Aviation Investigation Final Report

Location:	Santa Clara, Utah	**Accident Number:**	WPR14FA183
Date & Time:	May 7, 2014, 08:55 Local	**Registration:**	N8236F
Aircraft:	Cessna 150 - F	**Aircraft Damage:**	Substantial
Defining Event:	Abrupt maneuver	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

A witness reported that he observed the airplane at an altitude of between 800 to 1,000 ft above ground level about 2 miles from his location. About the same time, he also heard the airplane's engine sputter, and he then observed the airplane in a vertical, nose-down attitude for 3 to 4 seconds before it went out of sight behind a hill. The wreckage was found about 2 hours later in remote mountainous, rocky terrain. An on-site examination of the airframe and engine revealed that the airplane impacted the terrain upright in a flat orientation on a 27-degree downslope. Based on observed impact signatures, the airplane's forward momentum was negligible just before it impacted terrain. All of the components necessary for flight were accounted for at the accident site. Additionally, examinations of the airframe and engine revealed no anomalies that would have precluded normal operation. Based on the witness's observations and the physical evidence observed at the accident site, it is likely that the airplane was in a steep descent at a low altitude and that the flight instructor failed to pull the airplane up and out of the nose-down attitude at a sufficient altitude to preclude impact with terrain.

Probable Cause and Findings

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

The flight instructor's failure to arrest the airplane's descent and maintain clearance from mountainous terrain while maneuvering at a low altitude.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Delayed action - Instructor/check pilot
Personnel issues	Monitoring environment - Pilot
Personnel issues	Identification/recognition - Pilot
Environmental issues	Mountainous/hilly terrain - Awareness of condition

Factual Information

History of Flight

Maneuvering	Abrupt maneuver (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

On May 7, 2014, about 0855 mountain daylight time, a Cessna 150F airplane, N8236F, sustained substantial damage following impact with remote mountainous terrain while maneuvering about 2 nautical miles (nm) west of Santa Clara, Utah. The airplane was owned and operated by Above View Aviation, Saint George, Utah. The certified flight instructor, who occupied the right cockpit seat, and the pilot receiving instruction, who occupied the left cockpit seat, were fatally injured. Visual meteorological conditions prevailed for the local instructional flight, which was being operated in accordance with 14 Code of Federal Regulations Part 91. A flight plan was not filed. The flight had departed the Saint George Municipal Airport (SGU), Saint George, Utah, about 0800.

In an interview with the National Transportation Safety Board investigator-in-charge (IIC), the operator of the airplane, Above View Aviation, stated that this was the second or third orientation flight for the left seat student pilot, who had recently become interested in learning to fly. The operator stated that he thought the flight departed between 0815 and 0830, and that there was a radio call from the pilot stating that they were departing to the north, but that they could not have gone too far, as the cloud ceilings came down quickly to the north. He also stated that there were no further radio calls from the accident airplane, although a local pilot did report observing the accident airplane flying low level about 2 to 3 miles northwest of the airport at about 0915.

In a telephone conversation with the NTSB IIC about one week after the accident, a witness reported that he and his brother were out for a bicycle ride on the morning of the accident, having arrived at the Rim Runner bike trail at about 0800 local time. The witness stated that at exactly 0848, he observed an airplane overhead flying from east to west; the time was exact due to the fact that he looked at his watch at this time. The witness opined that he estimated that the altitude of the airplane at this time was between 800 to 1,000 ft above ground level. The witness stated that shortly thereafter, while the airplane was still proceeding to the west and when it was about 2 miles from his location, he heard the airplane's engine sputter, and then observed the airplane in a vertical nose down attitude for between 3 to 4 seconds. The witness also recalled seeing the wings wobbling at 0853, before it went out of sight behind a hill. The witness added that at 0856, he made a 911 call, and reported that his position was at the Santa Clara River Reserve, Zone #4, at which time he looked for signs of smoke, but there was none. At 0902, the witness stated that he called Federal Aviation Administration (FAA), but the recording indicated that they were temporarily unavailable. At this time the witness and his brother rode up to a high bluff to see if they could identify a plane crash, but they couldn't. He concluded by saying that at 1055, after he had ridden down the Barrel Roll trail, he spotted the wreckage.

The airplane was located in rugged, remote mountainous terrain at coordinates 37 degrees 7 minutes 10 seconds north latitude, and 113 degrees 41 minutes 59 seconds west longitude, and at an elevation of about 3,540 feet mean sea level. The airplane impacted rock-covered terrain on a 27-degree downslope

in an upright orientation, and on a measured magnetic heading of about 350 degrees, which coincided with the airplanes at rest heading. All components necessary for flight were accounted for at the site of the accident.

Flight instructor Information

Certificate:	Airline transport; Flight instructor	**Age:**	75
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	June 11, 2013
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	October 9, 2013
Flight Time:	14766 hours (Total, all aircraft), 11 hours (Total, this make and model), 9657 hours (Pilot In Command, all aircraft), 77 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	None	**Age:**	38
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	None None	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 5 hours (Total, all aircraft), 2 hours (Total, this make and model), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Flight Instructor

The flight instructor (CFI), age 75, held an airline transport pilot certificate, with single-engine and multiengine land ratings, and instrument airplane rating, and a flight instructor rating for airplane single-engine, multiengine, and instrument airplane. The instructor's most recent biennial flight review was conducted on October 9, 2013, and his most recent FAA first-class airman medical certificate was issued on June 11, 2013, with no limitations noted.

A review of the CFI's personal pilot logbooks by the NTSB IIC, as well as data provided by the airplane's operator, Above View Jet Center of Saint George, Utah, revealed that at the time of the accident the pilot had accumulated a total time of 14,756 hours, 10,862 hours in multiengine airplanes,

3,894 hours in single-engine airplanes, and about 11 hours in the accident airplane make and model. It was also revealed that the pilot had accumulated 9,657 hours as pilot in command, and about 3,350 hours of instruction given as a certified flight instructor. Additionally, the pilot had flown a total of 77 hours, 55 hours, 22 hours, and 1 hour in the previous 90 days, 60 days, 30 days, and 24 hours respectively. The pilot held type ratings on the following airplanes: CE-500, CE-525S, EA-500S, EMB-120, and the SA-227.

The pilot's flying experience included being a pilot in the United States Air Force from August 1965 to November 1985, pilot for a FAA Part 121 regional airline from October 1989 to December 1999, contract flying and flight instructing from January 1999 to October 2000, scenic flying in an EMB-120 airplane, Katmandu, Nepal, from October 2000 to April 2001, and general FAA Part 91 flying activities, including charters and flight instruction from May 2001 until the day of the accident.

Pilot Receiving Instruction

The pilot receiving instruction had neither a student pilot certificate nor a valid FAA airman medical certificate. According to the operator of the airplane, at the time of the accident the pilot had accumulated a total flying time of 4 hours, with 2 hours in make and model, all within the preceding 90 days, and 1 hour within the last 24 hours.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N8236F
Model/Series:	150 - F	**Aircraft Category:**	Airplane
Year of Manufacture:	1966	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	15064336
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	March 10, 2014 Annual	**Certified Max Gross Wt.:**	1760 lbs
Time Since Last Inspection:	49 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	8993 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, not activated	**Engine Model/Series:**	O-320-E2D
Registered Owner:	Planelogic LLC	**Rated Power:**	150 Horsepower
Operator:	Above View Jet Center	**Operating Certificate(s) Held:**	None

The accident airplane was a Cessna model 150F, serial number 15064336. It was a two-place, high-wing airplane, with a fixed tricycle landing gear configuration. The airplane was originally issued a utility category standard airworthiness certificate in June 1966, and was maintained in accordance with the Manufacturer's Inspection Program. Its most recent continuous airworthiness inspection was performed on March 10, 2014, at a total time 8,993 hours.

The airplane was powered by a Lycoming O-320-E2D engine, serial number L44995-27A, and equipped

with a McCauley fixed pitch, two-bladed propeller. It was reported that at the time of the accident the engine had accumulated a total time of 5,389 hours, 2,703 hours since it last overhaul, and 49 hours since it most recent inspection.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SGU,2884 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	08:35 Local	**Direction from Accident Site:**	115°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 8000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots / None	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.75 inches Hg	**Temperature/Dew Point:**	12°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Saint George, UT (SGU)	**Type of Flight Plan Filed:**	None
Destination:	Saint George, UT (SGU)	**Type of Clearance:**	None
Departure Time:	08:00 Local	**Type of Airspace:**	Class G

At 0835, the SGU Automated Weather Observing System (AWOS), located 10 nm southeast of the accident site, reported wind 130 degrees at 4 knots, visibility 10 miles, overcast clouds at 7,000 feet, temperature 12 degrees C, dew point minus 1 degree C, and an altimeter setting of 29.75 inches of mercury.

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	37.119445,-113.699722

An examination of the airframe and engine was conducted at the accident site on May 8, 2014. The examination revealed that the airplane had come to rest on the side of a mountain in an upright position, oriented facing down slope on an incline of about 27 degrees. The airplane's at rest magnetic heading was 350 degrees; a relative impact heading could not be definitively determined.

Airframe Examination

All major structural components of the airplane were present at the accident site. All control surfaces were observed attached at their relative attach points. Control cable continuity was established throughout the airframe. Cables were observed pinched under the cabin floor.

The elevator trim tab was faired, and the elevator trim control was damaged. The flaps were in the retracted position; the flap actuator retracted 0.0" extension. The flap switch was spring loaded to neutral.

The throttle was closed, the mixture control was full rich, and the carburetor heat was off. The magneto switch was selected to the BOTH position.

The rudder stop Airworthiness Directive had been complied with: Left present and Right separated in the impact sequence. The rudder stop bolts were damaged.

The #1 control yoke (left pilot station) was observed to be unremarkable, and the #2 yoke (right pilot station) had separated due to impact forces.

The position of the fuel selector was undetermined. Both fuel tanks had been breached (supply line). Both tanks contained fuel, and both fuel caps were serviceable and secured.

A survey of the cockpit instrumentation revealed the following: the directional gyro read 060 degrees, the airspeed indicator read 0, and the vertical speed indicator also read 0. The transponder was observed set at squawk code 1200 (VFR). The fuel indicators read empty, and the fuel pressure read 0. The altimeter reading was 2,630 feet, and the pressure was set at 29.78 inHg. The Omni Bearing Selector read 260 degrees, the tachometer read 629.6 hours, and the Hobbs meter read 2,415.0 hours.

The examination of the airframe revealed no catastrophic failure that would have precluded normal operation.

Engine Examination

The engine remained attached to the airframe by the engine mount. The engine had sustained significant impact energy damage at the oil sump and exhaust system. Visual examination of the engine revealed no evidence of pre-impact catastrophic mechanical malfunction or fire.

The vacuum pump was removed, and the crankshaft was rotated by hand through the drive pad utilizing a drive tool. The crankshaft was free and easy to rotate in both directions. Thumb compression was observed in proper order on all four cylinders.

The top spark plugs were removed and examined, with normal wear observed.

The complete valve train was observed to operate in proper order, and appeared to be free of any pre-mishap mechanical malfunction. Normal "lift action" was observed at each rocker assembly. Clean, uncontaminated oil was observed at all four rockerbox areas. Mechanical continuity was established

throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft.

The combustion chamber of each cylinder was examined through the spark plug holes utilizing a lighted borescope. The combustion chambers remained mechanically undamaged, and there was no evidence of foreign object ingestion or detonation. The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. There was significant ductile bending of the exhaust system components.

The left and right magnetos remained securely clamped at their respective mounting pads. The ignition harness was secure at each magneto. Magneto to engine timing could not be ascertained, due to the destruction of the flywheel.

The impulse coupler equipped left magneto produced a spark at the end of each spark plug lead (B2 & 4, T1 & 3) during hand rotation of the crankshaft. The right magneto was removed and the drive was found intact and properly safetied. The magneto was observed to produce spark at all four plug leads during hand rotation of the drive.

The carburetor bowl was displaced from the carburetor due to the forces of impact. The portion of carburetor that remained attached at the mounting pad was secure. The fracture surface signatures were consistent with overload.

The internal float assembly had sustained impact energy damage and had been displaced from the mounting. There was no fuel observed in the float bowl, and no visible contaminates were observed within the carburetor bowl.

On site examination of the engine driven fuel pump, fuel lines, and carburetor controls was precluded by the positioning of the airplane and engine at the accident site.

The engine fuel system was examined further (post recovery) on July 25, 2014 at the hangar facilities of Above View, Jet Center, St George Airport, Utah.

The carburetor sustained impact energy damage, as described previously. The throttle/mixture controls were found securely attached at their respective control arms of the carburetor.

The fuel pump was attached to the engine at the mounting pad. The fuel lines remained secure at their respective fittings. The fuel pump cover was removed for examination. The fuel pump remained free of internal mechanical malfunction and obstruction to flow. The diaphragm remained intact. The foam filter element remained securely attached to the airbox bracket. The filter element remained intact and exhibited no evidence of pre-impact obstruction to airflow.

The two-bladed, fixed pitch, McCauley propeller remained attached at the crankshaft flange. The spinner was attached to the propeller. The propeller blade tips exhibited minor rotational damage signatures.

The examination of the airplane's engine failed to reveal any anomalies that would have precluded normal operation.

Medical and Pathological Information

On May 8, 2014, an autopsy of the right-seat pilot was performed at the facilities of the Office of the Medical Examiner, Utah Department of Health, Salt Lake City, Utah. The results of the examination revealed that the cause of death was attributed to "total body blunt force injuries."

Toxicological testing was performed on the right-seat pilot by the FAA's Civil Aeromedical Institute, Oklahoma City, Oklahoma. The results of the testingrevealed no Carbon Monoxide detected in the Blood, no Ethanol detected in the Vitreous, and testing for Cyanide not performed. Additionally, Desmethylsildenafil and Sildenafil (Viagra) was detected in the Blood and Urine.

On May 8, 2014, an autopsy of the left-seat pilot was performed at the facilities of the Office of the Medical Examiner, Utah Department of Health, Salt Lake City, Utah. The results of the examination revealed that the cause of death was attributed to "total body blunt force injuries."

Toxicological testing was performed on the right-seat pilot by the FAA's Civil Aeromedical Institute, Oklahoma City, Oklahoma. The results of the testing revealed no Carbon Monoxide detected in Blood, no Ethanol detected in Blood, and no testing performed for Cyanide. Additionally, all testing for drugs was negative.

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Rodney Martinez; Federal Aviation Administration; Salt Lake City, UT Mark Platt; Lycoming Engines; Williamsport, PA Steve Miller; Textron Aviation; Wichita, KS
Original Publish Date:	July 29, 2015
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89178