Aviation Investigation Final Report

Location:	Elmwood, Nebraska	**Accident Number:**	CEN15LA405
Date & Time:	September 9, 2015, 18:30 Local	**Registration:**	N1057E
Aircraft:	Piper PA-36-375	**Aircraft Damage:**	Substantial
Defining Event:	Collision during takeoff/land	**Injuries:**	1 None
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot reported that, before the accident flight, the agricultural application airplane was loaded with 1,500 lbs of seed and 40 gallons of aviation fuel. He reported that there were no anomalies with the airplane during the five previous flights that day or the before-takeoff engine run-up. The accident takeoff was made from a private airstrip toward the south with the flaps partially extended. After applying full engine power, the pilot released the brakes, and the airplane accelerated down the runway. The airplane's tail became airborne about three-quarters down the runway at 75 mph. Although the airplane became airborne before reaching the end of the runway, it was unable to gain additional airspeed or achieve a positive climb rate. The airplane remained in ground effect as it crossed over the runway departure threshold, but it subsequently settled into a corn crop about 1/4 mile past the end of the runway. The pilot stated that he believed that the accident could have been prevented if he had reduced the payload weight for the accident flight.

The pilot reported that, at the time of the accident takeoff, the airplane weighed about 4,500 lbs, which was about 300 lbs below the airplane's maximum gross weight. According to local weather reports, the wind was light and variable at the time of the accident. Performance calculations revealed that, during takeoff at 4,500 lbs with the flaps fully retracted, with no headwind, and from a level hard-surface runway, the airplane would have required about 1,750 ft of runway to achieve liftoff and about 2,650 ft to clear a 50-ft obstacle. The north-south turf runway was 2,600 ft long. The Pilot's Operating Handbook did not provide takeoff performance data for operations from a grass/turf runway or with flaps extended. According to the available performance data, the airplane would likely have required additional runway length to achieve a normal takeoff and positive climb rate after liftoff.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's decision to take off with the airplane near its maximum gross weight from a runway that did not have sufficient length for the airplane to achieve a normal takeoff and positive climb rate after liftoff.

Findings

Aircraft	Takeoff distance - Capability exceeded
Aircraft	Climb rate - Capability exceeded
Personnel issues	Decision making/judgment - Pilot
Aircraft	Maximum weight - Not specified
Environmental issues	(general) - Contributed to outcome

Factual Information

History of Flight

Takeoff	Collision during takeoff/land (Defining event)

On September 9, 2015, about 1830 central daylight time, a Piper model PA-36-375 single-engine airplane, N1057E, was substantially damaged when it collided with a corn crop shortly after takeoff from a private airstrip located near Elmwood, Nebraska. The commercial pilot was not injured. The airplane was registered to and operated by Stove Creek Air, LLC, under the provisions of 14 Code of Federal Regulations Part 137 without a flight plan. Day visual meteorological conditions prevailed for the local aerial-application flight that was originating at the time of the accident.

The pilot reported that, on the day of the accident, he had completed numerous aerial-application flights from the private airstrip. The pilot reported that the airplane and its engine had been operating normally during the previous flights. Before the accident flight, the airplane was loaded with 1,500 lbs of seed and 40 gallons (240 lbs) of aviation fuel. The pilot stated that there were no anomalies with the airplane during his preflight inspection or before-takeoff engine run-up.

He reported that the accident takeoff was made toward the south and that he initially used a partial flap extension. After the application of full engine power, he released the brakes and the airplane accelerated down the runway. The pilot reported that the airplane's tail became airborne about 3/4 down the runway at 75 mph. He stated that although the airplane had become airborne before the end of the runway, he was unable to gain additional airspeed or achieve a positive climb rate. The airplane remained in ground effect as it crossed over the runway departure threshold, but it subsequently settled into the corn crop about 1/4 mile past the end of the runway. The airplane sustained substantial damage to the aft fuselage, empennage, and an engine mount. The main landing gear also collapsed during the off-field landing.

According to the pilot, at the time of the accident takeoff, the airplane weighed about 4,500 lbs, which was about 300 lbs below the airplane's maximum gross weight of 4,800 lbs. According to local weather reports, the wind was light-and-variable at the time of the accident. According to performance calculations, the airplane, at 4,500 lbs and with the flaps fully retracted, with no headwind, on a level hard-surface runway, would have required about 1,750 feet of runway to achieve liftoff and about 2,650 feet to clear a 50-foot obstacle. The north/south turf runway was 2,600 feet long. The pilot operating handbook did not provide takeoff performance data for operations from a grass/turf runway or with flaps extended.

The pilot reported no preaccident mechanical malfunctions or failures with the airplane that would have precluded normal operation. Additionally, he stated that he believed the accident could have been prevented if he had reduced the payload weight for the accident flight.

Pilot Information

Certificate:	Commercial	**Age:**	27
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Single
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 14, 2015
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 8, 2015
Flight Time:	(Estimated) 2232 hours (Total, all aircraft), 200 hours (Total, this make and model), 2015 hours (Pilot In Command, all aircraft), 200 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N1057E
Model/Series:	PA-36-375	**Aircraft Category:**	Airplane
Year of Manufacture:	1979	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	36-7902012
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	August 4, 2015 100 hour	**Certified Max Gross Wt.:**	4800 lbs
Time Since Last Inspection:	100 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4900 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	IO-720-D1CD
Registered Owner:	Stove Creek Air, LLC	**Rated Power:**	375 Horsepower
Operator:	Stove Creek Air, LLC	**Operating Certificate(s) Held:**	Agricultural aircraft (137)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PMV,1204 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	18:35 Local	**Direction from Accident Site:**	65°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.92 inches Hg	**Temperature/Dew Point:**	24°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Elmwood, NE (PVT)	**Type of Flight Plan Filed:**	None
Destination:	Elmwood, NE (PVT)	**Type of Clearance:**	None
Departure Time:	18:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Private PVT	**Runway Surface Type:**	Grass/turf
Airport Elevation:	1200 ft msl	**Runway Surface Condition:**	
Runway Used:	18	**IFR Approach:**	None
Runway Length/Width:	2600 ft / 70 ft	**VFR Approach/Landing:**	None

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:**	40.856388,-96.216667(est)

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Al Fowler; Federal Aviation Administration - Lincoln FSDO; Lincoln, NE
Original Publish Date:	January 5, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91954