National Transportation Safety Board
Aviation Accident Final Report

Location:	Westhampton, NY	**Accident Number:**	NYC07LA202
Date & Time:	08/23/2007, 2043 EDT	**Registration:**	N9CU
Aircraft:	LEARJET INC 60	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	6 None
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The captain was completing a night instrument approach, with 1/4-mile visibility and fog, and with the airplane positioned over the runway. Two seconds before touchdown, the first officer advised the captain, "you're drifting off the side," finishing the remark as an automatic 10-foot radio altimeter callout was being made. One second later, the captain responded "got it," and 1 second after that, the airplane's main landing gear touched down firmly near the left side of the runway, headed 20 to 30 degrees to the left of runway heading. The right main landing gear touched down first, followed by the left main landing gear, with no evidence that the nosewheel touched down on the runway. The airplane then continued straight, off the left side of the runway. It subsequently paralleled, then eased back toward the runway until losing its left main landing gear. The airplane then continued along a left arcing turn, crossed a taxiway, and came to rest about 4,300 feet from the runway threshold. Other than an anti-skid fault light, no preaccident mechanical anomalies were noted with the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The captain's failure to properly align the airplane prior to touchdown.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (C) PROPER ALIGNMENT - NOT ATTAINED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: LANDING - ROLL

Factual Information

On August 23, 2007, at 2043 eastern daylight time, a Learjet 60, N9CU, operated by JetShare U.S., was substantially damaged when it veered off the runway while landing at Francis S. Gabreski Airport (FOK), Westhampton, New York. The captain, first officer and four passengers were not injured. Night instrument meteorological conditions prevailed. The non-scheduled passenger flight, operating on an instrument flight rules flight plan from Tampa International Airport (TPA), Tampa, Florida, was conducted under the provisions of 14 Code of Federal Regulations Part 135.

According to the captain's written statement, the departure from Tampa was "normal." However, while passing through flight level 380 for flight level 390, he noticed the anti-skid light, "# 1 Wheel - Left Outboard" was illuminated. He subsequently turned the anti-skid switch off per the checklist.

As the airplane neared Westhampton, while performing the descent checklist, the captain recycled the anti-skid switch twice, with "normal" indications. He then left the anti-skid on.

The captain flew the ILS (instrument landing system) runway 24 approach, and upon touchdown, felt an "immediate" loss of directional control. "Steering would not respond," and the airplane veered off the left side of the runway. The thrust reversers were also "locked out" and did not deploy.

The first officer's written statement was similar to the captain's. He noted that "immediately after touchdown," the airplane veered left and off the runway, and came to a stop about 4,300 feet from the runway threshold.

One of the passengers, who chartered the airplane and also held a private pilot certificate, stated that he owned a Hawker 700 and flew in it as a passenger to Westhampton almost every week during summers. The Hawker, which landed slower than the Learjet, was undergoing maintenance, which was why the passenger chartered the Learjet.

The passenger, who was sitting on the right side of the airplane, facing forward, described the flight as "normal" prior to the accident. However, because he was familiar with the possibility of coastal fog at Westhampton, prior to the landing, he told the crew that in the event of fog, they could divert to Islip, New York.

During the approach, the passenger observed the weather to be "quite foggy," and noted that he could not see the ground when the airplane transitioned over the runway "hash marks." The airplane seemed to be a little left of centerline, and the passenger noticed the runway lights on the right side of the airplane. As soon as the airplane touched down, it was veering to the left, and spent "precious little time" on the runway before veering off. The airplane then hit some runway lights, and continued through the dirt for about 4,000 feet. Upon exiting the airplane, the passenger again noticed how foggy it was, "really soup."

The passenger further noted that the airplane "hit hard - felt like we were off kilter - left of runway center. There was a quick turn and he set it down left wheel first, then right, and it shot off at full speed."

A second passenger was sitting on the left side of the airplane during the flight. He was not a pilot, but had flown in corporate jets "hundreds" of times. Approaching the airport, the passenger couldn't see anything on the ground; however, he heard the first passenger say, "I

think he can see," referring to the pilot. When the airplane landed, it did so at a 45-degree angle, very hard "with a thud," and veered off the runway.

The passenger further noted that the copilot subsequently stated that airplane hit the runway "straight," but the passenger felt that the pilot realized that he was not over the runway, and steered the airplane to the right, causing the right wheel to hit "hard" first, followed by the left wheel. The passenger also stated that he had never been on an airplane that hit so hard during a landing. He also noted that it was so foggy that the fire trucks couldn't find the airplane for "quite some time" after the accident.

A third passenger was sitting on the right side of the airplane, behind the copilot, facing rearwards, toward the first passenger. She had flown into Westhampton many times as a passenger on the Hawker 700.

According to the passenger, the flight was uneventful, except that "[the first passenger] made a big deal of not landing in fog - they could go to Islip."

Approaching the landing, the passenger noted that it was very dark, and that during the touchdown, she could see white lights at the end of the runway. She also noted that "it was crystal clear that the airplane touched down sideways." They landed "to the side" of the runway, and "went off." She also recalled that the airplane was "tipped," and that they "landed sideways and jolted off." It then seemed like "it took forever" for the airplane to stop.

The passenger further noted that from her view out the side window, she knew they were going "very fast," that they "had the problem right away," and that the airplane landed "hard and crooked." There was a sound when they hit, like "whoa." The airplane was "wobbly and tilted" and quickly went off the runway.

There was also a fourth passenger onboard, who was related to the second passenger. The second passenger stated that he had discussed the accident with the fourth passenger, and that they both had the same recollections.

Upon Safety Board request, the JetShare U.S. director of safety queried the pilots about the position of the airplane relative to the center of the runway just prior to touchdown. The first officer indicated that the airplane was "slightly left" but that he was "more inside than outside...I was monitoring airspeed and sink rate. The captain stated that "the centerline was under the mains," but that the airplane could have been "a little left."

The cockpit voice recorder was forwarded to the Safety Board Vehicle Recorder Division for download. According to the Specialist's Summary Report:

At 2032, the crew noted that the anti-skid annunciator was still illuminated.

At 2033, the pilot flying noted his intentions to avoid using the brakes and commented on the long runway length.

Between 2038 and 2041, the crew configured the airplane, using the landing checklist, to include full flaps, and the pilot not flying noted "anti-skid is on." The crew subsequently noted the "rabbit" in sight, and afterwards, the runway in sight.

At 2042:52, there was a 50-foot radio altimeter callout, and the pilot flying asked for landing lights.

At 2042:53, there was a 40-foot radio altimeter callout.

At 2042:54, there was a 30-foot radio altimeter callout.

At 2042:56, there was a 20-foot radio altimeter callout.

At 2042:58, the pilot not flying told the pilot flying, "you're drifting off the side." There was also a 10-foot radio altimeter callout.

At 2042:59, the pilot flying stated, "Got it. Got it."

At 2043:00, there was a sound similar to airplane touchdown.

Runway 24 was 9,000 feet long and 150 feet wide.

An examination of photographs provided by FAA inspectors following the accident revealed two sets of double-wheeled skid marks on the left side of the runway, about 1,000 feet from the threshold. One set of skid marks, located in a position corresponding to the right main landing gear, appeared on the runway first. The second set of skid marks, located in a position corresponding to the left main landing gear, commenced further down the runway, about where the first set of marks from the right main landing gear ended. Both sets of skid marks appeared to be straight, and were angled toward the left side of the runway. Both sets of skid marks had the heaviest deposits of rubber at the beginning of the marks.

One photograph of the runway revealed a seam in the concrete, which ran along the runway's length about 25 feet from the runway's left edge. Located on either side of the seam, were the two sets of initial skid marks. Measurements of the angles of the initial skid marks, relative to the seam, revealed an approximately 30-degree angle to the left for the right main landing gear, and an approximately 20-degree angle to the left for the left main landing gear.

There were no skid marks noted in any runway photographs that would have corresponded to the position of the nose landing gear.

Subsequent photographs revealed skid marks that departed the runway and into the grass. The skid marks then turned back to initially parallel the runway, and eventually arced back toward the runway, with the right main landing gear rejoining the runway about 2,500 feet from the threshold. A few hundred feet beyond that, the left main landing gear was found separated from the airplane, and the skid marks commenced an arcing left turn. The skid marks subsequently intercepted and crossed taxiway E, and continued to where the airplane came to rest. Along the last segment of skid marks, the nose landing gear and the right main landing gear were found separated from the airplane. Both wings and the belly of the airplane exhibited substantial damage.

The landing gear on the airplane was loaned by Bombardier to the operator while a service bulletin was being incorporated on the operator's gear.

On November 14 and 15, 2007, examinations of the accident left, right and nose landing gear, brakes, anti-skid system, ant-skid control box, wheel speed transducers, wheel hub caps and transducer drive clips, and squat switches, took place at Bombardier's Wichita, Kansas, facilities under Safety Board oversight. The operator's director of maintenance was also present. No preaccident mechanical anomalies attributed to the accident were noted.

The airplane's tires were also forwarded to the manufacturer for examination, with no preaccident anomalies noted.

During the investigation, the operator employed a new director of maintenance, and requested that he be allowed to examine the landing gear components. Another examination of the landing gear components was subsequently conducted, with oversight provided by an FAA inspector. Again, no preaccident mechanical anomalies were noted.

The pilot, age 56, held an airline transport pilot certificate with a Lear 60 rating. According to the operator, the pilot had 23,800 hours of total flight time, with 4,800 hours in make and model. He also had 8,720 hours of night time, and 4,360 hours of actual instrument time.

Weather, recorded at the airport at 2051, included winds from 140 degrees true at 6 knots, an overcast cloud layer at 600 feet, visibility 1/4 mile, fog, temperature 64 degrees Fahrenheit, dew point 63 degrees Fahrenheit, and an altimeter setting of 30.14 inches Hg.

On February 19, 2009, the operator provided a submission for consideration by the Safety Board, based in part, upon a party review of the draft factual report. In it, the director of operations noted that crew comments to him also indicated that the airplane "hopped, or jerked to the left." In addition, the submission noted that two crewmembers who attended Bombardier recurrent training in July 2008, reported that Bombardier changed the procedure for when an anti-skid fault light illuminated, to turn off nose wheel steering. The submission concluded that the skid marks noted on the runway were not from the initial touchdown, but were the result of a second touchdown. The submission, which did not include any additional factual information, can be found in its entirety in the Public Docket associated with this accident.

According to an email provided by the Bombardier Lear 60 chief flight instructor, the Airplane Flight Manual does not correlate an anti-skid system malfunction with the nose wheel steering. In addition, the flight instructor stated that he was unaware of anyone teaching the procedure noted by the operator.

Pilot Information

Certificate:	Airline Transport	**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:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With Waivers/Limitations	**Last Medical Exam:**	06/14/2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	06/19/2007
Flight Time:	23800 hours (Total, all aircraft), 4800 hours (Total, this make and model), 23800 hours (Pilot In Command, all aircraft), 170 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	**Age:**	40, 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:**	No
Medical Certification:	Class 1 Without Waivers/Limitations	**Last Medical Exam:**	06/12/2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	04/02/2007
Flight Time:	3500 hours (Total, all aircraft), 150 hours (Total, this make and model), 87 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	LEARJET INC	**Registration:**	N9CU
Model/Series:	60	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	075
Landing Gear Type:	Tricycle	**Seats:**	11
Date/Type of Last Inspection:	06/28/2007, AAIP	**Certified Max Gross Wt.:**	23750 lbs
Time Since Last Inspection:	51 Hours	**Engines:**	2 Turbo Fan
Airframe Total Time:	4028 Hours	**Engine Manufacturer:**	Pratt and Whitney
ELT:	Installed, not activated	**Engine Model/Series:**	PW305A
Registered Owner:	AIRCRAFT HOLDING & LEASING LLC	**Rated Power:**	4600 lbs
Operator:	Jet Share US, LLC	**Air Carrier Operating Certificate:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	JUEA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	FOK, 43 ft msl	**Observation Time:**	2051 EDT
Distance from Accident Site:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Temperature/Dew Point:**	18°C / 17°C
Lowest Ceiling:	Overcast / 600 ft agl	**Visibility**	0.25 Miles
Wind Speed/Gusts, Direction:	6 knots, 140°	**Visibility (RVR):**	
Altimeter Setting:	30 inches Hg	**Visibility (RVV):**	
Precipitation and Obscuration:	Fog; No Precipitation		
Departure Point:	Tampa, FL (TPA)	**Type of Flight Plan Filed:**	IFR
Destination:	Westhampton, NY (FOK)	**Type of Clearance:**	IFR
Departure Time:	1812 EDT	**Type of Airspace:**	

Airport Information

Airport:	Francis S. Gabreski (FOK)	**Runway Surface Type:**	Concrete
Airport Elevation:	67 ft	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	ILS
Runway Length/Width:	9000 ft / 150 ft	**VFR Approach/Landing:**	Full Stop

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	6 None	**Latitude, Longitude:**	40.843333, -72.631667

Administrative Information

Investigator In Charge (IIC):	Paul R Cox	**Adopted Date:**	06/11/2009
Additional Participating Persons:	Ray Melcer; FAA/FSDO; Farmingdale, NY Ralph Witzke; Bombardier Learjet; Wichita, KS Curtis Ross; Jetshare US; Sarasota, FL		
Publish Date:	06/11/2009		
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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