Aviation Investigation Final Report

Location:	Dunkirk, New York	**Accident Number:**	IAD05FA146
Date & Time:	August 26, 2005, 21:15 Local	**Registration:**	N8164H
Aircraft:	Piper PA-28RT-201	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The accident airplane approached the Niagara Falls area from the south, and completed four 360-degree turns in the vicinity of the falls. The pilot then contacted air traffic control and requested VFR flight following services for the return trip. The airplane established an approximate southwesterly ground track and proceeded directly over the open waters of Lake Erie. About 4 minutes after crossing the shoreline, the airplane began to drift from its established course. The airplane turned to and away from the course before it began a 270-degree turn and disappeared from radar. During the final portion of the flight the airplane's altitude varied between 4,400 feet and 4,700 feet. Examination of visible satellite images taken just before dark revealed the presence of haze over Lake Erie, and infrared satellite images taken around the time of the accident revealed that clouds existed with tops between 5,000 and 6,000 feet. Examination of upper air data and high-resolution computer model soundings showed a possible cloud layer between 4,200 and 8,400 feet. Additionally, the sun had set more than an hour prior to the accident, and the moon did not rise until 2 1/2 hours after the accident. Toxicological testing performed on the pilot revealed levels of volatiles consistent with post-mortem ethanol production. Examination of the recovered wreckage revealed no evidence of any pre-impact mechanical malfunctions.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Loss of control for undetermined reasons.

Findings

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

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

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

Findings
2. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On August 26, 2005, about 2115 eastern daylight time, a Piper PA-28RT-201, N8164H was destroyed when it impacted the waters of Lake Erie, about 10 nautical miles north of Dunkirk, New York. The certificated commercial pilot and two passengers were fatally injured. Night instrument meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which originated at Zelienople Municipal Airport (8G7), Zelienople, Pennsylvania, and was conducted under 14 CFR Part 91.

According to Federal Aviation Administration (FAA) air traffic control radar and voice communication data, the accident airplane approached the Niagara Falls area from the south, about 2050. The airplane then completed four 360-degree turns in the vicinity of the falls.

At 2058, the pilot contacted Buffalo Terminal Radar Approach Control Facility and requested flight following services for the return trip to Zelienople. The airplane was radar-identified by the air traffic controller, and the pilot was told to proceed on course. No further radio transmissions were received. At 2100, the airplane established an approximate 210-degree ground track.

The radar data was plotted onto a map, and a line was drawn from the point where the airplane began to track on the 210-degree course, to Zelienople Airport. The resulting map showed that the airplane's track roughly followed this line.

About 2105, the airplane crossed the Canadian shoreline of Lake Erie, and continued out over open water. Over the next 4 minutes, the airplane roughly paralleled the course line for a time, then drifted to the west. At 2109, and over the next minute, the airplane began a right turn 60 degrees away from the plotted course line. About 2110, the airplane turned sharply left, about 80 degrees to a 190-degree track, back toward the plotted course line. About 2112, the airplane began another right turn to the west.

About 2113, the airplane began a sharp turn to the left. Over the next 70 seconds, and inside an area of about 1 square nautical mile, the airplane continued through 270 degrees of turn, and the altitude varied between 4,700 and 4,400 feet before the airplane disappeared from radar.

The final Mode-C (altitude reporting) radar target was observed at 2114:33, at 42 degrees 39 minutes 46.760 seconds north latitude, 79 degrees 18 minutes 40.979 seconds west longitude, at an altitude of 4,400 feet.

The final beacon-only (no altitude reporting) radar target was observed at 2114:43, at 42 degrees 39 minutes 53.396 seconds north latitude, 079 degrees 18 minutes 34.215 seconds west longitude.

The United States Coast Guard commenced a search and rescue (SAR) operation on August 26, 2005, about 2230. On August 29, 2005, about 2030, SAR operations ceased. During the SAR, and subsequent searches conducted by U.S. and Canadian authorities, three seats of a type known to be installed in general aviation airplanes, and various personal effects were recovered.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single and multiengine land, and instrument airplane. He also held a flight instructor certificate with ratings for airplane single and multiengine, and instrument airplane. His most recent FAA first class medical certificate was issued on December 10, 2004. At that time the pilot reported 3,420 total hours of flight experience.

On April 4, 2004, the pilot was hired into a second-in-command position by a regional airline. Examination of his airline training records revealed that as of June 4, 2004, he had accumulated 2,580 total hours of flight experience, 380 hours of which were at night. He had also accumulated 50 hours of simulated instrument experience, and 269 hours of actual instrument experience. His most recent airline proficiency training was completed on June 26, 2005.

The pilot's logbooks were not recovered.

AIRCRAFT INFORMATION

A review of the airplane's maintenance logbooks revealed that its most recent annual inspection was completed on August 1, 2005. On that date the airplane had accumulated 4,419 total hours of operation.

METEOROLOGICAL INFORMATION

A Safety Board meteorologist conducted a study of the weather conditions that existed over northwestern New York and Lake Erie around the time of the accident. No major frontal areas were noted, and scattered to broken cloud layers and haze were present.

Visible satellite data recorded from 1915 through 1945, when the last useable visible satellite image was taken, depicted scattered low-level clouds over western New York, and widespread haze over Lake Erie, northwestern Pennsylvania, and western New York.

The airplane's radar track was superimposed onto infrared satellite images taken between

2015 and 2115. The images taken between 2015 and 2045 revealed an increased horizontal and vertical cloud cover in the area where the last radar target was observed. Between 2110 and 2115, radiative cloud top temperatures ranged from 12.5 degrees to 15.5 degrees Celsius.

The Buffalo, New York radiosonde station, located about 30 nautical miles northeast of the accident site, recorded the following temperature and dewpoints for the nominal time of 2000:

Height MSL (Approximate, feet)	Temperature (Degrees C)	Dewpoint (Degrees C)
4,000	19.0	7.5
5,000	16.0	7.0
6,000	13.2	7.8
7,000	10.4	8.5
8,000	8.1	4.7
9,000	8.1	-6.1

The National Weather Service North American Mesoscale, a high resolution computer model upper air sounding, for the accident area depicted the following temperatures and dewpoints:

Height MSL (Approximate, feet)	Temperature (Degrees C)	Dewpoint (Degrees C)
4,200	16.0	13.0
5,000	15.0	12.6
5,800	13.6	11.7
6,700	11.9	10.4
7,600	10.3	8.2
8,400	8.6	4.9
9,400	6.9	0.6

The weather reported at Dunkirk Airport (DKK), Dunkirk, New York, about 10 nautical miles south of the last observed radar target, at 1953, included winds from 070 degrees at 4 knots, broken clouds at 5,000 feet, broken clouds at 9,000 feet, broken clouds at 11,000 feet, 10 statute miles visibility, temperature 77 degrees Fahrenheit, dewpoint 61 degrees Fahrenheit, and an altimeter setting of 29.94 inches of mercury.

At 2053, the reported weather included winds from 140 degrees at 5 knots, clear skies below 12,000 feet, 7 statute miles visibility, temperature 73 degrees Fahrenheit, dewpoint 62 degrees Fahrenheit, and an altimeter setting of 29.95 inches of mercury.

According to the United States Naval Observatory, on August 26, 2005, the official sunset in Dunkirk, New York, occurred at 2001, and the end of civil twilight occurred at 2030. Moonrise of the last quarter moon occurred at 2340.

WRECKAGE AND IMPACT INFORMATION

The main portion of wreckage, and all three of the airplane's occupants, were located on October 4, 2005. The wreckage was submerged under 80 feet of water at 42 degrees, 40.24 minutes north latitude, 79 degrees 18.78 minutes west longitude, about 1/2 nautical mile north-northwest of the last observed radar target.

In the process of recovering the airplane's occupants, a portion of the wreckage was retrieved by the New York State Police. The aircraft insurer elected not to recover the remaining portion of airplane from the lake. The recovered portion of wreckage was subsequently transported to the Buffalo Sector Coast Guard Station, Buffalo, New York, where it was examined on October 8, 2005.

The recovered wreckage consisted of various components from the tail section forward to aft of the firewall, and the engine. All of the pieces were fragmented, and exhibited signatures consistent with high-speed water impact. The rudder was separated from the vertical stabilizer, which remained attached to the fuselage. Both wings were separated from the fuselage at the wing fuselage juncture. The fracture surfaces exhibited signatures consistent with overload.

Flight control continuity was established from the stabilator push rod, stabilator trim tab, and rudder to the cockpit area. No aileron control cables could be located except for an approximate two-foot long center portion of the aileron balance cable.

The engine case and cylinders were largely intact; however, the oil sump, intake manifold, exhaust manifold, starter, alternator, fuel pump, fuel injector servo, one complete magneto and a portion of the other magneto had all separated from the engine. The left side of the engine case was fractured from the upper forward face of the number two cylinder, to the centerline of the engine case at the top of the engine, and from the lower forward face of the number two cylinder to the centerline at the bottom of the engine.

All spark plugs were removed and examined. The top number one and number two spark plugs were impact damaged, the number three and number four top spark plugs exhibited normal wear, the number three top spark plug was dark gray in color, and the number four electrode well was filled with mud. The number one bottom spark plug exhibited normal wear and was dark gray in color. The number two, three, and four bottom spark plug electrode wells were filled with mud.

The engine was completely disassembled, and no pre-existing discrepancies were noted with the cylinders, pistons, piston rights, pushrods, camshaft, or crankshaft. The crankshaft gear was securely bolted to the crankshaft. The oil pump gears were in place, and no signs of oil distress or overheating were noted.

The vacuum pump was removed from the accessory section, disassembled, and examined. The shear-drive, rotor, and all rotor vanes were intact.

A privately organized diving effort also recovered additional portions of wreckage from the lake. The dive team recorded that the majority of the wreckage was contained within a 40 by 80-foot area. An FAA inspector conducted examinations of the wreckage on November 4, 2005 and April 7, 2006.

One propeller blade was recovered. The blade exhibited "s-bending," chordwise scratching, and gouging of the leading edge. Additional recovered components included portions of the fuselage, landing gear, flaps, ailerons, stabilator, both wings, a vacuum-driven heading indicator, and a Global Positioning System (GPS) receiver. All of the components were similar in condition to the components that were initially recovered.

MEDICAL AND PATHOLOGICAL INFORMATION

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicological testing on the pilot. The testing revealed the presence of volatiles in the following concentrations:

>> 12 (mg/dL, mg/hg) ETHANOL detected in Muscle
>> 22 (mg/dL, mg/hg) N-BUTANOL detected in Muscle
>> 2 (mg/dL, mg/hg) N-PROPANOL detected in Muscle

An autopsy was performed on the pilot by the Erie County Medical Examiner's Office, Buffalo, New York.

TESTS AND RESEARCH

The vacuum-driven heading indicator was forwarded to the Safety Board Materials Laboratory. Examination of the heading indicator gyro did not reveal any general deformation to the gyro case. The gyro case exhibited a black paint deposit that spanned an arc about 20 degrees along the interior surface, and circumferential smearing of the black paint on the gyro rotor. A faint band of scrape marks, that spanned about 90 degrees, was also observed on the interior of the gyro case, and a very small amount of case material was found on the gyro rotor.

The Safety Board performed a special study on the GPS receiver that was recovered. The unit was severely damaged, which prevented recovery of any data relevant to the accident.

The wreckage was released to the owner on August 31, 2006.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	23,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Unknown
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 1 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2004
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 1, 2004
Flight Time:	3420 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8164H
Model/Series:	PA-28RT-201	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28R-8018045
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 1, 2005 Annual	**Certified Max Gross Wt.:**	2750 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4419.4 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-360
Registered Owner:	Roman Airways Inc.	**Rated Power:**	200 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	DKK,693 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	20:53 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	23°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Zelienople, PA (8G7)	**Type of Flight Plan Filed:**	None
Destination:	(8G7)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	42.664722,-79.309448

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	Guido Hassig; FAA/FSDO; Rochester, NY George Hollingsworth; New Piper; Staunton, VA James Childers; Lycoming; Williamsport, PA
Original Publish Date:	January 31, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=62435