Aviation Investigation Final Report

Location:	DeFuniak Springs, Florida	**Accident Number:**	ERA12FA326
Date & Time:	May 9, 2012, 11:10 Local	**Registration:**	N9001N
Aircraft:	GUTIERREZ PABLINO HUMMEL BIRD	**Aircraft Damage:**	Substantial
Defining Event:	Aerodynamic stall/spin	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses reported observing the airplane porpoising along its longitudinal axis during its climb after takeoff. About 300 feet above ground level, the airplane pitched up to a nose-high attitude and rolled to the right; it subsequently impacted the ground in a right-wing-low, nose-down attitude. Postaccident examination did not reveal any preimpact mechanical malfunctions or abnormalities that would have precluded normal operation. However, the weight of the airplane (not including fuel) plus the weight of the pilot exceeded the airplane's maximum gross takeoff weight and the center of gravity (CG) was aft of the most rearward limit. Although any fuel would have moved the CG forward of the most rearward limit, it also would have increased the airplane's takeoff weight. The pilot reported to his aviation medical examiner (AME) that the airplane was having "great" difficulty with longitudinal stability. He also noted that his weight gain caused the airplane to be "over gross," most likely causing the control problems. The AME advised the pilot to stop flying the airplane.

Because the airplane was at or aft of the rear CG limit, it would have been very sensitive in pitch control and may even have been at or near a dynamically unstable flight regime in terms of pitch handling. Accordingly, the airplane would have required more nose-down trim adjustment. Additionally, because stall speeds increase as gross weight increases, the airplane would have stalled at a higher airspeed. Therefore, it is likely that, during the climb, the airplane stalled at a higher airspeed than the pilot would have expected due to its exceedence of the maximum gross weight and that it subsequently entered a spin.

A review of the pilot's logbook indicated that he had accumulated only 4.4 flight hours in the 2 years preceding the accident flight with only 0.3 hour in the accident airplane. It is likely that the pilot's lack of experience in the airplane make and model contributed to his decision to take off with the airplane in an overweight condition and his inability to understand the seriousness of the situation. Although the postmortem toxicology testing was positive for three drugs used in the treatment of hypertension, none of the medications should have been impairing and were unlikely to have 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 failure to maintain airplane control due to the airplane's exceedence of its maximum gross weight and center of gravity's most rearward limit and his lack of familiarity with the airplane make and model, which resulted in an aerodynamic stall and subsequent spin. Contributing to the accident was the pilot's decision to knowingly operate the airplane over the maximum allowable gross weight with reduced longitudinal stability.

Findings

Aircraft	CG/weight distribution - Capability exceeded
Aircraft	Maximum weight - Capability exceeded
Personnel issues	Weight/balance calculations - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Total experience w/ equipment - Pilot
Personnel issues	Decision making/judgment - Pilot

Factual Information

History of Flight

Prior to flight	Aircraft loading event
Initial climb	Loss of control in flight
Initial climb	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On May 9, 2012, about 1110 central daylight time, an experimental, amateur-built, Gutierrez Hummel Bird airplane, N9001N, registered to, and operated by, the commercial pilot, impacted the ground in a nose-down attitude at the DeFuniak Springs Airport (54J), DeFuniak Springs, Florida. The pilot was fatally injured. Visual meteorological conditions prevailed. The personal flight was operated under the provisions of Title 14 Code of Federal Regulations Part 91, and no flight plan was filed. The flight was originating at the time of the accident.

According to eyewitness reports, the pilot was observed performing maintenance to the airplane prior to the flight. One of the witnesses stated that he observed the pilot conduct a lengthy preflight before starting the engine by hand, followed by a ground engine run-up, and then taxi to runway 27. Witnesses observed the airplane accelerate, roll down the runway, rotate, and climb about 30 to 40 feet above the runway when the airplane started varying its altitude. They watched as the airplane porpoised a few times as it continued to climb. When it reached an estimated altitude of 300 feet above ground level (agl), it pitched nose high and rolled to the right. The airplane nosedived and collided with the ground in an approximate 80 degree nose-down attitude. The airplane came to rest on its main gear in the upright position facing 120-degrees from the departing runway.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	77
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Waiver time limited special	**Last FAA Medical Exam:**	April 10, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 22, 1997
Flight Time:	527.5 hours (Total, all aircraft), 0.3 hours (Total, this make and model)		

The pilot, age 77, held a commercial pilot certificate with ratings for airplane single-engine and

multi-engine land, and instrument airplane. He held a flight instructor certificate for airplane single-engine land. He was issued a third-class medical certificate on April 10, 2012, with the limitation of a special time limited; however, in a letter mailed to the airman on May 5, 2012, the Federal Aviation Administration (FAA) withdrew his medical certificate. A review of his pilot logbook revealed the most recent entry was dated March 15, 2012 and at that time he had 527.5 total hours of flight experience, of which 0.3 of those hours were in the accident airplane make and model. The most recent recorded flight review was dated August 22, 1997; however, in February and March of 2012, there were three entries with a flight instructor signature associated with them that listed a variety of training, including; "takeoff and landings, emergency procedures, failures" to list a few.

Aircraft and Owner/Operator Information

Aircraft Make:	GUTIERREZ PABLINO	**Registration:**	N9001N
Model/Series:	HUMMEL BIRD	**Aircraft Category:**	Airplane
Year of Manufacture:	2010	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	001
Landing Gear Type:	Tricycle	**Seats:**	1
Date/Type of Last Inspection:	January 10, 2010 Condition	**Certified Max Gross Wt.:**	530 lbs
Time Since Last Inspection:	8 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	0 Hrs as of last inspection	**Engine Manufacturer:**	Hummel Engine
ELT:	Not installed	**Engine Model/Series:**	92X78
Registered Owner:	On file	**Rated Power:**	37 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The single-seat, low wing, all metal construction, fixed-gear airplane, serial number 001, was manufactured in 2012. It was powered by a 37-hp, 2-cylinder Hummel Engine, which consisted of 1/2 of a Volkswagen engine, and a Culver 2-bladed wooden propeller. Review of photographs of the airframe maintenance records revealed a conditional inspection was recorded by the accident pilot on January 9, 2010. The airplane was issued a special airworthiness certificate on January 10, 2010. The most recent airframe maintenance logbook entry was dated April 12, 2012, with a recorded tachometer time of 7.7 hours and stated, "Adjusted horizontal stabilizer = increase nose-down pitch." The entry was signed by the accident pilot. The most recent engine maintenance logbook entry was dated March 24, 2010, with a recorded tachometer time of 3.0 hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCEW,185 ft msl	**Distance from Accident Site:**	19 Nautical Miles
Observation Time:	11:25 Local	**Direction from Accident Site:**	279°
Lowest Cloud Condition:	Scattered / 2200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 11000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	27°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DeFuniak Springs, FL (54J)	**Type of Flight Plan Filed:**	None
Destination:	DeFuniak Springs, FL (54J)	**Type of Clearance:**	None
Departure Time:	11:10 Local	**Type of Airspace:**	Class G

A review of the 1125 recorded data from the Bob Sikes Airport (CEW), Crestview, Florida, 19 miles west of the accident site included variable wind at 4 knots, visibility 10 miles, scattered clouds at 2,200 and 3,000 feet agl and a broken cloud layer at 11,000 feet agl; temperature 27 degrees C, dew point 20 degrees C, and altimeter 29.89inches of mercury.

Airport Information

Airport:	DEFUNIAK SPRINGS 54J	**Runway Surface Type:**	Asphalt
Airport Elevation:	289 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	27	**IFR Approach:**	None
Runway Length/Width:	4146 ft / 60 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	30.731111,-86.15361(est)

The airplane impacted the ground in a nose and right wing low attitude. It came to rest upright and the nose exhibited crush damage in the positive and aft direction which correlated to an eyewitness report of an almost 80 degrees nose down attitude. The airplane came to rest on a heading of 030 degrees. The initial impact location was identified by an approximately 2 feet deep crater, and one of the two wooden propeller blades was located within the crater. The other blade was located near the initial impact crater. The right wing outboard approximate one-half of the leading edge exhibited crush damage which was more pronounced at the wing tip.

Medical and Pathological Information

The Florida State Medical Examiner's Office, Pensacola, Florida conducted a postmortem examination of the pilot. The cause of death was "blunt impact to the head and neck."

The FAA Civil Aeromedical Institute (CAMI) conducted toxicology testing on specimens from the pilot. The tests were negative for carbon monoxide, cyanide, and ethanol. The drug test was positive for Norverapamil, Verapamil, Losartan, in urine and blood, which are used in the treatment of high blood pressure, angina, and hypertension, all of which had been reported by the pilot.

Additional Information

According to fuel records provided by the airport, the most recent fuel purchase by the pilot was for 1.94 gallons of fuel on April 16, 2012.

A review of the pilot's FAA medical records showed that on May 5, 2012, a letter was issued to the pilot that withdrew his medicate certificate issued on April 10, 2012; due to a recent change in the medication the pilot was consuming for his medical condition. The certified letter was delivered to the pilot's residence on May 10, 2012.

According to information provided by the FAA Office of Aerospace Medicine, a letter from the Aviation Medical Examiner (AME) reported that during the most recent medical exam the pilot told the AME that "…he was having great difficulty with longitudinal stability, and was unable to complete even one pattern after multiple attempts. More than one of these attempted test flights ended with forced landings, and damage to the aircraft such that it had to be carried back to his hangar for repair. He noted his weight gain caused him to be 'over gross' most likely causing his control problem." The AME further reported that he had "advised the pilot, as did other friends, to stop trying to fly this plane and simply get a larger aircraft capable of carrying him."

According to documentation located with the airplane maintenance records, a center of gravity calculations form was located. The form, dated June 2, 2011, indicated that the empty weight of the aircraft was 333 pounds, and that weight did not include the weight of the pilot or the fuel. The form also indicated that the center of gravity (CG) limits were 8.25 – 11.25 inches rear of datum and a maximum gross weight of 530 pounds. When calculating the weight, utilizing the pilot's most recent medical information and 2 gallons of fuel, the takeoff weight was 561.2 pounds with a CG of 11.14 inches rear of datum. When calculating the weight, as above, except with full fuel the takeoff weight was 588 pounds and a CG of 10.216 inches rear of datum.

Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25A)

Chapter 4, "Aerodynamics of Flight," states in part "Generally, an aircraft becomes less controllable, especially at slow flight speeds, as the CG is moved further aft. An aircraft which cleanly recovers from a prolonged spin with the CG at one position may fail completely to respond to normal recovery attempts when the CG is moved aft by one or two inches…"

Chapter 8, "Weight and Balance," states in part "Compliance with the weight and balance limits of any airplane is critical to flight safety. Operating an airplane above the maximum weight limitation compromises the structural integrity of the airplane and adversely affects its performance…an overloaded airplane may not be able to leave the ground, or if it does become airborne, it may exhibit unexpected and unusually poor flight characteristics…excessive weight reduces the flight performance of an airplane in almost every respect. The most important performance deficiencies of the overloaded airplane are…higher stalling speed." The chapter goes on to state, in reference to CG "…if the CG is displaced too far aft on the longitudinal axis, a tail-heavy condition will result. It is possible that an unfavorable location of the CG could produce such an unstable condition that the pilot could not control the airplane…"

Administrative Information

Investigator In Charge (IIC):	Obregon, Jose
Additional Participating Persons:	George B Castleberry; FAA/FSDO; Birmingham, AL
Original Publish Date:	March 7, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83588