



# National Transportation Safety Board

## Aviation Accident Final Report

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<b>Location:</b>	Van Nuys, CA	<b>Accident Number:</b>	LAX07MA069
<b>Date &amp; Time:</b>	01/12/2007, 1107 PST	<b>Registration:</b>	N77215
<b>Aircraft:</b>	Cessna 525	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>		Part 91: General Aviation - Positioning	

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## Analysis

Line personnel reported that as the airplane was being fueled, the second pilot loaded more than one bag in the left front baggage compartment. With fueling complete, line personnel saw the second pilot pull the front left baggage door down, but not lock or latch it. Witnesses near midfield of the 8,001-foot long runway, reported that the airplane was airborne, and the front left baggage door was closed. Witnesses near the end of the runway, reported that the airplane was about 200 feet above ground level (agl) and they noted that the front left baggage door was open and standing straight up. All of the witnesses reported that the airplane turned slightly left, leveled off, and was slow. The airplane began to descend, and the wings were slightly rocking before it stalled, broke right, and collided with the terrain. Investigators found no anomalies with the airframe or engines that would have precluded normal operation. The forward baggage doors' design incorporates a key lock in the lower center of each door, and two latches in the left and right bottom section of the doors. There are two hinges in the upper left and right sections of the door. The handles latched the door to the door frame in the fuselage. The key would be in the horizontal position in an unlocked condition, and in the vertical position in a locked condition. The front left baggage door was found within the main wreckage debris field and had sustained mechanical and thermal damage. The key lock was in the horizontal position. Several instances of a baggage door opening in flight have been recorded in Cessna Citation airplanes. In some cases, the door separated, and in others it remained attached. The crews of these other airplanes returned to the airport and landed successfully.

## 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 during the initial climb resulting in an inadvertent stall/spin. Contributing to the accident were the second pilots inadequate preflight, failure to properly secure the front baggage door, and the front left baggage door opening in flight, which likely distracted the first pilot.

## **Findings**

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: TAKEOFF - INITIAL CLIMB

### **Findings**

1. (F) DOOR,CARGO/BAGGAGE - NOT SECURED
  2. (C) AIRCRAFT PREFLIGHT - INADEQUATE - COPILOT/SECOND PILOT
  3. (F) DOOR,CARGO/BAGGAGE - OPEN
  4. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
  5. (F) DIVERTED ATTENTION - PILOT IN COMMAND
  6. (C) STALL/MUSH - INADVERTENT - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

### **Findings**

7. TERRAIN CONDITION - GROUND

## Factual Information

### HISTORY OF FLIGHT

On January 12, 2007, about 1107 Pacific standard time, a Cessna CitationJet CE-525, N77215, collided with the terrain shortly after takeoff from Van Nuys Airport, Van Nuys, California. Sunquest Executive Air Charter was operating the airplane under the provisions of 14 Code of Federal Regulations Part 91. The airline transport pilot and the commercial certificated second pilot were killed; the airplane was destroyed by impact damage and post-crash fire. The local positioning flight was departing with a planned destination of Long Beach, California. Visual meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan had been filed.

The airplane had been parked overnight on the ramp of Millionaire Aviation. Two ramp workers for Millionaire indicated that they put 190 gallons of fuel in each wing. Procedures at Millionaire did not allow engine start at the fuel pumps, so after the airplane was fueled, it was towed to the start up area. One of the ramp workers had known the first pilot for some time, and reported that the first pilot was in the left seat. He also noted that it took longer than normal for the airplane to start and request marshalling out of the ramp area (about 10 minutes).

The other Millionaire worker reported that he fueled the left wing, and said that he conversed with the second pilot as he did so. He observed the second pilot open the left nose baggage door, and put one to three cases in the compartment. He informed the second pilot that he would have to move the airplane to a different location for start up. He observed the second pilot then shut the baggage door, but not lock or latch it. The worker stated that he then left to marshal out another airplane. He returned to marshal out the CitationJet, and noted that the crew had taken longer than normal to get ready for taxi. The worker was not sure of the pilots' seating arrangement.

The airplane then taxied the full length of the airport to the approach end of runway 34L, which is 8,001 feet long.

A certified flight instructor (CFI) was in an airplane that had landed on runway 34R, and was holding between runways 34R and 34L on taxiway F. The CFI stated that the airplane pitched up as it passed in front of him, and then quickly reduced pitch. It appeared to him that the airplane was low at this point, only about 100 feet above ground level (agl). The airplane then leveled off for a couple of seconds; he felt that this was in an attempt to gain airspeed and control. The CFI stated that the airplane tried to gain altitude one last time however, the airplane was slow; it stalled and broke to the right.

Witnesses at midfield noted that the airplane was airborne, and the front left baggage door was closed.

Witnesses near the end of the runway said that the front left baggage door was open, and standing straight up. The airplane was about 200 feet agl.

All of the witnesses stated that the airplane turned slightly left, leveled off, and was slow. It began descending, and the wings were slightly rocking. Several of the witnesses felt that the airplane stalled, and made a hard right turn.

The pilot of a Cessna 414 reported that he departed behind the CitationJet. The 414 pilot stated

that just after the tower cleared him for takeoff, one of the CitationJet's pilots indicated that they wanted to return for landing. The tower asked if they could make it back to runway 34, or did they want runway 16. They acknowledged 34. A few seconds later, the tower controller cleared them to land on any runway. The pilot of the 414 had the CitationJet in sight, and indicated that he was looking down at it, and it appeared to be slow. He saw the slight left turn, and then the hard right into the ground. He was able to maneuver away from the fireball.

Witnesses near the ground collision reported that the airplane cut one string of power lines that were perpendicular to the flight path; the falling line hit one witness in the head.

Some witnesses thought that they saw dark objects fall from the airplane, and enter the left engine. Airport personnel made two searches for foreign objects on the runway, but found nothing.

Law enforcement personnel scoured the area from the end of the runway to the crash site, and found nothing. Most of this space was an open sod field with the very high frequency omnidirectional radio range (VOR) in the middle of it.

## PERSONNEL INFORMATION

### First Pilot

The airplane was certified for single pilot operations. The pilot had a CE-525S type rating, which allowed him to fly single pilot operations. The company's Part 135 operation's specifications allowed single pilot flight with an operable autopilot in lieu of a second pilot. The second pilot had completed the company's Part 135 training, and was qualified as second in command for Part 135 flights.

A review of Federal Aviation Administration (FAA) airman records revealed that the 72 year old pilot held an airline transport pilot certificate with a rating for airplane multiengine land. The pilot held type ratings for the B-707, B-720, B-727, L-1011, and MD-11. The pilot held a commercial pilot certificate with a rating for airplane single-engine land.

A first-class medical certificate was issued on May 11, 2006. It had the limitations that the pilot must wear corrective lenses for near and distant vision.

The operator reported that the pilot had a total flight time of 38,000 hours in all aircraft with 800 hours in this make and model. The pilot successfully completed a flight review on December 5, 2005.

### Second Pilot

A review of FAA airman records revealed that the 49 year old second pilot held a commercial pilot certificate with ratings for airplane multiengine land and instrument airplane, and a private pilot certificate for airplane single-engine land.

A first-class medical certificate was issued on July 12, 2006. It had the limitation that he must wear corrective lenses.

The operator reported that the second pilot had a total flight time of 1,693 hours in all aircraft, but was unable to provide the total flight time in the accident airplane make and model. The second pilot successfully completed a flight review on August 23, 2006.

## AIRCRAFT INFORMATION

The airplane was a Cessna CitationJet CE-525, serial number 525-0149. The operator reported that the airplane had a total airframe time of 3,001.9 hours at the last inspection. They maintained the airplane on a phase inspection program. The last inspection occurred on December 15, 2006.

One item on the inspection sheet required an operational check of the door warning system for the nose baggage, tail cone baggage, and entry doors. This required opening each door individually and verifying annunciator illumination, and that no individual switches failed closed. A maintenance technician initialed completion of the check.

The left engine was a Williams International FJ44-1A, serial number 1301. Total time recorded on the engine at the last phase inspection was 3,001.9 hours.

The right engine was a Williams International FJ44-1A, serial number 1308. Total time recorded on the engine at the last phase inspection was 3,001.9 hours.

#### WRECKAGE AND IMPACT INFORMATION

Evidence gathered at the accident site indicated that the wings were nearly vertical to the ground when the airplane hit. The right wing tip hit the street; the left wing hit a light pole, and went through a set of power lines perpendicular to the flight path. The airplane continued through a wire fence with a cinder block wall behind it, and then through another cinderblock wall with a wire fence behind it.

The first identified point of contact (FIPC) was a ground scar in the street with right wing pieces nearby. The airplane came to rest upright on a northerly heading. The main wreckage consisted of the fuselage and empennage with the right engine attached. The left engine separated, and was about 100 feet in front of the main wreckage. The furthest piece of wreckage was a main wheel, which was about 200 yards in front of the main wreckage.

The wing assembly separated from the fuselage, and fire consumed portions of it. The remnants were about 30 feet forward of the fuselage.

The forward baggage doors' design incorporates a key lock in the lower center of each door, and two latches in the left and right bottom section of the doors. There are two hinges in the upper left and right sections of the door. The handles latched the door to the door frame in the fuselage. The key would be in the horizontal position in an unlocked condition, and in the vertical position in a locked condition.

Investigators found the front left baggage door 10 feet to the right of the right engine. It sustained mechanical and thermal damage. Structure material was missing from the front leading edge and bottom of the door. The key lock was in the horizontal position. A portion of the aft handle remained attached to the door; investigators did not find the front handle. The front left door frame fragmented and separated from the airframe. Investigators recovered a small piece, about 1-foot long, of the upper frame. One hinge remained attached to that piece.

The right front baggage door separated; it was in two pieces, and had fire damage. The key lock was not in the door, and not located. Investigators found portions of the door frame; these pieces had fire damage.

The aft baggage door latch pins were extended. The key was in the vertical position.

Control continuity was established for the elevators from the elevator surface to the forward elevator bellcrank in the cockpit area, and for the left rudder cable from the control surface to

the left pedal; the right cable separated in a broomstraw manner about 1 foot from rudder pedal. Both cables for the left aileron remained attached to the left aileron sector assembly, but separated near the wing root in a broomstraw manner. The right aileron control cables separated in the wing in a broomstraw manner. Both left and right aileron cables were attached to the control yoke.

The landing gear was down, and the speed brakes were stowed. The left flap actuator measured 3 11/16 inches; however, investigators could not find the right actuator and could not determine flap position.

#### MEDICAL AND PATHOLOGICAL INFORMATION

The Los Angeles County Coroner completed autopsies on both pilots. The FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma, performed toxicological testing of specimens of the pilots.

Analysis of the specimens for the first pilot contained no findings for carbon monoxide, cyanide, volatiles, and tested drugs.

Analysis of the specimens for the second pilot contained no findings for carbon monoxide, cyanide, volatiles, and tested drugs.

#### TESTS AND RESEARCH

##### Operating Procedures

##### Airplane Warning Systems

Section II of the Operating Manual for the airplane describes the airplane and its systems. One topic it discusses is the warning and test system. An annunciator panel that displays both normal and abnormal system conditions is in the center of the glare shield. The system uses two red MASTER WARNING RESET lights and two MASTER CAUTION RESET lights in conjunction with the panel to ensure rapid recognition of any red or amber annunciator lights. Placing the rotary TEST switch on the left instrument panel to the ANNU position tests all systems' light panels. This sequentially illuminates all lights, and causes the master warning and master caution lights to flash.

The MASTER CAUTION RESET light will illuminate when any amber annunciator light comes on. The amber annunciator light will flash until the master caution light is reset by pressing on it. The master caution will extinguish when reset. The amber door not locked light will remain illuminated but steady until the condition is corrected.

Section III of the flight manual describes operating procedures. The exterior checklist directs the pilot to check that the front baggage doors are secured and locked. The cockpit checklist directs the pilot to check the warning systems with the rotary test switch. A check of the annunciator panel is the last item on the before takeoff checklist.

Indications of a door not locked are addressed in the abnormal procedures section. Illumination of the door not locked caution light and the master caution light indicate unlocked (key) nose or tailcone doors, failure or improper position of one or more door switches, and/or possible disengagement of the lower forward cabin door pin. It instructs the pilot to correct the condition prior to flight if on the ground. In flight, it indicates that the pilot should reduce airspeed, keep the cabin door clear, descend to a lower altitude, and land as soon as practical.

## Engine Examinations

Technicians from Williams International examined the engines at their facility in Walled Lake, Michigan, on October 30 and 31, 2007, under the supervision of the FAA. The FAA inspector provided the following information regarding the inspections.

### Left Engine

The exterior of the engine showed slight aft bypass duct denting. Numerous fan blades exhibited very slight foreign object damage; technicians observed no damage on the fan spinner.

The engine fan and core rotated freely. Lodged at the outer areas of the fan stator at the 11 and 4 o'clock positions were two pieces of aluminum. These pieces were similar in color and thickness to the aluminum material on the rear face of the engine inlets.

The IP compressor rotor, high pressure (HP) turbine, and low pressure (LP) turbines displayed no signs of foreign object damage. Numerous tubes of the diffuser assembly separated. All fins of the high pressure compressor bent to the rear, and large amounts of stator material had been ground away. The inspector noted that this was evidence of "compressor slap," which meant that the HP compressor contacted the rear face of the HP stator assembly. He continued that this would be consistent with the engine striking the ground while operating.

The accessory gearbox and its mounted components rotated freely. Technicians established continuity by rotating the fan and observing the gearbox rotate freely. The HP shaft, LP shaft, pinion gear, and tower shaft were intact, and they observed no damage on these components. They indicated that this engine did not appear to have sustained any foreign object damage due to ingestion of a foreign object during operation.

### Right Engine

The exterior showed discoloration due to the post crash fire. The fan and core would not rotate. Fan blades near the center hub were discolored. There was a page from a Jeppesen manual protruding from the fan stator. Upon removal of the fan, technicians observed that the urethane adhesive securing the stator vanes at the inner circumference had melted, as did the rub strip aft of the fan. They felt that this prevented rotation of the fan and compressor rotors. After removing the fan and adhesive, the compressor cores and the accessory gearbox rotated freely.

During disassembly, technicians noted no evidence of foreign object damage to the HP and IP compressors or the HP and LP turbines. The diffuser sections appeared to be intact. The HP shaft, LP shaft, pinion gear, and tower shaft were all intact, and investigators observed no damage on these components. They indicated that this engine did not appear to have sustained any foreign object damage due to ingestion of a foreign object during operation.

### Prior Incidents

Two weeks prior to the accident, another operator of a Cessna Citation at Van Nuys reported that the right nose baggage door opened upon rotation. It separated after several seconds. The crew flew back to the airport and landed. They reported no adverse flying characteristics. They said that they completed a normal preflight, and had no lights illuminate to indicate that the door was unlocked.

### Aviation Safety Reporting System (ASRS)

The ASRS issued an alert bulletin (AB 2007:8/3-5) to Cessna regarding baggage door issues.

A Cessna 500 had the door open at 500 feet after departure, and the crew reduced power. While turning to crosswind for landing, the door flew open and separated. They landed uneventfully.

A Cessna 650 crew heard a loud noise, and felt the rudder pedals move during descent from flight level 350. They had a door unlocked light illuminate. Upon landing, they discovered that the rear baggage entry door was missing.

A Cessna 560 crew reported that during taxi to the runway they noticed a cargo door unlock light illuminate for 15 seconds and then go out. At 50 feet after takeoff, the left cargo door came unlatched, and a bag fell out. They returned to the field and landed without incident. There was no damage on a post flight inspection.

A Cessna Citation had the right nose baggage door open shortly after rotation. The crew reported that they had no warning lights. They returned to the airport and made a normal landing. They examined the airplane, secured the door, and continued with their flight. A crewmember left the door partially latched during baggage loading between legs.

## Pilot Information

Certificate:	Airline Transport; Commercial	Age:	72, 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:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1	Last Medical Exam:	03/01/2006
Occupational Pilot:		Last Flight Review or Equivalent:	12/01/2005
Flight Time:	38000 hours (Total, all aircraft), 800 hours (Total, this make and model)		

## Co-Pilot Information

Certificate:	Commercial; Private	Age:	49, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1	Last Medical Exam:	07/01/2006
Occupational Pilot:		Last Flight Review or Equivalent:	08/01/2006
Flight Time:	1693 hours (Total, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Cessna	Registration:	N77215
Model/Series:	525	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	525-0149
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	12/01/2006, Continuous Airworthiness	Certified Max Gross Wt.:	10400 lbs
Time Since Last Inspection:		Engines:	2 Turbo Jet
Airframe Total Time:	3001 Hours	Engine Manufacturer:	Williams International
ELT:	Installed, not activated	Engine Model/Series:	FJ44-1A
Registered Owner:	Moonchild Aviation LLC c/o Brown Kraft & Co	Rated Power:	1900 lbs
Operator:	Sunquest Executive Air Charter	Air Carrier Operating Certificate:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	SQ6R

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	VNY, 802 ft msl	Observation Time:	1051 PST
Distance from Accident Site:		Direction from Accident Site:	
Lowest Cloud Condition:	Few / 6000 ft agl	Temperature/Dew Point:	9°C / -12°C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	7 knots, 350°	Visibility (RVR):	
Altimeter Setting:	30.01 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Van Nuys, CA (VNY)	Type of Flight Plan Filed:	IFR
Destination:	Long Beach, CA (LGB)	Type of Clearance:	IFR
Departure Time:	1106 PST	Type of Airspace:	

## Airport Information

Airport:	Van Nuys (VNY)	Runway Surface Type:	Asphalt
Airport Elevation:	802 ft	Runway Surface Condition:	Dry
Runway Used:	34L	IFR Approach:	None
Runway Length/Width:	8001 ft / 150 ft	VFR Approach/Landing:	None

## **Wreckage and Impact Information**

<b>Crew Injuries:</b>	2 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	On-Ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	On-Ground
<b>Total Injuries:</b>	2 Fatal	<b>Latitude, Longitude:</b>	34.225556, -118.493611

## **Administrative Information**

<b>Investigator In Charge (IIC):</b>	Howard Plagens	<b>Adopted Date:</b>	04/30/2008
<b>Additional Participating Persons:</b>	Britt Boutin; Van Nuys FSDO; Van Nuys, CA Tom Teplik; Cessna Aircraft Company; Wichita, KS Chris Green; Williams International; Walled Lake, MI		
<b>Publish Date:</b>			
<b>Investigation Docket:</b>	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.ntsb.gov/pubdms/">http://dms.ntsb.gov/pubdms/</a> .		

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