National Transportation Safety Board
Aviation Accident Final Report

Location:	Claremont, CA	**Accident Number:**	LAX04FA066
Date & Time:	12/14/2003, 1723 PST	**Registration:**	N6887L
Aircraft:	Cessna 421C	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane impacted a residence during a missed approach. After completing the en route portion of the instrument flight, a controller cleared the pilot to proceed direct to the initial approach fix for the global positioning satellite (GPS) approach to the airport. After being cleared for the approach, the airplane continued on a course to the east and at altitudes consistent with flying the GPS published approach procedure. Radar data indicated that at the missed approach point at the minimum descent altitude of 2,000 feet msl, the airplane made a turn to the left, changing course in a northerly direction toward rapidly rising mountainous terrain. The published missed approach specified a climbing right turn to 4,000 feet, and noted that circling north of the airport was not allowed. Remaining in a slight left turn, the airplane climbed to 3,300 feet msl over the duration of 1 minute 9 seconds. The controller advised the pilot that he was flying off course toward mountainous terrain and instructed him to make an immediate left turn heading in a southbound direction. The airplane descended to 3,200 feet msl and made a left turn in a southerly direction. The airplane continued to descend to 2,100 feet msl and the pilot read back the instructions that the controller gave him. The airplane then climbed to 3,300 feet, with an indicated ground speed of 35 knots, and began a sharp left turn. It then descended to impact with a house. At no time during the approach did the pilot indicate that he was experiencing difficulty navigating or request assistance. An examination of the airplane revealed no evidence a mechanical malfunction or failures prior to impact; however, both the cockpit and instrument panel sustained severe thermal damage, precluding any detailed examinations.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot became lost/disoriented during the approach, failed to maintain course alignment with the missed approach procedure, and subsequently lost control of the airplane.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH

Findings
1. WEATHER CONDITION - LOW CEILING
2. (C) BECAME LOST/DISORIENTED - INADVERTENT - PILOT IN COMMAND
3. (C) PROPER ALIGNMENT - NOT MAINTAINED - PILOT IN COMMAND
4. (C) MISSED APPROACH - IMPROPER - PILOT IN COMMAND
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. OBJECT - RESIDENCE

Factual Information

HISTORY OF FLIGHT

On December 14, 2003, at 1723 Pacific standard time, a Cessna 421C, N6887L, collided with a residence in Claremont, California, while attempting an instrument approach to Cable Airport, Upland, California. The pilot/owner was operating the airplane under the provisions of 14 CFR Part 91. The commercial pilot, the sole occupant, sustained fatal injuries; the airplane was destroyed. The personal cross-country flight originated from Camarillo Airport, Camarillo, California, at 1653. Visual meteorological conditions prevailed at Brackett Field, La Verne, California, the closest official reporting station, which was 4 miles southwest of the accident site. An instrument flight rules (IFR) flight plan had been filed.

During the investigation, a National Transportation Safety Board investigator obtained and reviewed the recorded voice channels and radar data from Southern California Terminal Radar Approach Control (SCT).

Prior to departure, the pilot received an IFR clearance for radar vectors to the Van Nuys very high frequency omni-directional radio-range (VOR) navigation aid, and then to proceed to the Pomona VOR, via victor airway 186 (095-degree radial) and victor airway 210 (045-degree radial). While en route, the pilot received numerous heading, airspeed, and altitude assignments for traffic avoidance purposes. A review of the radar data disclosed that the pilot complied with all instructions and requests. However, at one point during the en route portion of the flight, while flying on victor airway 210, the target became off course about 1 1/2 miles north of the airway. The controller advised the pilot of the heading deviation, and instructed him to turn right 10 degrees to intercept the airway.

After completing the en route portion of the instrument flight, the SCT controller cleared the pilot to proceed direct to COVIN, the initial approach fix (IAP) for the global positioning satellite (GPS) approach to Cable Airport. At 1716:00, the controller cleared the pilot for the GPS RWY 6 approach. Radar data indicated that after being cleared, the target continued on a course and at altitudes consistent with flying the GPS published approach course.

Radar data further revealed that the target crossed over the final approach fix (FAF), the Pomona VOR, at 1720:08, and for 1 minute 28 seconds thereafter, remained on a heading consistent with that of the GPS approach course (054 degrees). Throughout that duration, the target descended from 2,900 to 1,900 feet mean seal level (msl) (all radar altitudes are as indicated by the airplane's Mode C-equipped transponder unless otherwise noted).

At 1720:13, the controller advised the pilot that he was over Pomona and approved him to change to an advisory frequency, which he followed with instructions on canceling the IFR flight plan. Several seconds later, the pilot responded by reading back the instructions. After this exchange, radar indicated that at 1721:45, at an altitude of 2,000 feet msl, the target made a turn to the left, changing course in a northerly direction, which corresponded to a 45-degree heading change. The target continued in an arc, climbing to 3,300 feet msl over the duration of 1 minute 9 seconds (between 1721:45 and 17:22:54).

At 1722:43, 2 minutes 30 seconds after giving the pilot a frequency change approval, the controller queried the pilot if he was still on the frequency. Several seconds later, the pilot confirmed that he was still on frequency by stating, "roger I'm with you." At 1722:47, the controller advised the pilot that he was flying off course, toward mountainous terrain. He

instructed the pilot to make an immediate left turn, heading in a southbound direction, and inquired as to what the pilot's intentions were. The controller repeated the instructions 14 seconds later and added that, if able to do so, the pilot should climb to 5,000 feet msl.

The recorded radar data revealed that, at 1722:59, the target descended to 3,200 feet msl and made a left turn in a southerly direction. The target began tracking in a southerly direction 4 seconds later and descended to 2,700 feet msl. During the 10 seconds thereafter, the target continued that descent until 2,100 feet msl. The pilot's last recorded radio transmission occurred at 1723:10, when he stated, "i'm southbound turning immediately," and the airplane then climbed to 3,300 feet. The last radar return was at 1723:35, with the target at 2,200 feet msl; it was directly next to the wreckage site

During interviews with a Safety Board investigator, several ground witnesses reported hearing a low flying airplane. They recalled hearing the sound of an engine sputtering, followed by it smoothing out, then sputtering again, and subsequently becoming quiet. Some witnesses reported seeing the lights on the airplane descending, and then observing the airplane impact a house. A post crash fire consumed most of the house. Several witnesses further noted that it was dark outside.

During an interview with a Safety Board investigator, the pilot's certified flight instructor (CFI) stated that he was waiting at the airport for the pilot to land. As the airplane approached the airport he could hear the airplane, but was unable to obtain visual contact. He reported seeing the runway lights illuminated.

PERSONNEL INFORMATION

A review of Federal Aviation Administration (FAA) airman records revealed that the pilot held a commercial pilot certificate with ratings for airplane single engine land, multiengine land, and instrument airplane. On June 06, 2003, when the pilot was issued a second-class medical certificate, his reported total flight time was 580 hours.

In an interview with a Safety Board investigator, the pilot's CFI stated that he had flown numerous hours with the pilot in the accident airplane. He estimated that the pilot had accumulated 175 hours in it, of which 55 were with him. He further stated that the pilot often flew simulated and actual IFR flights, and that he had made approaches into Cable Airport many times prior. The last time he and the pilot flew on instruments together was in May 2003, at which time the pilot demonstrated proficiency performing GPS approaches using the Garmin GNS 430. He noted that the pilot also was accustomed to using the Garmin GNS 530 in a Cessna P210 that he used to fly regularly. Their last flight together was in October 2003.

AIRCRAFT INFORMATION

The airplane was a Cessna 421C, serial number 421C1113. A review of the airplane's logbooks revealed that the airplane had undergone an annual inspection on March 01, 2003, at a total time of 3,257.1 hours. The engines were both Teledyne Continental Motors GTSIO-520-N series and underwent annual inspections on March 03, 2003. During the inspections, the mechanic noted that the right engine, serial number 227143-R, accumulated a total time of 2,267.2 hours, and that the left engine, serial number 277151-R, accumulated a total time of 1,604.1 hours.

This airplane was delivered with the Cessna 800B Integrated Flight Control System (IFCS). The IFCS had a mode selector, which had annunciation lights for the flight director, autopilot,

NAV 1, NAV 2, back course, go-around, glide slope, VOR/ localizer, and altitude hold modes. It had one avionics bus.

A Safety Board investigator reviewed the airplane's Major Repair and Alteration FAA 337 forms. The review disclosed that around November 24, 1999, Western Aircraft, Boise, Idaho, repair station personnel installed dual Garmin International, Inc., GNS 430 navigation, communication, and GPS systems on the accident airplane. The systems were certified solely for operation under visual flight rules (VFR). The entry further indicated that the airplane had two avionics buses. Connection to avionics bus one consisted of the number one GNS 430 unit, the directional gyro (KG102A), and the Sandel multi-function display. The sole connection noted for the second avionics bus was the number two GNS 430 unit. Any interface of the IFCS mode selector to the Garmin 430 is unknown. The 337 form said that annunciations are displayed on the Sandel HSI. Investigators could not locate information regarding the interconnection between the avionics buses.

Around February 11, 2000, the repair station personnel conducted a flight evaluation of the GPS, in an effort to comply with AC 20-138 "Follow-on IFR Airworthiness Installation Approvals" withsatisfactory results. They removed the "GPS VFR ONLY" placards, and added an FAA approved flight manual supplement to the Pilot's Operating Handbook.

A supplement to the Cessna information manual described the 800B IFCS. The autopilot/electric elevator trim disconnect switch was on the left handle of the control yoke. It stated that the electric trim switch is inoperable when the autopilot is engaged. After activating the go-around mode, the GA annunciator light illuminates; all other modes are cancelled, and it disengages the autopilot. It gives a wings level, pitch up command (4 to 6 degrees) on the flight director indicator pitch command bar only. It also notes that disengaging the autopilot with the GA switch will not illuminate the autopilot off light, but will give a 1- to 2-second aural tone.

AREODROME INFORMATION

The Airport/ Facility Directory, Southwest U. S., indicated an elevation of 1,439 feet msl for the Cable Airport that has one hard surfaced runway on a 060 - 240 magnetic orientation. The asphalt runway 06 is 3,865 long by 75 wide and is equipped with a V2L Visual Slope Indicator. The VOR 6 and GPS 6 are the only instrument approaches authorized at the airport. Directly north of the airport, about 1 nautical mile, an east-west freeway stretches parallel to the runway.

GPS 6 Instrument Approach Procedure.

The Cable GPS 6 approach, for which the pilot had been issued an instrument clearance, commenced at the COVIN initial approach fix. The instrument approach procedure indicated that after COVIN, the pilot was to descend no lower than 3,000 feet msl and proceed via a 075-degree course to the Pomona VOR, which also served as the final approach fix. After reaching the VOR, the procedure indicated that the pilot was to make a 21-degree course change, from 075 to 054 degrees, and to descend to the minimum descent altitude of 1,980 feet msl (554 agl). The missed approach point was at the onset of the runway, 5 nm from the Pomona VOR. The missed approach procedure specified a climbing right turn to 4,000 feet, and direct to the Paradise VOR. The chart noted that circling was not authorized north of runway 06-24. The chart further showed that directly north of Cable Airport was an area of rising terrain, starting at 2,000 feet.

During a telephone interview with a Safety Board investigator, the pilot's CFI stated that the pilot regularly used instrument charts manufactured by Jeppesen Sanderson, Inc., and he normally carried them in the airplane. In the wreckage, investigators located remnants of a Jeppesen-like metal binder.

METEROLOGICAL INFORMATION

The closest weather observation station was Brackett Field, La Verne, located 3.6 nm southwest of the accident site. An aviation routine weather report (METAR) for Brackett was issued at 1647. It stated: winds calm; visibility 7 statute miles; skies 2,500 broken; skies 4,500 overcast. At 1747, the observation was updated to report: winds calm; visibility 3 statute miles; mist; skies 1,600 overcast. The weather observation station at Ontario Airport, Ontario, California, located 8 nm southeast of the accident site, reported conditions at 1653. It stated: winds calm; visibility 7 statute miles; skies 1,400 feet overcast; temperature 11 degrees Celsius; dew point 11 degrees Celsius; altimeter 30.07 inches of mercury. At 1753, the observation was updated to report: winds calm; visibility 8 statute miles; skies 1,300 feet overcast; temperature 11 degrees Celsius; dew point 11 degrees Celsius; altimeter 30.09 inches of mercury.

A pilot's report issued in Palomar, California, about 63 miles southeast of the accident site, stated that the cloud tops were about 7,000 feet msl. Witnesses in the vicinity of the accident reported that the sky conditions were dark. No witnesses reported any type of unusual weather phenomenon.

According to the U.S. Naval Observatory, the time of sunset was 1644, with an end to civil twilight of 1712. The moon's illumination was 68 percent; however, the altitude of the moon was 37.7 degrees below the horizon.

WRECKAGE AND IMPACT

The accident site was about 1.71 nm and 99 degrees magnetic, from the Cable Airport. The GPS coordinates for the site were 34 degrees 7.384 minutes north latitude and 117 degrees 43.143 minutes west longitude. The entire airplane was present within the wreckage distribution area surrounding the final resting point of the fuselage. The airplane came to rest partially impacted into the side of a single-level house. The main wreckage consisted of the upright fuselage and both wings, all of which exhibited upward vertical crush damage. Both engines were in normal positions relative to the fuselage except for the alternator and reduction gear section of the right engine, which were about 50 feet away in neighbor's yards. All six of the propeller blades remained within the confines of the home's boundary fence. The fuselage was oriented on a magnetic bearing of 010 degrees. Remnants of the empennage and the left wing were inside the residence.

MEDICAL AND PATHOLOGICAL INFORMATION

The Los Angeles County Coroner completed an autopsy. The FAA Toxicology and Accident Research Laboratory performed toxicological testing of specimens of the pilot. The results of analysis of the specimens were positive for carbon monoxide (11 percent) and cyanide (0.28(ug/ml)).

TESTS AND RESEARCH

Following recovery, Safety Board investigators examined the airplane at Aircraft Recovery Service, Littlerock, California, on December 16 and 17, 2003. As well as FAA inspectors, manufacturer's representatives from Cessna Aircraft and Teledyne Continental Motors assisted

with the examination.

Airframe Examination.

The structural examination of the airframe revealed that the fuselage disintegrated from the floor level to the roof. The fuselage and empennage had burned predominately to ashes. All flight control surfaces were within the main wreckage. The cockpit and corresponding instrumentation were thermally destroyed and not recognizable.

Investigators established elevator and rudder control continuity from the aft end of the crushed cockpit pedestal to the end of the control cables. They established left aileron continuity from the crushed forward cabin area to the middle of the wing. They established right aileron continuity from the cockpit area to the bellcrank. The left and right control yokes remained connected in roll. The trim and all attachments were thermally destroyed. The wing flap position could not be ascertained due to the extensive impact damage of the flap motor.

Left Engine Examination.

The overall view of the engine revealed external thermal distress from the ground fire and the engine case was fractured. Due to the extent of the mechanical and thermal damage, investigators were unable to rotate the engine. The cylinder heads for cylinders number 2, 4, and 6 separated. The bottom spark plug for the number 2 cylinder and the top spark plug for the number 6 cylinder sustained mechanical damage; the bottom spark plug for cylinder number 6 was missing. The remaining spark plug electrodes were slightly oval and gray.

Thermal damage destroyed both magnetos and the ignition harness. The compressor section of the left turbocharger had melted away, and the turbine wheel would not turn. Fire consumed the throttle body, leaving only the butterfly valve and linkage. The oil sump crushed up; the screen was clean. The scavenge oil pump and main oil pump gears were not scored.

The valves were intact and remained in their relative positions. The piston heads revealed a thin layer of deposits, but also remained intact. All connecting rods were straight, and moved freely within their appropriate journals. The babbitt material lining several rod journals was partially melted. The cam lobes were egg-shaped and had not taken a circular shape. The main journals on the crankshaft were not scored, however, the babbitt lining was partially melted on all of the main bearing journals. Both engine case halves exhibited no evidence of fretting, and the counterweights moved freely on their pins.

All propeller blades showed evidence of chordwise scratching. One blade separated from the hub, and investigators found it several feet from the engine. A third of the outboard section was missing; the end of the stub was melted. Another blade also separated from the hub, and it was about 2 feet from the left engine. It revealed a slight S-bend and the blade tip was curled. The other blade was near the left side of the engine, and the propeller midsection curled upward.

Right Engine Examination.

The right engine sustained similar damage to the left engine and due to the severe mechanical and thermal damage it incurred, investigators were unable to rotate the crankshaft. Upon removal of the spark plugs, investigators observed the electrodes to be slightly oval and gray in color.

Thermal damage destroyed both magnetos and their respective ignition harnesses.

Investigators were able to turn the turbocharger, but a substance resembling sand was impacted within the casing; the blades were undamaged. The oil sump crushed up; the screen was clean. The scavenge oil pump and main oil pump gears were not scored.

The valves were intact and remained in their relative positions. The piston heads revealed a thin layer of deposits, but also remained intact. All connecting rods were straight, and moved freely on their appropriate journals. The babbitt material lining several rod journals was partially melted. The cam lobes were egg-shaped and had not taken a circular shape. The main journals on the crankshaft were not scored, however, the babbitt lining was partially melted on all of the main bearing journals. Both engine case halves exhibited no evidence of fretting, and the counterweights moved freely on their pins.

All propeller blades separated from the propeller hub and showed evidence of chordwise scratches; all blade tips were curled.

ADDITIONAL INFORMATION

The Safety Board investigator released the wreckage to the owner's representative.

Pilot Information

Certificate:	Commercial	**Age:**	54, Male
Airplane Rating(s):	Multi-engine Land; Single-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:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	06/01/2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	600 hours (Total, all aircraft), 175 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6887L
Model/Series:	421C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	421C1113
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	03/01/2003, Annual	**Certified Max Gross Wt.:**	7450 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	3257 Hours as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	GTSIO-540-N
Registered Owner:	Kaplan Steven N Trustee	**Rated Power:**	375 hp
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	POC, 1439 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	1745 PST	**Direction from Accident Site:**	247°
Lowest Cloud Condition:		**Visibility**	3 Miles
Lowest Ceiling:	Overcast / 1400 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	Calm /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	11°C / 11°C
Precipitation and Obscuration:	Mist		
Departure Point:	Camarillo, CA (CMA)	**Type of Flight Plan Filed:**	IFR
Destination:	Upland, CA (CCB)	**Type of Clearance:**	IFR
Departure Time:	1653 PST	**Type of Airspace:**	Class E

Airport Information

Airport:	Cable Airport (CCB)	**Runway Surface Type:**	Asphalt
Airport Elevation:	1439 ft	**Runway Surface Condition:**	Unknown
Runway Used:	060	**IFR Approach:**	Global Positioning System
Runway Length/Width:	3865 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	34.123056, -117.718889

Administrative Information

Investigator In Charge (IIC):	HOWARD D PLAGENS	**Report Date:**	05/29/2007
Additional Participating Persons:	Ron Gonzales; Federal Aviation Administration; Riverside, CA Thomas Teplick; Cessna Aircraft Company; Wichita, KS Scott Boyle; Teledyne Continental Motors; Mobile, AL		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		