



National Transportation Safety Board Aviation Accident Final Report

Location:	Queen Anne, MD	Accident Number:	NYC04LA006
Date & Time:	10/12/2003, 1710 EDT	Registration:	N18NL
Aircraft:	Extra Flugzeugbau EA-300L	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot departed on a solo aerobatic practice flight, and returned after about 45 minutes. Three hours later, he departed on his second aerobatic practice flight. The airplane was next observed about 25 minutes later in a near vertical descent, about 100 feet above the ground. No smoke or vapors were observed trailing from the airplane, and it was not turning or rotating. The airplane impacted in an open field, and the back side of the engine was found 18 inches below the surface of the ground. No problems were found with the airframe; however, it was highly fragmented, and the investigation was inconclusive. The pilot had recently won an aerobatic competition at the Sportsman level and working on improving his abilities to the Intermediate level. Prior to departure he was observed reviewing a list of proposed aerobatic maneuvers used in competition. He was then observed walking to the airplane, carrying hand drawn sketches of aerobatic maneuvers. The owner reported that a pilot would normally work from pre-printed cards for either the compulsory maneuvers, or elective maneuvers in the free flight program. The pilot's aerobatic flight instructor reported that she had instructed the pilot on the hazards of mixing high positive and negative G maneuvers. In addition, FAA Advisory Circular 91-61 - "A Hazard In Aerobatics: Effects Of G Forces On Pilots", discussed the problems with high G load, and the particular hazard of mixing together successive positive and negative Gs. The actual maneuver(s) the pilot was practicing were not determined; however, the descent and impact were consistent with a G induced loss of control (GLOC).

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's performance of aerobatic maneuvers with positive and negative Gs, which resulted in a G induced loss of control, and uncontrolled impact with the ground.

Findings

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

Findings

1. (C) AEROBATICS - PERFORMED - PILOT IN COMMAND
2. (C) INCAPACITATION(LOSS OF CONSCIOUSNESS) - PILOT IN COMMAND

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

Findings

3. TERRAIN CONDITION - OPEN FIELD

Factual Information

On October 12, 2003, about 1710 eastern daylight time, an Extra Flugzeugbau EA-300L, N18NL, was destroyed when it impacted the ground while maneuvering near Queen Anne, Maryland. The certificated airline transport pilot was fatally injured. Visual meteorological conditions prevailed for the personal flight. No flight plan had been filed for the local flight that departed from Bay Bridge Airport (W29), Stevensville, Maryland, and was conducted under 14 CFR Part 91.

According to the owner of the airplane, the accident pilot had won an aerobatic competition at the Sportsman level, and was practicing to improve his performance to the intermediate level. The accident pilot had departed about 1300 for a local practice flight, and returned to the airport about 1345. The airplane was refueled, and the owner then flew the airplane with a student on a dual instruction aerobatic flight. After the flight, the airplane was then refueled again. Prior to departure, the accident pilot was observed reviewing a list of proposed aerobatic maneuvers used in competition. He was then observed walking to the airplane, carrying hand drawn sketches of aerobatic maneuvers. The owner reported that a pilot would normally work from pre-printed cards for either the compulsory maneuvers, or elective maneuvers in the free flight program. The airplane departed about 1645.

A witness observed the airplane after departure. She reported that the airplane was in a near 90-degree nose down pitch attitude, about 100 feet above the ground. She stated that the airplane was not rotating, and she did not observe any smoke or vapors trailing from the airplane. She saw a cloud of dust came up after impact, and went to the accident site, after which she then called emergency personnel.

An inspector from the Federal Aviation Administration (FAA), reported that the debris field was within a 50-foot radius of the impact point. The airplane was fragmented, and the aft side of the engine was found 18 inches below the surface. The composite propeller was fragmented. Flight control continuity could not be verified due to the break-up of the airplane.

The airplane owner, who was the last pilot to fly the airplane before the accident flight, reported that she did not experience any problems with the airplane and everything appeared to be working.

The pilot's total flight experience was about 2,900 hours, with about 250 hours in the Extra 300, including 13.5 hours in the preceding 90 days, and 4.5 hours in the preceding 30 days. He had received about 44 hours of aerobatic dual flight instruction in the airplane prior to flying it solo. In addition, he had received ground instruction from his flight instructor and other aerobatic instructors.

The maneuvers being practiced by the pilot were not determined. However, the pilot's aerobatic flight instructor, who flies at the unlimited level, reported that generally as a pilot progressed to higher levels in competition, the intensity and duration of both positive and negative G forces increased. She reported that she had instructed the pilot about the hazards of mixing high positive and negative G force maneuvers, and the necessity to keep physically fit. She added that the pilot was a runner and appeared to be in very good mental and physical condition on the day of the accident.

On February 29, 1984, the FAA released Advisory Circular 91-61, A Hazard In Aerobatics: Effects Of G Forces On Pilots. The document stated in part:

"...One little know, but important, aspect of tolerance of G's is the effect of rapid changes from +Gz to -Gz, or vice versa. Because aerobatics induce such rapid changes, tolerance to changes could be highly significant. It is know, for example, that when one is subjected to -Gz, blood pressure receptors in the head and chest respond to the increased pressure and cause a reflex slowing of the heart. A rapid change to +Gz (for example, when the pilot executes a half-roll during a maneuver) would suddenly drop blood pressure in these receptors and there would be a rapid speeding up of the heart to maintain pressure; but because the reflex system requires some time to sense the need, the heart could be delayed in responding to this demand and blood flow to the brain might suddenly decrease...anything that reduces blood volume or cardiovascular response may reduce G tolerance. Dehydration, excessive sweating, severe sunburn, low blood pressure, prolonged standing or sitting, hypoxia, infection (even minor illnesses), and medications all lower G tolerance. Alcohol and hangovers will reduce your ability to perform aerobatic maneuvers. Make sure you are as fit as your aircraft...."

The 1654 weather observation from Baltimore-Washington International Airport (BWI), Baltimore, Maryland, included 10 miles visibility, and a few clouds at 25,000 feet. The winds were from 300 degrees at 6 knots.

An autopsy was conducted on the pilot the Medical Examiner's Office, State of Maryland. The toxicological testing report from the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, was negative for drugs and alcohol for the pilot.

Pilot Information

Certificate:	Airline Transport; Commercial	Age:	37, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Rear
Other Aircraft Rating(s):		Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):		Second Pilot Present:	No
Instructor Rating(s):		Toxicology Performed:	
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:		Last Flight Review or Equivalent:	11/01/2001
Flight Time:	2900 hours (Total, all aircraft), 250 hours (Total, this make and model), 14 hours (Last 90 days, all aircraft), 5 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Extra Flugzeugbau	Registration:	N18NL
Model/Series:	EA-300L	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Aerobatic; Normal	Serial Number:	137
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	08/06/2003, Annual	Certified Max Gross Wt.:	1808 lbs
Time Since Last Inspection:	46.5 Hours	Engines:	1 Reciprocating
Airframe Total Time:	550 Hours at time of accident	Engine Manufacturer:	Textron Lycoming
ELT:	Installed, not activated	Engine Model/Series:	AEIO-540-A1B5
Registered Owner:		Rated Power:	300 hp
Operator:	Lynn Aviation	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	BWI	Distance from Accident Site:	
Observation Time:	1654 EDT	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 25000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.83 inches Hg	Temperature/Dew Point:	25°C / 14°C
Precipitation and Obscuration:			
Departure Point:	Stevensville, MD (W29)	Type of Flight Plan Filed:	None
Destination:	(W29)	Type of Clearance:	None
Departure Time:	1645 EDT	Type of Airspace:	Class G

Airport Information

Airport:	Bay Bridge (W29)	Runway Surface Type:	Unknown
Airport Elevation:	15 ft	Runway Surface Condition:	Unknown
Runway Used:	NA	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	1 Fatal	Latitude, Longitude:	38.930833, -76.000833

Administrative Information

Investigator In Charge (IIC):	Robert L Hancock	Report Date:	09/01/2004
Additional Participating Persons:	Cooper Towers; Federal Aviation Administration; Baltimore, MD		
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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