Aviation Investigation Final Report

Location:	Moss Hill, Texas	**Accident Number:**	CEN16FA346
Date & Time:	September 3, 2016, 19:00 Local	**Registration:**	N787MW
Aircraft:	Bellanca 7ECA	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot and a passenger were conducting a local flight and performing aerobatics. Witnesses observed the pilot conducting "flybys" and "tricks" in the area. One witness reported observing the airplane complete "flips and spins" for about 10 minutes before the accident. Ground-based video footage depicted the airplane flying over the river at low altitude. The airplane pitched up and entered a steep climb. As the airplane reached the top of the climb, it yawed to the left and entered a near- vertical descent and gradual left turn. Shortly before impacting the river, the gradual left turn reversed abruptly into a right, descending turn. The airplane then impacted the river. A post-accident examination of the airframe and engine did not reveal any anomalies consistent with a pre-impact failure or malfunction.

According to a friend, the pilot was competent in spins and had received instruction in aerobatic maneuvers. However, the lack of a formal logbook training record with respect to aerobatics, the investigation could not determine the pilot's level of proficiency in such maneuvers.

Toxicological testing on the pilot was positive for cocaine and its metabolites; cocaethylene, a metabolite formed when cocaine is ingested with alcohol; and levamisole, a drug commonly used to "cut" street cocaine, in urine. Cavity blood was positive for methamphetamine and its metabolites. The absence of cocaine in the pilot's blood suggested distant usage. Accordingly, the acute effects of the drug had likely dissipated. The level of methamphetamine in the pilot's blood sample was low. As a result, the presence of any residual effects of the drug could not be determined. Based on the available information, the investigation was unable to determine whether the pilot was impaired, if at all, at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of control attempting to recover from a low-level aerobatic maneuver.

Contributing to the accident was the pilot's decision to attempt the low-level maneuver which significantly reduced any margin for error.

Findings

Personnel issues	Aircraft control - Pilot
Personnel issues	Decision making/judgment - Pilot
Aircraft	Altitude - Incorrect use/operation
Personnel issues	Use of medication/drugs - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Abrupt maneuver
Maneuvering-low-alt flying	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On September 3, 2016, about 1900 central daylight time, a Bellanca 7ECA airplane, N787MW, impacted the Trinity River while performing low-altitude aerobatic maneuvers near Moss Hill, Texas. The pilot and passenger sustained fatal injuries. The airplane was substantially damaged. The airplane was registered to a private individual and operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions prevailed at the accident site and the flight was not operated on a flight plan. The local flight originated from a private airstrip in Cleveland, Texas, at an undetermined time.

Witnesses observed the pilot conducting "flybys" and "tricks" in the area. One witness reported observing the airplane complete "flips and spins" for about 10 minutes before the accident. Ground-based video footage depicted the airplane flying over the river at low altitude. The airplane pitched up and entered a steep climb. As the airplane reached the top of the climb, it yawed to the left and entered a nearly vertical descent and gradual left turn. Shortly before impacting the river, the gradual left turn reversed abruptly into a right, descending turn. The airplane impacted the river in a nearly vertical, nose-down attitude and came to rest inverted and partially submerged in the river.

Pilot Information

Certificate:	Private	**Age:**	26,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	5-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	April 1, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 13, 2015
Flight Time:	454 hours (Total, all aircraft), 330 hours (Total, this make and model), 301 hours (Pilot In Command, all aircraft), 99 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft)		

The pilot's initial logbook entry was dated March 14, 2015; it was denoted as an "orientation flight" and was conducted in the accident airplane. His primary flight training was completed in the accident airplane, as well as Cessna 152 and 172 airplanes. The pilot was issued a private pilot certificate on July 13, 2015. He received a tailwheel airplane endorsement on July 14,

2015. The logbook also contained a stall awareness/spin competency endorsement dated January 5, 2016. The logbook did not contain any entries that specifically noted instruction in aerobatic maneuvers. However, a friend of the pilot's family stated that the pilot had received instruction and was competent in basic aerobatic maneuvers.

Aircraft and Owner/Operator Information

Aircraft Make:	Bellanca	**Registration:**	N787MW
Model/Series:	7ECA	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Aerobatic; Normal	**Serial Number:**	1177-76
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	August 1, 2016 Annual	**Certified Max Gross Wt.:**	1650 lbs
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1946 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-235-C1
Registered Owner:		**Rated Power:**	115 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Federal Aviation Administration (FAA) records revealed that the current owner purchased the airplane in November 2014. The exact airplane total time could not be determined because the recording tachometer was damaged consistent with impact forces.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	6R3,150 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	18:55 Local	**Direction from Accident Site:**	295°
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	29°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cleveland, TX (6R3)	**Type of Flight Plan Filed:**	None
Destination:	Cleveland, TX (6R3)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	30.27111,-94.799163(est)

The airplane came to rest inverted and partially submerged in the Trinity River about 1/3 mile south of Highway 105. A small beach area was located along the bank of the river immediately south of the highway overpass. Both river banks were lined with low trees in the immediate vicinity of the accident site.

A post-accident examination of the airframe and engine did not reveal any anomalies consistent with a pre-impact failure or malfunction. A detailed summary of the airframe and engine examinations is included with the docket material associated with this accident case.

Medical and Pathological Information

An autopsy of the pilot was conducted at Forensic Medical Management Services in Beaumont, Texas. The pilot's death was attributed to blunt force injuries sustained in the accident.

The FAA Bioaeronautical Research Sciences Laboratory, Oklahoma City, Oklahoma, conducted forensic toxicology report stated:

No Carbon Monoxide detected in Blood (Cavity);
No Ethanol detected in Vitreous;
2.067 (ug/ml, ug/g) Benzoylecgonine detected in Urine
0.049 (ug/ml, ug/g) Benzoylecgonine detected in Blood (Cavity)
Cocaethylene detected in Urine
Cocaethylene NOT detected in Blood (Cavity)
Cocaine detected in Urine
Cocaine NOT detected in Blood (Cavity)
Ecgonine Methyl Ester detected in Urine
Ecgonine Methyl Ester NOT detected in Blood (Cavity)
Ibuprofen detected in Urine
Levamisole detected in Urine
Levamisole NOT detected in Blood (Cavity)
0.032 (ug/ml, ug/g) Methamphetamine detected in Blood (Cavity)
Methamphetamine detected in Muscle

Benzoylecgonine and ecgonine methyl ester are inactive metabolites of cocaine; cocaethylene is a metabolite that is only formed when cocaine is co-ingested with ethanol. Levamisole is commonly used to cut street cocaine. Ibuprofen is an over-the-counter analgesic commonly marketed with the names Advil and Motrin. Methamphetamine is available by prescription for the short-term treatment of narcolepsy and obesity, but is also commonly available on the street.

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	Carl C Thomas; FAA – Flight Standards; Houston, TX John Butler; Lycoming Engines; Williamsport, PA
Original Publish Date:	June 13, 2017
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=93940