



National Transportation Safety Board Aviation Accident Final Report

Location:	Destin, FL	Accident Number:	ERA10FA342
Date & Time:	07/02/2010, 1219 CDT	Registration:	N92778
Aircraft:	NORTH AMERICAN AT-6	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot was giving airplane rides to his family members when the accident occurred. Witness interviews and global positioning system (GPS) data revealed that the pilot was performing lazy-eights, over water, about 1 mile south of the beach. The airplane descended to an altitude of 355 feet, reversed course from east to west with its "smoke on," and increased groundspeed to 184 knots. The airplane then climbed to about 1,200 feet and completed three lazy-eight turns. During the third turn, at an altitude of 1,254 feet, the airplane's groundspeed slowed to 66 knots. The airplane stalled and completed a one-half turn spin. The pilot recovered from the spin and was in the process of recovering from the ensuing dive, when the airplane impacted the water. Two of the witnesses were experienced in the accident airplane make and model. They were surprised that the pilot was performing maneuvers low over the water, as the water did not provide any ground reference with regard to altitude, position, or horizon. They also expected the airplane to be about 3,000 feet, while maneuvering, as that make and model airplane needed "significant altitude" to recover from a stall or spin. Examination of the wreckage did not reveal any preimpact mechanical malfunctions.

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 adequate airspeed while maneuvering, which resulted in an aerodynamic stall and spin. Contributing to the accident was the pilot's improper decision to perform the maneuvers at a low altitude and over water.

Findings

Aircraft	Airspeed - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause) Decision making/judgment - Pilot (Factor)

Factual Information

HISTORY OF FLIGHT

On July 2, 2010, at 1219 central daylight time, a North American AT-6G, N92778, operated by a commercial pilot, was substantially damaged when it impacted the Gulf of Mexico, about 1 mile south of Destin, Florida. The certificated commercial pilot and passenger were killed. Visual meteorological conditions prevailed and no flight plan was filed for the local flight that departed Destin-Fort Walton Beach Airport (DTS), Destin, Florida, at 1211. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

The airplane was owned by the pilot. According to friends of the pilot, his family was visiting for a wedding, and the pilot was giving some family members rides in his airplane. The accident flight was the pilot's second flight of the day and the passenger was the pilot's brother-in-law.

Several people were on the Destin/Fort Walton Beach, and witnessed the accident. They reported to a Federal Aviation Administration (FAA) inspector that the airplane had been performing aerobatic maneuvers along the beach. Just prior to the accident, the airplane was flying east along the beach, then turned west with its "smoke on." The airplane began a steep climb, possibly a loop or a wingover. At the top of the climb, the smoke ceased and the airplane entered a spin. The airplane descended in a spin, until impacting the water.

Some of the witnesses reported that the accident airplane may have been avoiding a banner-tow airplane, however, review of FAA radar data and an interview of the banner-tow pilot revealed that the banner-tow airplane was about 500 feet mean sea level (msl), and 1/2 mile closer to the shore, when the accident airplane descended in a spin from about 1,200 feet msl. The banner-tow pilot stated he was flying east along the Destin shore. He saw the accident airplane coming toward him, about 100 feet above his altitude. The accident airplane then performed a steep left climbing turn south, to perform maneuvers further out over the water. The banner-tow airplane passed below and north of the accident airplane. The banner-tow pilot did not see the accident sequence, and did not believe the accident pilot saw him.

Two of the witnesses on the beach, who were also T6 pilots and friends of the accident pilot, stated they were surprised that he was performing maneuvers over the water at low altitude. First, they stated that the water did not provide any ground reference with regard to altitude, position, or horizon. Second, both witnesses would have expected the airplane to be higher, about 3,000 feet msl, as that make and model airplane needed significant altitude to recover from a stall or spin. Both witnesses further stated that the airplane was doing a series of lazy-eights (or wingover turns), when it became too slow, stalled, and completed a one-half turn spin. The airplane had recovered from the spin and was in the process of recovering from the ensuing dive, when it impacted the water.

Review of radar data provided by the FAA revealed a target with a discrete transponder code on an easterly ground track at 12:14:23, at an altitude of 1,350 feet. The target descended to 150 feet at 12:17:11, then climbed to 1,150 feet at 12:17:34, and reversed track to west at 12:17:59, while descending through 650 feet. The target subsequently descended to 350 feet at 12:18:11, before climbing to 1,350 feet at 12:18:23. Two subsequent radar targets recorded altitudes of 950 feet and 850 feet, at 12:18:35 and 12:18:47, respectively.

PILOT INFORMATION

The pilot, age 57, held a commercial pilot certificate, with ratings for airplane single-engine land, airplane multiengine land, and instrument airplane. His most recent FAA third-class medical certificate was issued on November 3, 2009. Review of the pilot's most recent logbook revealed that he had accumulated 1,923.9 total hours of flight experience. The pilot had flown about 104 and 19 hours during the 90-day and 30-day periods preceding the accident, respectively. The pilot had accrued 14.2 hours in the accident airplane during the 90-day period preceding the accident, and he had not flown the accident airplane during the 30-day period preceding the accident. A friend of the pilot estimated that he had accrued approximately 300 to 500 hours of experience in "T6s."

AIRCRAFT INFORMATION

The two-seat tandem, low-wing, retractable-gear tailwheel airplane, serial number 182-486, was manufactured in 1943 and remanufactured in 1951. Its most recent FAA standard airworthiness certificate was issued on April 12, 1979. It was equipped with a Pratt and Whitney R1340, 550-horsepower radial engine and a Hamilton Standard two-blade constant-speed propeller. The airplane's most recent annual inspection was completed on March 26, 2010. At that time, the airplane had accumulated 6,790.1 total hours of operation and the engine had accumulated 232.1 hours of operation since overhaul. The airplane had been operated for 30.2 hours since the annual inspection.

METEOROLOGICAL INFORMATION

The recorded weather at DTS, located about 5 miles northwest of the accident site, at 1153, was: wind from 070 degrees at 6 knots; visibility 10 miles; few clouds at 2,800 feet; temperature 29 degrees Celsius (C), dew point 23 degrees C; altimeter 30.06 inches of mercury.

WRECKAGE INFORMATION

The wreckage was located the same day, about 3/4 mile south of the beach, at a depth of 65 feet. Underwater video recording confirmed that all major components of the airplane were accounted for at the accident site; however, during recovery, the fuselage separated from the center wing section. The engine, cockpit and fuselage were recovered and examined on July 4, 2010. The engine remained attached to the fuselage and the cockpit area was crushed. Elevator, elevator trim, and rudder control cable continuity was confirmed from the cockpit area to broomstick cable separations at the aft portion of the fuselage. The aileron control tubes had separated about the mid-cockpit area, at the "Y bar." The throttle and mixture controls were found mid-range, and the propeller control was full-forward. The fuel selector was positioned to the left main fuel tank.

The propeller remained attached to the engine. One propeller blade exhibited aft curling and chordwise scratches. The other propeller blade exhibited s-bending, leading edge gouges, and chordwise scratches. The top spark plugs were removed from the cylinders, except for the No. 3 top spark plug, which was missing. The spark plugs were light gray with some oil coating noted and their electrodes were intact. The propeller was rotated through 360 degrees. Compression was noted on the cylinders, with water emanating from them. Continuity was confirmed through the engine to the magneto drive shafts, and both magnetos remained attached to their respective drive shaft.

Portions of the wings and empennage were recovered on July 5, 2010. The wreckage was then examined again at a recovery facility on July 21, 2010. The right wing exhibited accordion type

crushing on the leading edge of the wing. The right wing was separated from the center wing section and its skin was torn from the rivets. A section of the left wing was crushed and separated from the center wing section and a section of the left flap remained attached. The right flap and both ailerons were not recovered. The left and right wing fuel bladder tanks were breached. Examination of the landing gear revealed that both main gear remained attached to the center wing section, and were in the retracted position. The center wing section was buckled and exhibited damage consistent with overstress.

Examination of the empennage revealed that it had separated from the fuselage. The horizontal and vertical stabilizers remained attached. The right elevator remained attached to the horizontal stabilizer, and was buckled in various locations. The rudder and left elevator had separated from their respective stabilizers, and both exhibited damage consistent with overstress.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the State of Florida District One Medical Examiner's Office, Pensacola, Florida, on July 6, 2010. The autopsy report noted the cause of death as "multiple blunt force injuries."

Toxicological testing was performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicology report revealed the presence of ethanol, methanol, and n-propanol; however, putrefaction was noted as "yes" and the report also noted, "The ethanol found in this case may be the result of postmortem ethanol production and not from ingestion."

Further review of the autopsy report and the pilot's FAA medical records revealed that he had a history of heart disease, but had a "good check-up" about 8 months prior to the accident. The pilot's wife, who was a nurse, stated that he had been "great" since the check-up. He ran on the treadmill three times per week for 30 minutes. She also stated that her husband performed aerobatics regularly with his friends and there was never any concern about G-loading with his heart condition. At the time of the accident, she believed he was performing a lazy-eight, which was common for him to do.

TESTS AND RESEARCH

A Garmin "GPSMAP 496" was recovered from the wreckage and forwarded to the NTSB Vehicle Recorders Laboratory, Washington, DC. Review of the data extracted from the global positioning system (GPS) revealed that the accident airplane had completed a short flight uneventfully, just prior to the accident flight. The beginning of the accident flight was also uneventful, until 1218, when the airplane descended to 355 feet GPS altitude, reversed course to west, and increased groundspeed to 184 knots. The airplane then climbed to about 1,200 feet and completed three lazy-eight turns. During the third turn, at 1,254 feet GPS altitude, the airplane's groundspeed slowed to 66 knots. The airplane then descended to 467 feet GPS altitude 3 seconds later, and to 344 feet GPS altitude another 3 seconds later, which was the last target recorded by the GPS.

History of Flight

Maneuvering	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	Age:	57, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	11/03/2009
Occupational Pilot:	No	Last Flight Review or Equivalent:	05/03/2010
Flight Time:	1924 hours (Total, all aircraft), 500 hours (Total, this make and model), 104 hours (Last 90 days, all aircraft), 19 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	NORTH AMERICAN	Registration:	N92778
Model/Series:	AT-6	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	182-486
Landing Gear Type:	Retractable - Tailwheel	Seats:	2
Date/Type of Last Inspection:	03/26/2010, Annual	Certified Max Gross Wt.:	5300 lbs
Time Since Last Inspection:	30 Hours	Engines:	1 Reciprocating
Airframe Total Time:	6790 Hours	Engine Manufacturer:	Pratt & Whitney
ELT:	Installed, not activated	Engine Model/Series:	R-1340
Registered Owner:	Timothy McDonald	Rated Power:	550 hp
Operator:	Timothy McDonald	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	DTS, 23 ft msl	Observation Time:	1153 CDT
Distance from Accident Site:	5 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	300°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Few / 2800 ft agl	Temperature/Dew Point:	29° C / 23° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	6 knots, 70°	Visibility (RVR):	
Altimeter Setting:	30.06 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Destin, FL (DTS)	Type of Flight Plan Filed:	None
Destination:	Destin, FL (DTS)	Type of Clearance:	None
Departure Time:	1211 CDT	Type of Airspace:	

Airport Information

Airport:	Destin-Fort Walton Beach (DTS)	Runway Surface Type:	
Airport Elevation:	23 ft	Runway Surface Condition:	
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal		

Administrative Information

Investigator In Charge (IIC):	Robert J Gretz	Adopted Date:	06/20/2011
Additional Participating Persons:	Phillip Fox; FAA/FSDO; Birmingham, AL		
Publish Date:	06/20/2011		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=76512		

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.

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