National Transportation Safety Board
Aviation Accident Final Report

Location:	Cross City, FL	**Accident Number:**	MIA07LA140
Date & Time:	09/05/2007, 0533 EDT	**Registration:**	N702PA
Aircraft:	CESSNA 208B	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General Aviation - Positioning		

Analysis

The pilot stated that he was on a repositioning flight to Tampa, Florida. He was cruising at 11,000 feet msl when, with no warning or spool down time, the engine failed. The engine indications instantly went to zero. The pilot declared an emergency to the air traffic controller and was advised that the nearest airport was 29 miles away. He maneuvered the airplane toward the airport and went through the engine failure procedures. The attempts to restart the engine were unsuccessful. The pilot configured the airplane for best glide speed. After gliding for 22 miles, the airplane's altitude was about 300 feet msl. The pilot slowed the airplane to just above stall speed before impacting small pine trees pulling back on the yoke and stalling the airplane into the trees. The engine was examined at Pratt and Whitney of Canada, with Transportation Safety Board of Canada oversight. The engine compressor turbine blades were fractured at varying heights from the roots to approximately half of the span. Materials analysis determined the blade fractures to display impact damage and overheating. The primary cause of the blade fractures could not be determined. There were no other pre-impact anomalies or operational dysfunction observed to any of the engine components examined. Impact damage to the blade airfoils precluded determination of the original fracture mechanism.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A total loss of engine power during cruise flight due to the fracture and separation of the compressor turbine blades for undetermined reasons. Contributing to the accident was the unsuitable terrain for a forced landing.

Findings

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

Findings
1. COMPRESSOR ASSEMBLY,BLADE - SEPARATION
2. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
3. OBJECT - TREE(S)

Factual Information

On September 5, 2007, about 0533 eastern daylight time, a Cessna 208 B, N702PA, registered to and operated by Paragon Air Express, Inc, as a Title 14 Code of Federal Regulations Part 91 positioning flight, impacted trees during a forced landing following loss of engine power, near Cross City, Florida. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed. The commercial rated pilot was not injured and the airplane incurred substantial damage. The flight originated from the Mobile Downtown Airport (BFM), Mobile, Alabama, earlier that day, about 0430.

The pilot stated he was on a repositioning flight to Tampa, Florida. He was cruising at 11,000 feet msl when, with no warning or spool down time, the engine failed. The engine indications instantly went to zero. The pilot declared an emergency to the air traffic controller and was advised that the nearest airport was Cross City Airport (CTY), Cross City, Florida, 29 miles away. He maneuvered the airplane toward the airport and went through the engine failure procedures. The attempts to restart the engine were unsuccessful. The pilot configured the airplane for best glide speed. After gliding for 22 miles, the airplane's altitude was about 300 feet msl. The pilot slowed the airplane to just above stall speed before impacting small pine trees pulling back on the yoke and stalling the airplane into the trees. He was able to exit the airplane without assistance. The airplane came to rest eight miles east of the CTY.

A review of Pratt &Whitney of Canada (P&WC) record's determined the engine was overhauled by Pratt & Whitney Engine Services (PWES), Bridgeport, WV on August 1, 2001. New compressor turbine blades were installed at that time. The engine's maintenance records indicated at 5,451 total hours a hot section inspection was completed on June 18, 2005 by PWES Atlanta, GA. On February 2, 2007, at 6,964 total hours, the power section was removed due to a light propeller strike and replaced with a rental unit. The original power section was repaired and reinstalled at 7,165 total hours, completed on March 27, 2007. The maintenance was performed by PWES, Addison, TX. At the time of the accident the engine's Gas Generator section had accumulated 7,507 total hours and the Power section had accumulated 7,279 total hours.

The operator was granted by the FAA, a time between overhaul extension to 4,600 hours in 2005 and was operating on an approved engine condition trend monitoring (ECTM) program in accordance with P&WC Service Bulletin 1703. The aircraft was not equipped with an automated engine parameter data recording system. Review of the ECTM data following the last hot section inspection revealed no deviations dictating a need for maintenance action.

The engine was examined at Pratt and Whitney of Canada, with Transportation Safety Board of Canada oversight. The engine compressor turbine blades were fractured at varying heights from the roots to approximately half of the span. Materials analysis determined the blade fractures to display impact damage and overheating. The primary cause of the blade fractures could not be determined. The blades' microstructure indicated that the blades had been exposed to excessive temperatures. The compressor turbine guide vane ring and all adjacent and downstream components displayed extensive mechanical damage due to contact with the separated compressor turbine blade debris. There were no other pre-impact anomalies or operational dysfunction observed to any of the engine components examined.

Pilot Information

Certificate:	Commercial	**Age:**	44, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	11/13/2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	05/07/2007
Flight Time:	11732 hours (Total, all aircraft), 5470 hours (Total, this make and model), 180 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N702PA
Model/Series:	208B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	208B0702
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	08/16/2007, Continuous Airworthiness	**Certified Max Gross Wt.:**	8785 lbs
Time Since Last Inspection:	53 Hours	**Engines:**	1 Turbo Prop
Airframe Total Time:	7844 Hours at time of accident	**Engine Manufacturer:**	Pratt and Whitney of Canada
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	PT6A-114A
Registered Owner:	Paragon Air Express, Inc	**Rated Power:**	675 hp
Operator:	Paragon Air Express, Inc	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	PA9A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	CTY, 42 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	0553 EST	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	27°C / 16°C
Precipitation and Obscuration:	No Precipitation		
Departure Point:	Mobile, AL (BFM)	**Type of Flight Plan Filed:**	IFR
Destination:	Tampa, FL (TPA)	**Type of Clearance:**	IFR
Departure Time:	0230 CDT	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	29.625556, -83.291389

Administrative Information

Investigator In Charge (IIC):	Jose Obregon	**Report Date:**	05/06/2009
Additional Participating Persons:	William Bonatti; FSDO/FAA; Orlando, FL Doug Hardy; Pratt & Whitney of Canada; Quebec, Canada, Ricardo Asensio; Cessna; Wichita, KS Adam Huskins; Paragon; Nashville, TN Denis Deroy; TSB of Canada; Quebec, Canada,		
Publish Date:	05/06/2009		
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/.		