Aviation Investigation Final Report

Location:	Oshkosh, Wisconsin	**Accident Number:**	CEN11LA429
Date & Time:	June 29, 2011, 10:03 Local	**Registration:**	N56PK
Aircraft:	Keesler W8 Tailwind	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The accident occurred during the initial flight testing of the experimental amateur-built airplane. The pilot reported that, during the initial climb, at an altitude of about 200 feet above the ground, the engine began to lose power. He notified the tower air traffic controller of his engine emergency and began a turn to remain clear of nearby buildings. The airplane encountered a ditch during the forced landing and the forward fuselage and firewall were substantially damaged.

The airframe had accumulated 4 hours since it was issued an airworthiness certificate and the engine had accumulated 5.7 hours since its last major overhaul. The pilot/builder replaced the carburetor, spark plugs, and a cylinder since the last engine overhaul. A postaccident examination of the engine revealed that both spark plugs for the No. 4 cylinder were loosely installed into the cylinder head. The upper spark plug for the No. 4 cylinder was not seated on its cylinder gasket. Several spark plugs were removed and exhibited features consistent with the engine operating at a rich carburetor mixture setting. Although a carburetor-icing probability chart indicated that there was a serious potential for carburetor ice accumulation while operating at a reduced engine power setting, the postaccident investigation could not determine if carburetor ice contributed to the loss of engine power.

The postaccident investigation was unable to determine the reason for the loss of engine power, which could have been a result of the incorrectly installed spark plugs on the No. 4 cylinder, an excessively rich carburetor mixture setting, an accumulation of carburetor ice before takeoff, or any combination of the aforementioned issues.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power during initial climb for undetermined reasons.

Findings

Environmental issues	Rough terrain - Contributed to outcome
Aircraft	(general) - Not specified

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Landing	Off-field or emergency landing
Landing-landing roll	Collision with terr/obj (non-CFIT)

On June 29, 2011, at 1003 central daylight time, an experimental amateur-built Keesler W8 Tailwind airplane, N56PK, was substantially damaged during a forced landing at Wittman Regional Airport (KOSH), Oshkosh, Wisconsin. The pilot sustained minor injuries. The airplane was registered to and operated by the private pilot under the provisions of 14 Code of Federal Regulations Part 91. Day visual meteorological conditions prevailed for the flight, which was operated without a flight plan. The local flight was originating at the time of the accident.

The pilot reported that the accident flight was the first flight in the accident airplane in over 6 months, during which time he had been modifying the airplane. The purpose of the flight was to orbit the airport while he evaluated the various airframe and engine systems. The pilot stated that during initial climb from runway 9, at an altitude of about 200 feet above the ground, the engine began to lose power. He notified the control tower of his engine emergency and began a turn to the south to remain clear of nearby buildings. The airplane landed in a grassy area to the south of runway 9, boarded by taxiways Juliet and Kilo. The forward fuselage and firewall were substantially damaged when the airplane encountered a ditch, collapsing the main landing gear.

According to available documentation, the airplane was issued its airworthiness certificate on May 19, 2010, and had completed 4.0 hours of its required 40 hour phase I flight testing when the accident occurred. A conditional inspection was completed on June 27, 2011, at 3.9 hours total airframe time. The last recorded flight was completed on November 10, 2010. The engine, a Continental Motors model C-90-12F, had accumulated 5.7 hours since its last major overhaul, which was completed on January 2, 2009. The carburetor and spark plugs were replaced by the pilot/builder on September 7, 2010. The No. 2 cylinder was replaced by the pilot/builder on October 18, 2010. The last recorded engine maintenance was an oil change that was completed on June 1, 2011.

A postaccident engine examination revealed that both spark plugs for the No. 4 cylinder were loosely installed into the cylinder head. The upper plug for the No. 4 cylinder was not seated on its cylinder gasket. Several spark plugs were removed and exhibited features consistent with the engine operating at a rich carburetor mixture setting. Both magnetos provided spark when rotated. Mechanical continuity was confirmed from the cockpit engine controls to their respective engine components. The carburetor heat control was in the off position. The carburetor bowl contained fuel with no evidence of water contamination.

At 1011, the airport's automated surface observing system reported the following weather conditions: wind 180 degrees at 3 knots; visibility 10 miles; clear skies; temperature 21 degrees Celsius; dew point 13 degrees Celsius; altimeter setting 30.15 inches of mercury.

The carburetor icing probability chart included in Federal Aviation Administration Special Airworthiness Information Bulletin No. CE-09-35, Carburetor Icing Prevention, indicated that there was a potential for serious carburetor icing while operating at glide power.

Pilot Information

Certificate:	Private	**Age:**	58,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:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	March 3, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 25, 2010
Flight Time:	283 hours (Total, all aircraft), 4 hours (Total, this make and model), 213 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Keesler	**Registration:**	N56PK
Model/Series:	W8 Tailwind	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	1953
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	June 27, 2011 Condition	**Certified Max Gross Wt.:**	1300 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4 Hrs at time of accident	**Engine Manufacturer:**	Continental Motors
ELT:	C91A installed, not activated	**Engine Model/Series:**	C-90-12F
Registered Owner:	On file	**Rated Power:**	90 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KOSH,808 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:11 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	21°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Oshkosh, WI (KOSH)	**Type of Flight Plan Filed:**	None
Destination:	Oshkosh, WI (KOSH)	**Type of Clearance:**	VFR
Departure Time:	10:03 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Wittman Regional Airport KOSH	**Runway Surface Type:**	Concrete
Airport Elevation:	808 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	09	**IFR Approach:**	None
Runway Length/Width:	6178 ft / 150 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	43.984443,-88.556945(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Connie A Martin; Federal Aviation Administration - Milwaukee FSDO; Milwaukee, WI Tim Derner; Federal Aviation Administration - Milwaukee FSDO; Milwaukee, WI
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Note:	
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