National Transportation Safety Board
Aviation Accident Final Report

Location:	Sunriver, OR	**Accident Number:**	SEA08FA161
Date & Time:	07/16/2008, 1015 PDT	**Registration:**	N441HK
Aircraft:	CESSNA 441	**Aircraft Damage:**	Destroyed
Defining Event:	Hard landing	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot was executing a day visual flight rules full-stop landing and touched down on the main landing gear near the approach end of the runway. Soon after the initial touchdown, the airplane became airborne again. Instead of initiating a go-around, the pilot attempted to continue the landing sequence. During that attempt, the airplane bounced on the runway three or four times, each time the rebound back into the air and the runway contact was more severe. During the last contact the airplane impacted the runway with sufficient force to result in the failure of the right main landing gear actuator rod, and in the right propeller contacting the runway surface multiple times. The pilot then initiated a go-around, but since the right engine had failed due to the multiple propeller strikes, the airplane produced asymmetrical thrust and began to roll to the right, veering off the right side of the runway. Soon thereafter its right wing collided with a tree and the airplane impacted terrain in an open field. The airplane was consumed by fire shortly after the collision. Postcrash inspection found no evidence of mechanical failure or malfunction with the airframe or either engine.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's misjudged landing flare and improper recovery from a bounced landing, and the pilot's failure to maintain directional control during the go-around after one of the airplane's propellers struck the runway.

Findings

Aircraft	
	Directional control - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HIISTORY OF FLIGHT

On July 16, 2008, about 1015 Pacific daylight time, a Cessna 441 Conquest, N441HK, impacted the terrain about 400 feet east of the runway at Sunriver Resort Airport, Sun River, Oregon. The private pilot, who was the sole occupant, was killed during the accident sequence, and the airplane, which was owned by the pilot's corporation, was destroyed by the impact and post-crash fire. The 14 Code of Federal Regulations (CFR) Part 91 personal transportation flight, which departed Bakersfield, California, about two hours and fifteen minutes prior to the accident, was being operated in visual meteorological conditions. The pilot filed and activated an Instrument Flight Rules (IFR) flight plan, but canceled his IFR clearance as he approached Sun River.

According to a friend of the pilot, the pilot and members of his immediate family had flown into Sunriver three days earlier (Sunday, July, 13). The purpose of that flight was to drop off the family members, who were going to visit with a friend of the pilot's wife who lived in the resort community. After dropping off the family members, and refueling the airplane, the pilot flew back to Bakersfield the evening of July 13.

According to friends of the family, on the day of the accident, the pilot intended to fly to Sunriver, have lunch with his family, and then he and his wife were going to meet with a realtor to look at a residence that was for sale near the home of his wife's friend. The pilot then planned to fly his family back home to Bakersfield later that afternoon or evening. Reportedly there was no set departure time from Sunriver, and the pilot intended to return to Bakersfield whenever the day's activities concluded.

As the pilot approached his destination on July 16, he terminated his IFR clearance at 0955, while about 20 miles south of the Sunriver Airport. Soon thereafter the pilot contacted Sunriver Unicom (the common traffic advisory frequency for the airport), and was given the current altimeter setting and advised that the winds were 337 degrees at four knots. After thanking the person who transmitted the altimeter setting and the winds, the pilot stated that he was going to set up for a straight-in for runway 36. A short time later the pilot transmitted that he was on final for runaway 36.

There were a number of witnesses who were watching the airplane as it approached the runway from the south, and they all reported that the approach looked "normal." The pilot-rated witnesses said that the airplane's speed and approach path looked appropriate, and all the witnesses said the airplane appeared to make a normal touchdown on the two main wheels near the south end of the runway.

What happened next differs according to witness accounts. Some thought that after the main wheels touched, the airplane simply bounced, skipped, or hopped back into the air. Others thought the nose wheel touched the runway surface, and then the airplane lifted back off the runway. At least one witness thought that after the mains touched, the nose wheel came down abnormally fast, hit the runway hard, and then the plane bounced back into the air. All agreed

that after the first bounce/hop, the airplane contacted the runway a number of times, bouncing back into the air after each contact. All witnesses agreed that the amplitude of each bounce increased as the airplane proceeded along the runway.

After the third or fourth bounce, while the airplane was at a height estimated by witnesses to be between 10 and 20 feet above the runway, the airplane entered a nose-down, right wing-low attitude. It then descended into the runway surface with sufficient force to result in the right propeller contacting the asphalt. This impact took place while the airplane was near the runway's left (west) edge, about 2,260 feet north of the threshold of runway 36. The marks on the runway surface showed that there were 16 propeller blade strikes from the right propeller over a distance of about 23 feet. In addition, there were 12-foot long scars/scratches on the runway surface from both the right main landing gear wheel rim and the nose landing gear wheel rim.

According to some of the witnesses, just prior to, during, or immediately after the propeller contacted the runway, one or both of the airplane's engines increased to what sounded like full power. After the propeller contacted the runway, the airplane once again lifted back into the air, this time in a nose-high attitude, in what appeared to some witnesses to be the beginning of an attempted go-around. According to one witness, who was waiting to initiate a glider tow from near the north end of the runway, and who had a nearly unobstructed frontal view of the accident airplane, soon after the propeller contacted the runway it almost completely stopped rotating.

As the airplane's nose came up, it started to roll to the right, and the airplane started to veer off to the right (east) side of the runway. Soon thereafter the airplane's right wing collided with a 25-foot tall tree about 200 feet east of the runway centerline, and about 845 feet north of where the right propeller had contacted the runway. Upon colliding with the tree, the outboard three feet of the right wing separated, and while still in a right bank angle of greater than 45 degrees, the airplane descended into the terrain in a nose-low attitude. According to a photograph taken immediately after the right wing hit the tree, a trail of fuel was released along the accident path, and soon after the airplane came to rest, a small fire started near the outboard section of the right wing. According to witnesses, the fire soon began to spread, and had engulfed the entire airframe within three to four minutes.

PERSONAL INFORMATION

The 50 year old pilot held a private pilot certificate, with ratings in single-engine and multi-engine airplanes, and an instrument rating for airplanes. According to his flight log, he had accumulated about 965 hours of total flight time. His flight log indicated he had accumulated about 845 hours as pilot-in-command (PIC) of multi-engine airplanes, and about 277 hours as PIC in the Cessna 441 Conquest. He completed a 10-hour Cessna Conquest II Recurrent Training Course on May 3, 2008, and successfully completed an Instrument Proficiency Check on the same date.

The pilot's last medical certificate, a second class, was issued on 8/6/2007. The only listed medical limitation was the requirement to wear corrective lenses.

METEOROLOGICAL INFORMATION

The 0956 aviation surface weather observation (METAR) for Roberts Field, Redmond, Oregon, which is located about 30 miles north of the accident site, reported winds 050 degrees at 04 knots, a visibility of 8 statute miles, clear skies, a temperature of 24 degrees Celsius, a dew point of 05 degrees Celsius, and an altimeter setting of 30.14 inches of mercury.

According to a representative of Sun River Resort Airport, at the time the 441 pilot first called Sun River Unicom, the winds were 337 degrees at 04 knots. There were reportedly some areas of scattered clouds around 10,000 feet above ground level (AGL), and the visibility was at least 10 statute miles.

WRECKAGE AND IMPACT INFORMATION

The outboard section of the right wing was located about 40 feet northeast of the tree that it collided with. The outboard 18 inches of the right aileron was located nearby. The nose of the airplane impacted an open grassy field about 180 feet northeast of the tree impact, on a magnetic heading of 55 degrees. The majority of the airplane's structure came to rest about 275 feet northeast of the tree. The right engine separated from the wing upon impact, and was located about 50 feet beyond the main wreckage on a magnetic heading of 35 degrees from the wreckage. Except for components that separated at the location of the nose cone impact point (nose gear, nose gear door, nose bay hydraulics) all primary airplane structure and flight controls were located with the main wreckage.

Except for the outboard one-third of the left wing, all of the airplane structure at the main wreckage site was extensively damaged by the post-crash fire. Most of the fuselage, except for the bulkhead structure around the cabin, and the section just forward of the instrument panel, had been consumed by the fire. The right wing outboard of the engine nacelle, and the left wing inboard of the engine nacelle had been consumed by the fire. Both fuel filler caps were found still connected to their filler tubes. The empennage suffered significant fire damage, but was laying flat on the ground in a manner that made all of its components readily identifiable. There was no evidence in the empennage of any flight control sub-component or hinge failure.

The remains of both the main entry door and the emergency door were in the closed and latched position. The nose gear actuator and the right main gear actuator were fully extended. The right main gear actuator rod had fractured in overload, and the right main landing gear had folded inward (not aft) into the retracted position. The position of the left main gear actuator could not be determined, but the left main gear could be seen fully extended in the witness photo taken moments after the airplane's right wing impacted the tree. The flap hydraulic actuator was found in the fully extended (flaps full down) position. The position of the flaps could also be seen in the aforementioned sequence photo, and they appeared to be in the full down position.

Control cable continuity was established from the cockpit flight controls to all empennage flight control surfaces. Continuity was also established in both the rudder trim and elevator trim cables. The elevator pitch trim cable was found attached to the fire-damaged elevator pitch trim motor. The elevator trim tab was found at its full tab down limit of 11 degrees. The rudder trim tab was found in the five degrees tab right position.

Control cable continuity was established from the control column to the aileron sector unit, and from the sector unit to the aileron bell crank assemblies. The aileron sector itself had been partially melted. The aileron trim tab, which is located on the left aileron, was found in the five-degree tab down position.

Both engines had separated from their mounts. The right engine had been thrown clear of the main wreckage and the post-crash fire. There was no evidence of damage to the portion of the compressor blades that were exposed through the engine inlet, and no evidence of damage to the blades in the aft portion of the turbine assembly. All four of its propeller blades were in the feather position. Each blade had extensive chordwise scarring and leading edge indentations/chipping along the outboard three to four inches of its tip. The tips of two of the blades were curled forward, and tips of the other two blades were curled aft. All four blades showed some degree of forward curvature along their entire span out to the point where their tips curled either forward or aft. About one-half of the right propeller spinner was crushed aft and up into its own support bulkhead and the propeller dome spring mechanism, which was protruding partially through the spinner. The spinner surface was stained and contaminated by the grass and dirt of the open field, but showed no circumferential or rotational scarring, scratching or tearing.

The left engine was found underneath the aft portion of the cabin, and had suffered extensive fire damage. There was no evidence of damage to the portion of the compressor blades that were exposed through the engine inlet, and no evidence of damage to the blades in the aft portion of the turbine assembly. The majority of the structure of the accessories had been consumed by the fire, and all four propeller blades had been melted from their tips to a point about one-quarter to one-third their span. All four blade roots were in the feather position.

Although the instrument panel and center console were almost totally consumed by fire, the throttle quadrant was recovered, and both the left and right throttles and the left and right fuel condition levers were determined to be in their full forward positions.

The examination/inspection of the airplane's surviving airframe, engine, and system components did not reveal any evidence of an anomaly or malfunction that would have precluded an uneventful landing and rollout from the point of initial main gear contact with the runway.

MEDICAL AND PATHOLOGICAL INFORMATION

The Federal Aviation Administration's Forensic Toxicology Research Laboratory performed a toxicological examination on specimens recovered from the pilot. The test was negative for carbon monoxide and cyanide in the blood, ethanol in the vitreous, and prescription and non-prescription drugs in the urine.

According to an autopsy report provided by the Oregon State Medical Examiner, the manner of death was accidental, and the cause of death was determined to be blunt force trauma.

History of Flight

Landing-flare/touchdown	Hard landing (Defining event)
Approach-VFR go-around	Loss of control in flight
Takeoff	Runway excursion
Approach-VFR go-around	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	50, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	08/06/2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	05/23/2008
Flight Time:	965 hours (Total, all aircraft), 277 hours (Total, this make and model), 53 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N441HK
Model/Series:	441	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	441-0336
Landing Gear Type:	Retractable - Tricycle	**Seats:**	10
Date/Type of Last Inspection:	03/14/2008, Continuous Airworthiness	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Turbo Prop
Airframe Total Time:	5643 Hours at time of accident	**Engine Manufacturer:**	Garrett
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TPE-331-10N
Registered Owner:	PROSOFT TECHNOLOGY INC	**Rated Power:**	1000 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:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 10000 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Bakersfield, CA (KBFL)	**Type of Flight Plan Filed:**	IFR
Destination:	Sunriver, OR (S21)	**Type of Clearance:**	None
Departure Time:	0800 PDT	**Type of Airspace:**	

Airport Information

Airport:	Sunriver Resort (S21)	**Runway Surface Type:**	Asphalt
Airport Elevation:	4164 ft	**Runway Surface Condition:**	Dry
Runway Used:	36	**IFR Approach:**	None
Runway Length/Width:	5500 ft / 70 ft	**VFR Approach/Landing:**	Full Stop; Go Around; Straight-in

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:**	43.872500, -121.451944

Administrative Information

Investigator In Charge (IIC):	Orrin K Anderson	**Adopted Date:**	06/11/2009
Additional Participating Persons:	Paul Lehman; Portland FSDO; Hillsboro, OR		
Publish Date:	11/16/2017		
Note:	The NTSB traveled to the scene of this accident.		
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/.		

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