# Aviation Investigation Final Report

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| **Location:** | Salina, Kansas | **Accident Number:** | GAA16CA331 |
| **Date & Time:** | June 17, 2016, 20:45 Local | **Registration:** | N853KS |
| **Aircraft:** | Beech F33 | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Aerodynamic stall/spin | **Injuries:** | 2 None |
| **Flight Conducted Under:** | Part 91: General aviation - Instructional | | |

## Analysis

The flight instructor reported that he and his student pilot had remained in the traffic pattern, and had been practicing short field landings and power off 180 degree accuracy turns. The flight instructor further reported that he instructed his student to perform a short field landing for their sixth and final landing, and once "they had the runway made", he would take the flight controls. He intended to demonstrate how "ground effect plays a part in our landings and how one can use it to their advantage if you were in a situation where one would be short on a power off 180 accuracy landing or in a real world situation".

About 50 feet above the ground and over the runway threshold the flight instructor took the controls from the student pilot. He further reported that while he was talking to his student pilot about how "ground effect can extend your landing distance if you carry extra airspeed", he noticed that the pitch attitude was higher than normal and before he could add power or reduce the pitch attitude, the right wing "gave way" and impacted the ground, which resulted in substantial damage to the right aileron.

The pilot verified that there were no preimpact mechanical failures or malfunctions with the airframe or engine that would have precluded normal operation.

The Federal Aviation Administration has published the Airplane Flying Handbook FAA-H-8083-3A (2004). This handbook discusses stalls and states in part:

The key to stall awareness is the pilot's ability to visualize the wing's angle of attack in any particular circumstance, and thereby be able to estimate his/her margin of safety above stall. This is a learned skill that must be acquired early in flight training and carried through the pilot's entire flying career. The pilot must understand and appreciate factors such as airspeed, pitch attitude, load factor, relative wind, power setting, and aircraft configuration in order to develop a reasonably accurate mental picture of the wing's angle of attack at any particular time. It is essential to flight safety that a pilot takes into consideration this visualization of the wing's angle of attack prior to entering any flight maneuver.

Stall accidents usually result from an inadvertent stall at a low altitude in which a recovery was not accomplished prior to contact with the surface.

## Probable Cause and Findings

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

The flight instructor's exceedance of the airplane's critical angle of attack during landing, which resulted in an aerodynamic stall and a collision with terrain.

### Findings

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| **Personnel issues** | Aircraft control - Instructor/check pilot |
| **Aircraft** | Angle of attack - Capability exceeded |

# Factual Information

## History of Flight

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| **Landing** | Aerodynamic stall/spin (Defining event) |
| **Landing** | Abnormal runway contact |

## Flight instructor Information

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| **Certificate:** | Commercial; Flight instructor | **Age:** | 26,Male |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 3-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | Airplane single-engine; Instrument airplane | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | May 2, 2016 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | May 10, 2016 |
| **Flight Time:** | (Estimated) 1026.5 hours (Total, all aircraft), 169.3 hours (Total, this make and model), 980.7 hours (Pilot In Command, all aircraft), 181.6 hours (Last 90 days, all aircraft), 55.5 hours (Last 30 days, all aircraft), 7.5 hours (Last 24 hours, all aircraft) | | |

## Student pilot Information

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| **Certificate:** | Private | **Age:** | 20,Female |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 3-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 Without waivers/limitations | **Last FAA Medical Exam:** | August 15, 2014 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | July 15, 2015 |
| **Flight Time:** | (Estimated) 288.3 hours (Total, all aircraft), 35.2 hours (Total, this make and model), 250 hours (Pilot In Command, all aircraft), 29.7 hours (Last 90 days, all aircraft), 13.8 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Beech | **Registration:** | N853KS |
| **Model/Series:** | F33 A | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1993 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Utility | **Serial Number:** | CE-1765 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | June 6, 2016 100 hour | **Certified Max Gross Wt.:** | 3400 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 6066.3 Hrs at time of accident | **Engine Manufacturer:** | Continental |
| **ELT:** | C126 installed, not activated | **Engine Model/Series:** | IO-520-BB |
| **Registered Owner:** | KANSAS STATE UNIVERSITY SALINA | **Rated Power:** | 285 Horsepower |
| **Operator:** | KANSAS STATE UNIVERSITY SALINA | **Operating Certificate(s) Held:** | Pilot school (141) |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Dusk |
| **Observation Facility, Elevation:** | KSLN,1282 ft msl | **Distance from Accident Site:** | 1 Nautical Miles |
| **Observation Time:** | 01:53 Local | **Direction from Accident Site:** | 38° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 10 knots / | **Turbulence Type Forecast/Actual:** | / None |
| **Wind Direction:** | 130° | **Turbulence Severity Forecast/Actual:** | / N/A |
| **Altimeter Setting:** | 29.92 inches Hg | **Temperature/Dew Point:** | 33°C / 21°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Salina, KS (SLN ) | **Type of Flight Plan Filed:** | Unknown |
| **Destination:** | Salina, KS (SLN ) | **Type of Clearance:** | VFR |
| **Departure Time:** | 19:45 Local | **Type of Airspace:** | Class D |

## Airport Information

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| **Airport:** | SALINA RGNL SLN | **Runway Surface Type:** | Asphalt;Concrete |
| **Airport Elevation:** | 1288 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 17 | **IFR Approach:** | None |
| **Runway Length/Width:** | 12301 ft / 150 ft | **VFR Approach/Landing:** | Full stop;Traffic pattern |

## Wreckage and Impact Information

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| **Crew Injuries:** | 2 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 None | **Latitude, Longitude:** | 38.789165,-97.660835(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Vanover, Jackie |
| **Additional Participating Persons:** | Megan R Sayre; FAA; Wichita, KS |
| **Original Publish Date:** | September 12, 2016 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | This accident report documents the factual circumstances of this accident as described to the NTSB. |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=93457 |