

Aviation Investigation Factual Report

Location:	FORT MYERS, Flor	rida	Accident Number:	MIA00TA070
Date & Time:	January 20, 2000,	13:30 Local	Registration:	N853M
Aircraft:	Bell	UH-1H	Aircraft Damage:	Substantial
Defining Event:			Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Public aircraft			

Factual Information

On January 20, 2000, about 1330 eastern standard time, a Bell UH-1H, N853M, registered to the Lee County Mosquito Control District, operating as a Title 14 CFR Part 91 public-use flight, crashed while maneuvering in the vicinity of Fort Myers, Florida. Visual meteorological conditions prevailed and no flight plan was filed. The rotorcraft received substantial damage and the commercially-rated pilot, the sole occupant, sustained minor injuries. The flight originated from Lehigh Acres, Florida, about 30 minutes before the accident.

According to the pilot, the rotorcraft was being routinely flown for off season maintenance prevention when, between 350 and 400 feet agl, he heard a loud "bang", the engine fail light illuminated, engine rpm decayed to zero, and rotor rpm indicated between 298 and 304. The pilot performed an autorotation, and the rotorcraft sustained a hard touchdown and rollover about 6 miles southwest of Southwest Florida International Airport.

According to an FAA inspector, eyewitnesses reported hearing a loud "popping sound" shortly before observing the rotorcraft perform an autorotation to an area southwest of Fort Myers known as Mulloch Creek. The touchdown was hard enough to cause the left landing skid to separate and the main rotor blades to collide with the tail boom and terrain. The tail boom was severed and separated. The airframe came to rest on its side, and debris in the tailpipe was determined to be remnants of turbine disc and blades. According to engine maintenance records, the Lycoming T53-L-13B turbine engine, serial no. LE-24073, was installed in N853M on March 17, 1998, at an engine time of 774 hours since overhaul. On January 19, 2000, the engine underwent a 50-hour inspection at an engine time of 924 hours since overhaul.

The engine was removed and sent to the Honeywell Product Safety and Integrity facility for material failure analysis, under FAA oversight. Adjacent to the engine data plate was affixed a Corpus Christi Army Depot, (CCAD) overhaul plate; however, the spaces for "overhaul date" and "time since new" had been marked with an "N/A". Records at CCAD revealed the engine was test cell run on April 8, 1993, but never repaired or overhauled. Disassembly inspection of the core engine by factory inspectors revealed that a section of the 2nd stage GP turbine disc, P/N 1-100-063-05, had fractured and separated due to sustained peak strain low cycle fatigue. The separation of the section of turbine disc resulted in liberation of disc and blade fragments that caused secondary damage to the downstream 1st stage PT nozzle, 1st stage PT disc and 2nd stage PT nozzle and disc, as well as lesser damage to the upstream 2nd stage GP turbine nozzle, 1st stage GP spool interference between the axial and centrifugal blades with their respective shrouds, resulting in blade tip rubbing. Additionally, the imbalance of the GP spool caused relative movement and interference between the aft internal splines of the GP spool and the aft GP turbine cone. This condition was evidenced by

impressions found on the aft GP turbine cone and the fracture of the sun gear retaining bolt washer.

No material defects were revealed that would have led to the disc separation. No evidence of improper lubrication or fuel servicing that could have contributed to the disc separation was revealed. The original engine was assembled at the factory, Stratford, Connecticut, in October 1974; however, the Lycoming complete service history of the military surplus 2nd stage GP turbine disc could not be determined from records provided by the operator. Factory inspectors stated they had not seen such corrosion of the 1st stage GP turbine nozzle retaining bolts and erosion of the bearing housing heat shield in a 924 hoursince-overhaul engine before. See the Honeywell Teardown Report of Model T53-L-13B Turboshaft Engine, serial no. LE-24073, an attachment to this report.

Certificate:	Commercial	Age:	56,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	February 23, 1999
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	20840 hours (Total, all aircraft), 3400 hours (Total, this make and model), 21900 hours (Pilot In Command, all aircraft), 60 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Pilot Information

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N853M
Model/Series:	UH-1H UH-1H	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal; Restricted (Special)	Serial Number:	68-16087
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	January 19, 2000 Continuous airworthiness	Certified Max Gross Wt.:	9500 lbs
Time Since Last Inspection:	1 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	6215 Hrs	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	T-53-L-13B
Registered Owner:	LEE COUNTY MOSQUITO CONTROL	Rated Power:	1400 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	RSW ,31 ft msl	Distance from Accident Site:	6 Nautical Miles
Observation Time:	13:53 Local	Direction from Accident Site:	60°
Lowest Cloud Condition:	Scattered / 6000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	15 knots / 22 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	290°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	27°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitat	tion	
Departure Point:	LEHIGH ACRES (X56)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	13:00 Local	Type of Airspace:	Class C

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	Rough;Vegetation
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	26.510194,-81.700988(est)

Administrative Information

Investigator In Charge (IIC):	Stone, Alan	
Additional Participating Persons:	VICTOR ROXAS; TAMPA , FL	
Report Date:	October 30, 2000	
Last Revision Date:		
Investigation Class:	<u>Class</u>	
Note:		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=48510	

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available <u>here</u>.