# Aviation Investigation Final Report

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| **Location:** | Columbus, Georgia | **Accident Number:** | ERA14LA422 |
| **Date & Time:** | September 3, 2014, 12:01 Local | **Registration:** | N333AW |
| **Aircraft:** | ACKLAND JEFFREY DEAN SH 3R | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Landing gear collapse | **Injuries:** | 2 None |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The pilot was returning the airplane to his home base following an avionics installation. During the takeoff roll, about 80 knots, the canopy handle vibrated to the open position, and the canopy opened. As the pilot was rejecting the takeoff, the landing gear retracted. The pilot was unable to maintain directional control, and the airplane departed the runway; the left wing struck a taxiway sign, resulting in structural damage. Examination of the aircraft after the accident revealed that the landing gear extend/retract switch was installed upside-down in the newly-replaced instrument panel. The switch was in the "retract" position during preflight and takeoff; however, the safety squat switch on the landing gear prevented gear retraction while on the ground. Once weight was removed from the landing gear during the takeoff sequence, the switch commanded the landing gear to retract. The mechanic who installed the instrument panel did not perform a functional gear check (gear swing) prior to releasing the airplane to the owner.

## Probable Cause and Findings

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

The mechanic's improper installation of the landing gear extend/retract switch, which resulted in the retraction of the landing gear during the aborted takeoff.

## Findings

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| **Aircraft** | Gear extension and retract sys - Incorrect service/maintenance |
| **Personnel issues** | Incorrect action performance - Maintenance personnel |

# Factual Information

## History of Flight

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| **Prior to flight** | Aircraft maintenance event |
| **Takeoff** | Miscellaneous/other |
| **Takeoff-rejected takeoff** | Landing gear collapse (Defining event) |
| **Takeoff-rejected takeoff** | Runway excursion |
| **Takeoff-rejected takeoff** | Collision with terr/obj (non-CFIT) |

On September 3, 2014, about 1201 eastern daylight time, an Ackland SH-3R (Glasair III), N333AW, collided with a taxiway sign following a rejected takeoff and landing gear retraction at Columbus, Georgia (CSG). The commercial pilot and one passenger were not injured, and the airplane was substantially damaged. The experimental, amateur-built airplane was operated under the provisions of 14 CFR Part 91 by the pilot. Day, visual meteorological conditions prevailed for the personal flight, and no flight plan was filed. The flight was destined for Crestview, Florida (CEW).

The pilot reported the airplane had been at CSG undergoing avionics installations for several weeks and he was returning it to his home base. During the takeoff roll on runway 24, while passing 80 knots, the pilot's canopy began to open. He would later report that the canopy handle became unsecured due to aircraft vibration, which had happened previously. The left wing came up and the pilot rejected the takeoff. The airplane began to settle as the landing gear collapsed. The airplane departed the right side of the runway and struck a taxiway sign. The airplane came to rest in the grass, adjacent to the runway.

An inspector with the Federal Aviation Administration responded to the accident site and examined the wreckage. The inspector confirmed structural damage to the left wing. The aircraft was then moved to a hangar for inspection of the landing gear system. The inspection revealed that the landing gear extend/retract switch was installed upside-down in the newly-replaced instrument panel. Troubleshooting revealed that the switch was in the "retract" position during preflight and takeoff; however, the safety squat switch on the landing gear prevented gear retraction on the ground. Once weight was removed from the landing gear during the takeoff sequence, the gear retracted.

The inspector also reported that the mechanic for the avionics company did not perform a functional check (gear swing) on N333AW after the avionics installation. They did not possess a set of aircraft jacks to accomplish this and did not try to procure a set.

## Pilot Information

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| **Certificate:** | Commercial | **Age:** | 80 |
| **Airplane Rating(s):** | Single-engine land; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 3-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 3 With waivers/limitations | **Last FAA Medical Exam:** | June 13, 2013 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | April 24, 2014 |
| **Flight Time:** | 12000 hours (Total, all aircraft), 276 hours (Total, this make and model), 12000 hours (Pilot In Command, all aircraft), 3 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | ACKLAND JEFFREY DEAN | **Registration:** | N333AW |
| **Model/Series:** | SH 3R | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 1990 | **Amateur Built:** | Yes |
| **Airworthiness Certificate:** | Experimental (Special) | **Serial Number:** | 3129 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | November 30, 2013 Condition | **Certified Max Gross Wt.:** | 2500 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 1827 Hrs at time of accident | **Engine Manufacturer:** | LYCOMING |
| **ELT:** | C91 installed, not activated | **Engine Model/Series:** | IO-540 SER |
| **Registered Owner:** | On file | **Rated Power:** | 300 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | CSG,397 ft msl | **Distance from Accident Site:** | 0 Nautical Miles |
| **Observation Time:** | 11:51 Local | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / | **Turbulence Type Forecast/Actual:** | / None |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | / N/A |
| **Altimeter Setting:** | 30.04 inches Hg | **Temperature/Dew Point:** | 30°C / 21°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Columbus, GA (CSG ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Crestview, FL (CEW ) | **Type of Clearance:** | VFR flight following |
| **Departure Time:** | 12:01 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Columbus Airport CSG | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 397 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 24 | **IFR Approach:** | None |
| **Runway Length/Width:** | 6997 ft / 150 ft | **VFR Approach/Landing:** | None |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 None | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 1 None | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 None | **Latitude, Longitude:** | 32.516387,-84.938888(est) |

## Administrative Information

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| **Investigator In Charge (IIC):** | Hicks, Ralph |
| **Additional Participating Persons:** | |
| **Original Publish Date:** | February 11, 2015 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=90015 |