Aviation Investigation Final Report

Location:	Sanford, North Carolina	**Accident Number:**	ERA11FA504
Date & Time:	September 25, 2011, 12:43 Local	**Registration:**	N360TV
Aircraft:	HUTCHINSON KENNETH A VELOCITY RG	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Examination of pilot, airplane, and fueling records revealed that the pilot/owner had flown the airplane about 24 total hours over the 7 years since he purchased it. He had last flown the airplane 18 months before the accident, and, on his most recent application for a medical certificate made 10 days before the accident, he reported that he had not flown at all in the preceding 6 months. Two pilots operating in the traffic pattern of the departure airport at the time of the accident described a takeoff roll for the airplane that was twice as long as expected. They observed the airplane at “very low” altitude, in a continuous, descending left turn in the vicinity of the crosswind to downwind legs of the traffic pattern. The airplane then disappeared from view, and a fireball appeared from the woods. Examination of the wreckage revealed no preimpact mechanical anomalies in the flight control system, but it did reveal that the turbocharger waste gate was frozen in a nearly full-open position due to corrosion. This discrepancy resulted in a loss of available boost pressure and significantly reduced the available power. The most recent annual inspection of the airplane was completed 3 years before the accident, and, 5 months before the accident, the pilot requested that the local maintenance facility draft a list of discrepancies that would require correction in order to return the airplane to an airworthy condition. The discrepancy list included the frozen turbocharger waste gate. A review of the pilot's medical records revealed that the pilot was treated for medical and psychological conditions that he failed to report on his most recent medical certificate application. It could not be determined if the medical conditions or medications present at the time of the accident posed a significant hazard to flight safety. If the pilot had flown more recently, it is possible that he may have recognized that the airplane was not performing normally and aborted the takeoff.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot/owner's intentional flight of his airplane with known mechanical discrepancies (frozen turbocharger waste gate), which resulted in a partial loss of engine power and subsequent collision with trees and terrain shortly after takeoff. Contributing to the accident was the pilot’s lack of recent experience.

Findings

Aircraft	Turbocharger - Damaged/degraded
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Tree(s) - Contributed to outcome
Personnel issues	Recent experience - Pilot

Factual Information

History of Flight

Takeoff	Loss of engine power (partial) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On September 25, 2011, about 1243 eastern daylight time, an experimental amateur-built Hutchinson Velocity RG, N360TV, was substantially damaged during collision with flat, wooded terrain shortly after takeoff from Raleigh Executive Jetport at Sanford-Lee County Airport (TTA), Sanford, North Carolina. The certificated private pilot was fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight, which was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to a flight instructor and student pilot, they were performing touch-and-go landings at TTA at the time of the accident. While on the downwind leg of the traffic pattern, the instructor heard the accident pilot announce the taxi to the takeoff runway, and during the downwind leg of the subsequent traffic pattern, the accident pilot announced the takeoff roll.

The student noticed the accident airplane at the hold-short line of runway 03 as he landed his airplane, and on the downwind leg of the subsequent traffic pattern, he noticed the airplane did not rotate for takeoff until it reached the 2,000-feet marker on the runway. He thought this was unusual, as his single--engine Cessna was normally off the ground in half that distance.

While on the base leg of the traffic pattern, the student noticed the accident airplane at “very low” altitude, in a continuous, descending left turn in the vicinity of the crosswind to downwind legs of the traffic pattern. He said the airplane then disappeared from view, and a fireball appeared from the woods. The instructor contacted air traffic control on an emergency frequency and advised them of the accident and its location.

PERSONNEL INFORMATION

According FAA records, the pilot held a private pilot certificate with a rating for airplane single engine. The pilot's most recent FAA third-class medical certificate was issued on September 15, 2011. On that date, he reported 375 total hours of flight experience, and zero hours of flight experience during the previous six months.

The pilot’s logbook was recovered at the accident site, but was destroyed by fire. No useful information was recovered.

AIRCRAFT INFORMATION

According to FAA records, the airplane's airworthiness certificate was issued in 1996. According to airplane and maintenance records, the airplane had accrued 143.8 total aircraft hours as of May 2011. The most recent annual inspection was completed March 1, 2008, at 131.8 total aircraft hours.

Over the approximate 15-year maintenance history of the airplane, the engine was disassembled 3 times, but none of the disassembly/reassembly repairs qualified as an overhaul. A Lycoming Service Instruction recommended that engines which have not reached the recommended limit for operational hours be overhauled in the 12th year after the last overhaul.

According to fueling records at TTA, the airplane was last fueled on March 21, 2010, at which time the airplane was serviced with 43 gallons of 100LL aviation gasoline. The airport manager stated that he was "reasonably certain" that the airplane had not flown since that date.

In an interview, the airport manager said that the pilot/owner would come out to the airport, tinker with the airplane, start the engine, and taxi the airplane, but that the airplane had not flown "for years."

In May, 2011, the pilot/owner asked the aircraft maintenance facility at TTA to draft a list of discrepancies on the airplane that required correction in order to return the airplane to an airworthy condition for possible sale. Among the discrepancies listed were, “Landing Gear Switch Inop[erative]” and “[Turbocharger] Waste Gate Froze[en].”

According to the Lycoming TO-360 series operator's manual, the engine's rated power output was 180 horsepower at 36.5 inches of mercury manifold pressure. The horsepower output rating with the waste gate open approximately 2/3 of its travel, the position in which it was frozen, could not be determined.

METEOROLOGICAL INFORMATION

The 1235 weather observation at TTA included a scattered cloud layer at 2,100 feet, a broken ceiling at 2,500 feet, and an overcast ceiling at 3,200 feet with 10 miles visibility. The winds were from 070 degrees at 4 knots, the temperature was 25 degrees C, the dew point was 21 degrees C and the altimeter setting was 30.06 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The wreckage was examined by NTSB at the accident site, on September 26, 2011. The wreckage path was on flat, wooded terrain, about 210 feet long, and oriented 180 degrees magnetic. It was measured from the first tree strike, about 40 feet above ground level, to the main wreckage. Several pieces of fiberglass, foam core, and pieces associated with the

propeller, rudders, and canard, were scattered along the wreckage path. The main wreckage, which was comprised of the cockpit, cabin area, and engine compartment, were completely destroyed by fire. The main wreckage rested on its right side and faced opposite the direction of travel. All three landing gear were down and locked.

Because of the fire damage, almost all remaining control cables, push-pull tubes, and bellcranks were visible. Control cable continuity was established from the cockpit area to the throttle, mixture, propeller, and turbocharger waste-gate manual control. Flaperon cable and push-pull tube continuity were established from the cockpit to the wing roots.

The composite propeller and spinner were fire-damaged, the outboard half of each propeller blade was separated, and the fractured ends were melted. The starter ring gear was separated from the flywheel, and the starter case was smeared at the bendix.

The engine was examined by NTSB at TTA on September 27, 2011. The engine displayed severe fire and impact damage. The accessory case and oil sump were almost completely melted from the engine, and the crankcase displayed several holes due to impact and fire.

Partial rotation of the crankshaft was achieved at the propeller flange, and movement was noted at all four connecting rods and pistons. Camshaft movement was impinged by impact and fire damage to the engine case, but borescope examination through the crankcase openings showed no abnormal wear or pre-impact mechanical failure of the crankshaft or camshaft.

Examination of the turbocharger waste gate revealed that the waste gate was frozen in a partially opened configuration (about 2/3 open) due to heavy corrosion.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Chief Medical Examiner, Chapel Hill, North Carolina, performed the autopsy on the pilot.

Toxicological testing for the pilot was performed by the Federal Aviation Administration (FAA) Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. Diphenhydramine (an antihistamine) was detected in the pilot's urine. All other drugs noted were consistent with treatment from emergency medical personnel.

The pilot reported the following medications on his most recent FAA medical application form:

Lisinopril/hydrochlorothiazide (Prinzide®, Zestoretic®) – Lisinopril was a prescription medication that was an angiotensin converting enzyme inhibitor. It was used to control high blood pressure.

Hydrochlorothiazide was a prescription diuretic used to treat fluid retention in high blood

pressure, congestive heart failure and cirrhosis of the liver.

The following medications were listed in medical records obtained by the Aviation Medical Examiner (AME) from the pilot's primary care physician:

Niacin supplement
Antihistamines (unidentified)

The following medical conditions were identified in the pilot's private medical record obtained by the AME from his primary care physician:

Anxiety disorder
Dyslipidemia with low HDL
Allergic rhinitis with seasonal allergies
Pyogenic granuloma of the left thumb

Review of all FAA medical certificates and supporting documentation indicated that the pilot reported a history of high blood pressure and the AME identified no significant issues on physical examination.

Based on available history and physical examinations and private medical records the pilot had a history of anxiety disorder, dyslipidemia (low, low density lipids) and allergic rhinitis with seasonal allergies. These conditions were not reported by the pilot to the FAA. In addition, the pilot was taking niacin to treat his dyslipidemia and an unreported antihistamine, which were also not reported to the FAA. Therefore, these conditions and medications were not evaluated by the AME and it could not be determined if the airman posed a hazard to flight safety.

According to the airport manager, the pilot/owner had mentioned on more than one occasion that he was trying to "get his medical back." However, the review of his records revealed that the pilot's medical certificate was still valid at the time of the accident.

Pilot Information

Certificate:	Private	**Age:**	43,Male
Airplane Rating(s):	Single-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 3 Without waivers/limitations	**Last FAA Medical Exam:**	September 15, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	375 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	HUTCHINSON KENNETH A	**Registration:**	N360TV
Model/Series:	VELOCITY RG	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	DMO237
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 1, 2008 Condition	**Certified Max Gross Wt.:**	
Time Since Last Inspection:	12 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	143 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	T0-360 SER
Registered Owner:	ARAGON KIRK C	**Rated Power:**	210 Horsepower
Operator:	ARAGON KIRK C	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TTA,246 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	12:35 Local	**Direction from Accident Site:**	25°
Lowest Cloud Condition:	Scattered / 2100 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 2500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	25°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sanford, NC (KTTA)	**Type of Flight Plan Filed:**	None
Destination:	Sanford, NC (KTTA)	**Type of Clearance:**	None
Departure Time:	12:41 Local	**Type of Airspace:**	

Airport Information

Airport:	Sanford-Lee County KTTA	**Runway Surface Type:**	Asphalt
Airport Elevation:	246 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	03	**IFR Approach:**	None
Runway Length/Width:	6500 ft / 100 ft	**VFR Approach/Landing:**	Forced landing;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.591945,-79.092224

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Jim Creider; FAA/FSDO; Greensboro, NC
Original Publish Date:	June 28, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81887