Aviation Investigation Final Report

Location:	Minden, Nevada	**Accident Number:**	LAX06LA187
Date & Time:	May 30, 2006, 08:39 Local	**Registration:**	N6008N
Aircraft:	Hunter Comp Air 6	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane descended to ground impact during a forced landing following a loss of engine power during the takeoff initial climb. During the takeoff roll, the engine momentarily hesitated and made a slight "pop" sound. The engine immediately smoothed out and all the cockpit gauges displayed normal indications. After rotation, the airplane climbed to about 400 feet above ground level (agl) and the pilot initiated a turn to the crosswind leg of the traffic pattern. While the airplane was in the turn, the engine experienced a total loss of power. The pilot stated that he attempted to activate the fuel pump and restart the engine, but he was not successful. A witness observed the airplane departing from runway 34. The airplane began to make a 45-degree turn to the west and he noticed that the engine did not sound normal. The airplane appeared to be maneuvering close to the runway and was rapidly losing altitude. After making another 45-degree turn to the left, the airplane was heading south and continually losing altitude. The witness recalled that he did not hear any sound from the airplane's engine. The airplane's left wing dipped down, almost perpendicular to the ground, and then the airplane impacted the terrain. The airplane came to rest inverted. The pilot had recently purchased the airplane and he had acquired 2 hours in the same make and model. The switch for the boost pump was located on the control stick and had three positions: off, low, and high. The post accident examination revealed that the switch was in the high position. According to the previous owner, he found the switch in the high position immediately after the accident. Manual manipulation of the switch revealed that movement was very easy without discernable resistance. During the examination, investigators removed the top spark plugs, which displayed a dark, sooty coloration consistent with a rich mixture setting. Thumb compression was obtained on all six cylinders, confirming crankshaft and camshaft continuity. In addition, the magnetos and their respective ignition harnesses were tested and found to produce a spark in the proper firing order. No anomalies were noted with the engine, with the exception of the dark spark plugs.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: a loss of engine power due to an excessively rich mixture. The underlying reasons for the overly rich mixture were not determined. Also causal was the pilot's failure to maintain an adequate airspeed while maneuvering for a forced landing, which led to a stall.

Findings

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

Findings
1. (C) FUEL INJECTION CONTROL/SYSTEM - EXCESSIVE FLOW/OUTPUT

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

Occurrence #3: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. (C) STALL - ENCOUNTERED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On May 30, 2006, at 0839 Pacific daylight time, an experimental Hunter Aerocomp Comp Air 6, N6008N, experienced a total loss of engine power and descended into terrain during the subsequent forced landing near Minden-Tahoe Airport, Minden, Nevada. The pilot/owner was operating the airplane under the provisions of 14 CFR Part 91. The private pilot and passenger received serious injuries; the airplane sustained substantial damage. The personal cross-country flight was originating from Minden at the time of the accident with an unknown destination. Visual meteorological conditions prevailed, and a flight plan had not been filed.

In a written statement, a witness reported observing the airplane departing from runway 34. The airplane began to make a 45-degree turn to the west and he noticed that the engine did not sound normal. The airplane appeared to be maneuvering close to the runway and was rapidly losing altitude. After making another 45-degree turn to the left, the airplane was heading south and continually losing altitude. The witness recalled that he did not hear any sound from the airplane's engine. The airplane's left wing dipped down, almost perpendicular to the ground, and subsequently impacted the terrain. The airplane came to rest inverted.

During a telephone conversation with a National Transportation Safety Board investigator, airport personnel stated that the pilot had just purchased the airplane about 3 weeks prior to the accident. He had recently been experiencing engine and fuel related problems.

In a written report, the pilot stated that prior to departing on the accident flight, he performed an engine run-up with all cockpit gauges indicating normal operation. He adjusted the mixture control by leaning for the airport elevation and completed the applicable checklists. On the departure roll he advanced the throttle lever to the maximum power setting and the airplane proceed down the runway. After reaching about 400 feet down the length of the runway, the engine momentarily hesitated and made a slight "pop" sound. The engine immediately smoothed out and all the cockpit gauges displayed normal indications.

The pilot further stated that he continued the takeoff roll and subsequently became airborne. The airplane climbed to about 400 feet above ground level (agl) and initiated a turn onto the crosswind leg of the traffic pattern. While in the turn the engine experienced a loss of power and quit. He attempted to activate the fuel pump and restart the engine to no avail. The airplane descended rapidly and impacted the ground simultaneously with the left wing and left main landing gear.

PERSONNEL INFORMATION

According to the Federal Aviation Administration (FAA) Airman and Medical records files, the pilot held a private pilot certificate with airplane ratings for single and multiengine land, and an instrument rating. The pilot was issued a third-class medical certificate on March 29, 2005, with the limitation that he must have glasses available for near vision.

In a written statement, the pilot reported 3,500 hours total flight experience, of which 2 hours were flown in the same make and model as the accident airplane.

AIRCRAFT INFORMATION

The Hunter Aerocomp Air 6, serial number 97135, was an experimental aircraft constructed of composite materials and built in 1998. The pilot reported that the most recent annual inspection was completed on May 28, 2006, at which time the airplane had accrued a total time in service of 309 hours. A Teledyne Continental Motors IO-520-F(24) engine, serial number 291148-R, received the last annual inspection on the same date noted for the airframe. The previous owner reported that the engine had amassed about 1,800 hours time in service since new, and during the annual inspection (about 3-4 days prior to the accident), no anomalies were noted. The pilot added that the airplane and engine accumulated 2 hours of flight time following the annual inspection.

The pilot refueled the airplane with 74 gallons of 100LL (low lead) avgas prior to departure, which he stated equated to a cumulative 90 gallons of fuel on board.

Airplane's Fuel System

The high-wing airplane was designed and built with a gravity fed fuel system. Both wings were equipped with two fuel tanks (main and auxiliary), where the fuel was routed to the root of each wing. Fuel was routed from the main and auxiliary tanks to their respective main fuel lines by gravitational forces. The left and right main fuel lines had a fuel shutoff valve downstream of the wing root junctions. According to the placards found on the airplane, and the previous owner, the system was designed for the pilot to open the left fuel shutoff valve (located over the left door), and close the right fuel shutoff valve (located over the right side door) when the fuel tanks were full of fuel.

The airplane was additionally equipped with a fuel pump, which the sole purpose was to return excess fuel to the left fuel tank. The kit manufacturer instructs pilots to utilize fuel from the left tank first, allowing adequate room for returned fuel. There was one fuel gauge installed on the airplane, which provided fuel quantity information for the left fuel tanks only. An automotive fuel filter was installed downstream of each shutoff valve. According to the FAA inspector who examined the airplane following the accident, the kit manufacturer discouraged the use of filters or other restrictions in this area.

The fuel boost pump was installed forward of the firewall. The switch for the boost pump was located on the control stick and had three positions: off, low, and high.

Prior Anomalies

In a written statement, the pilot reported that prior to the accident flight he received 2 hours of instruction with a certificated flight instructor (CFI). While the airplane was on the downwind leg of the traffic pattern at Minden, the engine experienced a total loss of power. The pilots were able to glide toward the closest taxiway at the airport and make an uneventful landing. Immediately following the mishap, the previous owner, who was also an airplane mechanic, replaced both the overhead fuel filters. He subsequently engaged the engine and taxied to the fuel pumps. After fueling, he attempted to restart the engine to no avail. The previous owner could not engage the engine and the airplane was towed back to his hangar. Following an examination, the previous owner stated that the fuel selector was in the off position. He cleaned the fuel strainer and the airplane was determined to be in airworthy condition.

During conversations with a Safety Board investigator, the previous owner revealed that the pilot flew with a local instructor the day before the accident. During that flight, the engine lost power while in the traffic pattern, and an uneventful landing was conducted. The previous owner further stated that he spoke with both the accident pilot and his CFI following that incident. He examined the airplane immediately after the loss of engine power event. He switched the fuel selector position and subsequently started the engine, noting no anomalies with the airplane. He taxied the airplane back to his hangar and conducted a power check, during which time he did not perceive any problems with the engine. He opined that the pilots had allowed for the fuel quantity get too low before switching the fuel tanks, which resulted in the loss of engine power. He instructed the pilot to clean out the fuel filters located downstream of the fuel shutoff valves and to add full fuel to the tanks.

METEOROLOGICAL INFORMATION

An Automated Surface Observation System (ASOS) at the Lake Tahoe Airport, South Lake Tahoe, California (located about 13 nautical miles southwest from the accident site), generated a routine aviation weather report (METAR) at 0833. It reported: winds calm; skies clear; temperature -03 degrees Celsius; dew point -07 degrees Celsius; and altimeter of 29.77 inches of mercury.

TESTS AND RESEARCH

Following recovery, a Safety Board investigator and a representative from Teledyne Continental Motors (TCM) examined the wreckage on June 10, 2006. The wreckage was located at private hangar in Minden that belonged to the previous owner of the accident airplane. FAA inspectors had already preformed a precursory examination prior to June 10.

A visual examination of the cockpit area revealed that the left fuel shutoff valve was in the "off" position, and the right fuel shutoff valve was in the "on" position. The examination revealed that the boost pump switch, located on the control stick was in the high position. According to

the previous owner, he found the switch in the high position immediately after the accident. Manual manipulation of the switch revealed that movement was obtained without discernable resistance.

Examination of the engine revealed that the oil had been drained from the engine and that the fuel lines were previously removed (an FAA inspector stated that he had removed the fuel lines after the accident and found fuel present). Investigators also learned that the previous owner of the airplane drained the engine oil as it was pooling the hangar floor after the accident.

During the examination, investigators removed the top spark plugs, which displayed a dark, sooty coloration consistent with a rich mixture setting. Thumb compression was obtained on all six cylinders, confirming crankshaft and camshaft continuity. In addition, the magnetos and their respective ignition harnesses were tested and found to produce a spark in the proper firing order. No anomalies were noted with the engine, with the exception of the dark spark plugs.

Pilot Information

Certificate:	Private	**Age:**	62,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 3 With waivers/limitations	**Last FAA Medical Exam:**	March 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 1, 2006
Flight Time:	3500 hours (Total, all aircraft), 2 hours (Total, this make and model), 3300 hours (Pilot In Command, all aircraft), 30 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hunter	**Registration:**	N6008N
Model/Series:	Comp Air 6	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	97135
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	May 1, 2006 Annual	**Certified Max Gross Wt.:**	3200 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	309 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-520-F
Registered Owner:	On file	**Rated Power:**	330 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TVL,6313 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	235°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.23 inches Hg	**Temperature/Dew Point:**	13°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Minden, NV (MEV)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	08:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Minden-Tahoe MEV	**Runway Surface Type:**	
Airport Elevation:	4726 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	39.000278,-119.751113

Administrative Information

Investigator In Charge (IIC):	Keliher, Zoe
Additional Participating Persons:	Lee Oscar; Federal Aviation Administration; Reno, NV
Original Publish Date:	April 25, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=63792