National Transportation Safety Board
Aviation Accident Final Report

Location:	HURLEY, NM	**Accident Number:**	FTW95FA082
Date & Time:	01/05/1995, 1835 MST	**Registration:**	N3LP
Aircraft:	BEECH A60	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General Aviation - Business		

Analysis

DURING CLIMB TO CRUISE THE PILOT REPORTED A POWER LOSS ON ONE ENGINE AND RECEIVED VECTORS FOR A RETURN TO THE DEPARTURE AIRPORT. THE PILOT WAS SUBSEQUENTLY CLEARED FOR THE VOR-A APPROACH AND REPORTED INTERCEPTING THE INBOUND RADIAL. THE IMPACT SITE WAS RIGHT OF THE INBOUND RADIAL AND SHORT OF THE EXTENDED RUNWAY CENTERLINE. WEATHER AT THE AIRPORT WAS VFR. POST IMPACT FIRE DAMAGED THE AIRPLANE. THE LEFT ENGINE PROPELLER WAS IN THE FEATHER POSITION. VISUAL AND METALLURGICAL EXAMINATION CONFIRMED THE TURBOCHARGER SHAFT SEPARATED DUE TO FATIGUE. THE SHAFT CONTAINED CHROMIUM. THE AIRCRAFT OVERHAUL MANUAL STATES THAT 'CHROME PLATING...RESTORATION OF THE SHAFT...ARE NOT PERMITTED.' METALLOGRAHICS REVEALED A MICROSTRUCTURE OF GREY IRON (AUTOMOTIVE APPLICATION) IN THE CENTER HOUSING. THE TURBOCHARGER WAS OVERHAULED AND INSTALLED ON THE LEFT ENGINE IN OCTOBER 1989.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain airspeed during a single engine approach resulting in an inadvertent stall. Factors were a fatigue separation of a shaft in the left engine turbocharger due to use of a Federal Aviation Administration approved overhaul procedure that was not consistent with the manufacturer's overhaul procedure, and the resultant loss of power to the left engine.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CLIMB - TO CRUISE

Findings
1. 1 ENGINE
2. (F) EXHAUST SYSTEM,TURBOCHARGER - FATIGUE
3. (F) MAINTENANCE,MAJOR REPAIR - IMPROPER

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CIRCLING (IFR)

Findings
4. (C) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT:

On January 5, 1995, at 1835 mountain standard time, a Beech A60, N3LP, was destroyed during an approach to the Silver City/Grant County Airport near Hurley, New Mexico. The airline transport rated pilot and the two passengers received fatal injuries. An instrument flight plan was filed for the business cross country flight.

Witnesses and local authorities reported the following information. The airplane arrived at the Silver City/Grant County Airport at 1350 and then departed on runway 26 at 1820. Subsequently, the pilot reported a loss of engine power, and the flight was cleared to return to the airport.

At approximately 1840, the airplane, with the landing light on, was observed with the left wing low, in a nose low attitude executing a turn toward the airport. Within "30 seconds" an explosion and fire came from the ground area near the airport.

PERSONNEL INFORMATION:

A review of the logbook indicated that the pilot had operated this make and model since May 4, 1991. The pilot upgraded his certificate to the airline transport pilot multiengine rating on January 4, 1992, in a PA-34-220T airplane.

AIRCRAFT INFORMATION:

On February 2, 1983, a remanufactured engine was installed in the left nacelle of Beech A60, N1155T. In October 1989, this engine, with a total time of 293 hours since the major overhaul, was installed in the left nacelle of N3LP. Turbocharger unit Model T1879, S/N EJR0101, was overhauled and installed on the left engine, on October 26, 1989, at a recorded hobbs time of 2,966.0 hours.

METEOROLOGICAL INFORMATION:

National Weather Service data for surface observations in the area west through southeast of Silver City/Grant County Airport reported winds from the west southwest at 10 knots with peak gust to 29 knots. Airmet Sierra issued for New Mexico advised of low level wind shear potential below 2,000 feet above ground level (AGL) throughout New Mexico.

COMMUNICATIONS:

A review of the air traffic control data revealed the following summary information. All times are converted to mountain standard time unless otherwise indicated. The pilot obtained an abbreviated weather briefing and filed instrument flight plans to Mesa, Arizona, and Provo, Utah. A clearance was issued at 1751:28 for departure from Silver City/Grant County Airport to Falcon field, Mesa, Arizona, with FL200 assigned.

1809:48 Albuquerque Air Route Traffic Control Center (ABQ ARTCC) established radar contact with N3LP as the pilot reported the flight climbing through 10,500 feet MSL for FL200. At 1811:02 the pilot reported the top of the clouds at 12,000 feet MSL.

1816:58 The pilot reported "I've just lost one of my engines, I'm going to need a vector to an airport."

1820:12 The flight was cleared to descend at pilot's discretion to 10,000 feet MSL and at

1826:34 was given a heading of 040 degrees to intercept the 128 degree radial of the Silver City VOR and to expect the VOR-A approach.

1829:08 N3LP was cleared for the VOR-A approach and to maintain 10,000 MSL until established on the 128 degree radial inbound.

The pilot reported a flight intercept of "VOR Alpha inbound course" at 1831:55 and was cleared for a frequency change at 1833:05. There were no further transmissions from N3LP and radar contact was lost at 1833:15.

WRECKAGE AND IMPACT INFORMATION:

Site terrain was rolling desert and the airplane came to rest on a measured magnetic heading of 095 degrees, 3,960 feet short of runway 26 at Silver City/Grant County Airport. Both engines were separated from the airframe with the left engine located under the left wing. The left engine turbocharger was found in the nacelle area. The left engine propeller was buried in the ground 31 feet from the main fuselage. The right propeller remained attached to the engine which was partially buried in the ground 27 feet from the airplane. There was no evidence of an inflight fire. See the enclosed diagram for additional details.

Cabin and cockpit areas were destroyed by the post impact fire. Flight control continuity was confirmed. One landing gear actuator arm (not destroyed by fire) was found in the transit position. Deice/anti-ice equipment status could not be determined.

Shafts for the left engine magnetos were rotated by hand. The left engine drive fuel pump shaft could be rotated by hand and fuel was found in the pump. The oil pump rotated, lubrication was present at the pump, and an oil sample was collected and forwarded to Aviation Laboratories in Gardena, California, for analysis. Left engine continuity was established through 360 degree hand crankshaft rotation and compression was noted on all cylinders. The engine was disassembled and no anomalies were noted that would have contributed to a loss of engine power.

Pieces of one right engine magneto were visually examined; however, due to impact damage the operation of the parts could not be verified. The second right engine magneto was not located and is presumed to have been destroyed by the fire. Right engine continuity was established during 360 degree hand crankshaft rotation, compression was noted to all cylinders, and there were no anomalies that would have contributed to a loss of right engine power.

Twisting, rearward bending, and chordwise scratching was found on all 3 blades of the right propeller with gouges noted at the leading edge tip ends of two of the blades. Two blades of the left propeller were bent and all three blades exhibited chordwise scratches. Both propellers were retained by the NTSB for further examination.

The left engine turbocharger, AlliedSignal Garrett Model T1879 S/N EJR0101, turbine and compressor impeller shaft did not have continuity. Shaft continuity was confirmed for the right engine turbocharger, AlliedSignal Garrett Model T1879 S/N PKR013, turbine and compressor impellers. Both turbochargers were retained by the NTSB for further examination.

MEDICAL AND PATHOLOGICAL INFORMATION:

The autopsies were performed at Albuquerque, New Mexico, by the Office of the Medical Investigator. The FAA Civil Aeromedical Institute's (CAMI) Forensic Toxicological and

Accident Research Center at Oklahoma City, Oklahoma, examined the pilot's specimens taken by the medical examiner.

TEST AND RESEARCH:

The left engine oil sample analysis indicated a "high aluminum" content. The source of the metal could not be determined.

Physical evidence of the left engine propeller preload plates "equate to a blade angle of 71 degrees, 72 degrees, and 60 degrees," respectively. The airframe manufacturer representative reported maximum pitch range as "81 degrees." The right engine propeller counterweight puncture marks indicated the "R2 blade was about a 60 degree angle." Marks on the propeller preload plates for "blades R1 and R3 equated blade angles of 21 degrees and 27 degrees," respectively.

When the turbochargers were examined, the right turbocharger, S/N PKR0113, exhibited rotational scoring and blades bent opposite to the direction of rotation. There were no anomalies that would preclude operation of the unit.

The left turbocharger, S/N EJR0101, shaft, connecting the turbine and the compressor wheels, was separated where the shaft joins the turbine wheel. The locating pins, for the center housing thrust collar, were identified as the type found in "diesel" applications and there were no identifying marks or part numbers on the compressor and turbine bearings. Extruded material was found on the inside diameter of the turbine bearing journal and the bearing oil passages were plugged with a "carbon-like material." The land (between the bearing journals on the turbine shaft) was the same diameter as the bearing journal areas. According to the AlliedSignal representative, "the land is normally ground undersize to a maximum of 0.026 inch." The turbine wheel assembly, center housing, and bearing were forwarded to the NTSB metallurgical laboratory.

Metallurgist examination revealed features indicative of fatigue cracking and torsional overload for the separated turbine wheel assembly, P/N 407293-0003. The diameter of the land area contained no reduction in middle area. Major peak positions along the land contained chromium and the radius contained iron (specified material for the shaft is a medium low alloy steel). Metallographic examination revealed that in the original construction the land area of the shaft was reduced. This reduction in diameter of the land area had been eliminated by a chrome-plating operation. The aircraft overhaul manual states that "chrome plating, plasma spray or equivalent restoration of shaft journals...are not permitted." A wedge-type metallographic specimen from the center housing revealed a typical microstructure of grey iron containing graphite flakes (specified material is a ductile iron containing graphite in the form of nodule).

ADDITIONAL DATA:

The airplane was released to the owner's representative.

Pilot Information

Certificate:	Airline Transport	**Age:**	36, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	05/02/1994
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	2746 hours (Total, all aircraft), 209 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	**Registration:**	N3LP
Model/Series:	A60 A60	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	P-242
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	02/16/1993, Annual	**Certified Max Gross Wt.:**	6725 lbs
Time Since Last Inspection:	26 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TIO-541-E1C4
Registered Owner:	MT. NEBO AVIATION	**Rated Power:**	380 hp
Operator:	MT. NEBO AVIATION	**Operating Certificate(s) Held:**	None
Operator Does Business As:	MID STATE CONSULTANTS, INC.	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	SVC, 5443 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	1821 MST	**Direction from Accident Site:**	290°
Lowest Cloud Condition:	Scattered / 2400 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	Broken / 3300 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	12 knots / 20 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	2°C / 1°C
Precipitation and Obscuration:			
Departure Point:		**Type of Flight Plan Filed:**	IFR
Destination:		**Type of Clearance:**	IFR
Departure Time:	1808 MST	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	3 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	JOYCE M SMITH	**Report Date:**	04/20/2000
Additional Participating Persons:	ROGER ST. HILAIRE; ALBUQUERQUE, NM		
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, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		