



# Aviation Investigation Final Report

<b>Location:</b>	Bradley, Illinois	<b>Accident Number:</b>	CEN10LA218
<b>Date &amp; Time:</b>	April 5, 2010, 19:30 Local	<b>Registration:</b>	N437XJ
<b>Aircraft:</b>	SAAB-SCANIA SAAB 340B	<b>Aircraft Damage:</b>	None
<b>Defining Event:</b>	Turbulence encounter	<b>Injuries:</b>	1 Serious, 30 None
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Scheduled		

## Analysis

The airplane entered a cumulus or convective cloud system and encountered moderate to severe turbulence as it approached its destination. The single flight attendant in the cabin hit her head on the cabin roof and then fell, fracturing her tail bone. The flight attendant was able to complete her duties and sought medical assistance after landing.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flightcrew's encounter with convectively induced turbulence associated with a convective cloud during the flight.

## Findings

<b>Environmental issues</b>	(general) - Effect on personnel
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# Factual Information

## History of Flight

Enroute-cruise	Turbulence encounter (Defining event)
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On April 5, 2010, about 1930 central daylight time, a Saab 340B, N437XJ, operated by Mesaba Airlines, Inc., as Delta Connection Flight 3271, and piloted by an airline transport pilot, encountered turbulence while in cruise flight near Bradley, Illinois. The sole flight attendant received serious injuries when she fell during the turbulence encounter. There was no damage to the airplane and no injuries to the other crew or passengers on the flight. The 14 Code of Federal Regulations Part 121 flight was operating in instrument meteorological conditions and was on an instrument flight rules flight plan. The airplane had departed from the Detroit Metropolitan Wayne County Airport at 1827 and was en route to the General Downing - Peoria International Airport when the event occurred.

The airplane was approaching its destination airport and the flight crew was attempting to make course corrections to avoid entering cumulus clouds on the airplane's flight path. At this point, the seatbelt sign was illuminated and the passengers were seated with their seat belts fastened. As the flight crew deviated around clouds, a buildup of clouds was unavoidable and the airplane entered the clouds. As the airplane entered the clouds, a brief turbulence encounter was experienced. At this time the flight attendant had just completed collecting garbage after the beverage service and was preparing to sit in her seat. The flight attendant stated that she was raised up off of the floor and her head hit the cabin roof. She was thrown back down to the floor and landed on her buttocks. The flight attendant was able to complete her duties with pain, and sought medical attention after the flight. It was later determined that she suffered a broken tail bone. The severity of the turbulence encountered was described as moderate by the operator and severe by the flight attendant.

## Pilot Information

<b>Certificate:</b>	Airline transport	<b>Age:</b>	34,Female
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	May 14, 2009
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	June 7, 2009
<b>Flight Time:</b>	7800 hours (Total, all aircraft), 7000 hours (Total, this make and model), 53 hours (Last 90 days, all aircraft), 53 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Co-pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	28,Female
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 With waivers/limitations	<b>Last FAA Medical Exam:</b>	June 24, 2009
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	July 23, 2009
<b>Flight Time:</b>	1320 hours (Total, this make and model), 130 hours (Last 90 days, all aircraft), 54 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	SAAB-SCANIA	<b>Registration:</b>	N437XJ
<b>Model/Series:</b>	SAAB 340B	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	340B437
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	38
<b>Date/Type of Last Inspection:</b>	Continuous airworthiness	<b>Certified Max Gross Wt.:</b>	29000 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo prop
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	GE
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	CT7-SER
<b>Registered Owner:</b>	LAMBERT LEASING INC	<b>Rated Power:</b>	1600 Horsepower
<b>Operator:</b>	MESABA AVIATION INC	<b>Operating Certificate(s) Held:</b>	Commuter air carrier (135)
<b>Operator Does Business As:</b>	Delta Connection	<b>Operator Designator Code:</b>	MALA

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Dusk
<b>Observation Facility, Elevation:</b>	PIA,660 ft msl	<b>Distance from Accident Site:</b>	90 Nautical Miles
<b>Observation Time:</b>	19:11 Local	<b>Direction from Accident Site:</b>	60°
<b>Lowest Cloud Condition:</b>	Scattered / 2400 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 6000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots / None	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	140°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29.78 inches Hg	<b>Temperature/Dew Point:</b>	21°C / 15°C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	Detroit, MI (DTW )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Peoria, IL (PIA )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	18:27 Local	<b>Type of Airspace:</b>	

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious, 2 None	<b>Aircraft Damage:</b>	None
<b>Passenger Injuries:</b>	28 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Serious, 30 None	<b>Latitude, Longitude:</b>	41.146389,-87.859169

## Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	John Lyons; Minneapolis FSDO; Minneapolis, MN
Original Publish Date:	April 28, 2011
Last Revision Date:	
Investigation Class:	<a href="#">Class</a>
Note:	
Investigation Docket:	<a href="https://data.nts.gov/Docket?ProjectID=75830">https://data.nts.gov/Docket?ProjectID=75830</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).