



National Transportation Safety Board Aviation Accident Final Report

Location:	FLORENCE, KS	Accident Number:	CHI98MA260
Date & Time:	07/18/1998, 1622 CDT	Registration:	N547JL
Aircraft:	North American NA-265-80	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot dropped off a passenger at Newton Airport before continuing the flight. The passenger, who was a contract pilot for the company, reported there had been no indications of any problem with the airplane. The pilot conducted a low pass followed by a steep climb to 10,000 feet when he departed Newton. Seven minutes later in the flight, the cockpit voice recorder revealed the pilot stating, 'You're going to pitch up now and take it all the way around here.' The pilot said, 'Pitch up, twenty degrees up.' After the pilot called for the nose to be pitched up, he did not make any statements for about 27 seconds. Then the pilot stated, 'Oh, Jim.' Eight seconds later the airplane impacted the ground. Radar data indicated that airplane's altitude about the time the nose was pitched up was 15,900 feet msl, and it impacted the ground about 37 seconds later. All flight control surfaces were found at the impact site. No maneuver in the pilot's manual or the FAA's Commercial test guide required the nose to be pitched up 20 degrees while maintaining 250 knots. The aircraft was certified as a Transport Category aircraft and was not certified for aerobatic flight.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's overconfidence in his personal ability, his improper in-flight decision to attempt aerobatics, and his loss of control of the airplane.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING

Findings

1. (C) AEROBATICS - ATTEMPTED - PILOT IN COMMAND
2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (C) OVERCONFIDENCE IN PERSONAL ABILITY - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

History of Flight

On July 18, 1998, at 1622 central daylight time, a North American Sabreliner, NA-265-80, N547JL, operated by Executive Aircraft Corporation, was destroyed when it impacted the terrain about four miles northeast of Florence, Kansas. The commercial pilot and copilot were fatally injured. The 14 CFR Part 91 flight had departed Newton Airport, Newton, Kansas, at about 1611 and was en route to Mid-Continent Airport, Wichita, Kansas. Visual meteorological conditions prevailed and no flight plan had been filed.

The airplane had departed Mid-Continent Airport at 1549 and was given a discrete transponder code during departure. Radar services were terminated at 1558, however, the pilot did not change the transponder code back to the VFR code of 1200, but kept the discrete code dialed in the transponder. The pilot was in the left seat, the copilot was in the right seat, and one passenger sat in the cabin.

The passenger reported that the flight was a direct flight to Newton, Kansas. He reported that the airplane was not shut down when they taxied to the ramp at Newton. The copilot left the airplane and found some keys to a van that the passenger used to drive back to Wichita. The copilot returned to the right seat and the airplane departed.

The passenger reported that the airplane did a low pass followed by a steep climb to about 10,000 feet mean sea level (msl). The airplane then departed to the northeast. The passenger, who was also a contract pilot for the company, reported that there were no indications of any type of problem with the airplane.

Witnesses at the Newton Airport (which had hosted a fly-in that day) reported that they saw the airplane do a low pass followed by about a 45 degree steep climb from the mid-point of runway 17.

The Cockpit Voice Recorder (CVR) and radar data indicated that the pilots departed Newton Airport at 1611 and entered the left downwind traffic pattern.

At 1613:44, the pilot transmitted over the radio, "...in fact, I think we're just going to do a little pass here."

At 1615:04, the radar data indicated that the airplane had climbed to 6,200 feet mean sea level (msl) within .2 mile of the airport, and then turned left to the northeast, continuing to climb to about 10,000 feet msl.

The cockpit voice recorder recorded the following:

At 1614:57, the copilot said, "Jiminy Christmas. [sound of laughter] Holy cow."

At 1615:37, the pilot said, "Go ahead and take it."

At 1615:39, the copilot said, "Okay."

At 1616:25, the pilot said, "You need to go to two hundred and fifty knots."

At 1616:51, the pilot said, "Let's go on that heading right there."

The radar data indicated that at 1616:53, the airplane was heading about 090 degrees. (All headings magnetic)

At 1617:36, the pilot instructed the copilot to climb to 12,500 feet msl.

The radar data indicated that the airplane's heading between 1617:41 and 1618:29 was about 045 degrees.

At 1618:13, the pilot said, "I'll tell you what you got to do for a check ride."

At 1618:17, the pilot said, "You got to go two hundred fifty knots, hundred eighty degree turn each way."

At 1618:22, the CVR indicated the sound of the altitude alerter. (The altitude alerter was not heard during the remainder of the flight.)

The radar data indicated that at 1618:29, the airplane was at 12,900 feet msl and had a ground speed of 375 knots.

At 1618:53, the pilot said, "and uuh. Anyway, let me show you what, how you do one of those. Let me see if I can get you ***." (An * indicates an unintelligible word.)

At 1619:10, the pilot said, "uhh..got a forty-five degree bank like this. Hold your altitude. You oughta have * just about a **. Just about a 10 degree pitch up and want you to hold your speed on ***. Set in there about eighty percent. Like that.... ."

The radar data indicated that between 1618:29 and 1619:53, the airplane had turned left about 90 degrees to a heading of about 315 degrees.

The radar data indicated that at 1619:17, the airplane was at 15,900 feet msl and had a ground speed of 340 knots.

At 1619:35, the pilot said, "...you roll out the other way... ."

At 1619:43, the pilot said, "...forty-five degrees right there. You just gotta hold about a four degree pitch up and fly two hundred and fifty knots all the way around the turn."

The radar data indicated that at 1605:05, the airplane had turned to the right about 90 degrees to a heading of about 045 degrees, and was at 16,000 feet msl, and had a ground speed of 308 knots.

At 1620:15, the pilot said, "And uh, ** get it there."

At 1620:20, the pilot said, "There's two fifty."

At 1620:22, the pilot said, "Roll into the turn. * that's forty-five degrees ***."

At 1620:27, the copilot said, "Yeah."

At 1620:28, the pilot said, "If you can do one of those, **."

At 1620:37, the pilot said, "See if you got any traffic out there."

The radar data indicated that at 1620:53, the airplane had turned to a heading of about 090 degrees, and was at 15,600 feet, and had a ground speed of 340 knots.

At 1620:56, the pilot asked, "Ready to make a circle here?"

At 1620:58, the copilot replied, "Yeah *. Okay. I don't like it."

At 1621:02, the pilot made an unintelligible comment.

At 1621:03, the copilot said, "*** let's try it."

At 1621:04 the pilot said, "I mean uh...just uh, hang on here a minute. Show you..** sucker....just to give you some comfort in it."

The radar data indicated that at 1621:05, the airplane had turned to a heading of about 045 degrees and remained on a heading of about 045 degrees until 1622:05.

The radar data indicated that at 1621:05, the airplane was at 15,300 feet msl and had a ground speed of 330 knots on a heading of about 045 degrees.

The radar data indicated that at 1621:29, the airplane was at 15,900 feet and had a ground speed of 328 knots.

At 1621:32, the pilot said, "You're going to pitch up now and take it all the way around here."

At 1621:37, the pilot said, "Pitch up, twenty degrees up."

At 1621:40, the pilot said, "Just a *.."

The radar data indicated that at 1621:41, the airplane's ground speed was 354 knots, but an altitude readout was not indicated by the radar data.

At 1621:45, the CVR indicated that the copilot made the sound of a chuckle.

The radar data indicated that at 1621:53, the airplane had a ground speed of 286 knots, but an altitude readout was not indicated by the radar data.

The radar data indicated that at 1622:05, the airplane's ground speed was 86 knots, but an altitude readout was not indicated by the radar data.

At 1622:07, the pilot said, "Oh, Jim."

At 1622:12, the pilot said, "Jim, Jim, Jim."

At 1622:15, the CVR stopped recording. (See the CVR Group Chairman's Factual Report and the Recorded Radar Study Report)

The airplane impacted the ground about one mile east of the last radar hit at 1622:15.

Witnesses in the area reported hearing an airplane and a loud explosion. Witnesses reported seeing a fireball and smoke in the sky after hearing the explosion.

Personnel Information

The pilot was a commercial pilot with single engine land, multi-engine land, and helicopter ratings. He held a First Class medical certificate. He held single engine land and airplane instrument flight instructor ratings. A current pilot's logbook was not obtained. An old pilot's logbook indicated that the pilot had 4,800 total flight hours recorded on January 19, 1980. On March 1, 1995, the pilot indicated on an insurance form that he had 7,800 total hours with 3,175 hours in jet aircraft. 1,100 hours had been logged in a Sabreliner. The pilot's current medical form indicated he had a total of about 10,000 hours of flight time. On May 27, 1998, the pilot completed a flight check in a Falcon, DA-50.

The copilot was a private pilot with single engine land, multi-engine land, and instrument ratings. He held a Third Class medical certificate. The copilot's logbook indicated that on May 3, 1998, he had a total of about 478 flight hours. The copilot logged 14.7 hours of multi-engine flight time. There were no entries indicating flight time in jet aircraft. The logbook did not indicate a current biennial flight review.

Company officials reported that the copilot had flown as copilot in the Sabreliner with the pilot on previous occasions. No pilot logbook entries were made that would indicate that he had flown in a Sabreliner.

The pilot and copilot were brothers. The pilot was the owner of the company. The copilot operated one of the divisions of the company.

Aircraft Information

The airplane was a Sabreliner, NA265-80, serial number 380-069. The airplane seated ten and had a take-off gross weight of 23,500 pounds. The engines were GE CF700-2-D-2 turbofan jet engines which produced 4,370 pounds of thrust each. The airplane was on a Continuous Airworthiness maintenance schedule. The airplane had not flown since the last inspection on May 29, 1998. The total time on the airplane was 5,484 hours.

The left and right engines had 5,347 hours and 5,395 hours since new, respectively. The left engine had 2,233 hours since overhaul and 211 hours since hot section inspection. The right engine had 2,192 hours since overhaul and 211 hours since hot section inspection.

The Sabreliner Maintenance Inspection Program/Computerized Aircraft Maintenance Program (SMIP/CAMP) "Aircraft Status Report" indicated that the airplane's maintenance and inspection program was up to date with no airworthiness issues overdue. A review of the aircraft and engine logbooks revealed no significant maintenance since the last inspection on May 28, 1998.

Meteorological Conditions

At 1554, weather conditions reported at Mid-Continent Airport were VFR. The sky was clear with 10 miles visibility. The temperature was 92 degrees Fahrenheit and the Dew Point was 62 degrees Fahrenheit. The altimeter was 29.98 and the winds were 200 degrees at 8 knots.

Communications

The CVR indicated that pilot and copilot used challenge and response checklists prior to takeoff from Mid-Continent Airport. The CVR indicated that no challenge and response checklists were used after the departure from Mid-Continent Airport, or during the approach, landing, and departure from Newton Airport.

Flight Recorders

A Flight Data Recorder was not installed on the airplane.

The airplane was equipped with a CVR. It was located in the debris field. The damage to the stainless steel casing of the CVR indicated that the impact force was greater than 500 G's. The memory module was bent, dented, and compressed. The bending physically distorted the tape reel and caused numerous cracks in the recording medium. It was necessary to apply more than 200 splices to the CVR tape. The splicing produced a possible timing error and audio degradation to the final recording. The pilots were not using their boom microphones so their inter-cockpit voices were only recorded on the cockpit area microphone, and their personal conversations were at times unintelligible or muffled by cockpit noise.

Wreckage and Impact Information

The airplane impacted rocky soil in a pasture near Florence, Kansas. The impact crater was located at coordinates North 38 degrees, 17.239', West 96 degrees, 51.658'. Distinct impact

scars from the fuselage and left and right wings were evident at the impact crater. Red and green light lenses were found at the ends of the left and right wing impact scars, respectively, and indicated that the airplane impacted in an upright position. The impact scar for the right wing was the most distinct, and the angle of the right wing impact relative to the terrain was approximately 45 degrees down. The terrain was sloped up approximately 10 degrees at the impact site. Examination of the face of the ADI, which was the furthest piece in the debris field, indicated that the airplane impacted in a nose-low and right wing down attitude. Very few other cockpit instruments were located, and no other readings could be obtained.

The airplane heading, based on the orientation of the impact crater and the wings, was estimated as 325 degrees. The heading from the right wingtip impact point to the left wingtip impact point was approximately 245 degrees.

Wreckage debris was scattered widely, even near the impact crater, with more debris found left of the crater. The centerline of the wreckage debris field was estimated as 300 degrees. Portions of the rudder, vertical and horizontal stabilizers, both elevators, ailerons, and flaps were accounted for in the wreckage. The struts and two of the tires for the nose and main landing gear were found left of the impact crater. None of the uplock mechanisms were located. However, the downlock mechanism and support fitting for the left main landing gear remained intact, indicating the gear was not down and locked at the time of impact. The main engine components were found approximately 200 to 250 feet from the impact crater. Due to the destruction of the airplane at impact, continuity of the flight controls, aircraft systems, or powerplants could not be determined.

Foot and aerial searches were made of the ground beneath the estimated flightpath "uptrack" of the impact crater. No pieces were found other than several wing lower skin pieces that were found near the impact crater. The first piece in the wreckage debris field was a wing piece located approximately 225 feet south of the impact crater.

The engines experienced significant damage due to impact forces. The fan section of each engine separated from the core section as well as the accessory gear box assemblies. Due to the impact loads directly on the front of the engines, both engines were compressed axially from about three feet in length to about 15 inches. There was relatively little evidence of rotational damage on the engine components. The fuel controls and all other accessories were separated from the engine core and destroyed by impact forces.

The airplane had been fueled with about 300 gallons of fuel prior to takeoff. The estimated fuel at takeoff was 4,100 pounds. The estimated fuel at impact was 2,500 pounds.

Medical and Pathological Information

No autopsies were performed. DNA analysis was used to positively identify the identities of the pilot and copilot.

Forensic Toxicology Fatal Accident Reports were prepared by the FAA Civil Aeromedical Institute.

Fire

A grass fire was started after the impact. The burned area covered about a 1/8 mile square. The local fire department put out the grass fire with water when they arrived on scene. The aircraft parts that were located in areas affected by the grass fires had soot covering the parts, but no significant burn or melting damage was evident.

Survival Aspects

Two seatbelt attach points to the airframe structure were located. The structural failure at the attach point indicated that the corresponding seatbelt had been used by either the pilot or copilot at impact. However, it could not be determined which of the two seatbelts was represented by the seat belt attach points.

Additional Information

The Sabreliner Pilot's Manual did not contain any maneuver description that required the nose of the airplane to be pitched up 20 degrees at 250 knots. The Federal Aviation Administration's test standards for a Commercial pilot rating did not contain any maneuver that required the nose of the aircraft to be pitched up 20 degrees at 250 knots.

The airplane was certified as a Transport Category aircraft and was not certified for aerobatic flight. Transport Category aircraft are limited to 60 degree angle of bank and 30 degree pitch attitude.

The aircraft wreckage was released to the United States Aviation Underwriters.

Parties to the investigation were the Federal Aviation Administration, Executive Aircraft Corporation, Sabreliner Corporation, and GE Aircraft Engines.

Pilot Information

Certificate:	Commercial	Age:	50, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last Medical Exam:	07/11/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	10000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	North American	Registration:	N547JL
Model/Series:	NA-265-80 NA-265-80	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	380-069
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	05/29/1998, Continuous Airworthiness	Certified Max Gross Wt.:	23500 lbs
Time Since Last Inspection:	0 Hours	Engines:	2 Turbo Jet
Airframe Total Time:	5484 Hours	Engine Manufacturer:	GE
ELT:		Engine Model/Series:	CF700-2-D-2
Registered Owner:	EXECUTIVE AIRCRAFT GROUP	Rated Power:	4370 lbs
Operator:	EXECUTIVE AIRCRAFT GROUP	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	EWK, 1332 ft msl	Observation Time:	1554 CDT
Distance from Accident Site:	46 Nautical Miles	Direction from Accident Site:	220°
Lowest Cloud Condition:	Clear / 0 ft agl	Temperature/Dew Point:	33° C / 17° C
Lowest Ceiling:	None / 0 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	8 knots/ 16 knots, 200°	Visibility (RVR):	0 ft
Altimeter Setting:	29 inches Hg	Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:	NEWTON, KS (EWK)	Type of Flight Plan Filed:	None
Destination:	WICHITA, KS (ICT)	Type of Clearance:	None
Departure Time:	1610 CDT	Type of Airspace:	Class G

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC): JIM SILLIMAN **Adopted Date:** 10/15/1999

Additional Participating Persons: KATHLEEN PERSON; WICHITA, KS
HARRY LITTLETON; WICHITA, KS
MARK TAYLOR; LYNN, MA
JOHN MECALO; ST. LOUIS, MO

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.nts.gov/pubdms/>.

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