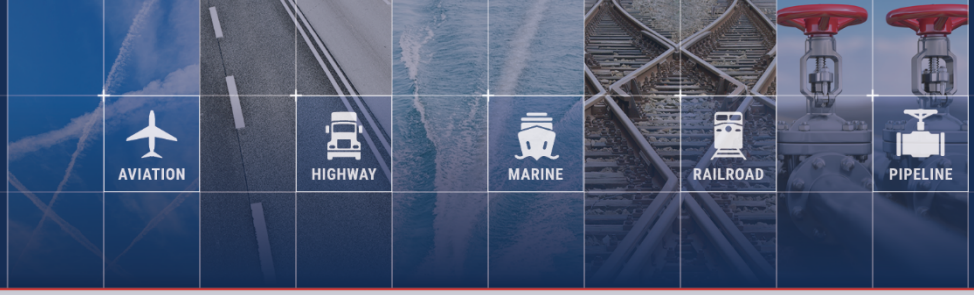

Aviation Investigation Final Report

Location:	Gardiner, Montana	**Accident Number:**	WPR14LA220
Date & Time:	June 2, 2014, 09:30 Local	**Registration:**	N7292V
Aircraft:	Aero Commander CALLAIR A 9B	**Aircraft Damage:**	Substantial
Defining Event:	Loss of lift	**Injuries:**	1 Serious
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The commercial pilot was conducting an agricultural application flight. The pilot reported that, during departure, the airplane was unable to maintain a positive climb rate, so he decided to conduct a forced landing on a grass field. During the landing roll, the airplane's wing struck terrain, and the airplane subsequently came to rest inverted.

Postaccident examination of the airplane and engine revealed no evidence of any preimpact anomalies that would have precluded normal operation. Postaccident weight and balance calculations determined that, at the time of the accident, the airplane exceeded its maximum gross weight limitation. Further, the density altitude was calculated to be 5,661 ft mean sea level. It is likely that the combined effects of the airplane being over its gross weight and the high-density altitude degraded the airplane's climb performance.

Probable Cause and Findings

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

The pilot's inadequate preflight planning and his subsequent takeoff with the airplane over its allowable gross weight in high-density altitude conditions, which degraded the airplane's climb performance and led to a subsequent forced landing.

Findings

Personnel issues	Weight/balance calculations - Pilot
Aircraft	Climb capability - Attain/maintain not possible
Personnel issues	Weight/balance calculations - Pilot
Aircraft	Maximum weight - Capability exceeded
Environmental issues	High density altitude - Effect on equipment
Environmental issues	(general) - Contributed to outcome

Factual Information

History of Flight

Initial climb	Loss of lift (Defining event)
Initial climb	Off-field or emergency landing

On June 2, 2014, about 0930, mountain daylight time, an Aero Commander, Callair A-9B, N7292V, sustained substantial damage during a forced landing shortly after departure from the Gardiner Airport (29S) Gardiner, Montana. The commercial pilot was seriously injured. The airplane was registered to Nardin and Nardin Co., and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 137 as an aerial application flight. Visual meteorological conditions prevailed and no flight plan was filed for the local flight.

The pilot reported that the airplane's climb rate was not sufficient after takeoff and he decided to perform an emergency landing on a grass field. During the landing sequence, the airplane's wing struck terrain and subsequently the airplane came to rest inverted.

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed substantial damage to the airplane's fuselage and wings.

The airplane was recovered to a secure storage facility for further examination.

Additional examination revealed that the engine was separated from the airframe by the engine mount. The engine case was breeched on top of the area where the front cylinders attach. All the rocker covers were removed and the cylinder overhead areas were lubricated and unremarkable. The cylinders were removed and each combustion chamber was examined. The inspection of the internal areas of the cylinders revealed normal operational conditions.

All engine accessories were examined and no anomalies were observed. The top sparkplugs were removed and all the sparkplug electrodes exhibited normal wear signatures when compared to the Champion Check-A-Plug comparison chart

The two-bladed propeller remained attached to the crankshaft flange. Both blades were bent aft about mid-span and twisted. Marks and abrasions were observed on the blades that were chord-wise in direction.

The postaccident examination of the airframe and engine revealed no evidence of a mechanical malfunction that would have precluded normal operation.

According to an FAA sponsored performance study of the airplane, the maximum gross weight limitation for flight was 3,000 pounds. The take-off gross weight was calculated by the National Transportation Safety Board investigator-in-charge (IIC), using the empty weight of the airplane, the reported weight of the occupant, 40 gallons of fuel, 12 quarts of oil, and 1600 pounds of chemical. The

calculated gross weight at the time of departure was about 3,881 pounds, which exceeded the maximum gross weight limitation.

Utilizing the weather conditions at the nearing reporting station, the density altitude was calculated by the IIC to be about 5,661 feet mean seal level, for the departure time of the accident flight.

Pilot Information

Certificate:	Commercial	**Age:**	54,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 18, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 11, 2012
Flight Time:	(Estimated) 607.6 hours (Total, all aircraft), 81 hours (Total, this make and model), 576.6 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Commander	**Registration:**	N7292V
Model/Series:	CALLAIR A 9B B	**Aircraft Category:**	Airplane
Year of Manufacture:	1969	**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	1437
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	May 10, 2015 Annual	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4606.28 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	TIO-540 SER
Registered Owner:	On file	**Rated Power:**	310 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:	KWYS,6649 ft msl	**Distance from Accident Site:**	27 Nautical Miles
Observation Time:	09:30 Local	**Direction from Accident Site:**	36°
Lowest Cloud Condition:	Few / 1300 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.15 inches Hg	**Temperature/Dew Point:**	9°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gardiner, MT (29S)	**Type of Flight Plan Filed:**	None
Destination:	Gardiner, MT (29S)	**Type of Clearance:**	None
Departure Time:	09:30 Local	**Type of Airspace:**	Unknown

Airport Information

Airport:	Gardiner 29S	**Runway Surface Type:**	
Airport Elevation:	5286 ft msl	**Runway Surface Condition:**	Vegetation
Runway Used:	28	**IFR Approach:**	None
Runway Length/Width:	3200 ft / 55 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	45.04972,-110.746665(est)

Administrative Information

Investigator In Charge (IIC):	Nixon, Albert
Additional Participating Persons:	Rick Koffman; Federal Aviaiton Administration; Helena, MT Troy R Helgeson; Lycoming Engines; Williamsport, PA
Original Publish Date:	June 1, 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=89341