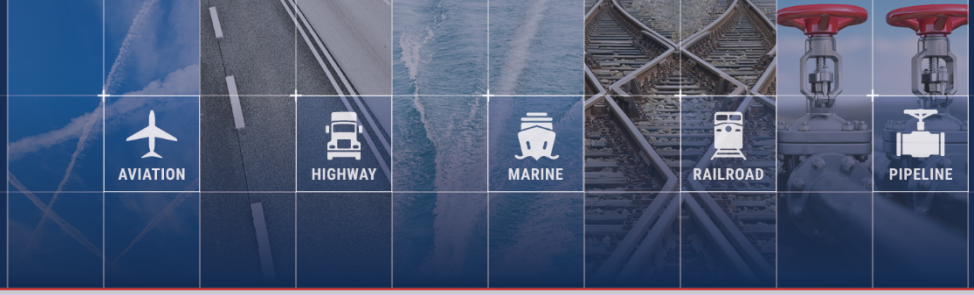

Aviation Investigation Final Report

Location:	Compton, California	**Accident Number:**	LAX08FA101
Date & Time:	April 12, 2008, 15:50 Local	**Registration:**	N6231Q
Aircraft:	Cessna 310Q	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	4 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Prior to departing for a planned round-trip flight, the pilot visually ascertained the quantity of fuel in the airplane's main fuel tanks, but relied on the fuel gauges to ascertain the quantity of fuel in the auxiliary fuel tanks. Prior to taking off for the return flight, the pilot did not look in any of the fuel tanks and estimated the airplane contained a total of 30 gallons of fuel that was distributed among the two main and two auxiliary tanks. Approaching the airport, the left engine sputtered and the pilot repositioned both fuel selectors from the main tanks to the auxiliary tanks position. The left engine did not restart. The pilot then attempted to provide fuel to the left engine by positioning its fuel selector into the cross-feed position. Moments later, both engines lost all power. At the time, the airplane was on short final approach for landing. As the airplane continued descending, the pilot again attempted to restore engine power and he switched the right engine's fuel selector to the right auxiliary tank. The right engine's power surged to red line and the airplane began to uncontrollably roll left. The pilot reduced the right engine's throttle to regain directional and lateral control, and the airplane impacted the underlying homes, coming to rest 2,100 feet short of the landing threshold. An examination of the airplane revealed no evidence of a preimpact mechanical malfunction with the airplane's fuel control system or engines. Only ounces of fuel were observed in fuel lines, and no evidence of fuel was found in tanks or in the underlying terrain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of both engines' power during approach due to fuel exhaustion that resulted from the pilot's inadequate preflight inspection and failure to verify the quantity of fuel on board the airplane.

Findings

Aircraft	Fuel - Fluid level
Personnel issues	Preflight inspection - Pilot
Aircraft	Fuel - Inadequate inspection

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Approach-VFR pattern base	Fuel exhaustion (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On April 12, 2008, about 1550 Pacific daylight time, a Cessna 310Q, N6231Q, experienced a partial loss of engine power on final approach to the Compton Airport, Compton, California. During the attempted forced landing, the airplane descended into residential homes about 1/2 mile east of runway 25L at the Compton Airport. The airplane was substantially damaged. The commercial certificated pilot owned and operated the airplane. He and his passenger were seriously injured, and two occupants in one of the homes were also seriously injured. An instrument flight rules (IFR) flight plan had been filed. Visual meteorological conditions prevailed, and the pilot cancelled the IFR flight plan as he was approaching Compton. The personal flight was performed under the provisions of 14 Code of Federal Regulations Part 91. The flight originated from Montgomery Field, San Diego, California, at 1506.

The pilot reported to the National Transportation Safety Board investigator that his flying activities commenced earlier in the day from the Hawthorne Municipal Airport, Hawthorne, California. At this location, the passenger joined the pilot, and they flew to Montgomery Field, San Diego, to attend a meeting. The accident occurred during their return flight.

In the pilot's completed "Aircraft Accident Report," and during subsequent statements to the Safety Board investigator, the pilot indicated the following events transpired during the operation of his airplane:

In preparation for the outbound flight, at Hawthorne he performed a routine preflight inspection of his airplane during which he physically looked into the main fuel tanks. The pilot stated that he estimated each of the main fuel tanks contained 25 gallons of fuel. He did not visually inspect the fuel level in the auxiliary tanks; however, the airplane's fuel gauges indicated each of these tanks contained 10 gallons of fuel. The pilot estimated that the flight time to San Diego was 20 minutes. The flight was uneventful, and at no time were the auxiliary tanks used.

In preparation for the return flight, the pilot stated that he again performed a normal walk around inspection of his airplane. He did not look into any of the fuel tanks. The fuel gauges indicated that the auxiliary tanks still each contained 10 gallons of fuel. The pilot and passenger took off. Upon reaching a cruise altitude of 8,000 feet, the pilot commenced drawing fuel from the auxiliary fuel tanks. At no time did these tanks run dry. When in the

vicinity of Seal Beach (about 13 miles from Compton), the pilot cancelled the IFR clearance. Thereafter, he descended to about 4,000 feet and began performing the landing checklist in preparation for landing. The pilot stated he repositioned the fuel selectors to the main fuel tanks position.

On final approach to Compton Airport, the left engine started "sputtering" slightly. In written documents, the pilot made the following statements regarding his reactions to this event:

I immediately switched back to the auxiliary tanks; the engine did not start. I then cross-fed fuel from the right main tank, and both engines failed. At the time, the airplane was on short final approach. I immediately switched the fuel selector to the right auxiliary tank and raised the landing gear and flaps to minimize drag. The right engine's power suddenly increased to full power as evidence by a "surge" in rpm, which went to "red line." Then, the airplane began to roll to the left. Power was reduced to stop the roll effect, and the airplane, which was going slower than 80 mph, lost speed and stalled. The pilot further reported that he raised the airplane's nose to reduce any further forward speed.

A Los Angeles County Deputy Sheriff reported to the Safety Board investigator that he had observed and heard the accident airplane as it negotiated a left base leg to final approach turn in the Compton Airport's traffic pattern. According to the deputy, he was standing in a parking lot about 1/2 mile east of the accident site when he noticed that the airplane "had no running engine (no audible engine sound). As the aircraft turned final I heard a loud sound come from the aircraft as if one or both of the engines were restarted. The aircraft passed westbound across my line of sight and out of view. Within a few minutes...I received an emergency call of an aircraft that had just crashed."

PERSONNEL INFORMATION

The pilot, age 70, held a commercial pilot certificate for airplane single and multiengine land, and instrument. The pilot was issued his private pilot certificate in 1970, and he was issued his commercial pilot and instrument ratings in 1971 and 1973, respectively. His second-class aviation medical certificate was issued in December 2006, with the restriction that he must wear corrective lenses.

AIRCRAFT INFORMATION

The six-seat, low-wing, retractable gear airplane, serial number 310Q0517, was manufactured in 1972. It was powered by two Teledyne Continental Motors IO-470-VO engines, rated at 260 horsepower. The airplane was maintained on an annual inspection program. A review of the airplane's maintenance logbook records showed an annual inspection was performed on October 24, 2007, at a total airplane time of 3,858.24 hours, and a Hobbs meter time of 2,392.4 hours. The Hobbs meter at the time of the accident was 2,409.0 hours.

Fuel Tanks and Capacity

Fuel for each engine is supplied by a main tank on each wing tip. Also, the airplane was equipped with an auxiliary fuel tank for each engine.

According to the Cessna Aircraft Company participant, the airplane's main fuel tanks hold a maximum capacity of 51 gallons of fuel, of which 50 gallons are usable. Each of the auxiliary tanks holds a maximum of 20.5 gallons, of which 20 gallons are usable. The total capacity of the airplane's fuel tanks is 143 gallons, and a total of 3 gallons of fuel are unusable.

The airplane's "Owner's Manual" indicates that under standard atmospheric conditions between 5,000 and 10,000 feet, when the engines are operating between 64 and 66 percent power, and the rpm is 2,300 to 2,450, the engines may be expected to burn fuel at a rate between 24.0 and 24.6 gallons per hour.

The minimum single-engine control speed (Vmc) is 86 miles per hour, indicated airspeed.

METEOROLOGICAL INFORMATION

Hawthorne Municipal Airport is located about 6 miles from the accident site. At 1453, Hawthorne reported the following weather conditions: sky clear; visibility 10 miles; wind 280 degrees at 8 knots; altimeter 29.99 inches of Mercury; and temperature 33 degrees Celsius.

COMMUNICATIONS

The Federal Aviation Administration reported it had no communications with the accident airplane after services were terminated in the vicinity of Long Beach, and the pilot was proceeding on his own navigation.

AIRPORT INFORMATION

Compton Airport is an uncontrolled airport located in the Los Angeles basin. It has two parallel runways, 25L and 25R. The runways are both 3,322 feet long by 60 feet wide, and both of the landing thresholds are displaced 680 feet.

WRECKAGE AND IMPACT INFORMATION

The on scene examination of the accident site and airplane wreckage revealed the airplane impacted several structures. Based upon witness statements and damage observed on the eastern side of structures, the airplane's initial point of impact was with a metal-framed outdoor patio awning, located in the backyard of a house at 526 W. Cypress Street, Compton. A concrete block wall was located several yards west of the awning. The airplane's crushed and severed right wing fuel tank was found next to the wall. The airplane was found pointed in a nose down attitude, with the empennage nearly vertically upward, in the backyard of the private residence west of the block wall at 530 W. Cypress Street. The airplane's left wing penetrated

the eastern wall of a two story private residence located immediately west of the main wreckage, at 534 W. Cypress Street.

The magnetic track between the initial point of impact and the main wreckage was 315 degrees. The airplane came to rest about 2,100 feet east of Compton Airport's runway 25L displaced threshold, and about 100 feet south of the runway's extended centerline.

Responding firemen reported to the Safety Board investigator that they smelled an odor of fuel upon their arrival on scene. The subsequent examination of the airplane's breached fuel tanks and the surrounding area did not reveal evidence of fuel residue in the tanks or around the wreckage.

TESTS AND RESEARCH

Airframe Examination

The airplane was examined prior to and immediately following its recovery from the accident site. The landing gear and wing flaps were found in the retracted position. The continuity of the flight control system was confirmed.

The left engine's fuel tank selector valve handle was found in the cross-feed position, set to draw fuel from the right main fuel tank. The right engine's fuel tank selector valve handle was found positioned between settings for the right auxiliary and the left main tank.

Fuel caps were found on the airplane's four fuel tanks. The right wing, outboard of the engine nacelle, was found severed from the inboard wing section, which remained attached to the airframe. No evidence of fuel was observed beneath or around the area where these components were located. The examination of the airframe, including its fuel system, did not reveal evidence of any preimpact mechanical malfunction.

Engine and Propeller Examinations

Both engines produced "thumb" compression on all cylinders when the crankshafts were turned by hand, and the valve train and crankshaft continuity was confirmed. Oil was present, and no evidence of any oil leak was found. The spark plugs showed normal wear signatures, according to the Champion AV-27 spark plug chart and the Teledyne Continental Engines participant. Both fuel pump couplings were found intact. A small amount (less than a couple of ounces) of fuel was observed in both fuel manifold valve cavities, and their screens were clear. Fuel was noted in the fuel line from the left fuel servo to the fuel manifold valve. The examination of the engines, including their respective accessories, did not reveal evidence of any preimpact mechanical malfunction.

The left and right propeller assemblies were found attached to the engines. Blades were observed scratched in multi directional patterns. Several blades exhibited leading edge gouges

and several were bent aft. None of the blades appeared in the feathered position. (See the Teledyne Continental Motors report included in the docket for additional details of the engine and propeller examinations.)

Flight Times

The Safety Board investigator reviewed air traffic communication data that indicated the airplane's flight from Hawthorne to San Diego took 49 minutes. The flight from San Diego to Compton took 44 minutes. The engines were also operated on the ground for at least 12 minutes.

ADDITIONAL INFORMATION

In the pilot's written statements he reported anticipating the flight from Hawthorne to San Diego would take 20 minutes, and the return flight would also take 20 minutes. He stated that upon departure from Hawthorne his visual assessment of the fuel in each main tank was 25 gallons. The auxiliary tanks each contained 10 gallons of fuel, as indicated by the fuel tank gauges. The pilot reported he estimated that upon departure from San Diego, the airplane contained about 30 gallons of fuel. He estimated that the airplane would consume fuel at an average rate of 25 gallons per hour. The pilot also reported that he made the accident flight using about 65 percent power.

Pilot Information

Certificate:	Commercial	**Age:**	70,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
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 With waivers/limitations	**Last FAA Medical Exam:**	December 14, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 1, 2007
Flight Time:	4100 hours (Total, all aircraft), 1200 hours (Total, this make and model), 3900 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6231Q
Model/Series:	310Q	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310Q0517
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 24, 2007 Annual	**Certified Max Gross Wt.:**	5300 lbs
Time Since Last Inspection:	17 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3875 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	C91A installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-470-VO
Registered Owner:	Eureka International, Inc.	**Rated Power:**	260 Horsepower
Operator:	Charles A. Reece	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HHR,66 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	15:53 Local	**Direction from Accident Site:**	278°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	33°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Diego, CA (MYF)	**Type of Flight Plan Filed:**	IFR
Destination:	Compton, CA	**Type of Clearance:**	VFR
Departure Time:	15:06 Local	**Type of Airspace:**	

Airport Information

Airport:	Compton CPM	**Runway Surface Type:**	Asphalt
Airport Elevation:	97 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	25L	**IFR Approach:**	None
Runway Length/Width:	3322 ft / 60 ft	**VFR Approach/Landing:**	Forced landing;Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	2 Serious	**Aircraft Explosion:**	None
Total Injuries:	4 Serious	**Latitude, Longitude:**	33.889446,-118.231391

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	Ron Brant; Federal Aviation Administration; Los Angeles, CA Emile Lohman; Cessna Aircraft Company; Wichita, KS Andrew Swick; Teldyne Continental Motors; Mobile, AL
Original Publish Date:	May 6, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=67811