Aviation Investigation Final Report

Location:	Farmingdale, New York	**Accident Number:**	DFW07LA105
Date & Time:	May 5, 2007, 08:50 Local	**Registration:**	N16HY
Aircraft:	Aviat A-1A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane stalled during initial takeoff climb as the pilot was performing a simulated short field takeoff. The pilot/owner boarded his passenger, started the airplane, and taxied to a 5,516-foot-long by 150-foot-wide asphalt runway. The pilot elected to perform a short-field takeoff. Once the airplane became airborne, the pilot established a pronounced nose-high attitude as he attempted to establish a climb airspeed of 55 knots. The pilot was under the impression that the stall speed of the airplane was between 47 and 51 knots and the best angle of climb speed (Vx) was between 55 and 60 knots. The pilot added that when the airplane reached an altitude of 100 to 200 feet above the runway, the engine RPM dropped and the airspeed decreased. The airplane stalled and the nose of the airplane dropped toward the ground, impacting the runway. A witness, who was a flight instructor, was standing on the airport ramp near the main terminal building when he saw the airplane takeoff. He said the airplane was in an "extreme nose high attitude" and he never saw the pilot make an attempt to lower the nose. Examination of the airplane revealed that the airplane came to rest upright on the west side of the runway near the 1,020-foot fixed-distance marks on the runway. The initial impact point was a series of four slash marks on the runway surface just prior to where the airplane came to rest. The flaps were found in the zero-degree (fully retracted) position and the elevator trim tab was positioned one-quarter of a turn from neutral towards the nose down position. According to the airplane's Flight Manual, the tab should be set halfway between neutral and full nose-up for a high performance takeoff. In addition, the published stall speed for the airplane with flaps (power on) was 33 miles per hour (mph) (29 knots).

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain control of the airplane during a short-field takeoff, which resulted in an inadvertent stall.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
2. (C) STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. TERRAIN CONDITION - RUNWAY

Factual Information

On May 5, 2007, at 0850 eastern daylight time, a single-engine Aviat A-1A airplane, N16HY, was substantially damaged when it impacted terrain shortly after takeoff from Runway 01 at the Republic Airport (KFRG), near Farmingdale, New York. The commercial pilot was seriously injured and the passenger sustained minor injuries. The airplane was registered to Air Transport Service, LLC, of Wilmington, Delaware, and operated by the pilot. Visual meteorological conditions prevailed and no flight plan was filed for the local flight conducted under 14 Code of Federal Regulations Part 91.

In a written statement, the pilot stated that he requested a short field, "immediate left downwind departure" from air traffic control. While climbing, the engine's manifold pressure and RPM dropped without warning. The engine lost "significant" power, the "nose went down", and he attempted to land on the runway.

In a telephone interview, the pilot stated that prior to the flight he calculated the airplane's weight and balance to be 15 to 20 pounds under gross weight and performed a pre-flight inspection of the airplane. He then boarded his passenger, started the engine and taxied the airplane to Runway 01(a 5,516-foot-long and 150-foot-wide asphalt runway). The pilot reported that everything was operating normally, and he elected to execute a short-field takeoff. Once the airplane became airborne, he pitched the nose-up to establish a climb airspeed of 55 knots. When asked what the stall speed of the airplane was, the pilot replied that it was between 47 and 51 knots and the best angle of climb speed (Vx) was between 55 and 60 knots. He added that when the airplane reached an altitude of about 100 to 200 feet above the runway, the engine RPM dropped and "things happened fast" as the airspeed decreased. The pilot further stated that he got concerned that the airplane would "slide back on its tail since he was out of the performance parameters of the aircraft." Subsequently, the nose of the airplane dropped toward the ground and the airplane impacted the runway. The pilot declared that he made every effort to recover the airplane; however, he did not have enough altitude to fully recover. In addition, he said that there was an initial drop in engine power (he thought maybe due to a magneto dropping off line), but it came back and the engine was operating at the time of impact. He also could not recall if he had retracted the flaps; however, he did say that if he had retracted the flaps it would have "exacerbated" the "situation."

A witness, who was a flight instructor, was standing on the airport ramp near the main terminal building when he saw the airplane takeoff. He reported that the airplane was in an "extreme nose high attitude" and he never saw the pilot make an attempt to lower the nose. When the airplane reached an altitude of 50-75 feet above the runway, the left wing dropped followed by the nose of the airplane and it impacted the ground.

A Federal Aviation Administration (FAA) safety inspector performed an on-scene examination

of the airplane. According to the inspector, the airplane came to rest in the upright position on the west side of the runway near the 1,020-foot fixed-distance marks. The initial impact point was a series of four slash marks on the runway surface just prior to where the airplane came to rest. Examination of the airplane revealed that the elevator trim tab was positioned one-quarter of a turn from neutral towards the nose down position. According to the airplane's Flight Manual, the tab should be set halfway between neutral and full nose-up for a high performance takeoff. The flaps were found in the zero-degree (fully retracted) position. In addition, the published stall speed for the airplane with flaps (power on) was 33 miles per hour (mph) (29 knots).

A review of the aircraft logbooks revealed the last annual inspection was completed on April 1, 2006. As per Federal Regulations, the airplane was required to have an annual inspection to be considered airworthy.

The pilot held a commercial pilot certificate for airplane single-engine and multi-engine land, and instrument airplane. He reported having accumulated a total of 1,846 hours, of which, 42 hours were in the same make and model aircraft. His last second class FAA medical was issued on December 1, 2006.

Pilot Information

Certificate:	Commercial; Private	**Age:**	52,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
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 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2006
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 1, 2005
Flight Time:	2 hours (Total, all aircraft), 42 hours (Total, this make and model), 1796 hours (Pilot In Command, all aircraft), 28 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aviat	**Registration:**	N16HY
Model/Series:	A-1A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1455
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	April 1, 2006 Annual	**Certified Max Gross Wt.:**	1875 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	481.1 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	0-360
Registered Owner:	Air Transport Service, LLC	**Rated Power:**	180
Operator:	Vincent Pacifico	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	FRG,82 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	9°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	17°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Farmingdale, NY (FRG)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	08:50 Local	**Type of Airspace:**	

Airport Information

Airport:	Republic Aiport KFRG	**Runway Surface Type:**	Asphalt
Airport Elevation:	82 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	01	**IFR Approach:**	None
Runway Length/Width:	5516 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	40.723888,-73.408058

Administrative Information

Investigator In Charge (IIC):	Yeager, Leah
Additional Participating Persons:	Joe Raichelle; FAA/FSDo; Farmingdale, NY
Original Publish Date:	July 25, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65751