



National Transportation Safety Board Aviation Accident Final Report

Location:	TULLAHOMA, TN	Accident Number:	ATL93FA062
Date & Time:	03/23/1993, 0328 CST	Registration:	N405PC
Aircraft:	CESSNA 402B	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

A WITNESS REPORTED THAT THE AIRPLANE USED THE ENTIRE RUNWAY TO GET AIRBORNE, REACHED ABOUT 300 FT AGL AFTER LIFTOFF, AND DRIFTED RIGHT. IT THEN IMPACTED TREES ABOUT 1/3 MI FROM THE DEPARTURE END OF THE RUNWAY. DAMAGE TO THE TREES INDICATED THAT THE AIRPLANE WAS IN A RIGHT BANK AT IMPACT. BOTH PROPELLERS SHOWED EVIDENCE OF ROTATION AT IMPACT. ESTIMATED WEIGHT CALCULATIONS SHOWED THAT THE AIRPLANE WAS AT LEAST 165 LBS IN EXCESS OF MAX GROSS WEIGHT; THIS DOES NOT INCLUDE AN UNKNOWN AMOUNT OF FUEL ON BOARD PRIOR TO THE LAST REFUELING.

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 CONTROL OF THE AIRPLANE DURING TAKEOFF. FACTORS WHICH CONTRIBUTED TO THE ACCIDENT WERE: THE PILOT'S FAILURE TO ENSURE THAT THE AIRPLANE MAXIMUM GROSS TAKEOFF WEIGHT WAS NOT EXCEEDED, THE DARK NIGHT, AND RAIN.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (F) WEATHER CONDITION - RAIN
2. (F) LIGHT CONDITION - DARK NIGHT
3. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
4. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

5. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On March 23, 1993, at about 0328 central standard time, a Cessna 402B, N405PC, collided with trees and terrain shortly after takeoff from the Tullahoma Regional Airport in Tullahoma, Tennessee. The airline transport pilot was fatally injured. The aircraft was operated under 14 CFR Part 135 by Springdale Air Service of Springdale, Arkansas. The aircraft was destroyed. Night, visual meteorological conditions prevailed at the time, and an instrument flight rules flight plan was filed for the non-scheduled cargo flight to Harrisburg, Pennsylvania. The flight was originating at the time of the accident.

The purpose of the flight was to transport photographic prints and film which had been processed at the Walmart processing facility in Tullahoma. Reportedly, the accident pilot arrived in Tullahoma from Harrisburg earlier in the evening in N405PC. The pilot refueled the aircraft, and loaded the cargo, which consisted mainly of vinyl bags of processed photographs. An employee at Walmart reported that the weight of the delivered cargo was 1,198.5 pounds. One of the Walmart employees reported that the pilot did not mention any aircraft abnormalities or problems during casual conversation.

At 0311, a man who identified himself as the pilot of SPG100 (a company call sign for N405PC) requested an instrument flight rules (IFR) clearance from Tullahoma to Harrisburg, and advised that the departure runway would be runway 36. At 0313, the Nashville, Tennessee Automated Flight Service Station (AFSS) issued an IFR clearance to SPG100. No inflight communications were reported from SPG100 prior to the accident.

A student who was studying in his trailer at the south end of the airport reported that he heard an aircraft "testing its' engines", prior to the time of the accident. He reported that he heard the aircraft go to full throttle about three times, about 3 to 4 minutes apart. He was familiar with the operations of this aircraft, and stated that the engine sound "didn't quite sound right." He stated that the aircraft took off about 10 or 15 minutes after 3 a.m.

Another witness was camping on the east end of the airport. He stated that the aircraft used the entire runway to get airborne, then drifted right. After the aircraft passed a building materials store, it lost altitude. He estimated that the aircraft was less than 300 feet above ground level. He saw no flash prior to the accident. He stated that "it sounded as if he had trouble gaining full power for takeoff."

A police patrolman reported that at about 0328, he saw an orange object, or "glow", in the air, in the direction of the airport. The glow began to grow dim, and he observed a large, mushroom shaped "fireball" above the treeline. About two minutes later, he arrived on the scene of the accident. He stated that several small explosions occurred after his arrival upon the crash scene.

PERSONNEL INFORMATION

Information on the pilot is included in this report. See "First Pilot Information."

AIRCRAFT INFORMATION

Information on the aircraft is included in this report. See "Aircraft Information."

METEOROLOGICAL INFORMATION

Night, visual meteorological conditions existed at the time of the accident. Several witnesses reported that at the approximate time of the accident, heavy rain was present. Meteorological information is included in this report under "Weather Information."

WRECKAGE AND IMPACT INFORMATION

The aircraft crashed in the front yard of a single family dwelling, about one third mile northeast of the departure end of runway 36 (Tullahoma Airport). The wreckage path was about 300 feet in length, and the magnetic heading from the first observed impact marks to the main wreckage was about 056 degrees. The main wreckage was found inverted, on a two lane, paved asphalt road. A wreckage distribution diagram is included as an attachment to this report.

On each side of the road where the main wreckage was found were storm drainage ditches, filled with water. The right, nose baggage door and the right engine top cowling were found in the ditch, partially submerged in the water. Soot, along with heat and fire damage, was observed above the level of the water. Below the level of the water, no heat or fire damage or soot was observed.

The right engine propeller was found separated from the engine, about 36 feet southwest of the main wreckage. The left propeller remained attached to the engine.

The landing gear were found in the retracted position. The left and right wing flaps were found extended about 15 degrees. All aircraft fuel tanks were destroyed; no residual fuel was found. Both the left and right fuel selector valves were found in the "left main" tank position.

MEDICAL AND PATHOLOGICAL INFORMATION

A post mortem examination of the pilot was performed by Dr. Julia C. Goodin, M.D., Office of the Medical Examiners, Nashville, Tennessee. She reported that the cause of death was from multiple injuries and thermal injury, including rib fractures, perforating injuries to the right chest with lacerations of the lungs, liver, heart, and diaphragm. Toxicological testing for carbon monoxide, alcohol, basic, acidic, and neutral drugs was negative.

TESTS AND RESEARCH

The right engine was disassembled and examined at the manufacturer's facility in Mobile, Alabama following the accident. The left engine fuel manifold valve, left engine driven fuel pump, and left engine throttle control were also inspected at this examination. The results are included as an attachment to this report (re: Teledyne Continental Motors Analytical Inspection Report).

The left engine was inspected at a wreckage storage facility in Jefferson, Georgia. The engine oil sump area had impact damage; the camshaft gear was bent and the engine could not be turned by hand. The engine cylinders were removed, and there was no evidence of internal malfunction or failure observed.

The propellers were disassembled and inspected at the manufacturer's facility in Vandalia, Ohio. An inspection report is included as an attachment to this report (re: Propeller Teardown Inspection Report provided by McCauley Accessory Division).

The turbochargers were disassembled and inspected in conjunction with the right engine inspection in Mobile, Alabama. The disassembled parts were subsequently inspected with a manufacturer's representative at a storage facility in Jefferson, Georgia. An inspection report is

included as an attachment to this report (re: Garrett Turbocharger Inspection Report).

The aircraft weight at the time of takeoff was estimated using the following information:

Aircraft Empty Weight:	4221 lbs.	Engine Oil:	49 "	Aircraft
Fuel Added to	N405PC Prior to Flight:	779 "	Pilot:	218 "
Cargo:	1198 "			
Total:	6465 "			
Maximum Takeoff Weight:	6300 lbs.			

The aircraft empty weight was obtained from information provided by the operator. The cargo weight was obtained from Walmart personnel. Due to fire and water damage, the cargo could not be accurately weighed after the accident. The distribution of the cargo was not reconstructed due to impact and fire damage. The amount of fuel in the tanks prior to the last fueling was not known; that amount is not included in the total weight above.

ADDITIONAL INFORMATION

The aircraft wreckage was released to:

Keith Wright	AIG Aviation, Inc.	Atlanta, Georgia.
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Pilot Information

Certificate:	Airline Transport; Commercial	Age:	41, 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	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	08/03/1992
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	4302 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N405PC
Model/Series:	402B 402B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	402B1381
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	03/10/1993, Annual	Certified Max Gross Wt.:	6300 lbs
Time Since Last Inspection:	63 Hours	Engines:	2 Reciprocating
Airframe Total Time:	7693 Hours	Engine Manufacturer:	CONTINENTAL
ELT:	Installed	Engine Model/Series:	TSIO-520-E
Registered Owner:	SPRINGDALE AIR SERVICE	Rated Power:	300 hp
Operator:	SPRINGDALE AIR SERVICE	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	HBCA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	THA, 1081 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	0340 CST	Direction from Accident Site:	210°
Lowest Cloud Condition:	Unknown / 800 ft agl	Visibility	5 Miles
Lowest Ceiling:	Overcast / 800 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	150°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	14° C / 14° C
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	IFR
Destination:	HARRISBURG, PA (CXY)	Type of Clearance:	IFR
Departure Time:	0328 CST	Type of Airspace:	Class G

Airport Information

Airport:	TULLAHOMA REGIONAL (THA)	Runway Surface Type:	Asphalt
Airport Elevation:	1081 ft	Runway Surface Condition:	Wet
Runway Used:	36	IFR Approach:	None
Runway Length/Width:	5000 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	RALPH E HICKS	Report Date:	06/17/1994
Additional Participating Persons:	LYNN W LAFEVER; NASHVILLE, TN		
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 pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).