Aviation Investigation Final Report

Location:	Silverton, Colorado	**Accident Number:**	CEN15FA400
Date & Time:	September 5, 2015, 14:08 Local	**Registration:**	N1099Q
Aircraft:	Cessna 310H	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane owner, who was a noninstrument-rated private pilot and did not hold a multiengine airplane rating, was conducting a visual flight rules (VFR), personal cross-county flight in the multiengine airplane. Before the accident flight, the pilot flew the airplane to an intermediate airport to refuel. A review of air traffic control (ATC) radio transmissions between the pilot and an air traffic controller between 0911 and 0938 showed that, during the approach for landing, the pilot misidentified in every transmission the make and model airplane he was flying, referring to his airplane as a Piper Comanche instead of a Cessna 310. Further, he did not provide correct responses to the controller's instructions (for example, he reported he was set up for the left base leg instead of right base leg as instructed), and he provided inaccurate information about the airplane's position, including its distance and direction from the airport.

A witness stated that, after the airplane landed and while it was taxiing, it almost hit another airplane and golf carts, and it was taxied close enough to the fuel pumps that it "knocked" a ladder with one of its propellers. The witness said that the pilot was not "observant about his surroundings." While at the intermediate airport, the pilot requested an abbreviated weather briefing for a VFR flight from that airport to the destination airport. However, the pilot incorrectly identified the destination airport as "L51," which was depicted on the VFR sectional chart for the Amarillo area but referred to the maximum runway length available at the destination airport not the airport itself. L51 was an airport identifier assigned to an airport in another state and located north of the accident location and in a direction consistent with the airplane's direction of travel at the time of the acident.

During the departure for the accident flight, the pilot taxied to and attempted to take off from an active runway without any radio communications with or clearance from ATC, which resulted in a runway incursion of an air carrier flight on final approach for landing to the runway. The air carrier initiated a missed approach and landed without further incident. The controller reported that the runway incursion was due to the accident pilot's loss of "situational awareness." Radar data showed that, after the airplane departed, it turned northward and away from a course to the intended destination airport. The northward

turn and track was consistent with a course to an airport in another state. According to meteorological information, as the flight progressed northward, it likely encountered instrument meteorological conditions (IMC) while flying into rain showers. The wreckage was found in rising mountainous terrain, and the accident wreckage distribution was consistent with a low-angle, high-speed impact. Given that postaccident examination of the airplane revealed no mechanical anomalies that would have precluded normal operation, it is likely that the noninstrument-rated pilot did not see the rising mountainous terrain given the IMC and flew directly into it.

The pilot had told person(s) that he flew F-4 Phantoms, but a military identification card showed that the pilot was a retired Marine lance corporal. Although the pilot's logbook showed that he had accumulated 150 hours of multiengine airplane flight time, there was no record of the actual flights showing the accumulation of 150 multiengine airplane hours or any record that he had flown military aircraft. The logbook did not show that the pilot had received any flight training in the accident airplane. The logbooks also showed that he had flown numerous flights in the airplane with passengers without proper certification and that he had not had a recent flight review as required by Federal Aviation Regulations (FARs). The pilot's logbook showed that he had once made low-altitude (10 ft above the ground) passes over a parade in the same airplane. The airplane had not received an annual inspection for continued airworthiness as required by FARs. The pilot's noncompliance with FARs and the logbook entries indicate that he had a history of poor decision-making and piloting errors, which was reflected in his behavior and actions while landing at the intermediate airport and during the taxi and takeoff phases of the accident flight.

Although the pilot had a number of medical problems that potentially could have interfered with his ability to safely operate the airplane, including spinal cord injuries, diabetes, and psychiatric issues, and was taking medications to treat them, these conditions and medications likely would not have interfered with his navigational skills and his ability to communicate on the radio or affected his decision-making. Although the available medical information was limited by the degree of damage to the body, there was no evidence of a medical condition or effects of a medication that contributed to this accident. Although ethanol was detected in the pilot's tissues, it likely resulted from postmortem production.

Probable Cause and Findings

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

The noninstrument-rated pilot's improper judgment and his failure to maintain situational awareness, which resulted in the flight's encounter with instrument meteorological conditions and controlled flight into terrain during cruise flight.

Findings

Personnel issues	Recent instrument experience - Pilot
Personnel issues	Qualification/certification - Pilot
Personnel issues	Decision making/judgment - Pilot
Personnel issues	Task monitoring/vigilance - Pilot
Personnel issues	Monitoring environment - Pilot
Personnel issues	Situational awareness - Pilot
Environmental issues	(general) - Effect on operation

Factual Information

History of Flight

Enroute	VFR encounter with IMC
Enroute	Controlled flight into terr/obj (CFIT) (Defining event)

On September 5, 2015, about 1408 mountain daylight time a Cessna 310H, N1099Q, impacted mountainous terrain near Silverton, Colorado. The private pilot, a pilot-rated passenger, and two passengers were fatally injured. The airplane was destroyed by impact forces. The airplane was registered to and operated by the pilot as a 14 *Code of Federal Regulations* Part 91 a personal flight. Instrument meteorological conditions (IMC) prevailed at the time of the accident, and no flight plan had been filed. The pilot was not using air traffic control (ATC) services. The flight departed from Flagstaff Pulliam Airport (FLG), Flagstaff, Arizona, about 1150 and was destined for Tradewind Airport (TDW), Amarillo, Texas.

A fuel receipt from the Big Bear City Airport (L35), Big Bear, California, showed that 20.04 gallons of fuel was purchased for the airplane on September 4, 2015.

The pilot's daughter stated that the airplane was kept at L35 during the summer and afterward at Barstow-Daggett Airport (DAG), Daggett, California. She said that her father departed from L35 on September 5, 2015, about 0615 PDT, and arrived at DAG about 0630 PDT to pick up the passengers. He was then going to fly to Amarillo, Texas, following Interstate 40, where they were going to have dinner and then return the same day. She said that her father did not call her after he refueled and departed Flagstaff and that she called for help on September 6 because she had not heard from him. She said that there was another pilot aboard and that they had a GPS. She said that her father did not know anyone in Colorado or Montana.

A part-time Unicom operator at L35 said that the pilot talked about conducting the flight about 1 week before the accident. The pilot asked "a lot of different pilots to go along as copilot" and asked him to go on the flight. The Unicom operator did not know what time the pilot departed on September 5, but "it was pretty early in the morning" when the pilot left to pick up passengers. The Unicom operator stated that the pilot purchased the airplane "not too long ago," that the airplane radios were "very old," and that the "instruments were not all that good."

The pilot's initial contact with an air traffic control (ATC) facility on the day of the accident occurred during a visual approach to FLG. A rerecording of provided radio transmissions between the pilot and an FLG air traffic controller between 1011 and 1038 follows:

N1099Q: "Flagstaff traffic this is Piper Comanche N1099Z I'm sorry quebec we're approximately thirty miles miles west of the field anybody know what how the weather is down there you socked in there cause we are flying over the top here."

FLG tower: "Comanche 1099Q flagstaff tower we are open. The uh the ATIS is also broadcasting we're

900 broken, 1,600 broken, 2,400 overcast, visibility 10."

N1099Q: "Oh thank you I just turned the ATIS then. I appreciate it thank you Flagstaff."

N1099Q: "Flagstaff tower 1099Q about to land we are we are approximately 10 miles west of the airport."

FLG tower: "Comanche uh 99Q flagstaff tower the uh we're IFR at the airport 900 broken 1600 broken visibility 10."

1099Q: "We are now approximately 8,000 feet we have visibility looks like greater than 10 miles."

FLG tower: "Comanche 99Q I concur with the visibility uh are you requesting something special."

FLG tower: "Comanche 99Q the field is now VFR the uh ceiling is well I have a scattered layer of 1,200 ceiling 1,600 report a right base for runway 21."

N1099Q: "Report right base for runway 21 will do quebec."

FLG tower: "Comanche 99Q uh verify you have information charlie."

N1099Q: "Copy that we have we got a little bit of a … here."

FLG tower: "Comanche 99Q roger the wind is 220 at 8 temperature 16 density altitude is 8,400 dew point 13 and the altimeter 30.26."

N1099Q: "30.36 thank you."

FLG tower: "altimeter 30.26 26."

N1099Q: "Flagstaff tower this is quebec were gonna report left base runway 21 I just want to confirm that quebec."

FLG tower: "Comanche 99Q are you set up for a right base or a left base you're coming from the west you said."

N1099Q: "Oh its showing left base on my uh GPS left traffic on runway 21."

FLG tower: "Comanche 99Q uh we can make whichever way you want I just need to know which direction you're coming from."

N1099: "Well we're comin we're we're coming from 270 right now."

FLG tower: "From 270 you should be west of the…airport where was the destination you left from."

N1099Q: "Well we can report let's see the winds are from uh what."

FLG tower: "Comanche 99Q the wind is 240 at 6 just report base."

N1099Q: "Well… we're…right now…"

FLG tower: "Comanche 99Q that came in broken and unreliable."

N1099Q: "The winds are 210."

FLG tower: "Wind 210 at 8."

FLG tower: "Comanche 99Q how far from the airport are you."

N1099Q: "We're downwind 21 left we're settin up for uh base for 21 left."

FLG tower: "Okay we only have runway 21 okay I see you now you are on a left downwind runway 21 cleared to land wind 210 at 8."

FLG tower: "Comanche 99Q runway 21 cleared to land."

N1099Q: "…the end of the runway now…on the downwind we'll make base to final."

FLG tower: "Comanche 99Q runway 21 cleared to land."

N1099Q: "Cleared to land runway 21."

FLG tower: "N99Q are you going to uh wiseman aviation the FBO."

N1099Q: "Yes we want to gas up can we exit."

FLG tower: "N99Q continue on the runway turn right alpha seven self-serve fuel will be towards the base of the rotating beacon if you want the uh FBO it's a green building near the uh rotating beacon."

N1099Q: "Okay I see the rotating beacon I guess we can make a right taxi here."

FLG tower: "N99Q you make right turn alpha seven that will get you more direct."

N1099Q: "Gotcha alpha seven."

N1099Q: "Flagstaff…down and clear of runway taxi to fuel pump."

N1099Q: "Yep."

N1099Q: "Quebec gettin ready to touchdown here runway 21 here flagstaff."

A fixed-base operator (FBO) employee at FLG stated that, during the airplane's taxi to the fuel pumps,

the airplane almost hit an "Eclipse jet," and he thought it was going to hit golf carts that were near the FBO building. When the airplane arrived, it taxied close enough to the self-serve fuel pumps that it "knocked" a ladder with one of its propellers. He said that the pilot was not "observant about his surroundings." The airplane had white "house letters" painted on its side similar to those on fighter or Air Force aircraft. The house letters had "pilot" followed by a name, which he could not remember seeing, and "copilot" followed by "God." The airplane "looked clean.". The employee stated that the pilot told him that he hoped there were no more clouds, there was no more weather, and that he wanted 75 gallons of fuel for the airplane. The pilot pointed east and added that it should be 2 more hours to their destination. The employee thought the destination was Amarillo but was certain that it was in Texas.

The FBO employee said he showed the pilot how to use the fuel pump. The pilot gave the fuel order and payed for the fuel with cash. A passenger helped fuel the airplane at the self-serve fuel pump; he added about 15 gallons of fuel to the left and right wing fuel tanks (auxiliary fuel tanks) and put the fuel caps back on. The wing tip fuel tanks (main fuel tanks) were topped off.

The FBO employee stated that another passenger said that he bought a "brand new GPS" and could not get "ADAS[Automated Weather Observing System Data Acquisition System]" to work and thought he also said, "oh well we'll figure it out later."

At 1054, the pilot called Lockheed Martin Flight Services (LMFS) while at FLG and requested an abbreviated weather briefing for a visual flight rules flight from FLG to Amarillo, Texas. The pilot told the weather briefer that the Amarillo, Texas, airport identifier was "L51"; this was not the correct identifier for Tradewind Airport. The correct identifier was TDW; the L51 airport identifier was assigned to Heller Farm Airport, Winifred, Montana. Despite providing the weather briefer with the wrong airport identifier, the briefer did provide information for the flight to Amarillo. The pilot received the latest weather information in the briefing, which included Airmen's Meteorological Information for mountain obscuration, convective outlooks (the briefer mentioned that there was no convective activity yet but told the pilot to stay updated via Flight Watch), the terminal aerodrome forecast for Rick Husband Amarillo International Airport, Amarillo, Texas, the Meteorological Terminal Aviation Routine Weather Report for Tucumcari Municipal Airport, Tucumcari, New Mexico, and the winds aloft at 9,000 and 12,000 ft between the departure and destination airports. No record was found indicating that the accident pilot received or retrieved any other weather information before or during the flight.

The FBO employee at FLG stated that, after the airplane was fueled, it taxied past the FLG ATC tower without making any radio communications with ATC. The airplane taxied onto a runway while an "air shuttle" was landing, and the air shuttle (SkyWest 2992) had to abort its landing. The pilot then turned the radio on and taxied off the runway and onto a taxiway near the air carrier ramp. A FLG airport rescue and firefighting (ARFF) employee drove to the airplane to talk to the pilot. The ARFF personnel told the left front pilot seat occupant that he had to move the airplane because it was blocking an air carrier ramp entrance. The employee said that FLG ATC had a "lengthy conversation" with the pilot after he had taxied the airplane off the runway and was told to call the FLG ATC tower. The employee said that he overheard on the FLG ATC frequency the air shuttle pilot asking about the airplane, and FLG ATC responded by saying it was "a case of situational awareness."

According to an Air Traffic Mandatory Occurrence Report, SkyWest 2992, CRJ2/L, was on the

instrument landing system (ILS) runway 21 approach and was cleared to land on runway 21. The accident airplane was observed northbound on taxiway A without authorization from the FLG tower. N1099Q turned right onto the connecting taxiway A2 continuing toward runway 21. At that time, the tower controller issued go-around instructions to SkyWest 2992 on about 1 1/2 mile final and coordinated missed approach instructions with Phoenix Approach. The accident airplane continued onto runway 21 and initiated the takeoff roll and then established communication with the tower. The tower controller instructed the accident pilot to cancel takeoff and exit the runway. SkyWest 2992 was vectored back to the ILS approach course and landed without further incident.

The FLG ATC tower controller stated that, during his telephone conversation with the accident pilot following the runway incursion, the pilot "kind of missed the point," "came up with excuses" for the runway incursion, and did not know there was another airplane "out there" during the runway incursion. The controller stated that, when he told the pilot that there was an airliner on final, and it was at that point that the pilot "realized the gravity of the situation." The pilot then said that he had been flying for 50 years and nothing like this happened before. The controller said it "seemed" that the pilot "really didn't register" what had happened. The controller added that he did not remember having to repeat questions that he asked the pilot. The pilot did not seem upset nor did the pilot ask questions in response to the questions asked by the controller. The controller said that, during the second takeoff attempt, the accident airplane settled onto the runway after it had lifted off and then climbed out with a left turn.

The ARFF employee stated that the accident airplane taxied from the FBO to taxiway A2, held at A2, and then taxied onto an active runway with a commercial regional airplane on short final without any radio contact to ATC. The employee said that the accident pilot transmitted that he did not have the airplane's radio turned on or "something to that effect" and stated that they were going to take off. The employee said that the radio transmissions from the accident pilot were "screwy" and "lacked organization and context, and was not current."The employee said that it seemed like the pilot had spent a lot of time around uncontrolled airports. The employee said that during the airplane's second takeoff attempt, the airplane remained low over runway 21 for a long time and that, about 1,000 ft from the departure end of the runway, the airplane pulled up, "not steep," and entered a left turn to the east and headed northeast.

The flight was not receiving ATC services and was not assigned a transponder squawk code. The airplane used a squawk code of 1200 based upon ATC recordings and the arrival/departure times to and from FLG. The radar track of an airplane with a squawk code correlating to those times was plotted to provide an overview of the flight and is shown in figure 1.

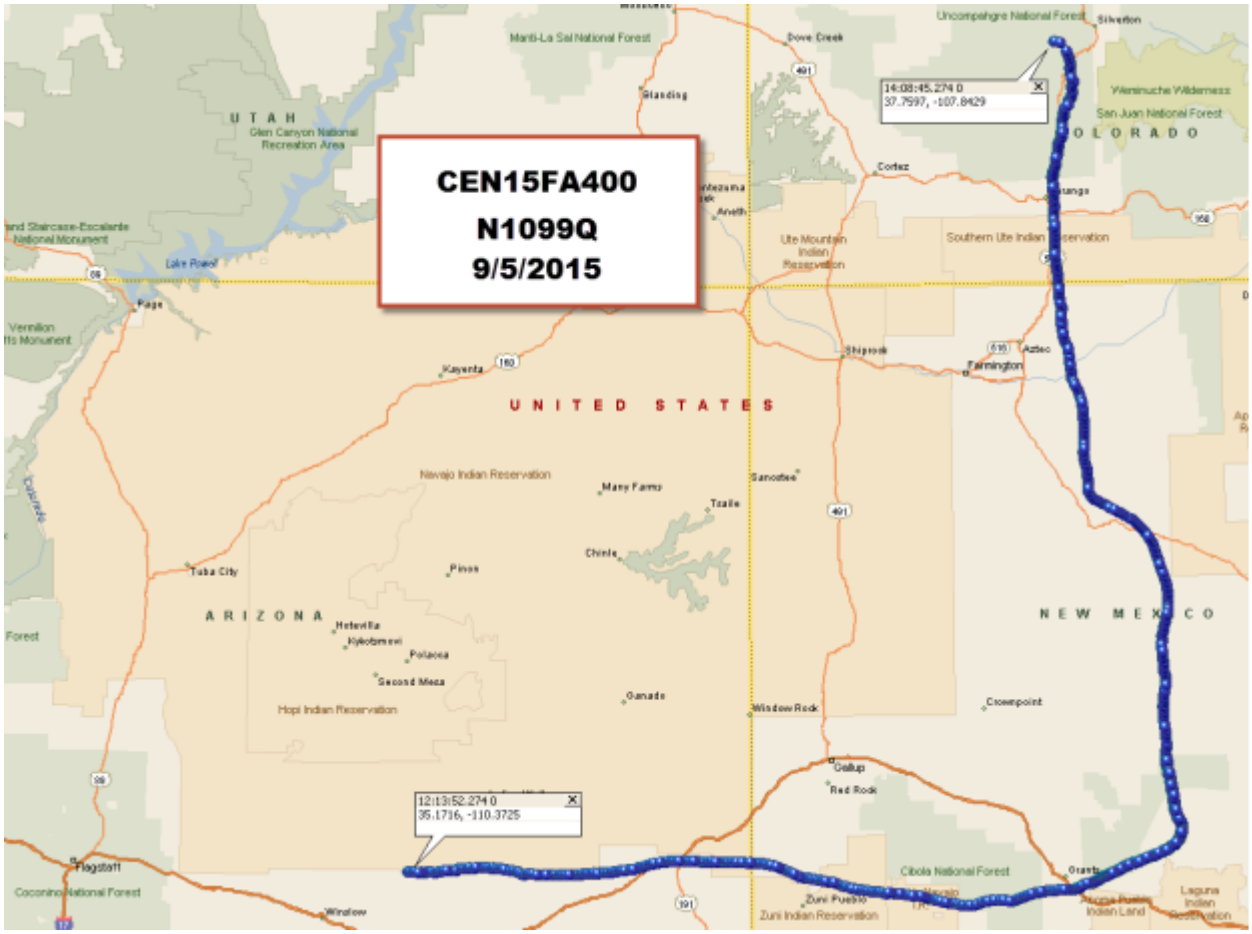

Figure 1. A radar plot of an airplane flight track consistent with the accident airplane. The plot shows a turn toward the north.

Pilot Information

Certificate:	Private	**Age:**	71,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 17, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 17, 2013
Flight Time:	35 hours (Total, this make and model)		

Pilot-rated passenger Information

Certificate:	Private	**Age:**	67,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	May 28, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 11, 2015
Flight Time:	786 hours (Total, all aircraft), 786 hours (Total, this make and model)		

Pilot/Airplane Owner Information

The pilot, age 71, held a private pilot certificate with a single-engine land airplane rating. The pilot's most recent FAA third-class airman medical certificate was issued December 17, 2013, with the limitation that he must wear corrective lenses for near and distant vision. At that time, the pilot reported a total flight time of 1,000 hours, 200 hours of which were in last 6 months. There was no military record received showing that the pilot had any flight experience in military airplanes.

The pilot's daughter stated that her father flew F-4 Phantoms. An L35 employee reported that he believed that the pilot said he flew F-4 Phantoms in the military and transitioned to helicopters and was injured in Vietnam. A Department of Defense (DOD)/Uniformed Services identification card that belonged to the pilot was recovered from the accident site. The card showed that he served in the US Marine Corps at grade "E3," which according to DOD's Enlisted Rank Insignias was a grade of Lance Corporal.

The L35 employee said the pilot told him the he was a doctor and "had an MD." He stated that he researched the things told to him by the pilot, and none of it was true. He said the pilot had "some speech issues" and that he had a "high pitched garbled voice." He said that pilot could not "keep a fluent conversation" without having an "issue with talking." He said that the pilot's aircraft radio transmissions were "very short," which "concerned" him and L35 staff. He said "there were a lot of circumstances that concerned people about his [the pilot's] flying."

A review of the pilot's FAA airman record revealed that, on July 18, 2009, the pilot failed the practical portion of the examination in his first attempt for a private pilot certificate with a single-engine land airplane rating. Upon reexamination for the certificate/rating, he was to be reexamined on the following: IX. Basic Instrument Maneuvers, V. Performance Maneuver, and VII. Navigation. At the time of the examination, the pilot reported a total time of 301 hours and a total instruction time received of 52 hours. On September 21, 2009, the pilot successfully passed his second attempt and was issued a private pilot certificate with a single-engine land rating. At the time of reexamination, the pilot reported a total time of 305 hours and a total instruction time received of 55 hours. No record was found indicating that the pilot had been issued a multiengine airplane rating or that he had flown military aircraft..

The pilot's logbook, which was recovered from the accident site by first responders, had flight entries beginning July 7, 2007, and ending August 15, 2015. The logbook showed that the pilot's total flight time in single and multiengine airplanes was 801.9 hours, 255.6 hours of which were in single-engine airplanes and 217.7 hours of which were in multiengine airplanes. The first logbook page entry of a multiengine airplane flight time was dated January 6, 2013, in a Piper PA-23-250, N54155 and it showed a total multiengine flight time of 10.5 hours. The page also showed that the pilot's a total multiengine flight time for previous flights was 150 hours; however, there were no logbook entries documenting flights in multiengine airplanes before the page indicating that he had 150 hours of multiengine flight time. The pilot's logbook showed a total flight time in night conditions of 17.0 hours, of 0.2 hour of which was in the accident airplane. The most recent flight entry in night conditions was dated December 2, 2014, in the accident airplane for 0.1 hour.

The accident airplane's Application for Registration to the pilot was dated June 27, 2014. The Aircraft Bill of Sale shows the airplane title was transferred to the pilot on July 2, 2014, from Aerobanc of America, Inc. The first flight entry in the pilot's logbook for the airplane was dated July 3, 2014. No record was found indicating that the pilot had received training in the airplane after its purchase/registration. The pilot's logbook contained a total of 72 flight entries for the airplane with a total flight time of 35.4 hours. During this period, the logbook's remarks sections had entries that showed the pilot had flown with passengers. There was one logbook entry dated March 7, 2015, for a flight in the airplane that had the following remark: "I let [name of pilot-rated passenger] fly part way back."

A logbook entry showed that the pilot's most recent flight review, as required by Part 61.56, was dated July 17, 2013, with a departure and destination of Apple Valley Airport, Apple Valley, California. The flight was in a Piper PA-28-180 with a flight time of 1.0 hour, a ground instruction time of 1.0 hour, and the remarks, "FAR 61.56 FLT. REVIEW VFR PROCEDURES." The flight review was conducted by the same flight instructor that had provided the pilot-rated passenger's flight review. Title 14 CFR Section 61.56(c) stated that a flight review must have been accomplished within the 24 calendar months preceding the month in which a pilot acts as pilot-in-command in an aircraft for which that pilot is rated. The pilot was overdue for his flight review by about 2 months.

A logbook entry dated July 4, 2012, showed a flight from DAG to DAG in a Piper PA-28-180 that was 1.0 hours in duration. The remarks section for the flight had the following entry: "Flew over parade 10 feet off ground made six passes." A logbook entry dated July 4, 2013, showed a flight from DAG to DAG in a Piper PA-28-180 that was 2.0 hour long. The remarks section for the flight had the following entry: "Landed on Rt. 66 4 July Parade. With Mayor." A logbook entry dated November 2, 2013, showed a flight from DAG to "Rt.66," in a Piper PA-28-180 that was 0.2 hour long. The remarks section for the flight had the following entry: "Flew to the barn landed on RT. 66 for auto show." According to 14 CFR 91.119, "Minimum safe altitudes," a pilot should not operate an aircraft at an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

A logbook entry dated June 14, 2014, showed a flight in a Piper PA-28-180 that was 2.0-hour long and included five landings from "DAG" to "Big Bear" with the remarks: "Young Eagles." Regarding this entry, the L35 employee reported that nothing at the time made him question the pilot's flying ability. He

said the pilot wanted to fly in the Young Eagles program and that they have a large Young Eagles program at L35. He said that they had asked the pilot to produce the required paperwork for the Young Eagles program, but the pilot never produced the paperwork, so the program representative decided about 8 to 10 months before the accident to not allow the pilot to fly in the Young Eagles program.

A logbook entry dated August 15, 2015, showed a 0.3-hour-long flight in the accident airplane "L35" to "L35." The remarks section for the flight stated: "Big Bear airshow. made it. speed passes over runway." Regarding this entry, the L35 employee stated that there was "some issue" with the pilot during the Big Bear Airport air show. When the airport opened for departures, the pilot departed with passengers. Upon the pilot's return to the airport, he turned the airplane onto the final leg of the airport traffic pattern and did not have the airplane radio on. The shows's air boss cleared another airplane to depart from the active runway while the accident pilot was flying his airplane on short final. He stated that, instead of the pilot offsetting the airplane to the side of the runway during the go-around, the pilot performed a "low-level left turn over the crowd" with the landing gear and flaps extended.

The pilot had no previous FAA record of accident(s), incidents(s), or enforcement(s) actions.A search of publically available information of airman certificate information from on the FAA's website, FAA.govGOV, using only the pilot/airplane owner's first and last name, revealed that the pilot/airplane owner only held a private pilot certificate with a single-engine land rating.

Pilot-Rated Passenger Information

The pilot-rated passenger, age 67, held a private pilot certificate with a single-engine land airplane rating. His most recent FAA third-class airman medical certificate was issued May 28, 2015, with the limitation that he must wear corrective lenses. At that time, he reported 1,000 hours of flight experience.

On March 25, 2003, the pilot-rated passenger successfully passed, on his first attempt, an examination for a private pilot certificate with a single-engine land airplane rating. At the time of examination the pilot-rated passenger reported a total time of 168 hours, and a total instruction time received of 90 hours.

The pilot-rated passenger's logbook, which was recovered from the accident site by first responders, had flight entries beginning February 26, 2009, and ending August 31, 2015. The logbook showed that his total flight time in all aircraft was 785.5 hours, all of which was in single-engine airplanes.

A logbook entry showed that the pilot-rated passenger's most recent flight review as required by Part 61.56 was dated June 11, 2015. The flight review was conducted by the same flight instructor who had provided the pilot's flight review.

The pilot-rated passenger's logbook showed a total flight time in night conditions of 17.0 hours. The most recent flight entry in night conditions was dated January 5, 2011.

The pilot-rated passenger had no previous FAA record of accident(s), incident(s), or enforcement action(s).

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N1099Q
Model/Series:	310H	**Aircraft Category:**	Airplane
Year of Manufacture:	1963	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310H0099
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	May 1, 2014 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	5367.3 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:		**Engine Model/Series:**	IO-470-VOCD
Registered Owner:	Pilot	**Rated Power:**	260 Horsepower
Operator:	Pilot	**Operating Certificate(s) Held:**	None

The accident airplane was a 1963 twin-engine Cessna 310H, serial number 310H-0099, airplane. It was powered by a Continental IO-470-VOCD, serial number 455693, engine and a Continental IO-470-D, serial number 79334, engine. The airplane was equipped with two 51-gallon capacity main fuel tanks and two 15.5-gallon capacity auxiliary fuel tanks.

According to FAA airworthiness records, the most recent airworthiness certificate for the airplane was a Special Airworthiness Certificate dated April 11, 2006. The Special Airworthiness Certificate was a Special Flight Permit for the purpose of "Out of Annual Inspection – Maintenance." The airplane did not have a current airworthiness certificate at the time of the accident. A standard airworthiness certificate remains valid as long as the aircraft meets its approved type design, is in a condition for safe operation and maintenance, and preventative maintenance and alterations are performed in accordance with Parts 21, 43, and 91.

The pilot's daughter provided copies of the aircraft logbooks . These copies showed that the airplane's last annual inspection was dated May 1, 2014, at a Hobbs time of 1,541.3 hours and a total time in service of 5,367.3 hours.

Logbook entries annotated the left engine as serial number 455693 and the right engine as serial number 79334 and noted that the most recent annual inspections of the left and right engines were dated May 1, 2014. At the time of the inspections, the left engine had a time since major overhaul of 1,241.6 hours; the Hobbs time was not annotated. The right engine had a time since major overhaul of 858.4 hours and a Hobbs time of 1,541.3 hours.

Title 14 CFR 43.7 states that every airplane is required to undergo an annual inspection: "no person may operate an aircraft unless, within the preceding 12 calendar months, it has had an annual inspection and has been approved for return to service by a person authorized by Part 43.7."

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TEX,9070 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	14:15 Local	**Direction from Accident Site:**	345°
Lowest Cloud Condition:	Scattered / 4700 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 6000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.34 inches Hg	**Temperature/Dew Point:**	17°C / 7°C
Precipitation and Obscuration:			
Departure Point:	Flagstaff, AZ (FLG)	**Type of Flight Plan Filed:**	None
Destination:	Amarillo, TX	**Type of Clearance:**	None
Departure Time:	10:50 Local	**Type of Airspace:**	

Astronomical Data

The astronomical data obtained from the United States Naval Observatory for the accident site on the day of the accident indicated that civil twilight began 0618, sunrise was 0645, sun transit was 1310, sunset was 1935, and civil twilight ended 2001.

Weather Information

Telluride Regional Airport (TEX), located 12 miles north-northwest of the accident site at an elevation of 9,070 ft mean sea level (msl) was the closest official weather station to the accident site. TEX had an Automated Weather Observing System, and its reports were not supplemented.

At 1415, TEX reported wind from 190 degrees at 5 knots, 10 miles visibility, present weather thunderstorms in the vicinity, sky condition scattered clouds at 4,700 ft above ground level (agl), broken ceiling at 6,000 ft agl, broken skies at 7,000 ft agl, temperature of 17° C, dew point temperature of 7° C, and an altimeter setting of 30.34 inches of mercury. Remarks: automated station with a precipitation discriminator, lightning distant northwest, temperature 17.4° C, dew point temperature 6.6° C.

Closer to the accident site, observations from the nonofficial surface stations within 12 miles of the accident site reported gusting wind between 8 and 39 mph. The strongest wind was at the nonofficial surface stations closest to the accident site altitude and near the tops of the mountains between 10,000 and 12,000 ft. In addition, these stations reported rain showers in the vicinity and had relative humidity values greater than 80 percent around the accident time. These stations were above 10,000 ft, and the high relative humidity values were consistent with cloud cover at or above 10,000 ft and mountain obscuration due to clouds, precipitation, and mist. Figure 2 shows the three-dimensional Grand Junction, Colorado, weather surveillance radar-88 Doppler base reflectivity from the scan initiated at 1406 and the ATC Flight Track.

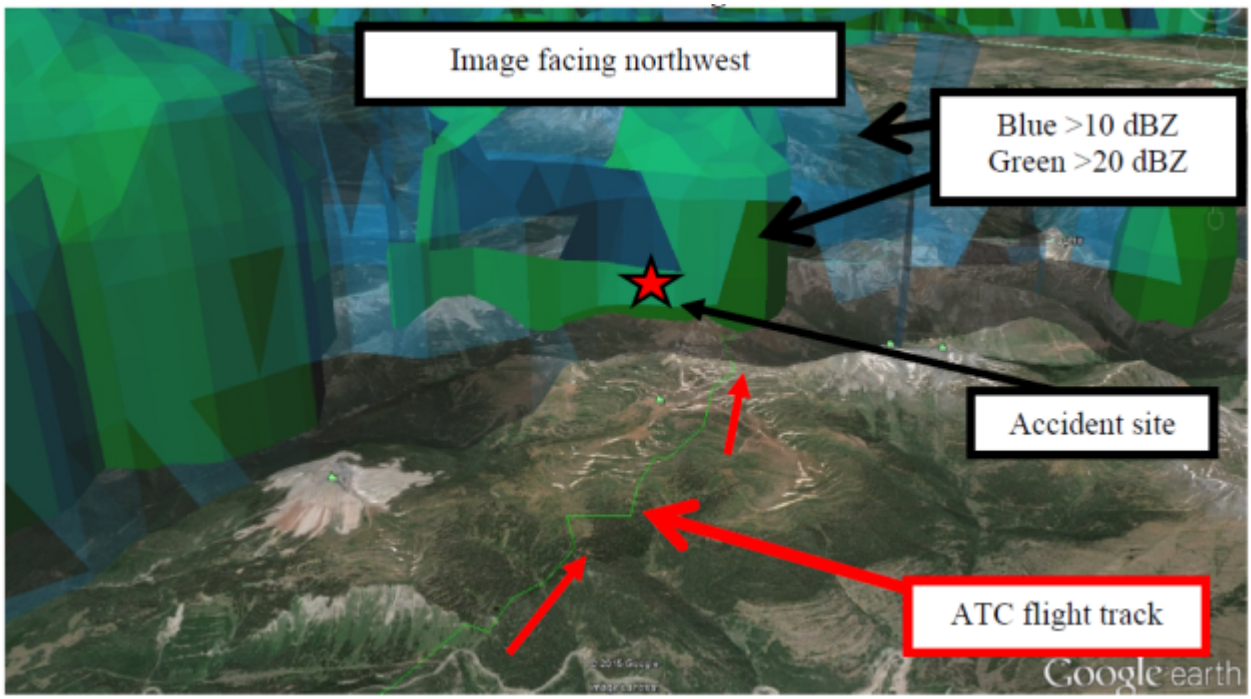

Figure 2. Three-dimensional Grand Junction, Colorado, weather surveillance radar-88 Doppler base reflectivity from the scan initiated at 1406 and the ATC Flight Track. Blue and green colored areas depict reflectivity of greater than 10 decibels (dBZ) and greater than 20 dBZ, respectively.

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	37.761943,-107.845558(est)

The accident site was located at latitude 37.76° north, longitude 107.84° west at an elevation of 11,500 ft. The wreckage path was estimated to be about 1,050 ft long along an estimated northerly direction in up-sloping mountainous terrain. See figures 4 and 5 for photographs of the wreckage.

Figure 4. Aerial view taken the day after the accident by first responders showing a white-colored object, which was a portion of the aircraft fuselage, resting on the face of up-sloping terrain. The photo also shows the cloud height at the time first responders arrived on-scene. The view of the western ridgeline averaged about 12,000 ft msl.

Figure 5. A photograph of the main wreckage, which was destroyed by impact forces with no evidence of soot or fire. The airplane wings, horizontal and vertical stabilizers, engines, and propellers were located at accident site.

Wreckage Examination

The largest piece of recovered wreckage was the tail section, which had the horizontal and vertical stabilizers attached. There was no evidence of soot or fire on the pieces of wreckage. Both engines were separated from the airframe. The propellers from both engines were separated from their hubs and displayed chordwise gouging/scratching and S-shaped bending/twisting. Accident impact damage to the airframe, accessories, and both engines precluded functional operational testing of these components/systems.

The instrument panel was destroyed by impact forces, and none of the instruments were attached. The electrical, lighting, and ignition switches were destroyed.

The altimeter face was separated from its case, and the altimeter altitude indicator needles were not intact. The altimeter setting window of the face was intact and indicated a setting of 30.40 inches of mercury.

The attitude indicator unit was separated from the instrument panel and crushed. The attitude indicator display was internally separated and loose within the unit and did not yield an attitude. The gyro within the attitude indicator was removed, and it showed circumferential scoring on the gyro and the gyro's housing.

The horizontal situation indicator heading select bug and compass both displayed about a 360° heading.

An oxygen bottle, consistent with a pilot oxygen system, was recovered, and its airworthiness/servicing was unknown due to the impact damage. A handheld GPS was not found/recovered from the accident site. The Hobbs meter and tachometers were destroyed.

The airplane's two fuel selector valve assemblies were separated from the airframe. One valve had its fuel selector control separated due to impact forces and was positioned to "off." The second valve was positioned to "main."

Examination of the flight control system revealed that the flight control cables were attached to the control horns/bell cranks. Separated sections of the flight control cables exhibited broom straw features.

Examination of both engines revealed no preimpact anomalies that would have precluded normal operation.

Medical and Pathological Information

The NTSB's Chief Medical Officer reviewed the pilot's and pilot-rated passenger's FAA medical case reviews, toxicology results, autopsy reports, the investigator's reports, and the audio tapes of the ATC conversations in Flagstaff. The pilot/airplane owner's personal medical records were obtained and reviewed.

Pilot/Airplane Owner

The pilot's last aviation medical examination was dated December 17, 2013. According to the records, he was 70 inches tall, weighed 165 pounds, and had reported no chronic medical conditions and no medications to the FAA. He had reported a number of previous surgical procedures and a disability related to a military gunshot wound but the aviation medical examiner noted "no residual."

Rocky Mountain Forensic Services, PLLC, performed an autopsy of the pilot. The autopsy report noted the cause of death was "multiple injuries" and the manner of death was "accident." Examination of the body for natural disease was limited by the severity of the pilot's injuries; no organs were available for evaluation.

The FAA's Bioaeronautical Research Laboratory performed toxicology testing on the only available specimen, which was muscle, from the pilot. The testing identified ethanol at 0.015 gm/dl as well as citalopram and its metabolite N-desmethylcitalopram. *Federal Aviation Regulations*, Section 91.17 (a), prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood. Detected ethanol may be to the result of ingestion or microbial activity in the body after death.

Citalopram is an antidepressant that carries a warning: "May impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery)." However, it has not been shown to degrade performance in psychological testing experiments using

healthy volunteers.

According to records obtained from the pilot's Veteran's Administration Hospital, in January 2013, he was documented as having multiple chronic medical conditions including spinal stenosis, hypothyroidism, depressive disorder, posttraumatic stress disorder, panic disorder, gastroesophageal reflux disease, esophageal stricture, chronic neck pain, paraplegia, peptic ulcer disease, type 2 diabetes, and emphysema. In a single note from an outside physician, the pilot's paraplegia was documented as relating to a motor vehicle accident in 1996.

The Veterans Administration records show that, in January 2015, the pilot was hospitalized for being unable to swallow. Eventually, he had a gastrostomy tube placed for feeding. He was admitted for a rotator cuff repair in March, 2015, and remained in the hospital for rehabilitation until May 2015. During that time, the feeding tube was removed. His active medications as of July 2015 included albuterol, formoterol, citalopram, hydromorphone (4mg tab every 4 active hours), aspart insulin (short acting), glargine insulin (long acting), levothyroxine, lidocaine patch, prazosin, and zolpidem.

Albuterol and formoterol are beta-agonists available as inhaled medication for the short-term treatment of wheezing and the longer term prevention of wheezing, respectively. Hydromorphone is an opioid analgesic Schedule II controlled substance available by prescription that is commonly marketed with the name Dilaudid and carries a warning about central nervous system depression so severe it may cause respiratory failure.

The pilot was on two forms of injected insulin: aspart, which is short acting, and glargine, which is long acting. Their common names are Novolog and Lantus, respectively. Levothyroxine is a replacement thyroid hormone typically used to treat hypothyroidism; it is commonly marketed with the name Synthroid. Lidocaine is a local anesthetic available in patch format to treat localized pain. Prazosin is a blood pressure medication commonly marketed with the name Minipress. Zolpidem is a short-acting sleep aid commonly marketed with the name Ambien and carries a warning about sedation and changes in judgment or behavior.

Finally, in a visit from September 1, 2015, the pilot was described as having a T12 spinal cord injury, "in a wheelchair but able to transfer."

Pilot-Rated Passenger

The pilot-rated passsenger's last aviation medical exam was dated May 28, 2015. At that time, he was 67 inches tall and weighed 255 pounds. He had previously reported high blood pressure to the FAA and reported using atenolol and naproxen as medications.

Rocky Mountain Forensic Services, PLLC, performed an autopsy Rocky Mountain Forensic Services, PLLC. The autopsy reported the cause of death was "multiple injuries" and the manner of death was "accident." Examination of the body for natural disease was limited by the severity of the pilot's injuries; no organs were available for evaluation.

The FAA's Bioaeronautical Research Laboratory performed toxicology testing on the only available specimen from the pilot-rated passenger, which was muscle. The testing identified ethanol at 0.043

gm/dl, as well as atenolol, diphenhydramine, and D-methamphetamine.

Atenolol is a medication used to treat high blood pressure and prevent recurrent heart attacks. It is commonly marketed with the name Tenorman. Diphenhydramine is a sedating antihistamine used to treat allergy symptoms and as a sleep aid. It is available over the counter under the trade names Benadryl and Unisom. Diphenhydramine carries the following Federal Drug Administration warning: "may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery). Compared to other antihistamines, diphenhydramine causes marked sedation; it is also classed as a CNS depressant and this is the rationale for its use as a sleep aid. Altered mood and impaired cognitive and psychomotor performance may also be observed. In fact, in a driving simulator study, a single dose of diphenhydramine impaired driving ability more than a blood alcohol concentration of 0.100%."

Methamphetamine is a Schedule II controlled substance and is available in low doses by prescription to treat attention deficit hyperactivity disorder, attention deficit disorder, obesity, and narcolepsy. It is also commonly available as a street drug. Even in prescription form, methamphetamine can cause a host of physiological and psychoactive effects.

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Jon Hanson; Federal Aviation Administration; FSDO; Salt Lake City, UT Paul Yoos; Textron Aviation; Wichta, KS Mike Council; Continental Motors; Mobile, AL
Original Publish Date:	April 19, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91934