Aviation Investigation Final Report

Location:	Queen Anne, Maryland	**Accident Number:**	NYC01FA158
Date & Time:	July 2, 2001, 18:00 Local	**Registration:**	N526GC
Aircraft:	Moravan Zlin 526F	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot and passenger departed on a local aerobatic flight. A few minutes after becoming airborne, the airplane entered a local aerobatic training area. After completing several aerobatic maneuvers, including an immelmann, the pilot attempted a second immelmann. The pilot entered the maneuver, and the airplane climbed about 1,000 feet before completing the course reversal. While the airplane was at the top of the maneuver and inverted, the pilot applied right stick to roll the airplane to the upright position. As the airplane started to roll, the nose began "creeping" right, and then suddenly the airplane entered an inverted spin. The passenger bailed out, but the pilot remained with the airplane until impact. The pilot had approximately 7,000 hours of flight experience, and was actively flying aerobatics. No pre-impact failures or malfunctions were identified with either the engine or the airframe.

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 an aerobatic maneuver, which resulted in an inadvertent inverted spin.

Findings

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

Findings

1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
2. STALL/SPIN - INADVERTENT - PILOT IN COMMAND
3. AEROBATICS - PERFORMED - PILOT IN COMMAND

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

Factual Information

Pilot Information

Certificate:	Airline transport	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
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 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	July 9, 1999
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	7000 hours (Total, all aircraft)		

The pilot held an airline transport pilot certificate with an airplane single-engine-land, and multi-engine-land ratings. In addition, he held a certified flight instructor certificate with ratings for airplane single-engine-land, multi-engine-land, and instrument. He also held an advanced ground instructor rating. The pilot's logbook was not recovered. On the pilot's last Federal Aviation Administration (FAA) second-class medical certificate, which was dated July 9, 1999, he reported a total flight experience of 7,000 hours. In addition, witnesses reported that the pilot was actively fly aerobatics.

The passenger held a private pilot certificate with an airplane single-engine-land rating. His last FAA third-class medical certificate was dated March 3, 2000. According to the passenger, he had 475 hours of total flight experience, which included about 250 hours of aerobatics. His last flight review was conducted in a Pitts S2B, on September 11, 1999.

Aircraft and Owner/Operator Information

Aircraft Make:	Moravan	**Registration:**	N526GC
Model/Series:	Zlin 526F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	1185
Landing Gear Type:	Retractable - Tailwheel	**Seats:**	2
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	2070 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LOM
ELT:	Installed, not activated	**Engine Model/Series:**	M137AZ
Registered Owner:	John E. Nagy Jr.	**Rated Power:**	180 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

According to the Pilot's Operating Handbook, the airplane was an all metal, two seat, low-wing monoplane manufactured in Czechoslovakia as an aerobatic trainer. It was approximately 35 feet long, had a wingspan of approximately 26 feet, and a maximum gross weight of approximately 2,070 pounds. The airplane was equipped with a six-cylinder engine cable of producing 180 horsepower. The fuselage was constructed of welded steal tubes that were covered with a combination of fabric and metal.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	BWI,146 ft msl	**Distance from Accident Site:**	42 Nautical Miles
Observation Time:	17:54 Local	**Direction from Accident Site:**	294°
Lowest Cloud Condition:	Few / 5500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.2 inches Hg	**Temperature/Dew Point:**	23°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	EASTON, MD (ESN)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	17:30 Local	**Type of Airspace:**	Class G

The weather at the Baltimore/Washington International Airport (BWI), Baltimore, Maryland, about 6 minutes before the accident was wind calm, visibility 10 miles, few clouds at 5,500 feet, scattered clouds at 25,000 feet, temperature 73 degrees Fahrenheit, dew point 41 degrees Fahrenheit, and an altimeter setting of 30.20 Hg.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	38.928333,-75.999725

The debris path was approximately 430 feet long, and orientated along a magnetic heading of 320 degrees. The first item in the debris path was the passenger's parachute. The next item was the cockpit canopy, which was located 240 feet past the parachute, and about 60 feet left of the center of the debris path. The next and last item was the main wreckage. The majority of the wreckage came to rest upright, and was confined to the dimensions of the airplane. Both wings, the vertical and horizontal stabilizers, along with all of the flight control surfaces were identified.

The left wing displayed impact damage to the wingtip, and the inboard 4 feet of the leading edge. The top inboard section of the left wing was consumed in the post-crash fire. The majority of the cockpit was

consumed in the post-crash fire. The right wing displayed impact damage the entire length of the leading edge. The top inboard section of the right wing was also consumed in the post-crash fire. The structure of the empennage was intact, but the fire had consumed the majority of the skin. Also consumed in the post-crash fire was the skin of the left and right elevators, along with the rudder. The vertical and horizontal stabilizers were intact and displayed minor impact damage. Both elevator trim tabs were intact, and approximately neutral. Flight control continuity was verified from each of the control surfaces to both of the cockpits. Flight control continuity could not be traced to each of the pilot controls because of impact and fire damage.

The engine was located on top of an impact crater that measured approximately 4 feet wide and 2-1/2 feet deep. The propeller had separated from the engine, and was located in the crater. The propeller blades displayed leading edge gouging and "S" bending. The fracture surfaces for the propeller flange and bolts were grayish in color, and consistent with torsional overload.

Medical and Pathological Information

An autopsy was performed on the pilot at the Medical Examiners office in Baltimore, Maryland, on July 3, 2001. The Federal Aviation Administration Toxicology and Accident Research Laboratory in Oklahoma City, Oklahoma, performed toxicological testing on July 20, 2001.

Additional Information

According to the passenger, he had flown once before in the accident airplane. It was from the front seat and about 1-1/2 years prior to the accident. On the day of the accident, the passenger did not fly the airplane. However, he did follow along on the controls during a couple of the maneuvers with the pilot's permission, but not during the accident maneuver. His reason for not flying on the day of the accident was a "hamstring injury," which prevented him from applying any force to the rudder pedals. The passenger added that he saw a medical doctor earlier in the day because of the injury.

The wreckage was released to the owner's representative on July 3, 2001.

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	Cooper Towers; FAA/FSDO; Baltimore, MD
Original Publish Date:	December 4, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52604