

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: CEN11FA417		Aircraft Registration Number: N88MN	
		Occurrence Date: 06/24/2011		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Charlevoix		State MI	Zip Code 49720	Local Time 1935	Time Zone EDT
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer BEECH		Model/Series A36		Type of Aircraft Airplane	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
<p>*** Note: NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this aircraft accident report. ***</p>					
HISTORY OF FLIGHT					
<p>On June 24, 2011, approximately 1935 eastern daylight time, a Beech A36 single-engine airplane, N88MN, sustained substantial damage when it impacted terrain and a residential garage while maneuvering near Charlevoix, Michigan. The private pilot, one passenger, and one dog sustained fatal injuries, one passenger sustained serious injuries, and one dog was not injured. The airplane was registered to Microjet, LLC, Fort Wayne, Indiana, and operated by the pilot. Instrument meteorological conditions prevailed and an instrument flight rules (IFR) flight plan had been filed for the 14 Code of Federal Regulations Part 91 personal flight. The flight had departed Smith Field Airport (SMD), Fort Wayne, Indiana, approximately 1730.</p>					
<p>According to Federal Aviation Administration (FAA) Minneapolis air route traffic control center (ARTCC) communications and radar data, the pilot filed an IFR flight plan from SMD to Boyne City Municipal Airport (N98), Boyne City, Michigan. At 1848, the pilot stated he wanted to divert to Boyne Mountain Airport (BFA), Boyne Falls, Michigan, due to weather in the area of N98 which did not have an instrument approach. The pilot requested the BFA RNAV (global positioning system (GPS)) approach to runway 35. The pilot was then cleared to ELBOT which was the initial approach fix for the RNAV approach. At 1917, the pilot contacted Minneapolis ARTCC and stated he was executing the missed approach at BFA and requested the Charlevoix Municipal Airport (CVX) RNAV (GPS) approach to runway 27. The pilot was cleared to COKOS which was the initial approach fix for the RNAV approach. At 1920, the pilot was cleared for the approach to CVX. At 1926, the pilot was then given approval for a frequency change to the CVX advisory frequency. The pilot acknowledged the frequency change.</p>					
<p>Witnesses, who were located in the CVX terminal building, overheard the pilot call on the CVX common traffic advisory frequency (CTAF) that he was executing the GPS runway 27 instrument approach. The witnesses reported that the cloud ceiling was 200 feet above ground level (agl) and the visibility was 1 mile at the time the pilot called CTAF to report the approach. The witnesses observed the airplane break out of the clouds approximately halfway down runway 27. They heard the airplane's engine increase power and observed the airplane enter a left turn, then a turn back to the right around a water tower located southwest of CVX. The airplane stayed approximately 200 feet agl during the turn around the airport. The airplane then entered a right downwind leg for runway 27. Witnesses observed the airplane begin a right turn toward runway 27, pitch nose up, and then roll to the left in a nose high attitude. The airplane then disappeared behind a tree line and airport buildings.</p>					
<p>Another witness, who was located at a baseball field approximately 1/4 mile west of the accident</p>					
FACTUAL REPORT - AVIATION					

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site, reported he observed the airplane appear from the clouds heading to the west approximately 200 feet agl during the approach. At that time, the airplane appeared to be between the runway and the baseball field. The witness then turned his attention back to the baseball game. A few minutes later, the witness observed the airplane overflying the baseball field at a low altitude and airspeed. The airplane was traveling to the east and began to make a right turn toward the airport. At that time, the airplane's nose pitched up and the "tail dropped and fluttered." The airplane then banked to the left, appeared out of control, and dropped. The witness lost sight of the airplane behind trees and observed a "fuel spray" after the impact.

The airplane impacted the yard of a residence adjacent to the north perimeter of CVX. The airplane came to rest upright, partially within a three stall garage attached to the residence. Rescue and law enforcement personnel arrived on scene shortly after the accident. One dog was found deceased at the accident site, and one dog was found the day after the accident walking around the surrounding neighborhood.

PERSONNEL INFORMATION

The private pilot held single-engine land and instrument airplane ratings. The pilot reported 1,300 total flight hours on his FAA third-class medical certificate dated May 25, 2010.

The pilot's logbook was recovered from the accident airplane. The logbook, identified as logbook number 3, did not contain a total hour amount forwarded from his previous logbook. The first logbook entry was dated February 28, 2004, for a flight in the accident airplane, and the last entry was dated June 19, 2011, for a flight in the accident airplane.

In the recovered logbook, the pilot recorded 2 flights to CVX with the note "GPS" in the respective flight log entry. The most recent flight to CVX was recorded on May 29, 2009.

The pilot most recent instrument proficiency check was completed on June 25, 2010, and at the time of the accident, the pilot logged 19 instrument approaches since the check.

The pilot and passenger who sustained serious injuries were involved in an airplane accident on September 1, 2003 (see NTSB Aviation Accident Report CHI03FA291). The pilot was also pilot-in-command at the time of that accident.

AIRCRAFT INFORMATION

The airplane was a Beech A36, serial number E-741. It was powered by a AV Power IO-550-B-AP turbocharged engine (Supplemental Type Certificate (STC) AV Power STC SE02881AT), serial number 274546-R, and a three-bladed, constant speed Hartzell propeller. The airplane was originally equipped with a 285-horsepower normally aspirated Continental Motors IO-520 series engine. A review of the FAA airworthiness records, and verified by the affixed engine data plates and hardware installation, revealed that the installed engine had been modified by an A.E.R.O. Aviation Company, Inc. STC as stated above. The modified engine was further modified with the installation of a Western Skyways turbo normalizer system STC (STC SE8677SW).

The airplane was issued a standard airworthiness certificate on August 20, 1975, and was registered to Microjet, LLC, on May 15, 2003. The airplane was configured with four seats.

The airplane was equipped with a Garmin GNS 530W GPS, a Garmin GNC 300XL TSO GPS, and a Garmin GDL 69 XM Data Link System.

A review of the airplane's maintenance records showed that an annual inspection was performed on the airframe on December 12, 2010, at 5,514 total airframe hours. The digital tachometer reading at the accident site was not available due to damage.

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METEOROLOGICAL INFORMATION

At 1914, the CVX automated weather observing system (AWOS) reported the wind from 260 degrees at 9 knots, visibility 1 3/4 miles, mist, sky broken at 400 feet, overcast clouds at 700 feet, temperature 11 degrees Celsius, dew point 10 degrees Celsius, and an altimeter setting of 29.71 inches of Mercury.

At 1935, the CVX AWOS reported the wind from 260 degrees at 9 knots, gusting to 15 knots, visibility 2 miles, rain, overcast clouds at 200 feet, temperature 11 degrees Celsius, dew point 11 degrees Celsius, and an altimeter setting of 29.72 inches of Mercury.

At 1954, the CVX AWOS reported the wind from 250 degrees at 10 knots, gusting to 14 knots, visibility 2 miles, drizzle, overcast clouds at 200 feet, temperature 11 degrees Celsius, dew point 10 degrees Celsius, and an altimeter setting of 29.72 inches of Mercury.

No airmen's meteorological information (AIRMETs) or significant meteorological information (SIGMETs) were active for the accident location at the accident time.

AIRPORT INFORMATION

The Charlevoix Municipal Airport, CVX, is a public, uncontrolled airport located 1 mile southwest of Charlevoix, Michigan, at 45 degrees, 18.286 minutes north latitude, and 085 degrees, 16.520 minutes west longitude, at a surveyed elevation of 669 feet mean sea level (msl). The airport features one asphalt runway, Runway 9/27, which is 4,550 feet by 75 feet, and one turf runway, Runway 4/22, which is 1,280 feet by 200 feet.

Runway 27 was equipped with medium-intensity runway edge lights, runway end identifier lights, and a 4-light, 3 degree glidepath precision approach path indicator (PAPI) located on the right side of the runway. Runway 27 was configured for non-precision approaches, which included RNAV (GPS) and non-directional beacon (NDB).

The RNAV approach to runway 27 at CVX included an inbound course of 270 degrees. The minimum descent altitude (MDA) was 1,100 feet msl. The weather minimums for the RNAV (GPS) runway 27 approach were a MDA of 500-feet and 1 mile visibility for the straight-in approach. The published missed approach procedure instructed the pilot to conduct a "climbing left turn to 3,000 direct to COKOS and hold."

WRECKAGE AND IMPACT INFORMATION

The accident site showed that the initial ground scar, located approximately 75 feet from the main wreckage, contained the left wing tip fuel tank fairing and pitot tube. The initial impact to the main wreckage was distributed along a measured magnetic heading of 090 degrees. The main wreckage consisted of the fuselage, engine, empennage, and both wings. The three-bladed propeller was separated from the engine crankshaft and came to rest adjacent to the main wreckage. Miscellaneous baggage and airplane debris were noted to the west of the main wreckage.

The left wing was partially separated from the fuselage. The leading edge was crushed aft, and the outboard 5 feet was crushed upward and aft. The fuel tank fairing was separated. The aileron was separated and came to rest on the top of the left wing surface. The flap was partially separated, and the flap actuator was found in the retracted position, consistent with the flap being retracted. The left main landing gear wheel was separated, and the strut was in the extended position. The wing fuel tank was compromised.

The right wing was partially separated and came to rest within the garage structure. The leading

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edge was bent aft. The aileron and flap control surfaces were separated. The flap actuator was found in the retracted position, consistent with the flap being retracted. The right main landing gear was separated and found in the extended position.

Rescue personnel reported fuel was draining from the airplane's fuel tanks upon their arrival.

The forward fuselage was crushed and deformed. The left garage structure support post was separated and the right garage structure support post was located within the cockpit area. The left side wall of the fuselage was intact and contained buckling from front to aft. The right side of the fuselage crushed and deformed. The right forward cabin door was separated and the door posts were cut by rescue personnel. The cabin utility doors were found in the open position, consistent with the rescue personnel information during rescue efforts for the passenger. The instrument panel was crushed and displaced to the right. The throw-over control yoke was found in the left seat position. The throttle, mixture, and propeller cockpit controls were found in the full forward position. The two cockpit seats were crushed and displaced to the right. The seats contained shoulder harness and lap belt restraints which were cut by rescue personnel. The rear seats, which faced aft, were intact and the lap belt restraints were found stowed. An Apple iPad1 was found between the left front seat and the left fuselage side wall. There were no paper instrument approach plates located in the airplane.

The empennage remained attached to the fuselage. The right stabilizer was bent upward at midspan. The elevator trim was found in the neutral position.

Flight control continuity was established from all flight control surfaces to the cockpit.

The engine remained partially attached to the firewall, and the firewall was separated from the fuselage. The propeller hub was separated from the engine crankshaft. The engine crankshaft was rotated by hand and mechanical continuity was noted throughout the engine, with the exception of the number 6 exhaust valve and rocker arm. The number 6 exhaust valve push rod was found damaged consistent with the impact. The magnetos were removed and rotated by hand. Sparks were noted on all ignition leads.

The three propeller blades remained attached to the hub. The blades exhibited leading edge damage and chordwise scratching. Two blade tips were missing and not located. The remaining portions of the blades were twisted and bent aft.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy on the pilot was performed by Spectrum Health, Grand Rapids, Michigan. The autopsy report listed the cause of death as blunt force injuries to the head and chest.

Forensic toxicology was performed on specimens of the pilot by the FAA Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma. The toxicology report was negative for carbon monoxide, cyanide, ethanol, and drugs.

TESTS AND RESEARCH

The NTSB Vehicle Recorder Division examined the following non-volatile memory (NVM) devices that were recovered from the airplane: Apple iPad1, Garmin TAWS/Terrain Data Card, Jeppesen IFR Data Card, and a Jeppesen IFRW Data Card.

Examination of the Apple iPad revealed the exterior of the unit had sustained significant impact damage. The internal processor printed circuit board (PCB) appeared undamaged and was transferred to a surrogate iPad for data recovery. The iPad appeared to have a functional copy of the ForeFlight App installed. The ForeFlight App contained reference to an approach plate for the RNAV

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(GPS) Runway 27 procedure to CVX. The approach plate was designated and dated EC-1, 02 JUN 2011 to 30 JUN 2011. The iPad recorded last being connected to via WiFi on June 24th. Examination of the cache information indicated that the com.apple.AppStore had been launched 6 times on the day of the accident. The last CFURL_CACHE_RESPONSE (found in Cache.db for com.apple.mobilesafari) was on June 24, 2011, at 20:46:34 to the following URL:

www.weather.com/common/a21/makerequest-2_3.html?pos=wx_tile1&key=1308890399090. No other recognizable aviation-related data was recovered from the iPad.

Examination of the data cards revealed little or no damage. In order to determine the effective dates for the mapping data stored on each card, the NVM chips were removed and read using a memory programmer. The following copyright statements were recovered from the cards:

Garmin TAWS/Terrain Card

1. Worldwide Detail Landmap Copyright 1995-2005 by Garmin Corp.
2. Copyright 2007 Garmin Ltd. US/Europe Obstacles
3. Copyright 2006 Garmin Ltd. Worldwide Airport Terrain
4. Copyright 2006 Garmin Ltd. Worldwide 30AS Terrain

Jeppesen IFR Card

1. Copyright 2009-2010 Garmin Corp.
2. Copyright 2009-2010 Jeppesen Sanderson Inc.

Jeppesen IFRW Card

1. Copyright 2011 Jeppesen Sanderson Inc.

Updated on Apr 20 2012 8:01AM

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Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used N/A	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Approach/Arrival Flown: Circling; Global Positioning System; RNAV					
VFR Approach/Landing: None					
Aircraft Information					
Aircraft Manufacturer BEECH		Model/Series A36		Serial Number E-741	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Retractable - Tricycle					
Amateur Built Acft? No	Number of Seats: 4	Certified Max Gross Wt. 3600 LBS	Number of Engines: 1		
Engine Type: Reciprocating	Engine Manufacturer: CONT MOTOR	Model/Series: IO-520-BB mod	Rated Power: 285 HP		
- Aircraft Inspection Information					
Type of Last Inspection Annual	Date of Last Inspection 12/2010	Time Since Last Inspection Hours	Airframe Total Time 5514 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes / C91	ELT Operated? Yes	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner MICROJET LLC		Street Address 426 W LUDWIG RD			
		City FORT WAYNE	State IN	Zip Code 46825-4002	
Operator of Aircraft ON FILE		Street Address ON FILE			
		City Fort Wayne	State IN	Zip Code 46845	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Personal					

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First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 46
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Sex: M	Seat Occupied: Left	Occupational Pilot? No	Certificate Number: On File
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Certificate(s): Private

Airplane Rating(s): Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): None

Current Biennial Flight Review? 06/2010

Medical Cert.: Class 3	Medical Cert. Status: With Waivers/Limitations	Date of Last Medical Exam: 05/2010
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	1300									
Pilot In Command(PIC)										
Instructor										
Instruction Received										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? Yes	Second Pilot? No
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point Fort Wayne	State IN	Airport Identifier SMD	Departure Time 1730	Time Zone EDT
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Destination Same as Accident/Incident Location	State	Airport Identifier CVX	
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Type of Clearance: IFR

Type of Airspace:

Weather Information

Source of Wx Information:
Commercial Weather Service

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
CVX	1935	EDT	669 Ft. MSL	1 NM	180 Deg. Mag.
Sky/Lowest Cloud Condition:			Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Overcast		200 Ft. AGL	Visibility: 2	SM	Altimeter: 29.72 "Hg
Temperature: 11 °C	Dew Point: 11 °C	Weather Conditions at Accident Site: Instrument Conditions			
Wind Direction: 260	Wind Speed: 9	Wind Gusts: 15			
Visibility (RVR): Ft.	Visibility (RVV): SM				
Precip and/or Obscuration:					

Accident Information		
Aircraft Damage: Substantial	Aircraft Fire: None	Aircraft Explosion: None

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers	1	1			2
- TOTAL ABOARD -	2	1			3
Other Ground					
- GRAND TOTAL -	2	1			3

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National Transportation Safety Board

FACTUAL REPORT
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Occurrence Date: 06/24/2011

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Aaron M. Sauer

Additional Persons Participating in This Accident/Incident Investigation:

Kenneth J Hughes
Federal Aviation Administration
Grand Rapids, MI

Paul E Yoos
Hawker Beechcraft Corporation
Wichita, KS

Rodney Martinez
Continental Motors Inc
Mobile, AL