National Transportation Safety Board
Aviation Accident Final Report

Location:	Atlanta, GA	**Accident Number:**	ERA14FA073
Date & Time:	12/17/2013, 1924 EST	**Registration:**	N50PM
Aircraft:	RAYTHEON AIRCRAFT COMPANY 390	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot and passenger departed on a night personal flight. A review of the cockpit voice recorder (CVR) transcript revealed that, immediately after departure, the passenger asked the pilot if he had turned on the heat. The pilot subsequently informed the tower air traffic controller that he needed to return to the airport. The controller then cleared the airplane to land and asked the pilot if he needed assistance. The pilot replied "negative" and did not declare an emergency. The pilot acknowledged to the passenger that it was hot in the cabin. The CVR recorded the enhanced ground proximity warning system (EGPWS) issue 11 warnings, including obstacle, terrain, and stall warnings; these warnings occurred while the airplane was on the downwind leg for the airport. The airplane subsequently impacted trees and terrain and was consumed by postimpact fire. Postaccident examination of the airplane revealed no malfunctions or anomalies that would have precluded normal operation. During the attempted return to the airport, possibly to resolve a cabin heat problem, the pilot was operating in a high workload environment due to, in part, his maneuvering visually at low altitude in the traffic pattern at night, acquiring inbound traffic, and being distracted by the reported high cabin temperature and multiple EGPWS alerts. The passenger was seated in the right front seat and in the immediate vicinity of the flight controls, but no evidence was found indicating that she was operating the flight controls during the flight.

Although the pilot had a history of coronary artery disease, the autopsy found no evidence of a recent cardiac event, and an analysis of the CVR data revealed that the pilot was awake, speaking, and not complaining of chest pain or shortness of breath; therefore, it is unlikely that the pilot's cardiac condition contributed to the accident. Toxicological testing detected several prescription medications in the pilot's blood, lung, and liver, including one to treat his heart disease; however, it is unlikely that any of these medications resulted in impairment. Although the testing revealed that the pilot had used marijuana at some time before the accident, insufficient evidence existed to determine whether the pilot was impaired by its use at the time of the accident.

Toxicology testing also detected methylone in the pilot's blood. Methylone is a stimulant

similar to cocaine and Ecstasy, and its effects can include relaxation, euphoria, and excited calm, and it can cause acute changes in cognitive performance and impair information processing. Given the level of methylone (0.34 ug/ml) detected in the pilot's blood, it is likely that the pilot was impaired at the time of the accident. The pilot's drug impairment likely contributed to his failure to maintain control of the airplane.

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 airplane control while maneuvering the airplane in the traffic pattern at night. Contributing to the accident was the pilot's impairment from the use of illicit drugs.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause) Illicit drug - Pilot (Factor)
Environmental issues	Dark - Effect on personnel (Cause)

Factual Information

HISTORY OF FLIGHT

On December 17, 2013 at 1924 eastern standard time (EST), a Raytheon Aircraft Company 390, N50PM, was destroyed when it impacted trees and terrain, and was consumed by an explosion and post-crash fire while returning to land at Fulton County Airport – Brown Field (FTY), Atlanta, Georgia. The airplane departed at 1920. Night visual meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the flight to New Orleans Lake Front Airport (NEW), New Orleans, Louisiana. The private pilot and sole passenger were fatally injured. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to statements from the fixed base operator (FBO) personnel where the airplane was parked, the aircraft was towed from a nearby maintenance facility and parked on their ramp about 1720. At 1738, the pilot called to request 250 gallons of fuel with Prist and the aircraft was fueled about 1755. The pilot and passenger arrived at the FBO about 1900 and parked their vehicle next to the airplane. After the luggage was placed in the airplane, the pilot informed FBO personnel that a marshaler was not necessary, which personnel reported as "not unusual for him."

Security camera video captured the airplane parked on the ramp and the pilot and passenger arriving in a personal vehicle. The video footage revealed only the front portion of the airplane, but showed the pilot conversing with ramp personnel for a few moments, then walking out of the video frame towards the left wing tip. A few moments later, the video showed the pilot walking around the right wing towards the front of the airplane, turning around and reversing his route coming back into the video frame near the front of the left wing near the cabin door. The cabin door was closed and the video captured movement through the left side cockpit windows. A few minutes later, the airplane's strobe lights were illuminated. Several moments later, the airplane's taxi lights were illuminated and the airplane was recorded taxiing from the parking ramp. Due to lamp light reflection off the side windows, it could not be conclusively determined who was seated in the pilot seat or co-pilot seat; however, the silhouette that was observed appeared to be that of an individual wearing a ball cap. The pilot was observed wearing a ball cap as he entered the airplane prior to closing the door; no ball cap was observed being worn by the passenger.

According to the cockpit voice recorder (CVR) recording, the pilot contacted the FTY Federal Aviation Administration (FAA) Air Traffic Control Tower (ATCT) ground controller at 1902:12 and requested the IFR clearance. At 1903:12 the clearance was read back by the pilot and taxi clearance was requested and granted. During the taxi out, various personal conversations were recorded between the pilot and passenger as well as the pilot missing a turn during the taxi and the ground controller providing him a modified taxi clearance. At 1908:54, the pilot requested "a couple of minutes here at the end..." From 1909:10 to 1916:07, various test tones were recorded including several "lift dump fail" test tones. During that time, the pilot also asked the passenger if she had his phone. A photograph was found in the pilot's phone of the warning light configuration. Meta data revealed that the photograph was recorded at 1906 on the date of the accident; however, it could not be conclusively determined if the noted time was accurate. At 1916:36, the pilot requested takeoff clearance. At 1919:19, takeoff clearance was issued by the ATCT controller and acknowledged by the pilot. At 1920:15, the cockpit area

microphone recorded the sound of two engine igniters which continued until the end of the recording. At 1920:47, the passenger asked "did you put heat on?" to which the pilot replied "why is that?" At 1920:55, the ground proximity warning system (GPWS) warned "to low terrain to low terrain." At 1921:02, the pilot notified the ATCT that "we're gonna need to come back now we've got a problem here." The controller cleared the airplane to enter right traffic for runway 26 and asked if the pilot need emergency assistance. At 1921:32, the pilot replied "negative" on the assistance. At 1921:33, the controller stated, "Premier five zero papa mike they put a hold message on your flight plan that way you can reuse it if you want to go later just let me know." At 1921:39, the pilot replied, "sounds good appreciate it." At 1922:42, the flight was issued landing clearance and traffic to follow. At 1922:51, the pilot replied, "cleared to land number two fifty five mike thank you," which was the last recording from the airplane to the ATCT. From 1922:53 until the end of the recording, several GPWS audible warnings were given including "pull up pull up pull up" and the pilot stating "I don't know what that's sayin." The airplane crashed while on the downwind leg for runway 26.

PERSONNEL INFORMATION

According to FAA records, the pilot held a private pilot certificate with a rating for single-engine land, multiengine land, and instrument airplane, and he held a type rating in the accident airplane. He held a third-class medical certificate which was issued on April 17, 2013 and contained restriction, "76 – not valid for any class after." At the time of that medical examination, the pilot reported 7,700 total hours of flight experience and 35 hours of flight experience within the preceding 6 months. The pilot further reported, on the medical certificate application, that he was diagnosed with coronary artery disease and had had a heart attack in April 1996, which was treated with angioplasty and stent placement. The pilot's stress test, conducted on April 11, 2013, revealed no evidence of ischemia. He further reported that his medications included aspirin, atenolol, losartan, and simvastatin.

According to the FAA medical case review, the pilot's reported medication of Atenolol and losartan were used to treat high blood pressure and were marketed as Tenormin and Cozaar. Simvastatin was a cholesterol lowering medication marketed as Zocar and Aspirin is a non-steroidal anti-inflammatory medication used to treat pain and fever, it also inhibits blood clots and helps prevent occlusion of the coronary arteries.

According to information provided by the pilot's company representative, the pilot's most recent logbook entry was dated June 27, 2013. At that time he had accumulated a total of 7,200.6 hours total flight experience, of those hours 1,030.1 hours of flight experience in "Jet;" however, it could not be accurately determined how many of those hours were in the accident aircraft make and model.

A search was conducted on the passenger and revealed no evidence of any FAA pilot or medical certification.

AIRCRAFT INFORMATION

According to FAA records the airplane, Serial No. RB-80, was issued an airworthiness certificate on September 20, 2003 and was registered to the corporation on November 7, 2003 as N50280. The registration number was changed to N50PM on December 24, 2003. The corporate registration listed the accident pilot as the president. It was equipped with two Williams-Rolls FJ44-2A engines. The left engine, also known as engine No. 1, serial number 105067, was placarded for 2,300 pounds of thrust. The right engine, also known as engine No.

2, serial number 105070, was placarded for 2,300 pounds of thrust. According to maintenance records dated December 16, 2013, four (4) maintenance items were recorded and signed off as completed. At the time of the entry, a recorded hobbs was 712.9 hours. On December 23, 2011 a recorded "A" airframe inspection was accomplished with a reported total time of 621.2 flight hours.

METEOROLOGICAL INFORMATION

The 1940 recorded weather observation at FTY, was considered a "Speci" and included wind from 230 degrees at 6 knots, visibility 10 miles, clear skies, temperature 12 degrees C, dew point 01 degrees C, and barometric altimeter 30.13 inches of mercury.

The 1853 recorded weather observation at FTY included wind from 240 at 4 knots, visibility 10 miles, clear skies, temperature 13 C, dew point 0 C, and barometric altimeter 30.13 inches of mercury.

According to the U.S. Naval Observatory, on the day of the accident, official sunset was at 1731, the end of civil twilight was at 1759, and official moonrise was at 1808. The moon phase was full.

AIRPORT INFORMATION

The airport in a publically owned airport and at the time of the accident had an FAA operating control tower. The airport was equipped with three runways designated as runway 8/26, 9/27, and 14/32. Runway 8/26 was reported as "in good condition" and runway 9/27 and 14/32 was reported as "in fair condition." Runway 8/26 was 5,797-foot-long by 100-foot-wide, runway 9/27 was 2,801-foot-long by 60-foot-wide, and runway 14/32 was 4,158 -foot-long by 100-foot-wide. The airport was surveyed at 841.1 feet above mean sea level.

FLIGHT RECORDERS

Cockpit Voice Recorder (CVR)

The CVR was forwarded to the NTSB Vehicle Recorders Laboratory in Washington, DC for readout. The CVR was a L-3 Fairchild FA-2100-1010; however, the serial number could not be determined. The thirty-minute digital recording consisted of four channels of audio information. Excellent quality audio information was recorded from both occupants' microphones and cabin/PA and good quality audio information was recorded from the cockpit area microphone. The exterior of the unit exhibited extensive heat and structural damage. Removal of the outer case revealed the interior crash-protected case did not exhibit any heat or structural damage. The memory ribbon cable that connected the memory to the external electronics was burned and not useable. A new ribbon cable was soldered to the accident memory, the memory boards were disassembled, cleaned and examined for damage, with no damage noted. The digital audio was successfully downloaded from the memory board. A CVR group was convened and a transcript was developed and is located in the public docket for this accident.

The entire recording was transcribed and the recording began at an unknown time and ran approximately one minute with no one in the cockpit of the aircraft. Electrical power was cycled and the verbatim transcript began at 18:55:07. The recording contained events from startup, taxi, takeoff, climb, and the accident sequence. The airplane started to taxi at 1903:22 to the departure runway and remained short of the runway from 1908:54 to 1919:24 while the pilot addressed some aircraft system issues. During the flight the pilot received several

obstacle, terrain , and bank angle warnings from the enhanced onboard ground proximity warning system. The pilot also received several stall warnings from the aircraft during the flight. The recording ended at 1924:02.

Enhanced Ground Proximity Warning System (EGPWS)

The EGPWS was a Honeywell MK V EGPWS and an exterior examination revealed the unit had sustained heat exposure with charring to the unit's housing. An interior inspection revealed no heat or impact damage to the circuit boards and the data was extracted by the NTSB Recorders Laboratory. The unit was designed to record events triggered by exceeding preset limits in 7 different modes, 3 of the modes required urgent attention by the flight crew. Once a limit was exceeded, a new event would be recorded at one sample per second that included 20 seconds before and 10 seconds after the exceedance. The accident flight data recording was triggered by 13 EGPWS alerts over two separate periods of time. The first period of time contained one, "Too Low Terrain" alert during the accident flight's takeoff. The second period of time contained 12 alerts spanning a time of about 50 seconds. The initial alert, during the second period of time, was a "Caution Obstacle" alert that was triggered by a smokestack, located 3 miles to the northeast of the airport and about 1,200 feet laterally from the airplane's recorded flight path. Two subsequent "Obstacle Pull-Up" warnings were recorded 4 and 15 seconds following the initial warning. For more detailed information on the EGPWS, please refer to the "EGPWS Factual Report" located in the public docket for this accident.

Flight Management Computer (FMC)

The FMC was a Rockwell Collins FMC-3000, Part No. 822-0883-701. An exterior examination of the unit revealed impact and thermal damage and an interior examination revealed the condition of the circuit board was acceptable to be placed into a test fixture. After being loaded into the test fixture, the unit failed to power up, and additional troubleshooting revealed the circuit board had damage consistent with impact damage. The damaged parts were replaced and the data was partially recovered. Some of the data was determined to be corrupted; however, an Angle of Attack (AOA) fault was displayed on the Cockpit Display Unit (CDU) prior to the accident flight's takeoff. Further research revealed that had the source of the AOA fault come from the flight management system, the FMC would have logged the fault in the data. For more detailed information on the FMC, please refer to the "Flight Management Computer Factual Report" located in the public docket for this accident.

Maintenance Data Computer (MDC)

The MDC was a Rockwell Collins MDC -3000, Part No. 822-1139-021. An exterior examination of the unit revealed impact and thermal damage to the casing and an interior examination revealed the primary circuit board contained flexure damage. The circuit board sustained damage that prohibited directly inserting it into a test fixture. Special connectors were utilized to connect the board to a test bench, and the data was downloaded successfully. The accident flight was identified as two faults were logged at 1921. The faults logged were "FMC 2 – NO BUS TO IOC" and a fault for the TCAS (Traffic Collision Advisory System). The FMC fault could be concluded as a nuisance fault when generated by the aircraft with only one FMC installed, as was with the accident airplane. The TCAS fault was also likely a nuisance fault and was reported as "fairly common" during the startup sequence and timing within the system. For more detailed information on the MDC please refer to the "Maintenance Data Computer Factual Report" located in the public docket for this accident.

Air Data Computer (ADC)

The airplane was equipped with two ADC units. Both units were manufactured by Rockwell Collins as the ADC-3000, Part No 822-1109-016. The Serial No. on the units were 12WYB and 13TVC. Exterior examination revealed impact damage to the housing and foreign object debris from impact. The memory chip on the unit with Serial No. 12WYB was damaged and data could not be recovered. The circuit board from the unit with Serial No. 13TVC was removed and data was successfully recovered. The recovered data included 44 flights and revealed only normal weight on wheel transition in the log and no failures were logged. The ADC indicated that the unit was shut down and powered up twice on the ground prior to the event flight. The unit further recorded the last weight on wheels transition (take-off) 25 minutes after having been powered up and no record of returning to "on-ground."

WRECKAGE AND IMPACT INFORMATION

The main portion of the airplane came to rest upright and in a moderately wooded area within a drainage ditch. An impact crater was located approximately 45 feet from the main wreckage along the debris path. Within the crater was the windscreen section, and the No. 1 (left pilot side) window was spider-webbed but remained intact. The wreckage was located about 3 miles on a 043 degree course from the threshold of runway 26 and came to rest facing toward the direction of travel. The debris path was approximately 250 feet in length and on a heading of 095 degrees.

The initial tree strike location was located approximately 80 feet above ground level (agl) and consisted of the left wingtip including the navigation light. The second tree impact location was located approximately 50 feet agl and consisted of the right wingtip including the navigation light. The initial ground impact point, along the debris path, contained the tailcone, a portion of the right wing, elevator, outboard approximate 4 feet of the left wing aileron, and an inboard gear door location. The GPS location of the main wreckage, which consisted of the right wing, horizontal stabilizer, both engines, nose landing gear and both main landing gear was 33°49.028' N, 084°28.147' W. The wreckage was also located at 867 feet above mean sea level.

Seven of the eight flap actuators were observed. Two actuators were located attached to the wing, and five of the actuators were found within the debris field. One of those had a handwritten "L.I." inscribed on it and another one had "L.O." inscribed on it. One "long" actuator could not be located. The measurements on the four "long" actuators measured, from the faceplate to the center of the attachment bolt, 7, 7 ¼, 7 ¼ and 7 ½ inches respectively and on one actuator, the eyelet containing the attachment bolt was not recovered, the measurement was of the exposed cylinder which measured 6 inches. The fifth "long" actuator measurement could not be conclusively determined due to impact damage. The measurement on one of the two "short" actuators measured 4 1/4 inches. The other "short" actuator measurement could not be conclusively determined due to impact damage. All obtained measurements corresponded to an approximate 10 degree flap position.

Nose Section

The nose of the airplane exhibited thermal damage and was impact fractured; the weather radar was located near the main wreckage. The impact resulted in a complete breach of the nose section. The nose landing gear was impact-separated at the top section of the trunion. A portion of the forward baggage door was located in the initial ground crater as well as near the main wreckage location.

Right Wing

The right wing exhibited thermal and impact damage. The fuel cap was separated from the fuel fill hole. The cap was thermally damaged; however, the cap was found with the locking tab recessed and in the locked position. The inboard and outboard flaps remained attached to the wing and exhibited thermal and impact damage. The right main landing gear oleo strut remained attached to the tire; however, it was thermally damaged. The right main landing gear actuator was separated from the gear and found in the wreckage. The actuator was thermally damaged. The actuator piston extension was measured and found to be extended approximately 21 inches, which corresponded to the landing gear in the full extended/down position. The right wing blow down actuator was in the full retracted position The cylinder was intact and thermally damaged and the unit remained attached to the respective ends. The roll/speedbrake/spoiler actuator piston was extended 3 ½ inches which correlated to a nearly fully extended position. The right lift dump actuator was not observed.

Empennage and Fuselage

The empennage, which was a composite and aluminum structure, was thermally destroyed. The elevator and rudder cables were located throughout the main wreckage and continuity was confirmed from the cockpit to the rudder horn and elevator aft lower bellcrank. The aileron cables were located and were intact and continuity was confirmed to the base of the control column to the aft sector bellcrank; however, the swedged end of the cable was pulled through the attachment point on the bellcrank in the left wing. The CVR was located within the empennage wreckage. The horizontal stabilizer was located on top of the right wing and inverted. The emergency exit was located and thermally damaged; the locking pins were extended and appeared to have been secured prior to the accident sequence. The main cabin door was located in the ground impact crater and the door pins were extended. The rudder was thermally damaged and only the rudder torque tube was located. The center wing section was thermally damaged. The hydraulic spoiler control unit was heat damaged.

Right Engine

The right engine was located within the main wreckage area and under the main cabin section. It was thermally damaged; however, no penetration was noted. The spinner was thermally damaged and the leading tip was melted. The fan would not rotate due to thermal and impact damage; 8 of the blades were noted to have curling on the tips or cuts in the blades. The fan stator exhibited evidence of impact, thermal, and debris damage and also had numerous areas of foreign obstacle ingestion damage, which likely occurred during ground impact. The interstage housing, forward and aft by-pass ducts were thermally destroyed. The throttle arm remained attached, the arm operated along a 20 degree arc and an exact throttle position could not be determined. The fuel filter remained attached to the engine housing. The fuel filter was removed and no evidence of foreign debris was noted. The fuel filter was located under the main cabin section of the aircraft. The hydraulic surge protector remained attached to the engine and oil was present. The exciter boxes and bleed valve remained attached. The bleed valve appeared to be in the open position. All six ITT probes remained attached to the 1st low pressure nozzle. The three chip detectors were located and secured in the engine. The detectors were removed and appeared to be free of foreign material. The engine was disassembled and no abnormalities or malfunctions were noted. For detailed information of the engine exam refer to the "Right Engine Examination" report located in the public docket with this accident.

Left Engine

The left engine was located in the main wreckage area. It was thermally damaged; however, no penetration was noted. The fan would not rotate due to thermal and impact damage. The fan stator exhibited evidence impact, thermal, and debris damage also had numerous areas of foreign obstacle ingestion damage, which likely occurred during ground impact. The interstage housing was thermally destroyed. The throttle arm was located in the near full throttle position, and the arm operated along its full 90-degree arc and the fuel cut off position was opposite of the position of the arm. The fuel filter was impact-separated and remained intact with the filter located inside the housing. Removal of the filter element was not possible due to the extent of the damage. The fuel filter was located under the main cabin section of the aircraft. The hydraulic surge protector remained attached on the left side of the engine and oil was present; however, one of the lines was thermally damaged. The exciter boxes and bleed valve remained attached. The bleed valve appeared to be in the open position. All six ITT probes remained attached to the 1st low pressure nozzle. The three chip detectors were located and secured in the engine. The detectors were removed and appeared to be free of foreign material. The engine was disassembled and no abnormalities or evidence of malfunctions were noted. For detailed information of the engine exam refer to the "Left Engine Examination" report located in the public docket with this accident.

Left Wing

The left wing was impacted-separated, thermally damaged, and segmented into multiple pieces. The wingtip and navigation light was located at the first tree impact point. The aileron trim actuator remained attached to separated section of the left wing. The aileron trim actuator consists of two pistons. One piston extension measured approximately 1 ¾ inches from the main body (face plate) to the piston end, which corresponded to approximately 2 degree trailing edge down. The other piston extension measured approximately 2 ¼ inches from the main body (face plate) to the piston end, but the measurement was out of the "normal" range towards the high side. A flap segment, which was approximately one-half of the total flap length and measured 59 inches remained attached to a section of the wing. The left main landing gear oleo strut was separated from the tire. The left main landing gear actuator was separated from the gear and found in the wreckage. The actuator was thermally damaged. The actuator piston extension was measured and found to be extended approximately 21 inches, which corresponded to the landing gear in the full extended/down position. The roll/speed brake/spoiler actuator was extended to about 2 11/16 inches which correlated to an approximate mid position. The unit remained attached to the respective attachment point on both sides and the outer housing was separated from the piston. The left lift dump actuator remained attached to a section of the left wing rear spar. The actuator was found in a retracted position.

Cabin

The cabin was thermally damaged and 5 of the 6 seats were located; however, there was no indication on what remained of the seats, of which seats were occupied. No seatbelts were located; however, the seat belt attachment points remained secured at the aft side of their respective seat pan.

Cockpit

The cockpit was impact-separated and exhibited thermal damage. The overhead panel, which

included light switches, was found near the main wreckage but had little thermal damage. The center pedestal was co-located with the main wreckage. The thrust levers were found in the full forward positions. The ground lift dump lever was in the full forward or "stowed" position and was in the gated or detent position. The ground lift dump arm switch was in the full aft or "armed" position. The spring-loaded flight spoiler lever was in the forward position and operated smoothly at the pedestal. The right side of the center pedestal was thermally damaged and the flap lever was located; however, due to thermal damage a flap position could not be ascertained. The windscreen windows and cockpit crown were located within the initial ground impact crater.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on December 18, 2013, by the Fulton County Medical Examiner, Atlanta, Georgia. The autopsy findings included Atherosclerotic cardiovascular disease, post mortem thermal burns, and "multiple blunt force injuries." The report listed the specific injuries. The cause of death was reported as "multiple blunt force injuries of the head, torso and extremities."

Forensic toxicology was performed on specimens from the pilot by the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology report stated no carbon monoxide nor ethanol was detected in the blood (Cavity). The report listed the following drugs being detected:

• Atenolol detected in Blood (Cavity)

• Atenolol detected in Liver

• Sildenafil detected in Blood (Cavity)

• Sildenafil detected in Liver

• Desmethylsildenafil detected in Blood (Cavity)

• Desmethylsildenafil detected in Liver

• Tadalafil detected in Blood (Cavity)

• Tadalafil detected in Liver

• 0.34 (ug/ml, ug/g) Methylone detected in Blood (Cavity

• Methylone detected in Liver

• 0.0021 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) detected in Blood (Cavity)

• 0.0383 (ug.ml, ug/g) Tetrahydrocannabinol (Marihuana) detected in Lung

• 0.002 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in Blood (Cavity)

• 0.0036 (ug//ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in Lung

• 0.0267 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in Liver

• 0.007 (ug/ml, ug/g) Zopiclone detected in Blood (Cavity)

• Zopiclone detected in Liver

A plastic baggie, containing a blue powder substance, was located in the front pocket of the

pilot's pants. The powder was sent to the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The report listed the following drugs:

• Amphetamine detected in Blue Powder

• Cocaine detected in Blue Powder

• Lidocaine detected in Blue Powder

• Methylone detected in Blue Powder

• Sildenafil detected in Blue Powder

• Cocaine detected in White Powder

• Lidocaine detected in White Powder

• Methylone detected in White Powder

According to the NTSB Medical Factual report, Zopiclone is a short acting prescription sleep aid marketed as Imovane. The half-life of Zopiclone ranges from 3.5 to 6.5 hours and therapeutic levels range from 0.076 to 0.140 ug/ml. Tetrahydrocannabinol (THC) is the psychoactive compound found in marijuana and has effects at levels as low as 0.001 ug/ml. THC has mood altering effects causing euphoria, relaxed inhibitions, sense of well-being, disorientation, image distortion, and psychosis. The ability to concentrate and maintain attention are decreased during marijuana use. Tetrahydrocannabinol carboxylic acid is the inactive metabolite of tetrahydrocannabinol. Methylone is a synthetic illicit stimulant with similar effects to cocaine, methamphetamine, and MDMA (Ecstasy or Molly). Methylone side effects are reportedly similar to MDMA and range from relaxation, euphoria, and excited calm at lower doses and agitation, panic attacks, and illusory or hallucinatory experiences at higher doses. Elevated body temperatures of up to 107 degrees F have been reported, where post mortem blood methylone levels have ranged from 0.056 ug/ml to 3.3 ug/ml.

History of Flight

Enroute-climb to cruise	Unknown or undetermined
Approach-VFR pattern base	Controlled flight into terr/obj (CFIT) (Defining event)
Post-impact	Explosion (post-impact)

Pilot Information

Certificate:	Private	**Age:**	67
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With Waivers/Limitations	**Last FAA Medical Exam:**	04/17/2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	12/10/2011
Flight Time:	(Estimated) 7200.6 hours (Total, all aircraft), 1030.1 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	RAYTHEON AIRCRAFT COMPANY	**Registration:**	N50PM
Model/Series:	390	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Transport	**Serial Number:**	RB-80
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	12/23/2011, Continuous Airworthiness	**Certified Max Gross Wt.:**	12591 lbs
Time Since Last Inspection:	92 Hours	**Engines:**	2 Turbo Fan
Airframe Total Time:	713 Hours as of last inspection	**Engine Manufacturer:**	Williams
ELT:	Installed, not activated	**Engine Model/Series:**	FJ44-2A
Registered Owner:	MALLEN INDUSTRIES INC	**Rated Power:**	2900 lbs
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	FTY, 841 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	1940 EST	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.13 inches Hg	**Temperature/Dew Point:**	12°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Atlanta, GA (FTY)	**Type of Flight Plan Filed:**	IFR
Destination:	New Orleans, LA (NEW)	**Type of Clearance:**	IFR
Departure Time:	1920 EST	**Type of Airspace:**	Class D

Airport Information

Airport:	Fulton County Airport (FTY)	**Runway Surface Type:**	Asphalt
Airport Elevation:	841 ft	**Runway Surface Condition:**	Unknown
Runway Used:	26	**IFR Approach:**	None
Runway Length/Width:	5797 ft / 100 ft	**VFR Approach/Landing:**	Full Stop; Precautionary Landing; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	2 Fatal	**Latitude, Longitude:**	33.821667, -84.469722

Administrative Information

Investigator In Charge (IIC):	Shawn Etcher	**Report Date:**	09/08/2015
Additional Participating Persons:	Danny A Cox; FAA; College Park, GA Ernest C Hall; Beechcraft Corporation; Wichita, KS Russell Schrock; Beechcraft Corporation; Wichita, KS Gregory G Ghareeb; Williams International; Walled Lake, MI		
Publish Date:	10/01/2015		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=88564		

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.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available here.