Aviation Investigation Final Report

Location:	White Bird, Idaho	**Accident Number:**	SEA05LA009
Date & Time:	October 17, 2004, 11:30 Local	**Registration:**	N101AM
Aircraft:	Cessna A185F	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

This was the pilot's first attempt at taking off uphill on the 2,300-foot private airstrip, which was estimated to be an upgrade of between 6 and 8 percent. After taxiing to the north end of the airstrip and noticing a strong right-quartering gusty headwind, the pilot selected 20 degrees of flaps and applied full power. The takeoff roll was normal, with the first 1,000 feet being on level ground, the second 1,000 feet being uphill, and the last 300 feet being on level ground; a fence bordered the end of the airstrip. The pilot, anticipating a longer-than-usual ground roll consistent with the uphill departure, applied back pressure on the control yoke with 300 feet of available runway remaining, but the aircraft did not lift off the ground. He then added another 10 degrees of flaps, which he said was in accordance with the airplane's soft-field takeoff procedures. At about the same time the airplane was crossing the fence line at the end of the runway, the pilot heard the sound of an impact. After the airplane became airborne the engine immediately developed a vibration, prompting the pilot to make a right 180 degree turn back to the airstrip. Approximately one-half to two-thirds of the way through the turn the engine lost all power and quit. The pilot managed to land the airplane in a pasture which bordered the departure airstrip on the west, spinning around 180 degrees and sliding backwards before coming to rest in an upright position. The airplane sustained substantial damage to both wings, the vertical stabilizer, and the fuselage. The exhaust stack exhibited impact damage which creased the bottom one-third of the component to the extent that the exhaust area opening was almost entirely closed. The aircraft owner's manual notes that soft-field takeoffs are performed with 20 degrees of flaps, and flap extension to 30 or 40 degrees is not recommended for takeoff.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to attain the proper airspeed for takeoff and his improper soft-field takeoff procedure. Factors contributing to the accident included the pilot's improper preflight planning, the fence, and the closed exhaust stack.

Findings

Occurrence #1: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: TAKEOFF - ROLL/RUN

Findings
1. (F) PREFLIGHT PLANNING/PREPARATION - IMPROPER - PILOT IN COMMAND
2. (C) AIRSPEED - NOT ATTAINED - PILOT IN COMMAND
3. (C) SOFT FIELD TAKEOFF/PROCEDURE - IMPROPER - PILOT IN COMMAND
4. (F) OBJECT - FENCE

Occurrence #2: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
5. (F) EXHAUST SYSTEM,STACK - CLOSED

Occurrence #3: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #4: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
6. TERRAIN CONDITION - OPEN FIELD

Factual Information

On October 17, 2004, about 1130 Pacific daylight time, a Cessna A185F, N101AM, was substantially damaged following a forced landing near White Bird, Idaho. The airplane was registered to and operated by a private individual. The certificated private pilot and his sole passenger received minor injuries. Visual meteorological conditions prevailed for the personal flight, which was being conducted in accordance with 14 CFR Part 91, and a flight plan was not filed. The flight was originating from the pilot's private airstrip at the time of the accident.

In a telephone interview with the NTSB investigator-in-charge (IIC), and according to the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2), the pilot reported that he taxied to the north end of the 2,300-foot airstrip and noticed a strong right-quartering gusty headwind. The pilot stated that he selected 20 degrees of flaps and applied full throttle and full RPM (2850). The pilot reported the takeoff roll was normal, with the first 1,000 feet of the ground roll being on approximately level ground, "...followed by a 1,000-foot uphill stretch and a final 300-foot level section." The pilot stated the tail came up on the uphill portion of the airstrip and the airspeed was nominal during the last 300 feet, with a fence bordering the end of the airstrip. The pilot reported, "We had anticipated this longer-than-usual ground roll; it was consistent with the uphill departure necessitated by the strong southwest wind." The pilot reported he added backpressure during the last 300 feet to clear the fence at the end of the airstrip, "...but the aircraft did not lift off as expected." The pilot reported trying to get airborne by adding another 10 degrees of flaps, which he stated was in accordance with the soft-field takeoff procedures. The pilot related, "The nose was up by then, but we heard an impact as we crossed the fence line." The pilot reported the engine immediately developed a slight vibration, "...so I executed a climbing turn to the right to return to land. The engine quit without warning about half to two-thirds of the way through the 180 degree turn." The pilot reported that he was able to set up a gliding approach to a pasture, which bordered the airstrip on the west. After touching down the airplane's right main landing gear separated, followed by a nose strike. The pilot reported the airplane then spun around 180 degrees and slid backwards approximately 100 feet before coming to rest upright heading in a southeasterly direction.

The pilot reported that both main landing gear, the tail wheel, both entry doors, and the propeller had separated from the airplane. The tail section and both wings were bent and twisted. The pilot said he felt the engine quit as a result of the airplane impacting the fence during takeoff. The pilot also stated that there were no anomalies detected with the airplane prior to the attempted takeoff.

A certificated Federal Aviation Administration (FAA) airframe and powerplant mechanic examined the exhaust stack, which was impact damaged. The component was void of any dirt or ground impact signatures and remained elevated above ground level next to the right main landing gear. The deformation to the exhaust stack was such that the bottom one-third of the

stack exhibited a lateral creased/closed off appearance.

The IIC calculated the density altitude at the time of accident to be 5,968 feet. An FAA inspector reported to the IIC that he estimated the uphill slope of the runway to be between 6 and 8 percent. The inspector also reported that the pilot told him this was the first time he had ever attempted an uphill takeoff from his private airstrip.

As noted under the TAKE-OFF section of the Cessna 185 Owner's Manual, "Soft-field take-offs are performed with 20 degrees of flaps. Flap deflections of 30 degrees and 40 degrees are not-recommended for take-off."

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	October 7, 2004
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	August 10, 2004
Flight Time:	1326 hours (Total, all aircraft), 993 hours (Total, this make and model), 1224 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N101AM
Model/Series:	A185F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18502390
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	May 9, 2004 Annual	**Certified Max Gross Wt.:**	3350 lbs
Time Since Last Inspection:	21 Hrs	**Engines:**	Reciprocating
Airframe Total Time:	3226 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520
Registered Owner:	Michael G. Foley	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken	**Visibility (RVR):**	
Wind Speed/Gusts:	30 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	215°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	White Bird, ID	**Type of Flight Plan Filed:**	None
Destination:	Richland, WA (RLD)	**Type of Clearance:**	None
Departure Time:	11:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	45.79,-116.49472

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	John H Phillips; Federal Aviation Administration; Spokane, WA
Original Publish Date:	March 30, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60375