



## National Transportation Safety Board Aviation Accident Factual Report

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<b>Location:</b>	Thermal, CA	<b>Accident Number:</b>	LAX05CA059
<b>Date &amp; Time:</b>	01/03/2005, 0910 PST	<b>Registration:</b>	N441CX
<b>Aircraft:</b>	Cessna 441	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	5 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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On January 3, 2005, about 0910 Pacific standard time, a Cessna 441, N441CX, collided with terrain during a runway overrun at Jacqueline Cochran Regional Airport, Thermal, California. Western Slope Auto Co., Inc., was operating the airplane under the provisions of 14 CFR Part 91. The private pilot and four passengers were not injured; the airplane sustained substantial damage. Instrument meteorological conditions prevailed, and an instrument flight rules flight plan had been filed. The personal cross-country flight departed Walker Field Airport, Grand Junction, Colorado, about 0800 mountain standard time, with the planned destination of Jacqueline Cochran Regional Airport, Thermal.

In a telephone conversation with a National Transportation Safety Board investigator, the pilot reported that as he approached Palm Springs, California, he prepared for an instrument approach to the airport. The automatic surface observation system (ASOS) was reporting the weather conditions as the following: broken cloud conditions at 2,500 feet; an overcast layer at 3,000 feet; wind calm; and visibility 1 1/2 miles. The pilot preferred to perform an approach to runway 35, but was unable to load the appropriate IFR approach procedure in the airplane's global positioning system (GPS) avionics unit. Instead, the pilot selected, and was cleared by the air traffic controller, to execute the very high frequency omnirange station/ distance measuring equipment runway 30 approach (VOR/DME).

At 6.4 nautical miles from the VOR, depicted by the geographical fix MECCA, the pilot configured the airplane for the final approach; establishing approach flaps, lowering the landing gear, and reducing the airplane's speed from 140 knots to 120 knots. The pilot descended via the approach to an altitude of about 800 feet, at which point he was able to identify the runway environment and transition to a visual approach. Throughout the approach, the pilot reported encountering moderate rain and restricted visibility. The airplane's speed remained about 120 knots, varying slightly with configuration changes required during descents and transitions to level flight.

During landing, the airplane touched down hard, about halfway down the runway, and bounced twice. The pilot reported that once established in the landing rollout, he applied full brakes and configured the propellers in full reverse thrust, attempting to stop before the end of

the runway. Although the runway was absent of noticeable standing water, the moderate rain and wet conditions hindered braking effectiveness. The airplane continued off the runway, impacted muddy terrain, and the nose gear collapsed. The pilot was unable to remember the speed at which the airplane touched down but opined that it was about 100 knots, the normal touchdown speed for the airplane.

The pilot reported no preimpact mechanical malfunctions or failures with the airplane. In a telephone conversation with a Safety Board investigator, the insurance adjuster who recovered the airplane reported that the airplane sustained damage to the right flap, the right side of the fuselage, and the forward firewall and electronics bay bulkheads.

The Federal Aviation Administration Airplane Flying Handbook defines hydroplaning as "a condition that can exist when an airplane is landed on a runway surface contaminated with standing water." It further states that "hydroplaning can have serious adverse effects on ground controllability and braking efficiency." In dynamic hydroplaning, "as the speed of the airplane and the depth of the water increase, the water layer builds up an increasing resistance to displacement, resulting in the formation of a wedge of water beneath the tire. At some speed, termed the hydroplaning speed (VP), the water pressure equals the weight of the airplane and the tire is lifted off the runway surface. In this condition, the tires no longer contribute to directional control and braking action is nil."

"Data obtained during hydroplaning tests have shown the minimum dynamic hydroplaning speed (VP) of a tire to be 8.6 times the square root of the tire pressure in pounds per square inch (PSI)."

The recommended main landing gear tire pressure for the Cessna 441 is 95 psi and 50 psi for the nose landing gear. Calculated per the Airplane Flying Handbook, (VP) would equate to 84 knots.

The handbook adds that viscous hydroplaning where "the tire cannot penetrate the fluid and the tire rolls on top of the film" can occur at a much lower speed than dynamic hydroplane and only requires "a thin film of fluid no more than one thousandth of an inch in depth."

The handbook recommends, "When confronted with the possibility of hydroplaning, it is best to land on a grooved runway (if available). Touchdown speed should be as slow as possible consistent with safety. After the nosewheel is lowered to the runway, moderate braking should be applied. If deceleration is not detected and hydroplaning is suspected, the nose should be raised and aerodynamic drag utilized to decelerate to a point where the brakes do become effective."

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	61, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 3	<b>Last FAA Medical Exam:</b>	05/10/2004
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	1763 hours (Total, all aircraft), 454 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N441CX
<b>Model/Series:</b>	441	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	441-305
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo Prop
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Garrett
<b>ELT:</b>		<b>Engine Model/Series:</b>	TPE331
<b>Registered Owner:</b>	Western Slope Auto Co. Inc.	<b>Rated Power:</b>	
<b>Operator:</b>	Western Slope Auto Co. Inc.	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:		Visibility	1.5 Miles
Lowest Ceiling:	Broken / 2500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	
Precipitation and Obscuration:			
Departure Point:	Grand Junction, CO (GJT)	Type of Flight Plan Filed:	IFR
Destination:	Thermal, CA (TRM)	Type of Clearance:	IFR
Departure Time:		Type of Airspace:	Class E

## Airport Information

Airport:	Jacqueline Cochran Regional (TRM)	Runway Surface Type:	Asphalt
Airport Elevation:		Runway Surface Condition:	Wet
Runway Used:	30	IFR Approach:	VOR/DME
Runway Length/Width:	4995 ft / 100 ft	VFR Approach/Landing:	Full Stop

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	4 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	5 None	Latitude, Longitude:	33.626667, -116.159722

## Administrative Information

Investigator In Charge (IIC):	George Petterson
Additional Participating Persons:	Gabe Serrano; Federal Aviation Administration; Riverside, CA
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .