National Transportation Safety Board
Aviation Accident Preliminary Report

Location:	Argyle, TX	**Accident Number:**	CEN15FA136
Date & Time:	02/04/2015, 2109 CST	**Registration:**	N441TG
Aircraft:	CESSNA 441	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

On February 4, 2015, about 2109 central standard time, a Cessna model 441 twin turbo-prop airplane, N441TG, was substantially damaged when it collided with terrain following a loss of control during an instrument approach to Denton Municipal Airport (DTO), Denton, Texas. The commercial pilot was fatally injured. The airplane was registered to Del Air Enterprises II, LLC, and was operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 while on an instrument flight rules (IFR) flight plan. Night instrument meteorological conditions prevailed for the cross-country flight that departed Willmar Municipal Airport (BDH), Willmar, Minnesota, about 1829.

According to preliminary Federal Aviation Administration (FAA) Air Traffic Control data, at 2050:47 (hhmm:ss), the accident flight established contact with Dallas-Fort Worth Terminal Radar Approach Control and reported being level at 4,000 feet mean sea level (msl). According to radar data, the flight was located about 35 miles northwest of DTO and was established on a southbound course at 4,000 feet msl. The approach controller issued the current weather conditions at DTO and told the pilot to expect the GPS runway 36 approach. At 2052:57, the approach controller told the pilot to fly direct WOBOS, an intermediate fix associated with the instrument approach. The plotted radar data showed the airplane turned to the south-southeast to a direct course toward WOBOS. At 2059:35, the flight was cleared to descend to maintain 3,000 feet msl and the pilot acknowledged the altitude clearance.

At 2101:24, the DTO tower controller advised the approach controller that a Cessna 172 had just landed at DTO and that the pilot reported light-to-moderate turbulence during approach along with an inflight visibility of about 1.5 miles. The approach controller subsequently advised the accident pilot of the light-to-moderate turbulence. At 2103:09, the flight was cleared to descend to maintain 2,500 feet msl and the pilot acknowledged the altitude clearance.

At 2103:23, the approach controller told the pilot to turn to a south heading. The pilot acknowledged the heading change and subsequently turned southbound. According to radar data, at 2104:09, the airplane descended below 2,500 feet msl. At 2104:26, the approach controller told the pilot to turn to an east heading. The pilot acknowledged the heading change, but according to radar data did not initiate the turn as requested. The airplane continued to

descend while on a southbound course until reaching 2,100 feet msl at 2104:46 when it began to climb. At 2104:59, after establishing that the flight had not turned to the assigned heading, the approach controller told the pilot to turn to a heading of 080 degrees. The pilot acknowledged the assigned heading and radar data showed the flight entering a climbing left turn toward the east.

At 2105:40, when the flight was 8 miles from the final approach fix (NULUX), the approach controller told the pilot to turn to a heading of 030 to intersect the final approach course, to maintain 2,500 feet msl until established on the final approach course, and that the flight was cleared for the GPS runway 36 approach. The pilot responded, "Okay, 030 maintain 2.5 until established on the approach." According to radar data, the flight turned to a north heading instead of the assigned heading of 030 degrees.

At 2106:17, the approach controller told the pilot to contact the DTO tower controller and the pilot replied with the correct frequency change. The flight continued due north until 2106:38, when it turned to a 030 degree course and subsequently descended through 2,500 feet msl at 2107:01. At 2107:16, the pilot established communications with the DTO tower controller. The tower controller told the pilot that the surface wind was 360 degrees at 19 knots with 25 knot gusts, and then cleared the flight to land on runway 36. The tower controller also asked the pilot if he had received the pilot report (PIREP) that had been issued by the proceeding Cessna 172. The pilot confirmed that he had received the PIREP from the approach controller. According to radar data, the airplane continued to descend as it intersected the final approach course and continued northbound toward NULUX.

At 2108:44, the automated air traffic control system issued a low altitude alert for the accident flight. The system presented the low altitude alert on both the control tower and the approach control radar displays. According to radar data, at the time of the low altitude alert, the airplane had descended to about 1,500 feet msl. At 2108:51, the tower controller told the pilot to "... check your altitude, you are still a couple of miles from the marker (NULUX), and uh believe your altitude should be about 2,100 there." The pilot replied, "Okay, going back up." According to radar data, following the altitude alert, the airplane continued to descend until the final radar return, recorded at 2109:11, about 2.5 miles south of NULUX at 1,000 feet msl (about 300 feet above the ground). At 2109:12, the tower controller transmitted again that the airplane was lower than the specified minimum descent altitude (2,000 feet msl) for that segment of the instrument approach. There was no response from the accident pilot.

According to preliminary airplane performance calculations, based on available radar data, during the time period 2106:43 to 2108:43, the airplane's ground speed decreased from about 145 knots to 95 knots and the airplane descended from 2,400 feet msl to 1,500 feet msl. During the final 28 seconds of radar data, the airplane's ground speed further decreased from 95 knots to 55 knots, while the descent rate decreased from 1,300 feet per minute to 650 feet per minute.

The flight path of the accident airplane was captured by a security video camera installed on

the exterior of a building that was located about 1/2 mile southeast of the accident site. The video camera, which was facing west, captured the accident airplane's wingtip navigation and strobe lights as it crossed from left to right at the upper portion of the camera's field of view. According to a preliminary review of the camera footage, the airplane entered the camera's field of view at 2108:48 and appeared to be in a wings level descent as it continued across the first half of the camera's lateral field of view. At 2109:00, the descent angle increased substantially before the airplane entered a near-vertical spiraling descent. The airplane's navigational lights and strobes were not visible after 2109:09.

According to 911-emergency calls received following the accident, several individuals reported hearing an airplane overfly their position at a low altitude followed by the sound of a large ground impact.

According to first responders with the Argyle Fire Department, upon arrival at the accident site, there was no evidence of ice or frost accumulation on the airplane's fuselage, wings, or tail. Additionally, the first responders reported that there was a substantial smell of Jet-A fuel at the accident site; however, there was no evidence of an explosion or postimpact fire. The pilot was seated in the left cockpit seat and was secured by a lap belt. The available shoulder harness did not appear to have been used.

The airplane wreckage was found in a grass-covered industrial storage yard located about 6.35 nautical miles (nm) south of the runway 36 threshold. The accident site was 400 feet northeast of the final radar return and about 207 feet right of the final approach course. There was no appreciable wreckage debris path identified at the accident site. The entire lower fuselage surface was crushed upward, consistent with a vertical impact while in a near level pitch attitude. The airplane tail section was found partially separated immediately aft of the aft pressure bulkhead. The vertical stabilizer, rudder, horizontal stabilizers, and elevators remained relatively undamaged. The leading edges of both wings, propeller spinners, and the airframe radome did not exhibit evidence of a ground impact. Aileron control cable continuity was established through an overstress separation of the aileron sector drive cable in the mid cabin area and a separation of the balance cable near the right wing root. All other flight control cables were continuous from the cockpit control inputs to their respective flight control surfaces. The landing gear was found extended. The wing flaps were found extended about 10-degrees. The stall warning horn and landing gear warning horn were extracted from the cockpit and both horns produced an aural tone when electrical power was applied. Switch continuity for the wing-mounted lift sensor was confirmed with an Ohmmeter. The left side altimeter's Kollsman window was centered on 30.24 inches-of-mercury. The right side altimeter's Kollsman window was centered on 30.09 inches-of-mercury. Both engines remained attached to their respective wing nacelle structures. The first stage compressor impeller of each engine exhibited blade tip bends that were opposite the direction of rotation and/or visible scoring as result of the rotating compressor impeller coming in contact with its respective shroud. The third axial turbine stage of each engine exhibited re-solidified metallic splatter on the turbine nozzle. The observed damage to the first compressor stage and third turbine stage was consistent with each engine operating at the time of impact. Both propeller assemblies remained attached to their respective engines. There were two approximately 12-inch deep

holes observed aside and slightly behind the engines where the rotating propellers had dug into the soil. Both propellers exhibited significant bending of their blades opposite the direction of rotation. Additionally, all propeller blades exhibited leading edge gouges, chordwise scratches, and polishing of the cambered side.

At 2103, the DTO automated surface observing system reported: wind 350 degrees at 17 knots, gusting 25 knots; an overcast ceiling at 900 feet above ground level (agl); 2 mile surface visibility with light rain and mist; temperature 3 degrees Celsius; dew point 3 degrees Celsius; and an altimeter setting of 30.26 inches of mercury.

The airplane's multi-hazard awareness system, the cockpit annunciator panel, and a cockpit multi-function display were retained for additional examination. Both engines and their control units were retained for possible teardown and/or testing. Additionally, the pilot's personal mobile phone, tablet computer, and a handheld device that provided his mobile devices with Attitude Heading Reference System (AHRS) information, weather data, ADS-B traffic, and GPS data were retained for potential retrieval of non-volatile data.

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	CESSNA	**Registration:**	N441TG
Model/Series:	441	**Aircraft Category:**	Airplane
Amateur Built:	No		
Operator:	Del Air Enterprises II, LLC	**Air Carrier Operating Certificate:**	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	DTO, 642 ft msl	**Observation Time:**	2103 CST
Lowest Cloud Condition:		**Conditions at Accident Site:**	Instrument Conditions
Lowest Ceiling:	Overcast / 900 ft agl	**Temperature/Dew Point:**	3°C / 3°C
Wind Speed/Gusts, Direction:	17 knots/ 25 knots, 350°	**Visibility**	2 Miles
Altimeter Setting:	30.26 inches Hg	**Type of Flight Plan Filed:**	IFR
Departure Point:	Willmar, MN (BDH)	**Destination:**	Denton, TX (DTO)

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal		

Administrative Information

Investigator In Charge (IIC):	Andrew T Fox
Additional Participating Persons:	Tony Baumgard; Federal Aviation Administration, North Texas FSDO; Irving, TX Ernest Hall; Textron Aviation; Wichita, KS David Studtmann; Honeywell Aerospace; Phoenix, AZ
Note:	The NTSB traveled to the scene of this accident.