Aviation Investigation Final Report

Location:	Bishop, California	**Accident Number:**	LAX03FA166
Date & Time:	May 26, 2003, 15:35 Local	**Registration:**	N4730W
Aircraft:	Rockwell 114	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane collided with upsloping, high mountainous terrain at an elevation of 12,660 feet mean sea level while maneuvering low to the terrain and below the tops of the peaks and ridge lines west of the accident site. Ground scars and crush deformation to the airplane is consistent with the airplane colliding with the ground in a stall/mush descent. The pilot had departed South Lake Tahoe for an intended nonstop flight to a Southern California airport. As documented by 81digital photographs taken by a passenger, the route of flight included flying over the Yosemite National Park and other scenic areas the Sierra Nevada mountains. En route scattered high clouds were predominant and the weather reports showed benign conditions over the area of the accident. The last few pictures taken by the passenger near the accident site showed the airplane generally flying in a southeasterly direction and at elevations below that of the surrounding mountains. Following the airplane's departure, there were no communications or services provided by any FAA facility. The accident occurred after the airplane had been flying for 1.9 hours. No evidence of any radar track consistent with the airplane's course was found in the vicinity of the accident site. The lowest altitude at which a target is visible on radar in the vicinity of the accident site is 13,300 feet. The wreckage was found on a Sierra Nevada mountain plateau, oriented in an easterly direction facing lower elevation terrain. One mile east of the accident site, over the edge of the plateau, the elevation decreased to about 11,300 feet msl. About 10 miles farther east, the elevation decreased to about 4,900 feet msl. The airplane was equipped with a normally aspirated, 260-horsepower engine, and with reduced gross weight the airplane could climb to a service ceiling of 15,000 feet. The density altitude at the accident site was also about 15,000 feet. No evidence of any mechanical malfunction was found during the wreckage examination.

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 an adequate airspeed while maneuvering close to the ground over mountainous terrain in a high density altitude environment near the upper performance capability of the airplane, which resulted in an inadvertent stall/mush into the terrain. Contributing factors were the pilot's improper in-flight decision to fly low over high elevation, upsloping mountainous terrain, and the high density altitude.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings
1. (F) TERRAIN CONDITION - HIGH TERRAIN
2. (F) TERRAIN CONDITION - RISING
3. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY
4. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
5. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
6. (C) AIRSPEED - INADEQUATE - PILOT IN COMMAND
7. STALL/MUSH - INADVERTENT - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On May 26, 2003, approximately 1535 Pacific daylight time, a Rockwell International 114, N4730W, impacted mountainous terrain while maneuvering over the Sierra Nevada Mountains about 16 nautical miles (nm) southwest of Bishop, California. The airplane was destroyed. The four fatally injured occupants in the airplane included a private pilot and three passengers, one of whom held a student pilot certificate and was in the front right seat. The pilot, student pilot, and the VYSYM Corporation were the registered owners of the airplane. A spokesperson for the occupants indicated that the pilot was primarily operating the airplane for personal reasons. The flight was performed under the provisions of 14 CFR Part 91. Visual meteorological conditions prevailed in the accident site vicinity, and no flight plan was filed. The flight originated from South Lake Tahoe, California, about 1341, with an intended destination of Santa Ana, California.

The Civil Air Patrol initiated a search for the airplane when it was reported overdue at its Santa Ana destination. The airplane was located the following day.

No witnesses reported observing the accident. The specific route of flight between the South Lake Tahoe Airport and the accident site was not determined. Photographs recovered from a passenger's camera revealed that after taking off and climbing over Lake Tahoe, the airplane flew over the Half Dome area of the Yosemite Valley, California. Thereafter, the airplane proceeded in a southeasterly direction.

PERSONNEL INFORMATION

Pilot.

The pilot held a Private Pilot certificate, dated June 5, 1997. According to information contained in the pilot's personal flight record logbooks, by the accident date his total flying experience was over 1,557 hours. His experience in the accident airplane was over 900 hours.

The pilot completed an instrument competency check and flight review on May 27, 2001, and Phase 2 of the Federal Aviation Administration (FAA) Wings program on September 28, 2002. During the 90-day period immediately preceding the accident flight, the pilot had flown the accident airplane at least 40 hours.

Student Pilot/Passenger.

The pilot's wife held a Student Pilot certificate. No certified flight instructor endorsements

authorizing solo flying were present on the certificate.

The student's personal flight record logbook indicated that her first flying lesson was taken in 1989. The last lesson recorded in the logbook was dated 1999. The student pilot's total dual instruction received, and total flying experience, was listed as being 4.0 hours.

AIRCRAFT INFORMATION

The accident airplane, serial number 14060, was manufactured in 1976. It was equipped with a normally aspirated, 260 horsepower, Lycoming IO-540-T4A5D engine. According to the airplane's manufacturer, under standard atmospheric conditions and with reduced gross weight, a Rockwell International 114 has the performance capability to climb to a service ceiling of 15,000 feet mean sea level (msl).

The airplane's standard 2-blade propeller had been replaced with a 3-blade propeller, pursuant to a supplemental type certificate. According to the airplane's Flight Manual Supplement, this change did not affect the airplane's limitations, procedures, or performance.

Maintenance.

Based upon an examination of the airplane's maintenance logbooks and the engine tachometer at the accident site, the airframe's total time was about 4,056.04 hours. The engine's total time since receiving a major overhaul was about 566.04 hours.

The airplane's last annual inspection was performed on May 11, 2002, at a total airframe time of 3,875.96 hours, and at an engine tachometer time of 2,437.48. Since that date, the airplane had been operated about 180.08 hours. During this period, the airplane's Hobbs switch was replaced, the nose strut was serviced, a tire was replaced, the landing gear was serviced, and the pitot-static system was inspected and certified, along with other maintenance items.

Regarding engine-related maintenance since the last annual inspection, the spark plugs were gapped, the oil was changed, and the oil filter was cut open, examined, and replaced.

A squawk sheet was found that listed, by date, maintenance items related to the engine and airframe. The first date noted on the sheet was September 25, 2001, and the last date indicated was April 5, 2003. No squawks were found that were dated after completion of the most recent (April 12, 2003) maintenance that was signed off in the aircraft logbook.

Weight.

The airplane's maximum certificated gross weight was 3,140 pounds. Based upon a weight and balance change form dated April 4, 2001, the airplane's maximum useful load was 1,189.67 pounds.

The fuel tanks held a maximum of 68 usable gallons of fuel. When the tanks were filled to the level of the tank indicator tabs, the fuel quantity was 50 gallons.

A May 26, 2003, fuel receipt from Superior Aviation, at the South Lake Tahoe Airport, indicated that the airplane had been serviced with 35.2 gallons of 100LL aviation fuel. The transaction time stamp was 1209. The fuel order was for the tanks to be filled to the "bottom of tabs."

The occupants and baggage were weighed under the supervision of the Safety Board investigator. Including 50 gallons of fuel and the weight of the occupants plus baggage, the airplane's total ramp weight at South Lake Tahoe was about 3,175 pounds.

During the accident flight, at 1429, a photograph was taken that showed the airplane's fuel flow indicator registering 12 gallons per hour. At the time, the airplane was in level cruise flight at 11,760 feet msl, and its indicated airspeed was 110 knots.

Based upon this fuel burn off rate, and including the fuel consumed during ground operation and the climb time, the Safety Board investigator estimated that the engine used about 146 pounds of fuel during the 1.9-hour-long flight (137 pounds used during climb and cruise, plus 9 pounds used during ground operation). The calculated weight of the airplane at the time of the accident was 3,175 - 146 = 3,029 pounds, which is about 111 pounds less than the airplane's maximum certificated gross weight.

METEOROLOGICAL INFORMATION

The closest aviation weather observation station to the accident site is located at Bishop, California. Bishop, elevation 4,120 msl, is located approximately 16 nm northeast (057 degrees, magnetic) from the accident site. In pertinent part, at 1456, Bishop reported the following weather conditions: Surface wind variable at 4 knots; visibility at least 10 miles; sky clear; temperature/dew point 91/37 degrees Fahrenheit. The approximate density altitude at the accident site was 15,000 feet.

The Safety Board investigator's review of photographs taken during the accident flight over the route between South Lake Tahoe, Yosemite Valley, and the accident site predominately revealed scattered high clouds.

According to FAA's Western-Pacific quality assurance staff, no FAA personnel provided the pilot with a weather briefing for the accident flight.

COMMUNICATION

The FAA's quality assurance staff reported that all communications and services between the South Lake Tahoe Airport and the accident airplane were normal. Following the airplane's departure, there were no further communications or services provided by any FAA facility.

WRECKAGE AND IMPACT INFORMATION

From an examination of the airplane and accident site, the accident occurred on a 15-degree (estimated) upsloping plateau at the following global positioning satellite (GPS) coordinates: 37 degrees 17.158 minutes north latitude by 118 degrees 40.805 minutes west longitude. The crash site was located in the John Muir Wilderness Area of the Sierra Nevada Mountains, which border the west side of the Owens Valley.

About 2 miles and 1 mile west of the accident site, the terrain elevation increased from 11,400 to 12,100 feet msl, respectively. The elevation of a ridgeline located about 0.1-mile west of the accident site was about 12,795 feet msl. The accident site elevation, just east of the ridgeline, was about 12,660 feet msl.

The principal axis of the wreckage distribution path was in an easterly direction, about 106 degrees, magnetic. One mile east of the accident site, over the edge of the plateau in the direction of the wreckage distribution (airplane travel), the elevation decreased to about 11,300 feet msl. The elevation decreased to about 4,900 feet msl about 10 miles farther east.

A mountain pass exists about 3 nm south-southeast of the accident site. The pass peak elevation is charted as being 11,423 feet msl.

The on-scene accident site examination revealed the presence of an estimated 1-foot-deep oval shaped impact crater that approximated the size of the main wreckage. The main wreckage was found about 45 feet east-southeast (101 degrees, magnetic) of the initial point of impact (IPI) crater. Between the IPI and the main wreckage, fragments from the airplane's tail cone, navigation light lens, a rotating beacon, and a navigation light housing were observed.

The airplane was found in an upright attitude, with retracted landing gear, oriented toward 110 degrees. The directional gyroscope on the right side of the instrument panel indicated a 124-degree heading.

The airframe examination revealed that the firewall and cabin structure had been displaced in aft and upward directions. The occupiable volume of the cabin area was reduced in size.

The wings, horizontal and vertical stabilizers, and all flight control surfaces were found attached to the fuselage. The leading edges of both wings were observed crushed and buckled in an aft direction with the deformation signatures consistent with the size of nearby boulders. The continuity of the flight control system was confirmed.

One propeller blade was found in the propeller hub, one blade was found beneath the engine, and one blade was found approximately 209 feet southeast (130 degrees, magnetic) from the main wreckage. The torsionally deformed blades exhibited multiple chordwise scratches, leading edge gouges, "S" bending, and curled tips.

Both wing tank fuel caps were found seated. The fuel selector was observed positioned to the "Both" tank setting. There was no evidence of oil leaks or fire.

A systems engineer at the FAA's Airplane Certification Office reported that the flap configuration was consistent with a retracted (up) position, based upon the observed flap jack screw extension measurement.

Avionics for VOR and GPS navigation were observed in the impact-damaged cockpit. A soiled San Francisco Sectional Aeronautical Chart (S.F. chart) was observed in the right side of the cockpit, next to the control column where the student pilot/passenger had been seated. The chart was found partially unfolded. The Safety Board investigator observed that an area of the chart that was unfolded and visible included the portion of the Sierra Nevada Mountains between Yosemite and the accident site vicinity.

MEDICAL AND PATHOLOGICAL INFORMATION

Pilot.

The pilot held a third-class aviation medical certificate, dated June, 2002. The medical certificate bore the limitation that the pilot must wear corrective lenses. The pilot also held a Statement of Demonstrated Ability, issued in January 1975, for his defective color vision. The pilot was restricted from flights requiring color signal control during daylight hours.

On May 29, 2003, an autopsy was performed on the pilot by the Inyo County Coroner's Office, 324 W. Elm Street, Bishop, 93514.

The FAA's Bioaeronautical Sciences Research Laboratory performed toxicology tests on the pilot. The laboratory manager reported finding no evidence of carbon monoxide, cyanide, ethanol, or any screened drugs.

Student.

The student pilot held a third-class aviation medical certificate, dated June 2002. The medical certificate bore the limitation that the pilot must wear corrective lenses.

On May 29, 2003, an autopsy was also performed on the student pilot by the Inyo County Coroner. FAA toxicology tests on the student pilot were similarly negative, except that salicylate (26.74 (ug/ml) was found in a blood specimen.

TESTS AND RESEARCH

Engine and Accessory Examination.

The engine was found partially attached to the airframe, and it had sustained impact damage predominately on its left lower side. The induction air filter was clear.

The integrity of the mixture and throttle controls was confirmed at their respective control arm attachment fittings, and to the cockpit.

Fuel was observed in the fuel servo line and in the engine's flow divider. The fuel screen was clean. The oil suction screen and filter were also clear.

The single drive dual magneto was removed from the engine and its drive was rotated by hand. Spark was observed at all plug leads, and the impulse coupler drive was found intact.

The examined spark plugs had an appearance consistent with normal operation, according to the Lycoming engine participant.

The engine was partially disassembled, the crankshaft was rotated, and the continuity of the valve and gear train was confirmed. No evidence of any preimpact mechanical malfunction was noted. See the Lycoming participant's report for additional details.

Radar Information.

FAA quality assurance personal at AWP-505 and at the Oakland Air Route Traffic Control Center (ARTCC) reported that the lowest altitude at which a target can be observed over the accident site vicinity is approximately 13,300 feet. A review of FAA recorded radar for the period between 1420 and 1546, did not reveal the presence of any targets in this area. Specifically, no evidence of any radar track consistent with the airplane's southerly and southeasterly course was found in the vicinity of the accident site.

Photographic Evidence.

A digital camera was found in the airplane wreckage. It was subsequently identified as belonging to a rear-seat passenger. The camera's recording media on a 256 megabyte SanDisk was found intact and was examined.

The examination revealed that the disk contained a total of 217 pictures, with date/time stamps chronologically from May 20 to 26, 2003. The last 87 pictures were dated May 26. As indicated by the difference in the time stamps between the first picture following takeoff and the last picture, the 81 airborne pictures were taken over a 101-minute-long period.

In summary, the pictures dated May 26 show the accident airplane's cockpit prior to takeoff, scenery during the initial climb over Lake Tahoe, views of Half Dome in the Yosemite National Park, and the mountainous snow-covered terrain to the southeast of Yosemite. The last few pictures show the airplane generally flying in a southeasterly direction, and at elevations below that of the surrounding mountains.

The distance from Half Dome to the accident site is about 49 nm. The magnetic course between these locations is about 109 degrees.

One of the in-flight pictures included a view of the airplane's quartz clock that indicated the time was between 1429 and 1430. The time stamp on the respective picture indicated it was taken at xx29:52.

The last three recorded pictures were time stamped between 23 and 24 minutes after the last photograph of the Half Dome area. One of these pictures shows a forward-looking view through the front windscreen. The airplane's compass and windscreen centerpost are visible in the foreground. Mountainous terrain higher than the airplane is apparent ahead and to the left of the airplane's longitudinal axis. The last recorded picture, time stamped at xx19:56, does not show the accident site.

Accident Time Calculations.

The Safety Board investigator estimated the time of the accident. It was based upon a combination of the following items: (1) the airplane's nominal cruise speed over the estimated 160 nm course between South Lake Tahoe, Half Dome, and the accident site; (2) photograph time stamp data recovered from digital pictures indicating the accident airplane was still airborne at 1520, and the flight's duration was at least 1.7 hours (101 minutes); (3) the time interval between when a passing satellite did not detect (1422) and then detected (1540) the airplane's distress signal from its emergency locator transmitter (ELT); and (4) evidence of engine operation (tachometer time) from a photograph taken prior to takeoff (indicating 2,615.61 hours) and at the crash site (indicating 2,617.56 hours). The difference in the engine's tachometer times was 1.95 hours (117 minutes).

ADDITIONAL INFORMATION

Family members reported to the Safety Board investigator that the student pilot had, as a youth, camped along the Bishop Creek and boated in the Lake Sabrina area.

Mountain Pass and Flight Route.

The Safety Board investigator made the following observations regarding the location of the accident site with respect to specific topographic features depicted on the S.F. chart:

1. Lake Sabrina is located in the Sierra Nevada mountains about 5.5 nm southeast (135 degrees, magnetic) from the accident site.
2. Lake Sabrina is depicted on the S.F. chart, but it is not identified by a label. The lake is depicted about 2 miles south of the community of Aspendell, which is both depicted and labeled on the chart.

3. The Piute (mountain) Pass, elevation 11,423 feet msl, is depicted on the S.F. chart. It is located about 3 miles south-southeast of the accident site, and about 3 miles from Lake Sabrina.
4. The symbol that depicts the Piute Pass is oriented on the S.F. chart on a 073/253-degree magnetic course, directly toward a mountain (on the east side of the drawing). The mountain's uncharted elevation is 13,118 feet msl.
5. The correct orientation of the Piute Pass is approximately 090/270 degrees.
6. An aircraft flying in an easterly direction over the Sierra Nevada mountain range that proceeds into the Piute Pass at its west end, is routed toward the Lake Sabrina/Aspendell area near the east end (lower elevation) of the pass.

Wreckage Release.

The airplane wreckage was released to the owner's assigned insurance adjuster on June 5, 2003. No parts were retained.

Pilot Information

Certificate:	Private	**Age:**	51,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2002
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 1, 2002
Flight Time:	1557 hours (Total, all aircraft), 900 hours (Total, this make and model), 1368 hours (Pilot In Command, all aircraft), 40 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:	Rockwell	**Registration:**	N4730W
Model/Series:	114	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	14060
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 1, 2002 Annual	**Certified Max Gross Wt.:**	3140 lbs
Time Since Last Inspection:	180 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4056 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-540-T4A5D
Registered Owner:	VYSYM Corp. and Steven D. & Nancy L. Meissel	**Rated Power:**	260 Horsepower
Operator:	Steven D. Meissel	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BIH,4120 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	14:56 Local	**Direction from Accident Site:**	57°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	33°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	South LakeTahoe, CA (TVL)	**Type of Flight Plan Filed:**	None
Destination:	Santa Ana, CA (SNA)	**Type of Clearance:**	None
Departure Time:	13:41 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	37.285831,-118.68

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	William Kunder; Federal Aviation Administration; Reno, NV Mark Platt; Textron Lycoming Engines; Williamsport, PA
Original Publish Date:	December 20, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=57076