



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Cleveland, OH	<b>Accident Number:</b>	NYC01LA125
<b>Date &amp; Time:</b>	04/12/2001, 2210 EDT	<b>Registration:</b>	N735TS
<b>Aircraft:</b>	Embraer EMB-135LR	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	3 None

**Flight Conducted Under:** Part 91: General Aviation - Positioning

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## Analysis

With the engines secured, a tug was connected to the nose wheel of the airplane in preparation for pushback. The flight crew completed the checklist to include selecting the parking brake to off. The crew then advised the tug operator that they were cleared to push. The tug operator released the parking brake for the tug, placed the shifter into "low," and slowly pressed on the accelerator. The crew felt the airplane move about a foot, and then the nose-gear collapsed. When the flight crew exited the airplane, they observed wheel chocks behind the left main gear. Ground personnel stated that the chocks were placed there after the accident. At the time of the accident the airplane weighted 34,570 pounds. The tug weighted 60,000 pound, had 40,000 pounds of pulling traction, and was capable of pushing-back a Douglas DC-10. Examination of the nose gear assembly revealed no evidence consistent with a fatigue failure.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: An overload force being exerted on the nosewheel gear assembly for undetermined reason.

## Findings

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Occurrence #1: MISCELLANEOUS/OTHER  
Phase of Operation: TAXI - PUSHBACK/TOW

### Findings

1. LIGHT CONDITION - NIGHT
2. LANDING GEAR, NOSE GEAR - COLLAPSED
3. REASON FOR OCCURRENCE UNDETERMINED

## Factual Information

On April 12, 2001, about 2210 Eastern Daylight Time, an Embraer EMB-135LR, N735TS, operated by American Eagle as flight 9766, was substantially damaged during pushback at the Cleveland-Hopkins International Airport (CLE), Cleveland, Ohio. The three crewmembers were not injured, and there were no passengers onboard. Visual meteorological conditions prevailed for the planned positioning flight to Norfolk International Airport (ORF), Norfolk, Virginia. An instrument flight rules flight plan was filed for the flight to be conducted under 14 CFR Part 91.

According to witness statements, the engines were secured, and a tug was connected to the nose wheel of the airplane in preparation for pushback. The flight crew completed the checklist to include selecting the parking brake to off. The crew then advised the tug operator that they were cleared to push. The tug operator responded, "here we go." The tug operator released the parking brake for the tug, placed the shifter into "low," and slowly pressed on the accelerator. The crew felt the airplane move about a foot, and then the nose-gear collapsed. When the crew exited the airplane they noticed chocks behind the left-main landing gear wheel. They queried station personnel about the chocks, and were advised that the chocks were placed there after the accident.

According to the NTSB form 6120.1/2, the maximum operating weight for the airplane was 44,092 pounds. At the time of the accident the airplane weighted 34,570 pounds.

According to the manufacture of the tug, when the tug was shipped from the factory it weighted 60,000 pound, had 40,000 pounds of pulling traction, and was capable of pushing-back a Douglas DC-10.

A review of the cockpit voice recorder (CVR) revealed, that about a minute after the captain called for the "Before Start" checklist, the first officer called "Parking Brake," and that the captain responded "Set." About a 1 minute and 30 seconds later, the captain notified the ground person that the nosewheel steering was disengaged, the parking brake was disengaged, and that she had clearance to pushback the airplane. Three seconds later, the sound of two clunks was heard. Ten seconds later, there was a rumbling sound followed by exclamations from the captain and first officer. In addition, the landing gear warning tone, and electronic voice could be heard. The first officer remarked that there was a problem with the nose gear. Eight seconds later, the ground person asked if the parking brake was released during the pushback, and the first officer responded "affirmative." No other pertinent sounds were heard, and about 10 minutes later, electrical power was removed from the CVR and the recording ended.

A review of the flight data recorder (FDR) revealed that it was not configured to record the emergency-parking-brake lever position.

About 19 minutes before the accident, the weather at the airport was recorded as wind 270 degrees at 22 knots, gusting to 28 knots, visibility 10 miles, clear skies, temperature 57 degrees Fahrenheit, dew point 48 degrees Fahrenheit, and an altimeter setting of 29.89 inches of mercury.

Examination of the nose gear assembly by the operator revealed no evidence consistent with a fatigue failure. The airplane had flown approximately 320 hours since being manufactured.

## Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor	<b>Age:</b>	37, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--w/ waivers/lim.	<b>Last Medical Exam:</b>	04/11/2001
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	05/13/2001
<b>Flight Time:</b>	12924 hours (Total, all aircraft), 730 hours (Total, this make and model), 10654 hours (Pilot In Command, all aircraft), 98 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft)		

## Co-Pilot Information

<b>Certificate:</b>	Flight Instructor; Commercial	<b>Age:</b>	25, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--no waivers/lim.	<b>Last Medical Exam:</b>	04/05/2001
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	06/29/2000
<b>Flight Time:</b>	2718 hours (Total, all aircraft), 764 hours (Total, this make and model), 1283 hours (Pilot In Command, all aircraft), 196 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Embraer	Registration:	N735TS
Model/Series:	EMB-135LR	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	145386
Landing Gear Type:	Retractable - Tricycle	Seats:	
Date/Type of Last Inspection:	Continuous Airworthiness	Certified Max Gross Wt.:	44092 lbs
Time Since Last Inspection:	319.7 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	319.7 Hours	Engine Manufacturer:	Rolls-Royce
ELT:	Installed, not activated	Engine Model/Series:	AE-3007A13
Registered Owner:	American Eagle Airlines, Inc.	Rated Power:	17500 lbs
Operator:	American Eagle Airlines, Inc.	Air Carrier Operating Certificate:	Commuter Air Carrier (135)
Operator Does Business As:	American Eagle	Operator Designator Code:	AEEA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	CLE, 792 ft msl	Observation Time:	2151 EDT
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	14° C / 13° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	22 knots/ 28 knots, 270°	Visibility (RVR):	
Altimeter Setting:	29.89 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	CLEVELAND, OH (CLE)	Type of Flight Plan Filed:	IFR
Destination:	NORFOLK, VA (ORF)	Type of Clearance:	Unknown
Departure Time:	EDT	Type of Airspace:	Unknown

## Airport Information

Airport:	CLEVELAND-HOPKINS INTL (CLE)	Runway Surface Type:	Unknown
Airport Elevation:	792 ft	Runway Surface Condition:	Unknown
Runway Used:		IFR Approach:	Unknown
Runway Length/Width:		VFR Approach/Landing:	Unknown

## Wreckage and Impact Information

<b>Crew Injuries:</b>	3 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 None	<b>Latitude, Longitude:</b>	

## Administrative Information

<b>Investigator In Charge (IIC):</b>	David Muzio	<b>Adopted Date:</b>	08/21/2001
<b>Additional Participating Persons:</b>	Robert Haake; FAA/FSDO; Cleveland, OH		
<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.ntsbt.gov/pubdms/">http://dms.ntsbt.gov/pubdms/</a> .		

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