



## National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Ruidoso, NM	<b>Accident Number:</b>	DEN07MA134
<b>Date &amp; Time:</b>	08/05/2007, 2141 MDT	<b>Registration:</b>	N369CD
<b>Aircraft:</b>	Beech E90B	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	5 Fatal
<b>Flight Conducted Under:</b>	Part 135: Air Taxi & Commuter - Non-scheduled - Air Medical (Unspecified)		

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### Analysis

The emergency medical services (EMS) airplane took off toward the east in dark night visual conditions. The purpose of the Part 135 commercial air ambulance flight was to transport a 15-month-old patient from one hospital to another. Immediately following the takeoff from an airport elevation of 6,814 feet above mean sea level (msl), witnesses observed the airplane initiate a left turn to the north and disappear. Satellite tracking detected the airplane a shortly after departure, when the airplane was flying at an altitude of 6,811 feet msl, an airspeed of 115 knots, and a course of 072 degrees. The airplane impacted terrain at an elevation of 6,860 msl feet shortly thereafter, about 4 miles southeast of the departure airport. The pilot, flight nurse, paramedic, patient, and patient's mother were fatally injured. When the airplane failed to arrive at its destination, authorities initiated a search and the wreckage was located the next morning. Documentation and analysis of the accident site by the NTSB revealed that debris path indicated a heading away from the destination airport. Initial impact with trees occurred at an elevation of 6,860 feet. Fragmented wreckage was strewn for 1,100 feet down a 4.5-degree graded hill on a magnetic heading of 141 degrees. The aircraft's descent angle was computed to be 13 degrees, and the angle of impact was computed to be 8.5 degrees. There was evidence of a post-impact flash fire. Both engine and propeller assemblies were recovered and examined; the assemblies bore signatures consistent with engine power in a mid to high power range. The flaps and landing gear were retracted, indicating that the pilot did not attempt to land the airplane at the time of the accident. Flight control continuity was established, and control cable and push rods breaks exhibited signatures consistent with overload failures. There was no evidence of any pre-impact mechanical malfunction found during examination of the available evidence. The pilot had logged 2,775 total flight hours, of which 23 hours were in the accident airplane. Toxicology testing detected chlorpheniramine (an over-the-counter antihistamine that results in impairment at typical doses) and acetaminophen (an over-the-counter pain reliever and fever reducer often known by the trade name Tylenol and frequently combined with chlorpheniramine). No blood was available for tox testing, so it is not possible to accurately estimate the time of last use, nor determine if the level of impairment that these substances would have incurred during the flight. The airplane was not equipped with either a flight data recorder or a cockpit voice recorder, nor were they required by Federal Aviation Regulation (FAR). The impact damage to the aircraft, presence of dark night conditions,

experience level of the pilot, and anomalous flight path are consistent with spatial disorientation.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Failure to maintain clearance from terrain due to spatial disorientation.

### Findings

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Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: MANEUVERING

#### Findings

1. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. USE OF INAPPROPRIATE MEDICATION/DRUG - PILOT IN COMMAND
3. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
4. (F) ALTITUDE - LOW
5. (F) LIGHT CONDITION - DARK NIGHT
6. (F) OBJECT - TREE(S)
7. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY

## Factual Information

### HISTORY OF FLIGHT

On August 5, 2007, at 2141 mountain daylight time, a Beech E90, N369CD, registered to Omni Flight Helicopters, Inc., formerly Enchantment Aviation, d/b/a Southwest MedEvac and piloted by an airline transport certificated pilot, was destroyed when it struck trees and impacted terrain while maneuvering approximately 4 miles southeast of the Sierra Blanca Regional Airport (SRR), Ruidoso, New Mexico. Visual meteorological conditions (VMC) prevailed at the time of the accident. The nonscheduled domestic passenger (air ambulance) flight was being conducted under the provisions of Title 14 Code of Federal Regulations (CFR) Part 135, and an instrument flight rules (IFR) flight plan had been filed but had not been activated. The pilot, flight nurse, paramedic, patient, and patient's mother were fatally injured. The cross-country flight originated from Ruidoso approximately 2137, and was en route to Albuquerque (ABQ), New Mexico.

The patient, a 15-month-old female child, had been treated for seizures at the Lincoln County Medical Center in Ruidoso. The attending physician summoned an air ambulance to transport the patient to University Hospital in Albuquerque. According to Southwest MedEvac, the airplane departed Roswell (ROW), New Mexico, approximately 2000, and arrived at SRR approximately 2030. The patient and her mother were placed aboard the airplane, and the airplane took off on runway 06. Witnesses observed the airplane make a left turn to the north and disappear. Satellite tracking detected the airplane only once, at 2137, when it was at an altitude of 6,811 feet, tracking a course of 072 degrees northeast of the airport, and flying at an airspeed of 115 knots. When the airplane failed to arrive at ABQ, Southwest MedEvac notified the airport at 2200 and a perimeter search was conducted. Unable to locate the airplane, FAA's ABQ automated flight service station (AFSS) issued an ALNOT (alert notice). The wreckage was located by search and rescue personnel approximately 0500 the next morning 4 miles southeast of the airport on a heading away from its destination.

### CREW INFORMATION

The pilot was employed by Southwest MedEvac in June 2006, and was assigned to fly the Cessna 414A. He later upgraded to captain on the Beech E90B in April 2007. He held an airline transport pilot certificate with an airplane multiengine land rating, and commercial privileges with an airplane single-engine land rating. His second class airman medical certificate, dated January 17, 2007, contained no restrictions or limitations. According to the operator, the pilot had accrued 2,774.6 total flight hours, of which 2,239 hours were in multiengine airplanes, and 23 hours were in the Beech E90B. He had also logged 439 hours of night flying. Of the 23 hours logged in the Beech E90B, 14 hours were as pilot-in-command. The pilot had undergone 16 hours of ground school, 48 hours of training by computer, and 6 hours of flight training on the Cessna 414A. When he transitioned to the Beech E90B, he underwent another 16 hours of ground school. His flight training was for 5.2 hours. His proficiency check lasted 1.8 hours. Along with the other Roswell-based pilots, he had received an additional 1.2 hours of training that dealt specifically with engine hot starts. One company instructor described the pilot as "one of his best students and was excited about the (Beech King Air) transition." Coworkers described him as "very cautious"; "nice individual, very positive"; he showed "a healthy amount of curiosity, a lot of interest, a very serious approach, [and was] diligent to flying the E90"; "very dedicated"; "comfortable with the airplane"; "confident and competent."

The flight nurse was employed by Southwest MedEvac on January 9, 2007. Previous to this employment, he had been a volunteer paramedic for 11 years with the Denver City, Texas, Volunteer Fire Department.

The flight paramedic was employed by Southwest MedEvac on July 2, 2007. Previous to this employment, she was an emergency room technician and paramedic in Prescott Valley, Arizona.

#### AIRCRAFT INFORMATION

N369CD (s.n. LW162), a model E90B King Air, was manufactured by the Beech Aircraft Corporation in 1975. It was powered by two Pratt & Whitney Canada PT6A-28 turboprop engines, each rated at 680 shaft horsepower, driving two McCauley 4-blade, all-metal, constant-speed, and fully-reversible propellers (m.n. 4HFR34C762-E./94LMA-4).

According to the aircraft maintenance records, the airplane was maintained under a continuous airworthiness program (AIP). A phase 4 inspection was performed on August 4, 2007. No unusual anomalies were noted. At the time of the accident, the airframe had accrued 10,358 flight hours. Hot section inspections of both engines was performed on May 10, 2007.

#### METEOROLOGICAL INFORMATION

The following Aviation Routine Weather Report (METAR) was made by the Automated Weather Observation Station (AWOS) at SRR at 2030 (see WEATHER REPORTS AND RECORDS for further details):

Wind, 190 degrees at 3 knots; visibility, 10 statute miles; sky condition, 7,000 feet overcast; temperature, 24 degrees Celsius (C.); dew point, 17 degrees C.; altimeter, 30.21 inches of Mercury; remarks: automated observation with precipitation discriminator (rain/snow).

#### AIDS TO NAVIGATION

There were no reported difficulties with aids to navigation.

#### COMMUNICATIONS

There were no reported communication difficulties.

#### AERODROME INFORMATION

According to AOPA's Airport Directory, Sierra Blanca Regional Airport (33 degrees, 27.77' North latitude; 105 degrees, 32.09' West longitude), elevation 6,814 feet msl, is located 15 miles northeast of Ruidoso. It is equipped with two runways: 06-24, 8,099 feet x 100 feet, asphalt, porous friction coarse overlay (pfc); 12-30, 6,500 feet x 75 feet, asphalt. According to airport officials, all lights and facilities were operating normally throughout the evening.

#### FLIGHT RECORDERS

The airplane was not equipped with either a flight data recorder or a cockpit voice recorder, nor were they required by Federal Aviation Regulation (FAR). The airplane was equipped with Sky Connect, a satellite-based flight tracking system. According to Southwest Medevac, an aircraft's position is transmitted every 5 minutes for fixed wing aircraft, and every 30 seconds for rotary-wing aircraft. In the case of N369CD, only one position was transmitted, at 2137. At that time, the airplane was at an altitude of 6,811 feet, the airspeed was 115 knots, and it was tracking a course of 072 degrees.

## WRECKAGE AND IMPACT INFORMATION

On August 6, 7, and 8, 2007, the Federal Bureau of Investigation, Evidence Response Team, Albuquerque Field Office, under the auspices of the National Transportation Safety Board, used Nikon Total Station surveying equipment to document the accident site and wreckage. Initial impact with trees was at an elevation of 6,860 feet. Fragmented wreckage was strewn for 1,100 feet down a 4.5 degree hill on a magnetic heading of 141 degrees. The aircraft's descent angle was computed to be 13 degrees, and the angle of impact was computed to be 8.5 degrees (see FBI's report for further details). There was evidence of a flash fire. Both engine and propeller assemblies were recovered and bore signatures consistent with operation and turning at impact.

## MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the victims by the New Mexico Office of the Medical Investigator (OMI). According to its report, death was attributed to "multiple blunt force injuries."

Toxicological screens were performed on the victims by the State of New Mexico and FAA's Civil Aeromedical Institute (CAMI). The MEO's report indicated the presence of chlorpheniramine and acetaminophen (Tylenol) in both the liver and preserved vitreous. CAMI found the same medications in the urine and lung. In a cover letter accompanying CAMI's report, the regional flight surgeon for FAA's Southwest Region said that chlorpheniramine is "an antihistamine used in the treatment of allergic symptoms and may have sedative effects. If the FAA had been made aware of this medication, the pilot would have been issued a warning not to fly within 12-hours of taking it."

NTSB's medical officer reviewed the pilot's medical records maintained by FAA's Civil Aeromedical Institute, and the autopsy and toxicological reports prepared by the State of New Mexico. On his most recent application for medical certification dated January 17, 2007, the pilot answered "No" to the question, "Do you currently use and medication?" The pilot noted "Yes" to the following: "Admission to hospital" and "Other illness, disability, or surgery." The pilot noted "No" to all other items under "Medical History," including specifically "Hay fever or allergy."

## TESTS AND RESEARCH

On August 28 and 29, 2007, the wreckage was re-examined at the facilities of Air Transport in Phoenix, Arizona, under the auspices of the National Transportation Safety Board. The wreckage was fragmented due to impact forces. All major components were identified. The flaps and landing gear were retracted. Flight control continuity was established. All control cable breaks exhibited "broomstraw" signatures, consistent with overload failures. All push rod breaks exhibited signs of overload failures. The restraint systems for both flight crew seats and the flight paramedic appeared to have been in use. The condition of the restraint system used by the flight nurse suggests it may not have been worn at the time of impact. According to Pratt & Whitney Canada, examination of both engines revealed "contact signatures" to various components "characteristic of the engines producing power at the time of impact in a mid to high power range."

On October 10, 2007, both propellers were examined at McCauley Propeller Systems in Wichita, Kansas. According to the McCauley report, there was no evidence of propeller failure prior to impact, and all damage was consistent with impact forces. Damage was consistent with the propellers rotating at high power.

## ADDITIONAL INFORMATION

Southwest MedEvac aircraft are operated with only one pilot as allowed by FAR (Federal Aviation Regulations) Part 135.105.

In addition to the Federal Aviation Administration, parties to the investigation included the Federal Bureau of Investigation, Hawker Beechcraft Corporation, Pratt & Whitney Canada, McCauley Propellers, and Southwest MedEvac.

The wreckage was released to U.S. Aviation Insurance Group on October 10, 2007.

### Pilot Information

<b>Certificate:</b>	Airline Transport; Commercial	<b>Age:</b>	56, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 Without Waivers/Limitations	<b>Last FAA Medical Exam:</b>	01/01/2007
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	2775 hours (Total, all aircraft), 23 hours (Total, this make and model), 2653 hours (Pilot In Command, all aircraft), 120 hours (Last 90 days, all aircraft), 39 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N369CD
Model/Series:	E90B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	LW162
Landing Gear Type:	Retractable - Tricycle	Seats:	5
Date/Type of Last Inspection:	08/01/2007, Continuous Airworthiness	Certified Max Gross Wt.:	10200 lbs
Time Since Last Inspection:		Engines:	2 Turbo Prop
Airframe Total Time:	10358 Hours at time of accident	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Installed, not activated	Engine Model/Series:	PT6A-28
Registered Owner:	Omni Flight Helicopters, Inc.	Rated Power:	680 hp
Operator:	Omni Flight Helicopters, Inc.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:	Southwest Med Evac	Operator Designator Code:	NE6A

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	SRR, 6814 ft msl	Distance from Accident Site:	4 Nautical Miles
Observation Time:	2130 MDT	Direction from Accident Site:	270°
Lowest Cloud Condition:	Scattered / 7000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.23 inches Hg	Temperature/Dew Point:	22° C / 18° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ruidoso, NM (SRR)	Type of Flight Plan Filed:	IFR
Destination:	Albuquerque, NM (ABQ)	Type of Clearance:	IFR
Departure Time:	2135 MDT	Type of Airspace:	

## Airport Information

Airport:	Sierra Blanca Regional (SRR)	Runway Surface Type:	
Airport Elevation:	6814 ft	Runway Surface Condition:	
Runway Used:	N/A	IFR Approach:	Unknown
Runway Length/Width:		VFR Approach/Landing:	Unknown

## Wreckage and Impact Information

Crew Injuries:	3 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	5 Fatal	Latitude, Longitude:	33.459167, -105.453333

## Administrative Information

Investigator In Charge (IIC):	Arnold W Scott	Report Date:	12/28/2008
Additional Participating Persons:	Kenneth D Hand; Albuquerque, New Mexico		
Publish Date:	12/28/2008		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).