engine total time was 3,820 hours. The airframe and the engine had gone through a 100 and 300 hour inspection at 4,246.6 airframe hours and 3,809.6 engine hours. All airworthiness directives and applicable service bulletins as well as all instructions for continued airworthiness were complied with. The hot section and turbine inspection was completed on February 21, 2008 at 2,958 hours. The number 3 turbine wheel power turbine was overhauled on February 3, 2004 at 1210.6 hours and 1633.0 cycles, and was due to be replaced at 4,710.6 hours. The number 3 turbine wheel had 2609.7 hours and 2412.0 cycles at the time of the accident. The number 3 turbine wheel had 1940.0 hours remaining and 3588.0 cycles remaining at the time of the accident.

Updated on Mar 16 2011 10:54AM

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Landing Facility/Approach Information					
Airport Name	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 MCDONNELL DOUGLAS HELICOPTER		Model/Series 369E		Serial Number 0329E	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Skid					
Amateur Built Acft? No	Number of Seats: 4	Certified Max Gross Wt. 3100 LBS	Number of Engines: 1		
Engine Type: Turbo Shaft	Engine Manufacturer: ALLISON	Model/Series: 250-C20 SER	Rated Power: 420 HP		
- Aircraft Inspection Information					
Type of Last Inspection 100 Hour	Date of Last Inspection 08/2009	Time Since Last Inspection 10 Hours	Airframe Total Time 4257 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes / C91	ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner ROTORWORKS LLC		Street Address 165 COMMODORE PATH			
		City HIRAM	State GA	Zip Code 30141	
Operator of Aircraft ROTORWORKS LLC		Street Address 165 COMMODORE PATH			
		City HIRAM	State GA	Zip Code 30141	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): On-demand Air Taxi					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Aerial Observation					
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First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 41
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Sex: M	Seat Occupied: Left	Occupational Pilot? Yes	Certificate Number: On File
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Certificate(s): Commercial

Airplane Rating(s):

Rotorcraft/Glider/LTA: Helicopter

Instrument Rating(s): Helicopter

Instructor Rating(s): None

Current Biennial Flight Review?

Medical Cert.: Class 2	Medical Cert. Status: Without Waivers/Limitations	Date of Last Medical Exam: 05/2009
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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	1038	95								
Pilot In Command(PIC)	563									
Instructor										
Instruction Received										
Last 90 Days	33									
Last 30 Days	33									
Last 24 Hours	6									

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

Type of Flight Plan Filed: None

Departure Point Same as Accident/Incident Location	State	Airport Identifier RYY	Departure Time 0900	Time Zone EDT
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Destination Local Flight	State GA	Airport Identifier RYY	
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Type of Clearance: VFR Flight Following

Type of Airspace:

Weather Information

UAT/CA Source of Wx Information:

Unknown

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
RYY	0847	EDT	1040 Ft. MSL	5 NM	90 Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			4000 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Broken		11000 Ft. AGL		Visibility: 10 SM	Altimeter: 30.03 "Hg
Temperature: 27 °C	Dew Point: 21 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction: 330		Wind Speed: 5		Wind Gusts:	
Visibility (RVR): Ft.		Visibility (RVV) SM			
Precip and/or Obscuration: No Precipitation					

Accident Information		
Aircraft Damage: Substantial	Aircraft Fire: None	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					
Passengers		1			1
- TOTAL ABOARD -		1	1		2
Other Ground					
- GRAND TOTAL -		1	1		2

National Transportation Safety Board

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Administrative Information

Investigator-In-Charge (IIC)

Eric Alleyne

Additional Persons Participating in This Accident/Incident Investigation:

Michael Oot
FAA/FSDO
Atlanta, GA