



Aviation Investigation Final Report

Location:	OXFORD, Mississippi	Incident Number:	MIA87IA141
Date & Time:	April 20, 1987, 14:00 Local	Registration:	N222HX
Aircraft:	BELL 222U	Aircraft Damage:	Minor
Defining Event:		Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

THE PILOT EXECUTED A PRECAUTIONARY LANDING AFTER HEARING A LOUD BANG AND EXPERIENCING A LOSS OF THE NUMBER 1 ENGINE. POST ACCIDENT EXAMINATION REVEALED THAT THE POWER TURBINE WHEEL BLADES HAD FAILED, AND THE WHEEL PARTS LOGJAMMED AND PENETRATED THE ENGINE CASE. THE BLADE FRACTURES WERE HIGH CYCLE TRANSGRANULAR FAILURES EMINATING FROM THE TRAILING EDGE OF EACH BLADE ROOT. A REVIEW OF FAA SDR RECORDS REVEALED 87 SIMILAR FAILURES. SIX EMERGENCY AIRWORTHINESS DIRECTIVES WERE SUBSEQUENTLY ISSUED.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be:

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF

Phase of Operation: CRUISE - NORMAL

Findings

1. (C) TURBINE ASSEMBLY, TURBINE BLADE - FAILURE, TOTAL
2. (C) MAINTENANCE, DESIGN CHANGE - IMPROPER - MANUFACTURER
3. (C) ACFT/EQUIP, INADEQUATE DESIGN - MANUFACTURER
4. (C) INADEQUATE CERTIFICATION/APPROVAL, AIRCRAFT - FAA(ORGANIZATION)
5. (C) ACFT/EQUIP, INADEQUATE COMPLIANCE DETERMINATION - FAA(OTHER/ORGANIZATION)

6. INADEQUATE SURVEILLANCE, INADEQUATE PROCEDURE - FAA(ORGANIZATION)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings

7. PRECAUTIONARY LANDING - PERFORMED

Factual Information

Pilot Information

Certificate:	Commercial; Flight instructor	Age:	37, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter; Instrument helicopter	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	3200 hours (Total, all aircraft), 400 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	BELL	Registration:	N222HX
Model/Series:	222U 222U	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	47533
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	January 23, 1987 100 hour	Certified Max Gross Wt.:	6400 lbs
Time Since Last Inspection:	97 Hrs	Engines:	2 Turbo shaft
Airframe Total Time:	842 Hrs	Engine Manufacturer:	LYCOMING
ELT:	Installed, not activated	Engine Model/Series:	LTS-101-75001
Registered Owner:	MEMPHIS MEDICAL CENTER	Rated Power:	750 Horsepower
Operator:	MEMPHIS MEDICAL CENTER	Operating Certificate(s) Held:	On-demand air taxi (135)
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:	MEM ,500 ft msl	Distance from Accident Site:	60 Nautical Miles
Observation Time:	13:19 Local	Direction from Accident Site:	335°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	7 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	33°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MEMPHIS , TN (MEM)	Type of Flight Plan Filed:	None
Destination:	OXFORD , MS	Type of Clearance:	None
Departure Time:	13:30 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	Asphalt
Airport Elevation:	0 ft msl	Runway Surface Condition:	Dry
Runway Used:	0	IFR Approach:	None
Runway Length/Width:	0 ft / 0 ft	VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Minor
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	34.349617,-89.519363(est)

Administrative Information

Investigator In Charge (IIC):	Alston, Andrew
Additional Participating Persons:	FELIX NUNNERY; MEMPHIS , TN ; WILLIAMSPORT , PA ; NEW BEDFORD , MA ; FT. WORTH , TX
Original Publish Date:	July 10, 1989
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=31794

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