Aviation Investigation Final Report

Location:	San Dimas, California	**Accident Number:**	LAX02FA214
Date & Time:	July 4, 2002, 12:30 Local	**Registration:**	N8145M
Aircraft:	Cessna 310I	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal, 9 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane impacted trees, terrain, and pedestrians after the pilot declared an emergency during takeoff from a nearby airport. Witnesses observed the airplane not climbing after takeoff and air traffic controllers heard the pilot declare mayday three times. The pilot did not elaborate on the emergency situation. Witnesses observed the airplane turn left over the shoreline of a reservoir where it impacted a tree with its left wing. One witness stated the left propeller was not turning as fast as the right propeller and he heard the engines backfiring. Post-accident examination of the aircraft revealed no flight control anomalies. The left engine's top spark plugs were covered with black soot and the piston and cylinders were dark in appearance, indicative of an overly rich fuel/air mixture. The reason for the excessively rich mixture was not determined. The left engine was successfully test run twice following the accident, once utilizing the systems and plumbing in the airframe, and the second time in an instrumented test cell. Examination of the wreckage did find irregularities in the wiring circuits for both boost pumps and their associated cockpit switches; however, the relationship of these irregularities to the loss of power is uncertain. Review of the airplane owner's manual revealed the emergency procedures for a loss of engine power after takeoff called for the retraction of the landing gear and the feathering of the propeller to obtain the maximum climb performance. The landing gear was not retracted and the left propeller was not feathered. Eighteen months prior to the accident, the pilot failed his first attempt to obtain his multiengine airplane rating due to improper emergency procedures during engine failure operations after liftoff. The pilot's total time in the same make and model as the accident airplane is unclear.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's failure to maintain control of the airplane following a loss of power in one engine

during takeoff. The reason for the loss of power in the left engine could not be determined. Contributing factors to the accident were the pilot's failure to retract the landing gear and to feather the inoperative engine propeller.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. 1 ENGINE
2. (C) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings
3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (F) GEAR RETRACTION - NOT PERFORMED - PILOT IN COMMAND
5. (F) PROPELLER FEATHERING - NOT PERFORMED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On July 4, 2002, at 1230 Pacific daylight time, a Cessna 310I twin-engine airplane, N8145M, was destroyed when it impacted terrain shortly after takeoff from the Brackett Field Airport, La Verne, California. The airplane was registered to, and operated by, the pilot. The commercial pilot and his pilot-rated passenger sustained fatal injuries. Two individuals on the ground received fatal injuries and nine individuals on the ground sustained serious injuries. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The local flight was originating at the time of the accident.

The Brackett Field air traffic controllers reported that the pilot made three consecutive mayday calls during the initial climb out from runway 26L; however, the pilot did not indicate the nature of the emergency. The controllers observed the airplane "not climbing" before the airplane descended behind trees.

A witness, located on a boat in the Puddingstone Reservoir, observed the airplane flying toward the west after departing Brackett Field. The witness was facing north. The airplane was approximately 100 feet above the ground. As the airplane approached the reservoir, the witness heard the engines "backfiring" and noted the right propeller was not turning as fast as the left propeller (as viewed facing the nose of the airplane). The witness also noted the landing gear were extended. The airplane turned toward the south and continued to lose altitude. The witness observed the airplane strike a tree with the right propeller (when viewed from the front of the airplane looking aft), "causing the plane to spin around." The airplane then struck a second tree, bounced back up into the air, and over the second tree. The witness then lost sight of the airplane.

Another witness located on the reservoir said that the propellers were turning. He said one could normally hear the engine power when taking off, but he could not hear engine power for the accident airplane. He observed the airplane turn left toward the shore and lose altitude. The airplane clipped a tree with the port side wing about halfway up the wing, "pulling the plane into a cartwheel." The main body of the airplane hit the second tree with the starboard side and spun around until impacting a picnic area.

The airplane came to rest along the shoreline of Lake Puddingstone in the Frank G. Bonelli Park, San Dimas, California. Park officials estimate that 200-400 people were at the lake near the time of the accident.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with single engine land airplane, rotorcraft helicopter, and instrument airplane and helicopter ratings. He also held a private pilot certificate with multiengine land airplane privileges, which was limited to visual flight rules (VFR) operations only. In addition, the pilot held a flight instructor certificate for single engine land airplanes, rotorcraft helicopters, and instrument helicopters. The pilot held a Federal Aviation Administration (FAA) second-class medical certificate that was issued on October 12, 2001. The medical certificate did not contain any limitations or waivers.

According to the pilot's last pilot certificate application (airplane multiengine add-on rating), which was dated January 29, 2001, he had accumulated a total of 468 hours of airplane flight time and 4,396 hours of helicopter flight time. According to the application, he had accumulated a total of 13.3 hours in the Cessna 310, which is what the pilot used for the practical flight test. According to the FAA's certificate records for the pilot, he failed his multiengine add-on rating practical flight test on January 29, 2001, due to "Emergency Procedures: Engine Failure After Lift Off" and "Emergency Descent." Following the failed practical flight test, the pilot received additional flight instruction, which equated to 0.5 hours of flight time. On the 29th, the pilot was given another endorsement indicating he was "given additional instruction required for a retest after failure of the airplane multiengine land" flight test, and passed the practical flight test on the 29th.

Following the January 2001 practical test, the pilot logged 1.1 hours of multi-engine flight time; however, the last logbook entry was dated September 1, 2001. The pilot completed an application for the use of another Cessna 310 aircraft; adjacent to the pilot's name, was an entry for total time in the same make and model. Penned into that entry block was "92". A date was not affiliated with this pilot experience application.

The pilot-rated passenger held a private pilot certificate with single engine land airplane privileges. He also held a third-class medical certificate that was issued on November 29, 2001. The medical certificate stipulated that the airman must wear lenses for distant vision and possess glasses for near vision while exercising the privileges of his airman certificate. The passenger reported on the medical certificate application that he had accumulated a total of 180 flight hours. A review of his logbook revealed he logged a total of 153.8 hours of flight time, none of which was obtained in multiengine airplanes.

AIRCRAFT INFORMATION

The 1964 model airplane was issued an airworthiness certificate on July 13, 1964. The airplane was equipped with two Teledyne Continental Motors (TCM) IO-470 engines, each rated at 260 horsepower (left engine serial number 115276-4-U, right engine serial number 118267-70-U-R), and two McCauley constant speed, manually feathering, 2-bladed propellers.

A bill of sale closing statement indicated the pilot and his partner purchased the airplane on February 13, 2002. An aircraft registration application for N8145M was filled out by the pilot and his partner on February 8, 2002. On February 15, 2002, a Special Flight Permit was issued

for the airplane in order to transport the airplane to a maintenance facility. The airplane was officially registered to the pilot and his partner on March 15, 2002.

The airframe logbooks revealed a period between February 16, 1993, and April 26, 2002, when no maintenance entries were made. According to those familiar with the airplane, it was awaiting sale during this time period. The February 1993 logbook entry was a determination of airworthiness for a ferry flight. The last entry prior to that was a July 1992 entry, which also determined airworthiness for a ferry flight. The last annual inspection prior to the ferry flights was completed on July 3, 1989, but an aircraft total time was not entered.

A logbook entry dated February 11, 1976, revealed the Hobbs meter was replaced at an aircraft total time of 3,108.5 hours. A logbook entry dated July 15, 1981, stated, "For TT [total time] add 4109 to Hobbs time."

A review of the aircraft maintenance records revealed complete engine histories were not available and their total times were unknown. According to separate engine entries, both dated May 7, 2002, the left engine's total time since its last major overhaul was 1,050 hours, and the right engine's total time since its last major overhaul was 850 hours. The Hobbs meter at the time of these entries was 2,052 hours.

The aircraft's last static system check was completed on April 26, 2002. The last annual inspection conducted on the airplane was completed on May 7, 2002. This annual inspection entry listed both the aircraft total time and the Hobbs meter reading as 2,052.0 hours. Adding the aircraft's hour meter reading at the accident site to 4,109, as instructed to in the logbook entry dated July 15, 1981, provides an aircraft total time of 6,166.1 hours.

According to those familiar with the airplane, the airplane's landing gear collapsed in June 2002. No mention of the repair work was found in the maintenance logbooks.

The airplane was refueled at the departure airport on June 28, 2002, with 28.8 gallons of 100LL aviation gasoline; however, it is unknown how much fuel was onboard the airplane during the accident flight.

METEOROLOGICAL INFORMATION

At 1237, the weather observation facility at the Brackett Field Airport reported the wind from 250 degrees at 7 knots; visibility 5 miles in haze; sky partially obscured; and an altimeter setting of 29.96 inches of mercury. The temperature and dew point were not recorded.

WRECKAGE AND IMPACT INFORMATION

According to a Global Positioning System (GPS) receiver, the accident site was located at 034 degrees 05.078 minutes north latitude and 117 degrees 48.097 minutes west longitude, and at an elevation of 1,444 feet. The linear energy path from the initial tree impact to the final

airplane component, which was the right engine, measured 230 feet in length. The airplane initially contacted a tree that was 30 feet tall. The airplane then contacted a second tree that was 100 feet past the first tree. The main wreckage was located 184 feet past of the initial tree impact, and adjacent to a park cooking grill (steel grill cemented in place) and picnic table.

The airplane separated into four major structural sections; the left wing, right wing, the fuselage from the instrument panel forward, and the fuselage from the instrument panel aft. The second tree entered the cabin just forward of where the leading edge of the right wing meets the fuselage. The cabin floor was separated on a diagonal line starting at the point the tree entered the cabin and ending where the trailing edge of the left wing meets the fuselage. The park grill indented and ruptured the right side fuselage skin at fuselage station 132.00.

The energy path was oriented on a magnetic heading of 160 degrees until the point of the second tree impact. The energy path then switched to a 130-degree heading to where the final piece of wreckage came to rest. The airplane's final resting heading was 100 degrees.

The following components were found within the debris path (distances are referenced from the initial impacted tree). The front section of the left main fuel tank (tip tank) was located in the debris path approximately 65 feet past of the initial tree impact, and the tip tank displayed a semicircular indentation consistent with the shape and size of the initial tree. A section of the right wing spar came to rest at the 94-foot mark. At the 104-foot mark, the right seat and cabin section came to rest. At 120 feet, one of the right propeller blades came to rest in the tree debris. The nose landing gear door and the nose wheel were found at 124 feet and 138 feet, respectively. At 141 feet, the top section of the second tree came to rest. Three feet past the top of the tree was the front section of the right main fuel tank (tip tank). At 184 feet and 230 feet were the main aircraft wreckage and the right engine, respectively.

Initial examination of the airframe accounted for all primary structural elements of the flight control surfaces. The flight control system was examined. Of the control cables that were found separated, all displayed a broom-straw appearance. Some of the flight control cables had to be cut to facilitate transport from the accident site. Continuity was established through the cables, and the broom-straw separations. The aileron trim actuator was found set to 11 degrees tab down and its position indicator was destroyed (aileron trim was located on left wing). The elevator trim actuator was found in the neutral position and its position indicator was destroyed. The rudder trim was extended 3/8 inch to the left of its trailing edge. The landing gear was in the extended position. By comparing the position of the flap drive chains of the accident airplane with an exemplar model, it was determined the flaps were in the retracted position.

According to photographs taken by first responders, the throttle quadrant was found with the following settings: the left throttle control was in the mid-range setting, the left propeller control was positioned aft 1 inch, the left mixture control was pulled aft 1 inch; the right engine throttle, propeller, and mixture controls were in the full forward position. The left engine's fuel selector was in the left main tank position and the right engine's fuel selector was in the right

main tank position. The left and right main fuel tank quantity indicators displayed a zero indication, the left auxiliary tank indicated 10 gallons, and the right auxiliary tank indicated 7.5 gallons. The left and right fuel boost pump switches were in the ON (up) position.

The left engine remained attached to its mounts and in its nacelle, and the propeller assembly remained attached to the engine. The fuel line between the fuel pump and fuel metering unit was removed at the fuel metering units fitting and fuel was present. The engine's accessories all remained attached to the engine. Both propeller blades were bent aft and displayed very light leading edge damage. One of the blades was twisted toward low pitch near its tip. The other blade did not display any twisting, but displayed slight leading edge polishing.

The right engine separated from its nacelle and the propeller separated from the engine. The engine crankcase displayed two cracks. The first initiated at the front top and extended aft to the rear of the No. 6 cylinder. The second crack initiated at the propeller hub and extended aft to the top of the No. 5 cylinder. The propeller hub was found split into two halves and both propeller blades were separated from the hub. One propeller blade displayed scrape marks consistent with making contact with the cement ground. The propeller blade was not twisted and did not display face polishing. The other blade was never located. The engine's accessories remained attached except for the starter and left magneto, which separated. The left magneto's drive coupling was rotated by hand and the three leads that remained attached made sparks. The pulley, which drives the alternator, was separated and no rotational scoring was noted.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on both the pilot and passenger at the Los Angeles County Medical Examiner's Office. According to the autopsy reports, the pilot and passenger both died as a result of "multiple traumatic injuries." A toxicology test conducted on the pilot revealed 0.011 ug/mL and an unquantified amount of bupropion metabolite detected in the blood and urine, respectively. Buproprion is a drug used in the treatment of depression and is used for the management of smoking cessation. It is commonly known by the trade name Zyban.

TESTS AND RESEARCH

On July 6, 2002, the wreckage was examined at a wreckage recovery facility located in Corona, California. The top spark plugs on the left engine were removed and were dark in color (all top spark plugs were covered with black soot) when compared to the Champion Aviation Check-A-Plug AV-27 Chart. The left engine's pistons were observed through the spark plug holes and they also appeared dark in color. A thumb compression check was performed while the propeller was manually rotated by hand. Compression was achieved on each cylinder. The oil screen and fuel screen were removed and both were free of debris. The left engine was prepared for a test run. A new propeller was installed on the left engine and it was successfully run at an idle power setting utilizing fuel from the auxiliary fuel tank. The left engine was removed from the nacelle and sent to the Teledyne Continental Motors (TCM)

factory for an official test run.

The top spark plugs on the right engine appeared normal when compared to the aforementioned spark plug comparison chart. The spark plugs were free of deposits and their electrodes were round. The right engine's main oil screen and fuel screen at the fuel metering unit were removed and both were free of debris. The damage sustained by the right engine prohibited a test run. The right engine was also shipped to the TCM factory for a more detailed examination.

On September 4-6, 2002, the left and right engines were examined under the supervision of the National Trandportation Safety Board investigator-in-charge (IIC). The left engine was prepared for test run by replacing the damaged induction balance tube, removing the exhaust system and installing short stacks, and removing some baffling. The engine was test run in a test cell for 40 minutes. The engine produced rated power and was taken through a range of power settings. The engine displayed no anomalies.

The right engine's fuel system was removed from the right engine and was placed on the left engine for testing. No anomalies were noted with the right engine's fuel pump, fuel metering unit, fuel manifold, fuel lines, and nozzles. Both magnetos were tested on a magneto test stand and functioned normally across a 7MM spark gap. Internal examination of the right engine revealed the front of the crankshaft was bent in the same area of crankcase damage. Some "minor" metal contamination to the bearing surfaces were observed and the number 1 connecting rod piston pin bushing was loose. The oil pump drive shaft was intact and the pump cavity and gear edges were scratched from "particle passage during service." The oil pressure relief valve was unobstructed. According to TCM, none of these noted items "were causing a serviceability problem at the time of the accident."

On November 5, 2002, the propellers were examined at the manufacturer's facility in Vandalia, Ohio, under the supervision of the IIC. The following pertinent observations were made on both propellers. There were no indications of preimpact fatigue failure of any components; the feather stops were undamaged; and both piston positions were found to be in the vicinity of the low pitch setting to latched positions. The damage sustained by the right propeller was extensive and included the breakup of the propeller hub, which according to the manufacture is a signature "indicating power at impact." The left propeller's overall damage was significantly less than that of the right, "indicating lower energy (power) at impact."

On August 6, 2002, the wreckage was reexamined under the supervision of an FAA inspector. The purpose of the examination was to determine the configuration of the electrical wiring in the fuel boost pump systems.

The original fuel boost pump system was designed with each side being independent. The System consisted of the following components and was the same for each side:

- A switch on the cockpit labeled ON (up position), OFF (middle position), and NORM (down

position).
- A push button primer switch in the cockpit.
- An oil pressure switch located in the leading edge of the wing root.
- A fuel pressure switch attached to the throttle body.
- A 5-ohm, 25-watt dropping resistor located in the trailing edge of the wing.
- A relay located in the trailing edge of the wing.
- A boost pump.
- Various wires and connectors.

When taking off, with the original boost pump system, the pilot was to place the two boost pump switches in the ON position. This provided power through the dropping resistor and the boost pump would run at a reduced speed, producing less pressure. If the fuel pressure switch detected a drop in fuel pressure it would provide power to a solenoid in the relay that would allow power to the boost pump to bypass the dropping resistor so the boost pump would run at full speed. The relay was self-locking and would remain engaged until the boost pump switch was moved to the OFF position. After takeoff the boost pump switches were to be moved to either OFF or NORM as necessary. A boost pump working at full speed could cause the engine to be flooded at a power setting other than full throttle. The oil pressure switch inhibited the use of the boost pump operation when there was no oil pressure in the engine. The primer switch bypassed the oil pressure switch and allowed the pilot to run the boost pump on high for engine priming. When the pilot released the prime switch the boost pump was shut off.

Cessna Aircraft Company Service Bulletin ME88-3 Revision 2 (dated January 18, 1991) with Service Kit SK310-104B (dated February 10, 1989), provided a method to remove the fuel pressure switch and to change the cockpit boost pump switch. The new cockpit switch was labeled HIGH (up position), OFF (middle position), and LOW (down position). An extra wire was added to the circuit to provide the pilot with direct control of the speed of the boost pump. The solenoid and resistor remained in the airplane. In the LOW position, power was still routed through the dropping resistor. To move the boost pump switch to the HIGH position the switch had to be pulled out and then moved up past a lock. In this position, power was sent to the boost pump through the added wire that bypassed the dropping resistor allowing the boost pump to run at full speed.

It was found that neither engine was equipped with a fuel pressure switch. No logbook record of the accomplishment of this Service Kit was found. While the fuel pressure switches in the engine nacelles had been removed, the wires had been cut, but not capped, and the boost pump switches in the cockpit had not been modified per the Service Kit. No additional wiring was found. This would have caused the fuel boost pumps to stay in the LOW mode whenever the boost pump switch was not in the OFF position.

When the boost pump switches were removed from the cockpit a jumper wire was discovered between the two switches. Normal aircraft wiring prohibited the running of the boost pump with the boost pump switch if the engine did not have oil pressure. This wire would have

allowed the boost pump on a non-running engine to be run if the opposite engine was running. Two of the six terminals on each boost pump switches were loose.

The Safety Board conducted a Sound Spectrum Study on the air traffic control recordings in an attempt to determine spectral signatures related to engine operation. No clear engine signatures were discernable.

ADDITIONAL INFORMATION

The person who sold the accident airplane to the pilot, introduced the pilot to a multiengine flight instructor. The flight instructor provided multiengine training to the pilot. In an interview with the FAA, the flight instructor provided details on the technique used for simulating engine failures. When between 0 and 50 percent Vmc, the instructor would retard the mixture control to simulate an engine failure. When greater than 50 percent Vmc and below 3,000 feet above ground level (agl), he would retard the throttle control. If the airplane was above 3,000 feet agl, he would retard the mixture control. The student was instructed to verify the inoperative engine by reducing the throttle. The student was to then retard the propeller lever of the identified engine aft 1 inch, to simulate feathering the propeller. The flight instructor would then set a zero thrust condition on the inoperative engine.

According to the instructor, the examiner, who tested the pilot for his multiengine add-on rating, lived in Kingman, Arizona. The instructor and the pilot flew another Cessna 310 to Kingman on January 29, 2001. During the flight to Kingman, the instructor gave the pilot a practice practical flight test. Upon arriving in Kingman, the examiner stated he had another exam to give in Victorville, California, and suggested that the instructor and pilot fly him there and he would give the flight test while en route. The flight instructor sat in the back seat, without a headset, while the pilot occupied the left front seat and the examiner sat in the right front seat. The flight subsequently landed at Barstow, California, and the examiner informed the instructor that the pilot had failed his check ride.

According to the flight instructor, he assumed the pilot failed his emergency procedures, but was not sure because the examiner "did not make it clear." The flight instructor then flew again with the pilot for 0.5 hours and landed. He endorsed the pilot for another check ride, and the three individuals reentered the airplane and continued the flight to Victorville, during which time, the examiner reexamined the pilot. The pilot was issued a temporary Airmen Certificate after landing in Victorville.

Review of the aircraft's owner manual under the section titled, "Emergency Procedures," revealed recommended procedures for Engine-Out On Take-Off (With Sufficient Runway Remaining), and Engine-Out After Take-Off; Above 100 MPH (Without Sufficient Runway Ahead).

Under the procedure for Engine-Out On Take-Off (With Sufficient Runway Remaining), the pilot is instructed to "Cut power and decelerate to a stop." A note accompanying this procedure

states, "The aircraft can be accelerated from a standing start to 100 MPH on the ground, and then decelerated to a stop with heavy braking within 3,046 feet of the starting point of the take-off run at sea level, and within 3,863 feet of the starting point at 5,000 feet altitude (zero wind, hard surface runway, standard conditions, full gross weight)."

The procedure for Engine-Out After Take-Off; Above 100 MPH (Without Sufficient Runway Ahead) instructs the pilot to take the following steps:

"(1) Throttles - Full Forward.
(2) Propellers - High RPM.
(3) Landing Gear - UP.
(4) Determine Inoperative Engine (idle engine same side as idle foot).
(5) Propeller - FEATHER (inoperative engine).
(6) Climb Out at 100 MPH.
(7) Accelerate to 116 MPH after Obstacle is Cleared.
(8) Wing Flaps - UP (if extended) in small increments.
(9) Secure Inoperative Engine as Follows:
    (a) Auxiliary Fuel Pump - OFF.
    (b) Mixture - IDLE CUT-OFF.
    (c) Magneto Switches - OFF.
    (d) Generator Switch - OFF.
    (e) Fuel Selector Valve - OFF."

A supplemental section of the owner manual provides additional information regarding engine-out operations during takeoff. The supplement states, "The twin-engine airplane must reach the minimum control speed (85 MPH) before full control deflections can counteract the adverse rolling and yawing tendencies associated with one engine inoperative and full power operation on the other engine. However, although the airplane is controllable at the minimum control speed, the airplane performance is so far below optimum that continued flight near the ground is improbable. A more suitable recommended safe single-engine speed is 100 MPH, since at this speed altitude can be maintained more easily while the landing gear is being retracted and the propeller is being feathered." The supplement adds, "For best climb performance, the wings should be banked 5 degrees toward the operative engine." The supplemental information also indicates that, "The following facts should be used as a guide at the time of engine failure: (1) discontinuing a take-off upon engine failure is advisable under most circumstances; (2) altitude is more valuable to safety after take-off than is airspeed in excess of the best single-engine climb speed since excess airspeed is lost much more rapidly than is altitude; (3) climb or continued level flight at moderate altitude is improbable with the landing gear extended and the propeller windmilling; (4) in no case should the airspeed be allowed to fall below the engine-out best angle-of-climb speed, even though altitude is lost, since this speed will always provide a better chance of climb, or a smaller altitude loss, than any lesser speed."

A checklist found in airplane, for a Cessna 310L, had a section titled "Engine Failure At Take-

Off (at or above 105 MPH; no runway remaining)." The recommended procedures on that checklist were as follows:

"- Pilot's discretion - Go Around
- Maintain Directional Control
- Throttles, Propellers, Mixtures - Forward
- Gear, Flaps - Up
- Fuel Pumps - On/As Required
- Fuel Selectors - Proper Tanks
- Magnetos - On
- Identify (foot), Verify (throttle), Feather (inop)
- Inoperative Engine (Mixture, Mags, Pump) - Off"

The airplane was released to the owner's representative on May 14, 2003.

Pilot Information

Certificate:	Commercial; Flight instructor; Private	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Helicopter; Instrument helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 12, 2001
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	January 29, 2001
Flight Time:	4891 hours (Total, all aircraft), 15 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N8145M
Model/Series:	310I	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310I0145
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	May 7, 2002 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:	5160.5 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	6158.1 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-470-U
Registered Owner:	Michael A. Brand	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	N/A	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	POC,1011 ft msl	**Distance from Accident Site:**	
Observation Time:	12:37 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	5 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	
Precipitation and Obscuration:	N/A - None - Haze		
Departure Point:	La Verne, CA (POC)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	12:30 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	Brackett Field POC	**Runway Surface Type:**	Asphalt
Airport Elevation:	1011 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	26L	**IFR Approach:**	None
Runway Length/Width:	4839 ft / 75 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	2 Fatal, 9 Serious	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal, 9 Serious	**Latitude, Longitude:**	34.083332,-117.801666

Administrative Information

Investigator In Charge (IIC):	Ragogna, Jason
Additional Participating Persons:	Brad Howard; Federal Avitaion Administration; Riversdie, CA Henry Soderlund; Cessna Aircraft; Wichita, KS Michael Grimes; Teledyne Continental Motors; Mobile, AL Thomas M Knopp; McCauley Propeller Systems; Vandalia, OH
Original Publish Date:	September 29, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=55136