



National Transportation Safety Board Aviation Accident Final Report

Location:	Upland, CA	Accident Number:	LAX06FA211
Date & Time:	06/24/2006, 2226 PDT	Registration:	N486SB
Aircraft:	Cessna 560	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal, 2 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane touched down at night about 1,400 feet down the 3,864-foot runway and overran the runway surface, coming to rest about 851 feet beyond the departure end. The pilot was operating the airplane using a single-pilot waiver that he obtained two months prior to the accident. The airplane was certified by the Federal Aviation Administration with a flight crew of two. The pilot was returning from a personal event with his family, and landing at his home airport when the accident occurred. Witnesses stated that the pilot's approach into the airport was not consistent with previous approaches in which the airplane would touch down directly on the runway numbers. They also stated that they heard the thrust reversers deploy, and then return to the stowed position. The airplane flight manual states that once the thrust reversers have been deployed, a pilot should not attempt to restow the thrust reversers and take off. Two sink rate warnings were issued during the approach to landing which should have alerted the pilot of the unstabilized approach. Performance calculations showed that the airplane would have required an additional 765 to 2,217 feet of runway for a full stop landing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's unstabilized approach to the runway and failure to obtain the proper touchdown point, which resulted in a runway overrun.

Findings

Occurrence #1: OVERRUN

Phase of Operation: LANDING

Findings

1. LIGHT CONDITION - NIGHT
2. (C) CONTINUED - PILOT IN COMMAND
3. (C) TOUCHDOWN - INCORRECT - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT

Phase of Operation: LANDING

Findings

4. TERRAIN CONDITION - DROP-OFF/DESCENDING EMBANKMENT
5. OBJECT - FENCE
6. TERRAIN CONDITION - ROUGH/UNEVEN

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER

Phase of Operation: LANDING

Findings

7. TERRAIN CONDITION - DROP-OFF/DESCENDING EMBANKMENT
8. TERRAIN CONDITION - ROUGH/UNEVEN

Factual Information

1.1 History of the Flight

On June 24, 2006, at 2226 Pacific daylight time, a Cessna 560, N486SB, collided with obstacles and terrain following a runway overrun at Cable Airport, Upland, California. The airplane was registered to Aero Charter Services, Incorporated and the commercial pilot (the president of Aero Charter Services, Incorporated) was operating the airplane under the provisions of 14 CFR Part 91 using a single-pilot waiver. The pilot and two passengers sustained serious injuries; the airplane was destroyed. Night visual meteorological conditions prevailed and the pilot canceled his instrument flight rules clearance at 2221 when he reported obtaining visual contact with Cable Airport. The pilot departed from Montgomery Field, San Diego, California, at 2200, and was landing at his destination when the accident occurred. One of the passengers later succumbed to her injuries.

According to friends of the pilot, the pilot, his wife, and his daughter, were attending a personal event in San Diego. They were returning to their home-based airport when the accident occurred. The pilot had been based at the airport for about 2 years.

1.1.1 Witness Information

A witness, who was a pilot and airplane builder, was standing at the Experimental Aircraft Association (EAA) chapter hangar located on the northeast side of the airport, when the airplane landed on runway 24. He noted a 5 to 7 knot tailwind from the east. When the accident airplane touched down, the airplane was approximately 1,000 to 1,300 feet down the 3,864-foot runway. He heard the engines spool up and then it was quiet. The landing approach was not consistent with landings that the witness had previously seen the pilot of N486SB conduct. Normally when the pilot would land the airplane, he would touch down directly onto the numbers of the runway.

Additional witnesses were sitting in their home, which was located in a rock quarry plant at the end of runway 24. They heard the airplane and looked out the window. As it passed by four big hangar doors, they could hear the thrust reversers and the airplane kept rolling off the end of the runway. The witness stated, "It appeared like the pilot wanted to climb the airplane." They then witnessed flames shooting up from the accident area. The witnesses noted that it appeared the airplane did not have the runway distance it needed to land.

Another witness, reported that he did not see the airplane coming into land. He could hear the airplane and it sounded as if it were taking off. He then heard the sound of "reverse thrust" prior to the airplane powering up again. As the airplane came into view from behind a building, it was low to the ground and climbing. When it was about 20 to 40 yards above ground level, the witness heard the thrust reversers again and the airplane nosed down into the ground where it impacted an embankment and exploded into flames.

An additional witness, who was a police officer, reported that he did not see the airplane but heard it fly over his house. He had heard the airplane fly over many times in the past and was familiar with his approach. As the airplane came over his house, it sounded lower than normal like the engines were spooled down. Normally, about 20 to 25 seconds later he hears the sound of the thrust reversers but he did not hear them deploy.

1.2 Performance Information

The airplane was equipped with a Honeywell enhanced ground proximity warning system (EGPWS) unit. The unit does not record event times or dates, but tracks the duration of an event and each leg. The flight history was downloaded from the EGPWS unit at Honeywell, Redmond, Washington, on July 31, 2006, with the National Transportation Safety Board (NTSB) investigator and representatives from Honeywell present. The accident flight was identified as the last recorded event in the unit.

1.2.1 Performance Study

An NTSB performance engineer completed a performance study using data obtained from the Honeywell EGPWS, the Cockpit Voice Recorder (CVR), reported atmospheric data, and airplane data from Cessna's airplane flight manual. The results of the study indicated that the airplane approached runway 24 for landing, above the 4-degree visual glide slope indicator. During the approach, the data showed two periods of sink rate warnings, and then about 11 seconds after the last warning the data indicated that the airplane touched down about 1,400 feet beyond the runway 24 displaced threshold. The published total landing length of runway 24 is 3,707 feet. Landing distance calculations revealed that the distance required for a full stop landing after touchdown was between 3,072 and 4,524 feet for the given conditions. According to the engineer, the accident flight needed an additional 765 to 2,217 feet of runway for a full stop landing.

During the approach, two sink rate warnings were issued; one was issued about 1,500 feet horizontally from the threshold and the other was issued about 700 feet horizontally from the threshold. The engineer further reported that the sound of touchdown occurred about 11 seconds after the last sink rate warning, placing the airplane at a minimum, about 1,400 feet past the runway 24 displaced threshold.

1.3 Cockpit Voice Recorder Information

A Fairchild Model A200S 2-hour solid-state CVR (serial number unidentifiable) was delivered to the audio laboratory of the National Transportation Safety Board on June 27, 2006. The event was captured near the end of the recording. A CVR Group was not convened.

The CVR engineer indicated that at 2221:35, the pilot radioed that he was on the vhf-omnidirectional range (VOR) approach into Cable and would be entering the downwind for runway 24. He canceled his instrument clearance and at 2223:03, the pilot radioed that he was established on the downwind leg for Cable Airport. At 2224:26 the pilot indicated that he was turning base. At 2224:50, there was a sound consistent with six radio on-off key clicks being performed in rapid succession. At 2224:56, the pilot called again stating that he was turning base. A series of messages related to minimums and sink rate were heard and at 2225:51, the sound of touchdown was heard. The recording ended at 2226:10.

1.4 Pilot Information

The pilot held a commercial pilot certificate with ratings to fly single- and multi-engine airplanes under instrument conditions. The pilot held a second-class medical certificate that was issued on September 9, 2005. It contained the restriction that the pilot must wear lenses for distant and possess glasses for near vision. On the application, the pilot reported a total flight time of 2,700 hours.

The pilot attended training at CAE Simuflight, in Fort Worth, Texas. On April 18, 2006, the pilot obtained a single pilot certification by Federal Aviation Administration exemption to

operate the Cessna Citation CE-560-Ultra, CE-560-Encore aircraft. The certification was valid through April of 2007.

The pilot's attorney submitted the completed National Transportation Safety Board (NTSB) form 6120.1/2, the Pilot Operator Report, on behalf of the pilot. On the form a total flight time of 2,951 flight hours was reported, with 268 hours in the accident make/model airplane. A total of 50 hours of night flight time was recorded. No flight times were reported for the past 90 and 30 days. The pilot indicated on the form that he could not recall the circumstances that led to the accident.

1.5 Airplane Information

The airplane was a Cessna 560 Citation manufactured in 2001 and was certified by the FAA requiring a two-person flight crew. It was equipped with two model PW535A Pratt and Whitney Canada engines. Federal Aviation Administration records show that the airplane was purchased by Aero Charter Services, Incorporated on August 5, 2005.

On June 24, the airplane was fueled with 500 gallons of Jet A at Crown Air, located at Montgomery Field.

The airplane was maintained through a phase inspection program. The last completed inspections were Phase 8, Phase 11, Phase 23, and Phase 54 inspections. They were completed on May 7, 2006, at an airframe time of 2,513 hours. The engines had also accrued 2,513 hours at the time of the phase inspections. About 30 hours had accumulated on the airplane since the last inspections.

1.6 Airport Information

The Airport Facility Directory/Southwest shows that Cable Airport runway 06/24 is 3,864 feet in length and 75 feet wide. The runway is equipped with medium intensity runway edge lights. Both runways are served by 2-box visual approach slope indicators with 4-degree glide paths. There are no runway end identifier lights. The airport has two instrument approach procedures that include a global positioning system (GPS) for runway 06 and a VOR for runway 06.

1.7 Meteorological Information

Recorded winds were obtained from a local fixed base operator at the Cable airport. At 2216, winds were 3.5 knots from the south-southeast. At 2231, winds were 3.5 knots from the south-southeast. At 2246, winds were 4.3 knots from the southeast.

The winds reported at the Ontario International Airport, Ontario, California, at 2153, located 6 nautical miles southeast of the accident site were calm.

1.8 Wreckage and Impact Information

The NTSB investigator, an inspector from the FAA Riverside Flight Standards District Office, a representative from Cessna Aircraft Company, a party to the investigation, and an advisor from Pratt and Whitney Canada, responded to the accident site on June 25, 2006. The airplane came to rest approximately 851 feet beyond the departure end of runway 24, and was extensively burned. The general wreckage path was in the direction of 240 degrees.

An examination of the runway surface did not reveal the presence of any skid marks or rubber

debris consistent with the tires on the airplane. From the end of the runway, a dirt overrun area extended before the terrain dropped at an abrupt edge. Leading from the runway, two distinctive tire tracks were in the dirt. Approximately 15 feet from the edge, another track appeared between the first two. These three tracks continued until the abrupt edge. The initial impact point from the abrupt edge, was a flat gravel area. Three distinctive tire marks, spaced the approximate distance among the main gears and nose gear were evident on a berm.

From the berm, the terrain sloped downward and then upward in a rolling manner and as it moved upward, the right landing gear and nose landing gear were located in the debris path, along with the right inboard flap. At the top of this berm the plants and shrubs in the area were blackened. Just forward of this area there was a drainage culvert that ran generally perpendicular (north and south) to the wreckage debris path. Along the western face of this culvert a visible liquid mark was splashed against the walls and gouges were taken out of the lips of the top surface that lined the western wall of the culvert. The smell of Jet fuel was evident in this area. Two chainlink fences lined this culvert and they were ripped from their poles and pulled with the airplane as it continued through the rough, uneven terrain. A portion of the right wing fell into the culvert and washed downstream prior to catching on debris located on the side of the culvert. The left main gear was located on the west side of the culvert. After colliding with trees and terrain, the airplane came to rest upright, on a general heading of 145 degrees magnetic. The nose of the airplane broke from the fuselage upon impact and rolled forward from the wreckage, remaining outside of the burn area.

The recovered flaps and flap roller assemblies and flap tracks were examined. Several impact marks were evident on the flap tracks where the roller assemblies positioned through the tracks. One of the tracks was discolored entirely by sooting, except for a portion covered by the roller assembly at the fully deployed position. According to the Cessna representative, the impact marks and sooting were consistent with the flaps in the fully deployed position. Investigators also noted that the flap actuator arms were in a fully deployed position.

The thrust reversers were in the stowed position. The linkages between the fuel control and the thrust reversers were intact and continuous, although fire extensively damaged the area.

Control continuity was obtained from the cockpit to the center area and from the center area to the left aileron and trim tab, the elevator and trim tabs, and the rudder and associated trim tab. The right aileron was consumed in the post impact fire. Measurements of the trim tab positions showed that the left aileron actuator was 1.75 inches (8 degrees down), the elevator actuator was 1.25 inches (6 to 7 degrees down), and the rudder actuator was 1.75 inches. The rudder trim tab position prior to impact could not be determined due to damage sustained in the accident sequence.

The brake hydraulic fluid reservoir still contained fluid visible through the sight gauges. Hydraulic fluid was also present on the ground. The hubcaps were removed from both wheels and the wheel speed transducers were retained for later testing.

The Pratt and Whitney engines, serial numbers DCO084 (left) and DCO067 (right) sustained extensive thermal damage. Both engine fans had chunks of metal out of the blades and rub marks on the bottom of the blades that were nearest to the case. The corresponding marks on the engine housing were not located due to the fire damage. The high-pressure impellers showed curvature at the blade tips, opposite the direction of rotation. Both tower shafts were intact and the gearing was unremarkable. The emergency fuel actuators were examined and

the fuel lines were open. All data collection units on the engines were destroyed in the post impact fire. There were no disconnects from the control quadrant in the cockpit to the engine control unit.

1.9 Tests and Research

The wheel speed transducers were tested on October 4, 2006, at Crane Aerospace, located in Burbank, California, by a representative of Crane Aerospace and the NTSB investigator. The transducers passed all areas of test procedure 40-955 Revision D. No anomalies were noted.

The engines were further examined on February 2, 2007, at Aircraft Recovery Service, Pearblossom, California, by a representative from Pratt and Whitney Canada and the NTSB investigator. The engines sustained severe fire and impact damage that precluded formal disassembly. Both disassemblies were limited to removal of the rear bypass fairing, the exhaust mixer, the exhaust case, the low-pressure turbine assembly, and the second stage turbine vane ring.

1.10 Additional Information

1.10.1 Airplane Information

According to a representative from the airplane manufacturer, the thrust reversers take 2.5 seconds to deploy and 1.8 to 2.5 seconds to stow. Once the thrust reversers are deployed and then selected to stow, the system prevents throttle movement to increased power until the thrust reversers are fully stowed, approximately 4.3 to 5 seconds.

The operating information contained in the aircraft flight manual contains the following warning:

"DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY."

1.10.2 Wreckage Release

The wreckage was released to the owner's representative on April 25, 2007. No parts or pieces were retained.

Pilot Information

Certificate:	Commercial	Age:	55, 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 Medical Exam:	09/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	04/01/2006
Flight Time:	2951 hours (Total, all aircraft), 268 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Cessna	Registration:	N486SB
Model/Series:	560	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	560-0580
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	05/01/2006, Continuous Airworthiness	Certified Max Gross Wt.:	16830 lbs
Time Since Last Inspection:	30 Hours	Engines:	2 Turbo Jet
Airframe Total Time:	2513 Hours	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	PC535A
Registered Owner:	Aero Charter Services Inc	Rated Power:	3361 lbs
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	KONT, 944 ft msl	Observation Time:	2253 PDT
Distance from Accident Site:	6 Nautical Miles	Direction from Accident Site:	150°
Lowest Cloud Condition:	Few / 15000 ft agl	Temperature/Dew Point:	22° C / 16° C
Lowest Ceiling:	Broken / 20000 ft agl	Visibility	7 Miles
Wind Speed/Gusts, Direction:	Calm	Visibility (RVR):	
Altimeter Setting:	29.95 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Diego, CA (MYF)	Type of Flight Plan Filed:	IFR
Destination:	Upland, CA (CCB)	Type of Clearance:	IFR
Departure Time:	2200 PDT	Type of Airspace:	

Airport Information

Airport:	Cable Airport (CCB)	Runway Surface Type:	Asphalt
Airport Elevation:	1444 ft	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	None
Runway Length/Width:	3864 ft / 75 ft	VFR Approach/Landing:	Full Stop

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal, 1 Serious	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 2 Serious	Latitude, Longitude:	34.109167, -117.695833

Administrative Information

Investigator In Charge (IIC):	Kristi Dunks	Adopted Date:	07/25/2007
Additional Participating Persons:	Jesus R Gonzales; Federal Aviation Administration; Riverside, CA Steven Miller; Cessna Aircraft Company; Wichita, KS Craig Williams; Pratt and Whitney Canada; Galt, CA Thomas Berthe; Pratt and Whitney Canada; Burlington, VT Brian Ramsey; Crane Aerospace; Burbank, CA Abdullah Kakar; National Transportation Safety Board; Washington, DC Joseph Gregor; National Transportation Safety Board; Washington, DC		
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.nts.gov/pubdms/ .		

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