Aviation Investigation Final Report

Location:	Spearfish, South Dakota	**Accident Number:**	CEN12LA580
Date & Time:	August 25, 2012, 11:00 Local	**Registration:**	N140XX
Aircraft:	Cessna 140	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

After an uneventful cross-country flight, the solo student pilot was setting up to enter the downwind leg of the traffic pattern at his destination airport. When he applied carburetor heat, the engine rpm dropped below 1000. Unable to continue to the planned runway, the student pilot elected to land the airplane in an adjacent field. During the landing roll, the airplane struck a barbed wire fence and nosed over, coming to rest inverted. Postaccident examination of the engine revealed debris lodged in the throttle body beneath the carburetor venturi. The debris appeared to be remnants of aluminum tape or foil. Additionally, what appeared to be a small piece of exhaust insulation or asbestos wrap was found within the carburetor heat box. No other anomalies with the engine or airframe were discovered that could have contributed to the partial loss of engine power. It is unknown how long the foreign object debris was present below the carburetor venturi; however, the airplane had operated for about 3 flight hours since its most recent annual inspection, which was conducted 3 months before the accident flight. The presence of debris lodged beneath the carburetor venturi is consistent with the student pilot's statement that he experienced a loss of power and engine rpm when carburetor heat was applied.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The partial loss of engine power due to debris lodged beneath the throttle body of the carburetor venturi.

Findings

Aircraft	Fuel control/carburetor - Not specified

Factual Information

History of Flight

Approach	Loss of engine power (partial) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-landing roll	Nose over/nose down

On August 25, 2012, approximately 1100 mountain daylight time, a Cessna 140, N140XX, registered to the student pilot, sustained substantial damage during a forced landing after a partial loss of engine power in the vicinity of the Black Hills Airport - Clyde Ice Field (SPF), Spearfish, South Dakota. The student pilot, who was on a cross country solo flight, was not injured. Visual meteorological conditions prevailed in the vicinity and a flight plan was not filed. The flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. The final portion of the multi-airport flight originated at 1000 from the Philip Airport (PHP), Philip, South Dakota.

The pilot reported that he was nearing the end of his uneventful cross country student solo flight and set up for a downwind at SPF. As he applied carburetor heat, the engine RPM dropped below 1000. Unable to continue to the planned runway, the pilot elected to land the airplane in an adjacent field. During the landing roll, the airplane struck a barb wired fence and nosed over inverted, resulting in substantial damage to the vertical stabilizer and rudder. The pilot exited the airplane uninjured.

Post accident examination of the engine revealed foreign object debris (FOD) lodged in the throttle body beneath the carburetor venturi. The debris appeared to be remnants of aluminum tape/foil. Also found was what appeared to be a small piece of exhaust insulation/asbestos wrap within the carburetor heat box. No other anomalies with the engine or airframe were discovered. It is unknown how long the foreign object debris was present below the carburetor venturi. The airplane and engine had operated normally for about 3 flight hours after its last annual inspection, dated May 3, 2012. The tachometer time at the time of the annual inspection was 1,473 hours. The tachometer time at the time of the accident was 1,476 hours.

Pilot Information

Certificate:	Student	**Age:**	67,Male
Airplane Rating(s):	None	**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:**	May 29, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	70 hours (Total, all aircraft), 70 hours (Total, this make and model), 20 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N140XX
Model/Series:	140	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	8847
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	May 3, 2012 Annual	**Certified Max Gross Wt.:**	1450 lbs
Time Since Last Inspection:	1473 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1476 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	C85 SERIES
Registered Owner:	BOWEN BRUCE C	**Rated Power:**	85 Horsepower
Operator:	BOWEN BRUCE C	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SPF,3933 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:35 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	350°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	18°C / 3°C
Precipitation and Obscuration:			
Departure Point:	Philip, SD (PHP)	**Type of Flight Plan Filed:**	None
Destination:	Spearfish, SD (SPF)	**Type of Clearance:**	None
Departure Time:	10:00 Local	**Type of Airspace:**	Unknown

Airport Information

Airport:	Black Hills Airport-Clyde Ice SPF	**Runway Surface Type:**	
Airport Elevation:	3933 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	44.818889,-103.988609(est)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	Todd M Orbritsch; FAA FSDO Rapid City; Rapid City, SD
Original Publish Date:	September 12, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
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