Aviation Investigation Final Report

Location:	Rocksprings, Texas	**Accident Number:**	DFW07FA067
Date & Time:	February 9, 2007, 17:15 Local	**Registration:**	N69845
Aircraft:	Cessna 414	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Executive/Corporate		

Analysis

The 2,212-hour instrument rated commercial pilot collided with terrain while circling to land after completing an instrument approach to an uncontrolled non-towered airport. The airport had two instrument approaches to Runway 14; a VOR and a RNAV(GPS). The published minimums for a circling approach to Runway 32 are a 500 foot ceiling and one mile visibility (VOR14) and a 700 foot ceiling and one mile visibility for RNAV(GPS) to Runway 14. The weather at the airport at the time of the accident was reported as 300 overcast, visibility of 3/4 of a mile in mist, with winds from 020 degrees at 10 knots gusting to 14 knots. Two witnesses reported that the airplane circled over the airport and then descended straight to the ground. Radar data revealed that after the airplane made the instrument approach to Runway 14, at approximately 2,800 feet mean sea level (msl), the airplane initiated a circling turn to the left and a slight descent. The last radar hit showed the airplane at 2,600 feet at a groundspeed of 186 knots. A post impact fire consumed some of the airframe. The pilot's logbooks were not located during the course of the investigation and his instrument experience and currency could not be determined. The pilot was reported to be very familiar with the airport and the 2 instrument approaches. A detailed examination of the wreckage of the airplane failed to reveal any anomalies with the airframe, structure, or systems. Flight control continuity was established at the accident site. The engines were examined, and no mechanical anomalies were found. The propellers were shipped to the manufacturer's facility for examination and teardown. Both propellers were rotating at the time of ground impact. Neither of the two propellers was found in the feathered position. Blade damage was consistent with both propellers operating under power at the time of impact. No mechanical defects were noted with either propeller.

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 clearance with terrain. Contributing factors were the below approach/landing minimums weather and the drizzle/mist weather conditions.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: APPROACH - CIRCLING (IFR)

Findings
1. (F) WEATHER CONDITION - BELOW APPROACH/LANDING MINIMUMS

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings
2. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings
3. WEATHER CONDITION - DRIZZLE/MIST

Factual Information

HISTORY OF FLIGHT

On February 9, 2007, about 1715 central standard time, a twin-engine Cessna 414 airplane, N69845, was destroyed upon collision with terrain while circling to land during an instrument approach to the Edwards County Airport (ECU), near Rocksprings, Texas. The commercial pilot and his passenger were fatally injured. The airplane was owned and operated by Drilling Structures International, Inc., of Rocksprings, Texas. An instrument flight rules (IFR) flight plan was filed for the 240-mile cross-country flight that originated from the David Wayne Hooks Memorial Airport (DWH) near Houston, Texas, at 1544. Instrument meteorological conditions (IMC) prevailed for the business flight conducted under 14 Code of Federal Regulations Part 91.

A review of the radar data revealed the airplane departed the David Wayne Hooks Memorial Airport and continued towards Edwards County Airport. The en-route portion of the flight was routine. After the airplane executed the instrument approach to Runway 14, at approximately 2,800 feet mean sea level (msl), the airplane was observed initiating a circling approach by establishing a turn to the left and a slight descent. The last radar hit showed the airplane at 2,600 feet msl (field elevation was 2,368 feet) at a groundspeed of 186 knots.

Two witnesses located near the accident site reported observing the mishap. The first witness, who was driving on Highway 55 near ECU, reported that she observed an airplane on approach to landing. The witness stated that "the airplane started to circle [the airport] and then headed straight down." The airplane continued to descend toward the ground, bursting into flames upon ground impact, and continued rolling toward the highway.

The second witness, located at the airport, reported that he saw the airplane circle over [the airport] and then descend straight to the ground and explode.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate for airplane single-engine land, multi-engine land, and instrument airplane. He also held a flight instructor certificate for airplane single and multi-engine. His last first class Federal Aviation Administration (FAA) medical was issued on May 5, 2006. At the time of his last medical examination, the pilot reported a total of 2,212 flight hours. The pilot's logbooks were not located during the course of the investigation. The pilot's instrument experience and total time in the make and model could not be determined. The pilot was reported to have been hired by Drilling Structures International, Inc.. as the company's corporate pilot.

AIRCRAFT INFORMATION

The airplane was a 1975 model Cessna 414, which is a pressurized twin-engine, low-wing airplane, with retractable tricycle landing gear. The airplane is normally configured for 6 to 8 seats.

A review of the airplane's maintenance logbooks revealed that the last annual inspection was performed on May 23, 2006, at an airframe total time of 5,465.9 hours. The time accrued on the airplane since the last annual inspection was approximately 110.9 hours. The airplane was powered by two Continental TSIO-520-J reciprocating engines, rated at 310-horsepower each. Each engine was equipped with a McCauley 3-blade, full feathering, constant speed propeller.

METEOROLOGICAL INFORMATION

At 1725, the automated weather station at ECU reported winds from 020 degrees at 10 knots gusting to 14 knots, temperature 45 degrees Fahrenheit, dew point 43 degrees Fahrenheit, visibility three-quarters of a mile in mist, ceiling 300 feet overcast, and an altimeter setting of 30.23 inches of Mercury.

COMMUNICATIONS

The pilot contacted the Montgomery County FCF/AFSS and obtained five weather briefings prior to the flight. He also filed an IFR flight plan during his last briefing.

No emergency or distressed calls were received from the pilot of the accident airplane prior to the accident sequence.

AERODROME INFORMATION

The Edwards County Airport (ECU) is a public-use airport, located near Rock Springs, Texas. The airport does not feature a control tower, but has a local area common traffic advisory frequency (CTAF). ECU features a single asphalt runway. Runway 14-32 is 4,050 feet long and 50 feet wide. The field elevation is 2,368 feet mean sea level (msl). The airport has two instrument approaches to Runway 14; a VOR and a RNAV(GPS). The published minimums for a circling approach to Runway 32 are a 500 foot ceiling and one mile visibility (VOR14) and a 700 foot ceiling and one mile visibility (RNAV(GPS)14).

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was examined at the site on February 10-11, 2007. The fuselage of the airplane came to rest inverted on a magnetic heading of 015 degrees, approximately one-quarter mile east of Runway 14-32. The initial impact point was a ground scar that exhibited blue paint transfer on the soil consistent with the paint scheme of the airplane. The wreckage path continued on a 255-degree heading for approximately 160-feet to where the main

wreckage came to rest. The main wreckage consisted of the fuselage and empennage. The left engine and outboard section of the right wing were found near the main wreckage. The left wing was located under the fuselage. During the accident sequence both propellers separated from their respective engines. There was a post-impact fire. All major components of the airplane were accounted for at the scene.

The airplane and engines were recovered to Air Salvage of Dallas (ASOD), near Lancaster, Texas, for further examination. The propellers were shipped to McCauley Propeller Systems of Wichita, Kansas, for further examination.

On April 19, 2007, at ASOD, engine serial numbers 510387 and 521269 were examined under the supervision of the NTSB investigator-in-charge (IIC), along with representatives from Teledyne Continental Motors (TCM) and Cessna Aircraft Company.

The left engine was intact with the outboard section of the propeller governor separated, along with the turbocharger, and the fuel metering unit. The number six cylinder valve cover was crushed. The oil sump was crushed, and the exhaust pipes were missing aft of the cylinders. The balance tube was missing, and the number six cylinder head was damaged. The valve covers and the top spark plugs were removed, and the crankshaft was rotated. Continuity was confirmed to all of the cylinders and to the rear of the engine. Thumb compression was confirmed on all of the cylinders, except the number four cylinder. The number four intake valve was found in the slightly open position. The number four intake rocker arm was removed, and then thumb compression was obtained on the number four cylinder. The cylinders were borescoped and all of the cylinder domes and piston heads had normal deposits. The top spark plugs were worn out normal when compared to the Champion Check-A-Plug comparison card. They had light gray deposits in the electrode areas. Both magnetos were in place and had impact damage. The both magnetos sparked at all terminals when hand rotated.

The right engine was intact with the turbocharger, and propeller separated. About 1/3 of the crankshaft propeller attachment flange was separated, and the oil sump was crushed. All of the intake pipes were crushed and the exhaust pipes were separated aft of the cylinders. The hydraulic pump, starter, propeller governor, and fuel metering unit were separated. The left magneto was separated and hanging by the ignition leads. The fuel manifold valve was partly separated, and the left side valve covers were crushed. The top spark plugs and the valve covers were removed and the crankshaft was rotated. Continuity was confirmed to all of the cylinders and to the rear of the engine. Thumb compression was confirmed on all of the cylinders. The cylinders were borescoped and all of the cylinder domes and piston heads had normal deposits. All of the valves were in place. The top spark plugs were removed and examined. They had normal wear when compared to the Champion Check-A-Plug comparison card. They had light gray deposits in the electrode areas. The left magneto was separated from the crankcase half and had impact damage. The right magneto was in place and had very light impact damage. The left magneto sparked at all terminals when hand rotated. The right magneto would not spark when hand rotated. Water was observed dripping from the

interior of the magneto. The magneto was blown dry with compressed air, and then heated in an oven. After that the magneto sparked at all terminals when hand rotated.

The examination of the engines did not reveal any pre-impact mechanical anomalies that would have prevented normal engine operation.

On April 17, 2007, at McCauley Propeller Systems, the propellers were examined under the supervision of the NTSB IIC with representatives from McCauley Propeller Systems and Cessna Aircraft Company. The examination of the propellers did not reveal any pre-impact mechanical anomalies that would have prevented normal operation. Examination of the propellers revealed that neither propeller was feathered at the time of impact.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy and toxicology examination was performed by the Bexar County Medical Examiner's Office, San Antonio, Texas on February 11, 2007.

TESTS AND RESEARCH

The Edwards County Airport Automated Weather Observing System (AWOS) annual certification inspection was performed December 19, 2006. An additional inspection was performed February 15, 2007. All systems were operating normal and no equipment malfunctions were reported.

ADDITIONAL INFORMATION

The wreckage was released to the owner's representative on April 19, 2007.

Pilot Information

Certificate:	Commercial	**Age:**	32,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	May 1, 2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2212 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N69845
Model/Series:	414	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	414-0637
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	May 1, 2006 Annual	**Certified Max Gross Wt.:**	6350 lbs
Time Since Last Inspection:	111 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5466 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-J
Registered Owner:	Drilling Structures International, Inc.	**Rated Power:**	310 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ECU	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	17:25 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:		**Visibility**	0.75 miles
Lowest Ceiling:	Overcast / 300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.22 inches Hg	**Temperature/Dew Point:**	7°C / 6°C
Precipitation and Obscuration:	In the vicinity - None - Mist		
Departure Point:	HOUSTON, TX (DWH)	**Type of Flight Plan Filed:**	IFR
Destination:	Rocksprings, TX (ECU)	**Type of Clearance:**	IFR
Departure Time:	15:44 Local	**Type of Airspace:**	

Airport Information

Airport:	Edwards County Airport ECU	**Runway Surface Type:**	Asphalt
Airport Elevation:	2368 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	32	**IFR Approach:**	Circling
Runway Length/Width:	4050 ft / 50 ft	**VFR Approach/Landing:**	None

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:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	30.010198,-100.209152(est)

Administrative Information

Investigator In Charge (IIC):	Hatch, Craig
Additional Participating Persons:	Bill Bumps; FAA, FSDO; San Antonio, TX Henry Soderland; Cessna Aircraft Company; Wichita, KS Tom Knopp; McCauley Propellers Systems; Wichita, KS John Kent; Teledyne Continental Aircraft Engines; Mobile , AL
Original Publish Date:	July 25, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65278