



# Aviation Investigation Final Report

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<b>Location:</b>	Camarillo, California	<b>Accident Number:</b>	SEA08LA192
<b>Date &amp; Time:</b>	August 31, 2008, 09:25 Local	<b>Registration:</b>	N7482D
<b>Aircraft:</b>	Piper PA-18-150	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of control in flight	<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Banner tow		

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## Analysis

During a banner pickup maneuver, witnesses observed the airplane level off from the descent about 150 feet before the banner pickup loop, then rotate and catch the banner pickup loop with its main landing gear instead of the tail hook. Witnesses stated that as the banner started to lift, the pilot added full power and began a climbout at a 45-degree angle to an altitude of about 150 feet. The airplane was then observed to level off before the nose suddenly dropped to about a 30-to-45-degree nose-down attitude before impacting the ground. One of the pilots who witnessed the accident said that it appeared that the pilot might be trying to land straight ahead but did not level off prior to ground impact. According to company procedures, the pilot is expected to establish an approach speed of 80 to 85 mph, maintaining a 15 degree to 20 degree approach angle until the rotation point at the banner pickup loop, and establish full power before rotating. Rotation serves to swing the hook down and forward to snag the rope, as opposed to a flat approach that drags the hook across the rope. As the airplane rotates, the nose is to be raised approximately 20 degrees to 30 degrees above the horizon. At 150 feet, the power is pulled back and the airplane smoothly leveled off at an altitude of 200 feet where full power is then applied. A postaccident examination noted no preimpact anomalies with the airframe or engine which would have precluded normal operation.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to fly the correct approach profile that resulted in the inadvertent pickup of a banner tow line with the airplane's main landing gear.

## Findings

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<b>Personnel issues</b>	Aircraft control - Pilot
<b>Personnel issues</b>	Incorrect action sequence - Pilot
<b>Aircraft</b>	Descent/approach/glide path - Not attained/maintained

## Factual Information

### History of Flight

<b>Maneuvering-low-alt flying</b>	Miscellaneous/other
<b>Initial climb</b>	Loss of control in flight (Defining event)
<b>Uncontrolled descent</b>	Collision with terr/obj (non-CFIT)

On August 31, 2008, about 0925 Pacific daylight time, a Piper PA-18-150, N7482D, sustained substantial damage after impacting terrain while maneuvering at the Camarillo Airport (CMA), Camarillo, California. The commercial pilot, the airplane's sole occupant, was killed. The airplane was operated by Van Wagner Aerial Media of Hollywood, Florida, in accordance with 14 Code of Federal Regulations (CFR) Part 91. Visual meteorological conditions prevailed for the local banner tow flight, and no flight plan was filed. The flight departed CMA about 5 minutes prior to the accident.

According to a Federal Aviation Administration (FAA) airworthiness inspector who responded to the accident site, 4 witnesses, 3 of which witnessed the airplane's impact with terrain, submitted statements relative to the accident sequence.

Witness #1 reported observing the pilot "...start his descent from downwind to base, continued base to final, losing altitude and leveled off about 10 feet above the ground, maybe 150 feet before the pickup point." The witness stated that as [the pilot] approached the pickup point "...I noticed a lot of rudder input. As he crossed the pickup point he pitched the nose up and applied full power and began to climb out. I saw the rope being pulled aloft and he continued his climb until the banner was pulled off the ground. He appeared to momentarily level off at about 150 above ground level, then began a rapid descent, between 35 degrees and 45 degrees, hitting the ground with a 'pop' sound and a cloud of dust."

Witness #2, a ground crew employee of the banner tow company, reported that as the pilot came in on approach to pick up the banner, "...he rotated very low and caught the banner pickup loop on the main gear. I have seen other planes pick up on the mains without any problems, so I was not expecting anything serious." The witness did not observe the descent or the subsequent impact with terrain.

Witness #3 reported that after watching the pilot depart from Runway 26, he observed him climb to about 400 feet, turned right and maintained 400 feet before turning downwind. The witness stated, "Just past the end of the runway on downwind he [the pilot] pulled back on the throttle. He made a short, sweeping base turn and a short final, all the time descending." The witness revealed that when he observed the airplane cross the banner rope, "...his wings were approximately 15 feet above the ground. When he caught the rope the banner started to lift. He [the pilot] added full power and climbed at an angle of 45 degrees to an altitude of

approximately 150 feet. He then leveled off for about 2 seconds, the airplane's nose dropped about 30 degrees and remained at that angle until it hit the ground." The witness reported that as the airplane approached the ground "...I could see the elevator going up and down, but the plane did not go up or down or change direction. The engine appeared to be running normally. It looked like the plane was being pulled to the ground as if the rope was caught on the landing gear. I never saw the rope connected to the hook at the rear of the plane."

Witness #4, a Van Wagner pilot who was about to board his airplane for an advertising flight, reported that a ground crewman advised him that "...a plane had the lead rope on the main gear. I turned and watched as the banner lifted and the aircraft leveled off. I was surprised to see the aircraft then appear to attempt to land straight ahead in the clear banner area, which is not normal procedure. The engine was running and the aircraft appeared to be in a straight glide ahead. I did not hear the engine power increase as it descended. The aircraft struck the ground at the same angle of the glide (I estimate a 30 to 40 degree angle from the horizontal).

Company personnel provided the Safety Board investigator-in-charge (IIC) with a description of The Approach for Banner Pick Up procedure, which states, "While the hook is out, overfly the pickup area and locate your flag and banner. Reenter the downwind at 400 feet and cruise power (2,300 RPM minimum). As you turn base, reduce power to establish an 80 to 85 miles per hour approach speed, maintaining a 15 degree to 20 degree approach angle until the rotation point, remembering to establish full power before rotating. The stronger the headwind, the closer the rotation point is to the poles. Rotation serves to swing the hook down and forward to snag the rope, as opposed to a flat approach that drags the hook across the rope. As you rotate, raise the nose to approximately 20 degrees to 30 degrees above the horizon (less in a strong head wind). At 150 feet pull the power back and smoothly level out so as to be in level flight at an altitude of 200 feet. Your airspeed at this point should be about 60 to 65 MPH and the banner should be leaving the ground. At this point apply full power. You may have to apply forward elevator pressure to keep the nose from pitching up as the weight and added drag of the banner acts on the tail of the aircraft. Maintain level flight until the banner gets off the ground, and then initiate your climb. It is important that the engine is developing full power before passing the poles. On climb-out after takeoff, be sure to lean mixture for maximum RPMs. It is also important that your speed is not less than 60 MPH at the top of the pickup climb. Do not lose altitude when leveling off or level off too quickly, as the aircraft may sink due to the drag of the banner."

The pilot, age 53, possessed a commercial pilot certificate for airplane single-engine land, airplane multiengine land, and instrument airplane. The pilot received his most recent second-class medical certificate on June 23, 2008, with the limitation "Must wear corrective lenses." At this time the pilot listed his total flying time as 1,968 hours.

According to the company's Director of Operations, the accident pilot had accumulated a total of 260.2 hours of banner tow time in the PA-18 airplane during his employment with the company. Company records also indicated that the pilot's most recent recurrent training occurred on January 13, 2008, which consisted of 0.5 hours of ground instruction, with the

training form annotated, "[The pilot] was observed later picking a banner with N105F, and he demonstrated proper safe operational procedures as discussed." Additionally, the pilot received recurrent training on October 12, 2007, which included 0.5 hours of ground instruction and 0.5 hours of flight recurrent training on "banner pick profile and procedures," which was conducted by the company's chief pilot. The chief pilot noted, "At issue is [the pilot's] picking a banner with the main gear. [The pilot] did a successful job demonstrating safe operational procedures." A statement submitted to the IIC by the company's Director of Operations confirmed that the accident pilot "...did in fact have an issue back in October 07, when operating in Waco, Texas, he picked a banner up with the main gear and had to land with the banner."

On September 8, 2008, under the supervision of a Safety Board Air Safety Investigator, an examination of the engine and airframe was conducted at a secured salvage facility. The examination revealed that no anomalies existed with the airplane, which would have precluded normal operation.

At 0955, the Automated Surface Observing Facility located at the Camarillo Airport, reported wind 230 degrees at 6 knots, visibility 9 statute miles, sky clear, temperature 23 degrees Celsius, dew point 17 degrees Celsius, and an altimeter setting of 29.77 inches of Mercury.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	53, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Front
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	June 23, 2008
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	June 1, 2008
<b>Flight Time:</b>	1968 hours (Total, all aircraft), 260 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N7482D
<b>Model/Series:</b>	PA-18-150	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Restricted (Special)	<b>Serial Number:</b>	18-5817
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	August 22, 2008 Annual	<b>Certified Max Gross Wt.:</b>	1700 lbs
<b>Time Since Last Inspection:</b>	8 Hrs	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	12118 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	O-360
<b>Registered Owner:</b>	Van Wagner Aerial Media, LLC	<b>Rated Power:</b>	180 Horsepower
<b>Operator:</b>	Van Wagner Aerial Media, LLC	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	CMA, 77 ft msl	<b>Distance from Accident Site:</b>	1 Nautical Miles
<b>Observation Time:</b>	09:55 Local	<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	9 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	6 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	230°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.77 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 17°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Camarillo, CA (CMA )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Camarillo, CA (CMA )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	09:20 Local	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Camarillo Airport CMA	<b>Runway Surface Type:</b>	Concrete
<b>Airport Elevation:</b>	77 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	26	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	6013 ft / 150 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	34.215831,-119.079444

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Little, Thomas
<b>Additional Participating Persons:</b>	Frank L Motter; Federal Aviation Administration; Van Nuys, CA Charlie Little; Piper Aircraft Company; Vero Beach, FL
<b>Original Publish Date:</b>	August 13, 2009
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=68836">https://data.ntsb.gov/Docket?ProjectID=68836</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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