# Aviation Investigation Final Report

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| **Location:** | Karnack, Texas | **Accident Number:** | CEN12FA421 |
| **Date & Time:** | July 7, 2012, 04:04 Local | **Registration:** | N987GM |
| **Aircraft:** | Beech E90 | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | Windshear or thunderstorm | **Injuries:** | 1 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Positioning | | |

## Analysis

Before the flight, the pilot did not obtain a weather briefing and departed without approval from company personnel. The airplane departed the airport about 0230 and climbed to 14,500 feet mean sea level. The pilot obtained visual flight rules (VFR) flight following services from air traffic control (ATC) personnel during the flight. While the airplane was en route, ATC personnel advised the pilot that an area of moderate precipitation was located about 15 miles ahead along the airplane's flight path. The pilot acknowledged the transmission and was then directed to contact another controller. About 3 minutes later, the new controller advised the pilot of an area of moderate to extreme precipitation about 2 miles ahead of the airplane. The pilot responded that he could see the weather and asked the controller for a recommendation for a reroute. The controller indicated he didn't have a recommendation, but finished by saying a turn to the west (a right turn) away from the weather would probably be better. The pilot responded that he would make a right turn. There was no further radio contact with the pilot. Flight track data indicated the airplane was in a right turn when radar contact was lost. A review of the radar data, available weather information, and airplane wreckage indicated the airplane flew through a heavy to extreme weather radar echo containing a thunderstorm and subsequently broke up in flight. Postaccident examination revealed no mechanical malfunctions or anomalies with the airframe and engines that would have precluded normal operation.

During the VFR flight, the pilot was responsible for remaining in VFR conditions and staying clear of clouds. However, Federal Aviation Administration directives instruct ATC personnel to issue pertinent weather information to pilots, provide guidance to pilots to avoid weather (when requested), and plan ahead and be prepared to suggest alternate routes or altitudes when there are areas of significant weather. The weather advisories and warnings issued to the pilot by ATC were not in compliance with these directives. The delay in providing information to the pilot about the heavy and extreme weather made avoiding the thunderstorm more difficult and contributed to the accident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadvertent flight into thunderstorm activity, which resulted in the loss of airplane control and the subsequent exceedance of the airplane's design limits and in-flight breakup. Contributing to the accident was the failure of air traffic control personnel to use available radar information to provide the pilot with a timely warning that he was about to encounter extreme precipitation and weather along his route of flight or to provide alternative routing to the pilot.

## Findings

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| **Environmental issues** | Thunderstorm - Contributed to outcome |
| **Personnel issues** | Aircraft control - Pilot |
| **Aircraft** | Spar (on wing) - Capability exceeded |
| **Personnel issues** | (general) - ATC personnel |

# Factual Information

## History of Flight

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| **Maneuvering** | Windshear or thunderstorm (Defining event) |
| **Uncontrolled descent** | Collision with terr/obj (non-CFIT) |

HISTORY OF FLIGHT

On July 7, 2012, at 0404 central daylight time, a Beech E90, N987GM, operated by Win Win Aviation, Inc., De Kalb, Illinois, was destroyed when it impacted terrain near Karnack, Texas. The commercial pilot was fatally injured. No flight plan had been filed for the 14 Code of Federal Regulations Part 91 positioning flight. The flight departed from the De Kalb Taylor Municipal Airport (DKB), DeKalb, Illinois, approximately 0230, and was en route to Brownsville, Texas.

According to the owner of Win Win Aviation, the airplane was recently purchased from an air medical company and underwent maintenance and refurbishment for sky diving operations. The pilot was a contract pilot for Win Win Aviation and was hired to fly the airplane to Mexico to deliver aircraft parts, and ultimately deliver the airplane to a sky diving company.

The pilot arrived at the operator's facility at DeKalb approximately 1430 on July 6th, and inquired about the status of the airplane. The owner of Win Win Aviation instructed the pilot to await the return the chief mechanic prior to the intended flight, in order for the chief mechanic to inspect a recent propeller installation and return the airplane to service. The chief mechanic was out of town and expected to return later in the evening. The pilot then returned to a hotel approximately 1600.

The chief mechanic returned to the facility approximately 0010 on July 7th. The mechanic called the owner and reported he was too tired to complete the required inspection. Prior to leaving the facility, the chief mechanic saw the pilot and instructed him to return in the morning. The chief mechanic left the facility and had no further communication with the pilot.

The pilot departed from DKB approximately 0230. At 0336:45, the pilot contacted the Dallas Fort Worth Air Route Traffic Control Center (ZFW ARTCC) Sector 27 after being switch by the previous ZFW sector and reported level at 14,500 feet mean sea level (msl). The ZFW Sector 27 controller acknowledged the pilot and issued the Texarkana altimeter setting of 29.97 inches of mercury. At 0359:12, the ZFW Sector 27 controller advised the pilot of an area of moderate precipitation at a distance of 15 miles and at his 12 o'clock position. The pilot acknowledged the transmission. At 0359:28, the ZFW Sector 27 controller switched the airplane to ZFW Sector 52.

At 0359:57, the pilot checked in with the ZFW Sector 52 controller and reported his altitude was 14,500 feet msl. The controller responded with an altimeter setting of 29.99. At 0401:11, a United Airlines Flight 335, an Airbus Industries A320 flying from Los Angeles, California, to Orlando, Florida, checked in on the ZFW Sector 52 frequency and reported his altitude of flight level 350 (35,000 feet msl). At

0402:37, the United pilot requested a left deviation for weather and the deviation was approved by the ZFW Sector 52 controller.

At 0402:55 the ZFW Sector 52 controller transmitted to the accident airplane pilot, "N7GM, I'm showing some moderate, heavy and extreme precipitation now 12 o'clock and about two miles, it just popped up and became extreme there, it's gonna extend to the south about another one five miles". The pilot responded, "Ah, yeah I'm seeing some weather, sir do you have a recommendation deviation left or right degrees?" The Sector 52 controller responded, "N7GM, no I really don't, it looks like you are heading right for it, it looks like the heavier stuff most of it is to your left, to the east so maybe going west would be better". At 0403:27, the pilot responded, "Alright sir, I'll make a 25 right".

At 0403:55 the pilot of N987GM transmitted "Fort Worth Center, I'm gonna keep it going right here". The ZFW Sector 52 controller acknowledged the transmission and at 0404:01 transmitted "That's fine N7GM, whichever way you need to go is fine".

At 0405:08 the ZFW Sector 52 controller asked the pilot if he was through the weather, and there was no response. Starting at 0405:37, the ZFW Sector 52 controller made three unsuccessful attempts to contact the pilot with the last transmission at 0407:15.

Witnesses who were residents in the vicinity of the accident site reported that a severe thunderstorm passed through that area about the time of the accident. They reported that the thunderstorm contained lightning, thunder, and heavy rain.

## PERSONNEL INFORMATION

The pilot, who was seated in the left front seat position, held a commercial pilot certificate with airplane multi-engine land and airplane single-engine land ratings. The commercial certificate contained the following limitation, "Not valid for carriage of persons for hire in airplanes on cross-country flights of more than 50 nautical miles or at night." The pilot was issued a second-class medical certificate on June 14, 2012, with a restriction for corrective lenses for distant and near vision. According to the Federal Aviation Administration's (FAA) airman records, the pilot reported on his most recent medical application he had accumulated 5,300 total flight hours.

According to records obtained from the operator, the pilot's most recent flight review was satisfactorily conducted on July 6, 2011. The records, which were excerpts of the pilot's logbook, indicated that as of July 6, 2011, the pilot had accumulated 9,103.6 total flight hours and 6,525.4 hours in multi-engine airplanes. The logbook also indicated the pilot had accumulated 718 actual instrument flight hours. The pilot did not hold an airplane instrument rating.

The operator reported that the pilot was an experienced, good pilot, and most often flew for sky diving companies. The operator also stated the pilot did not typically fly with a handheld global position system (GPS), and probably was not familiar with the operation of the installed weather avionics on the airplane. The accident flight was the first flight for the pilot in the accident airplane.

## AIRCRAFT INFORMATION

The accident airplane, a Beech E90 (King Air), serial number LW-65, was a high performance, low wing, semi-monocoque design airplane. The airplane was powered by two 680-horsepower Pratt &

Whitney PT6A-28 engines (serial numbers PCE-41799 and PCE-50620). The airplane was equipped with 4-bladed, Hartzell HC-B4TN-3A propellers. Flight controls were installed for the left seat only. The airplane's maximum takeoff weight was 10,100 pounds (lbs) and useful load was 3,681 lbs.

The airplane was issued a standard airworthiness certificate on August 20, 1973, and was maintained under a continuous airworthiness inspection program.

According to the maintenance records obtained from the owner, the airplane underwent Phase 1 through Phase 4 inspections and additional miscellaneous maintenance that was completed on June 30, 2012. At the time of the maintenance, the airframe had a total time of 15,081.2 hours. The left engine (serial number PCE-41799) had accumulated 31,056 hours and 45,534 cycles since new; 5,524 hours since overhaul, and 1,214 hours since hot section overhaul. The right engine (serial number PCE-50620) had accumulated 7,859 hours and 8,373 cycles since new; and 3,619 hours and 2,630 cycles since overhaul.

The airplane was equipped with a Bendix/King RDS-82 weather radar system and IN-182A radar indicator. The system was capable of providinig continuous en route weather information relative to cloud formations, rainfall rate, thunderstorms, and storm detection up to a distance of 240 miles. The indicator contained front panel selections of power, range, tilt adjustment of antenna, receiver gain control, hold, self-test, and stab adjustment. The airplane was also equipped with a BFGoodrich Avionics Systems WX-900 Weather Mapping System stormscope.

## METEOROLOGICAL INFORMATION

Harrison County Airport (ASL), 3 miles southeast of Marshall, Texas, had an Automated Weather Observing System (AWOS) whose reports were not supplemented by a human observer. ASL was located 10 miles southwest of the accident site.

At 0335, the ASL AWOS reported the wind calm, visibility 10 statute miles, scattered clouds at 8,000 feet, broken ceiling at 12,000 feet, temperature 21 degrees Celsius, dew point 19 degrees Celsius, and altimeter setting of 30.01 inches of mercury.

At 0355, the ASL AWOS reported the wind calm, visibility 10 statute miles, broken ceiling at 8,000 feet, broken skies at 11,000 feet, temperature 22 degrees Celsius, dew point 20 degrees Celsius, and altimeter setting of 30.01 inches of mercury.

At 0415, the ASL AWOS reported the wind from 190 degrees at 3 knots, visibility 10 statute miles, scattered clouds at 8,000 feet, scattered clouds at 11,000 feet, temperature 22 degrees Celsius, dew point 20 degrees Celsius, and altimeter setting of 30.01 inches of mercury.

A radar summary image from 0415 with reflectivity values over the southern United States showed the accident site located in an area with 40 to 50 decibel (dBZ) values. The reflectivity values indicated very strong to intense echoes over the accident site around the accident time.

The closest National Weather Service Weather Surveillance Radar-1988, Doppler (WSR-88D) was Shreveport Regional Airport (SHV), Shreveport, Louisiana, located 23 miles southeast of the accident site. The SHV WSR-88D base reflectivity image for the 6.0 degree elevation scans initiated at 0357, 0402, and 0408, indicated that the airplane likely encountered conditions between a video integrator and processor (VIP) intensity level of 4 and 6, or very strong to extreme conditions. Lightning flash data

from 0359 to 0404 revealed that lightning occurred near the accident site and in front of the flight track at least 5 minutes before the accident time.

At 0402, a 3-dimensional view of the SHV WSR-88D base reflectivity for the elevation scans showed the accident flight encountering an area of thunderstorms directly along the flight track.

Pilot reports (PIREPs) close to the accident site were reviewed from 3 hours prior to the accident to 3 hours after the accident time, and no PIREPs were disseminated.

No SIGMENTs, CWSU Advisory or Meteorological Impact Statements, or AIRMETs were active for the accident site at the accident time.

There was no record of the accident pilot receiving an official or unofficial weather briefing prior to departure.

RADAR AND COMMUNICATIONS

Radar data was obtained from an airport surveillance radar (ASR-11) located at Barksdale Air Force Base that also supplied data to ZFW ARTCC. The last recorded radar plot occurred at 0403:54 at an altitude of 14,600 feet msl. A Weather and Radar Processor (WARP) plot provided by the FAA Technical Center in Atlantic City, New Jersey, depicted an area of extreme intensity precipitation in the flight path and was representative of the weather information being displayed to sector 52 controller at the time of the accident.

According to the plotted WARP weather map obtained from the FAA, from the beginning of the sector 52 WARP data at 0354:41 until 0358:55, the weather system that the accident airplane was flying toward was displayed to the sector 52 controller as moderate and heavy precipitation. At 0358:55, the WARP system updated the display to show the precipitation as moderate, heavy, and extreme intensity, which continued until at least 0409:35, the end of the WARP data provided by the FAA.

Operations Manager In Charge (OMIC)

On the day of the accident, the OMIC was working a mid-watch shift from July 6, 2012, at 2230 to 0630 on July 7, 2012. At the time of the accident, he was working the Operations Manager desk and had been conducting direct and indirect monitoring of the facility operations. He indicated that by 0400, he was tired and could not do much more. Approximately 0408, the Cedar Creek specialty sector 29 controller told the OMIC he was needed in the Cedar Creek specialty.

The OMIC went to the Cedar Creek specialty where the sector 52 controller explained he had a simultaneous loss of radar and radio communications with the accident airplane. The OMIC looked at the radar display and saw a coast track with an altitude of 14,500 feet msl. He stated that there were "popcorn storms" in the area; most were moderate with areas of heavy and extreme precipitation as had been typical throughout the week. He added that most of the storms were not in the area for very long, and both the sector 29 and 52 controllers stated the weather had built rapidly.

The OMIC immediately started making notifications of a possible aircraft accident or incident.

The OMIC indicated there had been no irregularities with the radar or weather data throughout the watch, and the weather had been normal with scattered storms. He reported that it was characteristic for the "popcorn storms" to pop up or die down quickly.

He indicated the storms on the morning of July 7, 2012, ranged from moderate to extreme precipitation intensity. The storms had been building from 1200 to 1300 on July 6, 2012, until 2100, and then began to fall apart. He felt like these "popcorn storms" were the worst storms, more dangerous than a line of thunderstorms because they grew or dissipated so fast.

Frisco Specialty Sector 27 Controller

On the day of the accident, the controller worked a mid-watch shift from July 6, 2012, at 2230 to 0630 on July 7, 2012, and was assigned to the Frisco Specialty sector 27. The controller stated he had just come off a 2.5 hour recuperative break and took the sector at 0340. He received a briefing from the off going controller. His first transmission after taking the position was to tell the accident pilot about the weather just ahead of the airplane, which was depicted on the radar display as moderate precipitation. After the pilot acknowledged the weather, the controller switched the pilot to sector 52. A short time later, the sector 29 controller told him that the sector 52 controller had lost radar and radio communications with the airplane.

The controller stated that issuing weather to a pilot was on a workload permitting basis. He reported no anomalies with the radar or weather systems when he assumed his watch, and had not seen any glaring anomalies in the system before switching the airplane to sector 52.

Cedar Creek Specialty Sector 29 Controller

On the day of the accident, the controller worked a mid-watch shift from July 6, 2012, at 2230 to 0630 on July 7, 2012, working sectors 29/89 combined in the Cedar Creek specialty. He reported the traffic volume was normal with the usual reduced number of aircraft, although he did not recall how much traffic he was working at the time of the accident. After reviewing the accident replay during the interview, he said he was working one aircraft at the time of the accident, which was the accident airplane.

The controller became aware of the situation with the accident airplane when he overheard the sector 52 controller talking to the pilot about the weather and trying to give him options. The controller said that after he heard the accident pilot indicate he would be going farther right around the weather, it piqued his interest. He observed moderate returns in the sector 52 area.

When the sector 52 controller told him that the flight track had gone into coast, he looked at the sector 52 radar display and observed moderate, heavy, and extreme precipitation returns. He attempted to contact the airplane without success.

Cedar Creek Specialty Sector 52 Controller

On the day of the accident, the controller worked a mid-watch shift from July 6, 2012, at 2230 to 0630 on July 7, 2012, working sector 52 in the Cedar Creek specialty. The controller had only worked the accident airplane for a few moments when UAL 335 checked on frequency and requested a deviation for weather. The controller approved the left deviation for UAL 335, and then advised the accident pilot that

there was an area of moderate, heavy, and extreme weather at 12 o'clock and 2 miles. The pilot then asked for a suggested turn to avoid the weather, and the controller told him a right turn to the west looked better from his presentation and approved a deviation.

The controller recalled that there had been scattered areas of moderate precipitation throughout the area all evening, and the first time he had observed the heavy or extreme weather was when UAL 335 had requested the left deviation to avoid it. The controller stated that he had been very focused on his radar display and had been watching his traffic. He stated he was not engaged in any conversation with other controllers.

The controller did not recall if the accident airplane had been tracking towards the moderate weather or why he did not call the moderate precipitation when the pilot checked on frequency. He believed the weather had been scattered all evening and it would not be a factor.

The controller stated there were no known anomalies with the radar system, and there had not been any heavy or extreme precipitation shown on his display before he told the accident pilot about it.

After losing contact with the accident airplane, the controller attempted to locate the airplane by contacting the previous controller to see if the pilot had switched back to that frequency. He also attempted to contact the pilot utilizing back up communications and secondary frequencies.

## WRECKAGE AND IMPACT INFORMATION

Portions of the airplane were located by the Civil Air Patrol (CAP) and Texas Department of Public Safety officer approximately 1100. The fuselage came to rest in a wooded area. The wings, engines, horizontal stabilizers, and vertical stabilizer were separated from the fuselage and located within a 1 mile diameter of the fuselage. No evidence of in-flight or post-impact fire was noted.

### Fuselage

The fuselage was damaged due to separation of the left and right hand wings, separation of the horizontal and vertical stabilizers and impact with the ground. The fuselage complete from fuselage station (FS) 30.00 to FS 380.00 came to rest on the left hand side. The fuselage was crushed from right to left and deformed into an oval shape from its original semi cylindrical shape.

All of the examined fracture surfaces exhibited features consistent with overstress failures with no evidence of fatigue.

### Left Wing

The wing is defined as having three primary sections; a center section from left wing station (WS) 99.61 to right WS 99.61 and two outboard wing sections from WS 99.61 to WS 303.735. The left wing fractured at about WS 28.975 and about WS 169.82. The first fracture was located at the wing to side of fuselage intersection and the second was located about 70 inches outboard of the center wing to outboard wing splice between the inboard end of the aileron and the outboard end of the flap at about WS 169.82. At both fracture locations the wing skins, stringers and spar caps were bent upward in a direction consistent with an upward bending load on the wings. The inboard section of the wing from about WS 28.975 to about WS 169.82 had minimal damage to the upper and lower skin panels outside

of the two primary fracture locations and a aileron cable tear in the upper wing skin from about WS 88.0 to about WS 169.82. The outboard section of the wing had minimal damage to the skin panels except for the upper skin panel adjacent to the aileron bell crank located on the rear spar on the wing.

The leading edge inboard of the engine was destroyed and the leading edge from about WS 99.61 to about WS 169.82 was covered in mud and dirt and deformed inward consistent with impact damage. The inboard leading edge also had multiple control cable transfer marks. The two most prominent were located about 28 and 31 inches outboard of the wing splice about WS 131.23. There was also red paint transfer just inboard of the leading edge de-ice boot about WS 120.72. The leading edge from about WS 184.01 to about WS 266.73 was in overall good condition.

The aileron separated from each of the three wing attachment points. The aileron fractured into three pieces and the outboard 14 inches and inboard 27 inches were not recovered at the accident site.

The outboard flap remained attached and was retracted in the 0 degree position. The inboard flap less the inboard 18 inches of the flap remained attached and was retracted in the 0 degree position.

All of the examined fracture surfaces exhibited features consistent with overstress failures with no evidence of fatigue.

Right Wing

The right wing separated from about WS 28.975 at the wing to fuselage intersection. The front and rear spar caps and stringers were bent upward in a direction consistent with an upward bending load on the wings. The upper and lower wing skins exhibited minimal damage aside from some localized damage consistent with impact with the ground. The outboard section of the wing exhibited evidence of up bending beginning about WS 211.92.

The leading edge inboard of the engine was destroyed and the leading edge from about WS 120.72 to about WS 198.48 was intact and had minimal impact damage. From about WS 198.48 to about WS 266.73 the upper row of fasteners common to the front spar were sheared separating the upper edge of the leading edge from the wing.

The aileron separated from each of the three wing attachment points. The inboard 29 inches from the inboard to center hinge fitting was recovered at the accident site.

Both flaps remained attached to the wing in the fully retracted 0 degree position.

All of the examined fracture surfaces exhibited features consistent with overstress failures with no evidence of fatigue.

Vertical Stabilizer

The vertical stabilizer separated from the fuselage at the front and rear spar attachment points. Both sides of the stabilizer exhibited evidence of impact damage and black transfer marks from the leading edge to training edge across the registration numbers. The left side of the stabilizer was torn open from just aft of the front spar to the rear spar.

The rudder separated from the stabilizer at the hinges. There was impact damage to both the right and left sides and black transfer from the leading to trailing edges just above the registration numbers. The upper portion of the rudder from the upper hinge to the tip was severely damaged and or missing.

All of the examined fracture surfaces exhibited features consistent with overstress failures with no evidence of fatigue.

Horizontal Stabilizer

Both the right and left hand horizontal stabilizers separated from the fuselage support structure at the forward and rear spar attachment points. The right hand stabilizer exhibited evidence of down bending beginning about horizontal stabilizer station (HS) 54.06. The left hand horizontal stabilizer exhibited impact damage from about HS 63.0 inboard. The leading edge was also fractured from about HS 45.12 to about HS 54.06. There was red paint transfer to the left hand upper skin panel in multiple locations between about HS 13.8 to about HS 54.06. A small piece aluminum with yellow primer and red metallic paint was lodged in the left upper skin panel about HS 36.18 and about 7 inches forward of the front spar. The rudder was painted with red metallic paint.

Both the left and right hand elevators separated from the stabilizers at the hinges and were not recovered at the accident site. Both the right and left elevator balance weights were recovered at the accident site.

All of the examined fracture surfaces exhibited features consistent with overstress failures with no evidence of fatigue.

Passenger Doors

The main cabin door was closed and in the fully latched position.

Landing Gear

The nose and main gears were in the retracted position.

Left Engine and Propeller Assembly

The left engine separated from the left engine nacelle and the propeller separated from the engine at the propeller shaft. The propeller assembly was located next to the engine. The propeller shaft fracture surface exhibited features consistent with an overstress failure with no evidence of fatigue.

Right Engine and Propeller Assembly

The right engine separated from the right engine nacelle and the propeller assembly remained attached to the propeller shaft.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Tyler Forensic Center, Tyler, Texas, on July 10, 2012. According to the autopsy, the cause of death for the pilot was multiple blunt force injuries.

Toxicological tests were performed by the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma. The tests were not performed for carbon monoxide and cyanide. The following drugs were detected:

12 (mg/dL, mg/hg) Ethanol detected in Brain
No Ethanol detected in Muscle
Oxazepam detected in Urine
0.048 (ug/ml, ug/g) Temazepam detected in Urine
2460 (mg/dl) Glucose detected in Urine

The toxicology report indicated that putrefaction was noted in the samples.

Oxazepam is a tranquilizer used in the treatment of anxiety disorders and is a metabolite of Diazepam, Nordiazepam, and Temazepam.

Temazepam (Restoril®) is a prescription medication that is a benzodiazepine hypnotic agent. It is used for the short-term treatment of insomnia.

According to the FAA, on the pilot's most recent FAA medical certificate application, he did not report using any medication. In addition, he reported that he did not have any type of diabetes.

A medical kit was found within the airplane wreckage. The medical kit contained equipment and medication typically used to treat diabetes.

ADDITIONAL INFORMATION

FAA Order 7110.65, "Air Traffic Control" provides guidance and instruction to controllers on actions to take when issuing weather information to pilots. Paragraph 2-6-4 states in part:

a. Issue pertinent information on observed/reported weather or chaff areas. When requested by the pilot, provide radar navigational guidance and/or approve deviations around weather or chaff areas.

1. Issue weather and chaff information by defining the area of coverage in terms of azimuth (by referring to the 12-hour clock) and distance from the aircraft in terms of fixes or distance and direction from fixes.

2. When a deviation cannot be approved as requested and the situation permits, suggest an alternative course of action.

b. In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes.

NOTE - Weather significant to the safety of aircraft includes such conditions as tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, wind shear, microbursts, moderate to extreme turbulence (including CAT), and light to severe icing.

d. Use the term "precipitation" when describing radar-derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word "turbulence" in describing radar-derived weather.

1. LIGHT
2. MODERATE
3. HEAVY
4. EXTREME

NOTE - Weather and Radar Processor (WARP) does not display light intensity.

f. EN ROUTE. When issuing Air Route Suerveillance Radar (ARSR) precipitation intensity use the following:

1. Describe the lowest displayable precipitation intensity as MODERATE.
2. Describe the highest displayable precipitation intensity as HEAVY to EXTREME.

g. When operational/equipment limitations exist, controllers must ensure that the highest available level of precipitation intensity within their area of jurisdiction is displayed.

## Pilot Information

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| **Certificate:** | Commercial | **Age:** | 51,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | April 6, 2011 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | July 6, 2011 |
| **Flight Time:** | 5300 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Beech | **Registration:** | N987GM |
| **Model/Series:** | E90 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | LW-65 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | |
| **Date/Type of Last Inspection:** | June 30, 2012 Continuous airworthiness | **Certified Max Gross Wt.:** | 10100 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 2 Turbo prop |
| **Airframe Total Time:** | 15082 Hrs as of last inspection | **Engine Manufacturer:** | U/A CANADA |
| **ELT:** | C91 installed, activated, aided in locating accident | **Engine Model/Series:** | PT6A-28 |
| **Registered Owner:** | Win Win Aviation, Inc | **Rated Power:** | 680 Horsepower |
| **Operator:** | Win Win Aviation, Inc | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Night/dark |
| **Observation Facility, Elevation:** | ASL,357 ft msl | **Distance from Accident Site:** | 10 Nautical Miles |
| **Observation Time:** | 03:55 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | 8000 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | Broken / 11000 ft AGL | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.01 inches Hg | **Temperature/Dew Point:** | 22°C / 20°C |
| **Precipitation and Obscuration:** | In the vicinity - Thunderstorm - Rain | | |
| **Departure Point:** | De Kalb, IL (DKB ) | **Type of Flight Plan Filed:** | VFR |
| **Destination:** | Brownsville, TX (BRO ) | **Type of Clearance:** | VFR |
| **Departure Time:** | 02:30 Local | **Type of Airspace:** | Unknown |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Fatal | **Latitude, Longitude:** | 32.661945,-94.219718(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Sauer, Aaron |
| **Additional Participating Persons:** | David Shugart; Federal Aviation Administration; Dallas, TX<br>Ernest Hall; Beechcraft; Wichita, KS<br>Willem A Wiese; Win Win Aviation; IL |
| **Original Publish Date:** | November 6, 2013 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | The NTSB traveled to the scene of this accident. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=84219 |