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## Ground collision between Boeing 777-223 and Boeing 737-823, September 13, 2002

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**Micro-summary: Boeing 777-223 collides with a Boeing 737-823.**

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**Event Date: 2002-09-13 at 1810 EDT**

**Investigative Body: National Transportation Safety Board (NTSB), USA**


**Investigative Body's Web Site: <http://www.nts.gov/>**

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 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: MIA02IA167		Aircraft Registration Number: N939AN	
		Occurrence Date: 09/13/2002		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
<b>Location/Time</b>					
Nearest City/Place Miami		State FL	Zip Code 33166	Local Time 1810	Time Zone EDT
Airport Proximity: On Airport		Distance From Landing Facility:		Direction From Airport:	
<b>Aircraft Information Summary</b>					
Aircraft Manufacturer Boeing		Model/Series 737-823		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
<b>Narrative</b>					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
HISTORY OF FLIGHT					
<p>On September 13, 2002, about 1810 eastern daylight time, the left wingtip of a Boeing 777-223 (B777) airplane being towed, N759AN, registered to American Airlines, Inc., collided with the rudder of a Boeing 737-823 (B737), N939AN, also registered to American Airlines, Inc., that was parked at gate E34 with passengers on-board awaiting pushback for a flight, at the Miami International Airport, Miami, Florida. Visual meteorological conditions prevailed at the time and an instrument flight rules (IFR) flight plan was filed for the B737 airplane that was operating in accordance with 14 CFR Part 121, as flight 977, a scheduled, international passenger/cargo flight from Miami, to Panama City, Panama. Both airplanes sustained minor damage and there were no injuries to the captain, first officer, 99 passengers, or 4 cabin crewmembers in the B737 airplane. There were no injuries to the brake rider, or tow tug driver who were involved with the B777 tow operation.</p>					
<p>The B777 airplane was being tow repositioned from gate E11 to a maintenance hangar. According to the American Airlines Operations-Tower Coordinator (tower coordinator), the brake rider of the B777 being towed contacted him and requested pushback clearance. He advised in part to tow out on the centerline. The brake rider read back the instructions correctly but during the tow, he (tower coordinator) noted that the airplane was being towed on the "south line" instead of the "center line." He advised the brake rider over the frequency of this and the brake rider responded that he knew and he was trying to get the attention of the tug operator but he (tug operator) was not responding. The tower coordinator advised the brake rider that the airplane being towed was getting close to the airplane parked on gate E34, then notified him of the impact.</p>					
<p>The brake rider in the B777 airplane reported that when he contacted ramp he received pushback clearance then routing via taxi lane 6C, which he relayed to the tow tug driver. The tow tug driver questioned what direction to position the tail, he (tow tug driver) then stated he would call operations. That was the last two-way communication he had with the tow tug driver. The airplane started moving on the tow and when he noted the airplane was being towed onto taxi lane 6S, he tried contacting the tow tug driver on the interphone but was unsuccessful. He later reported that when being towed on taxi lane 6S, he thought it was unsafe due to the close proximity to the airplanes on gates near the taxi lane line. He also turned the nose and landing lights on several times to gain the tow tug drivers attention, but was unsuccessful. He did not feel the collision, and was advised by an unknown person on the frequency of the collision.</p>					
<p>The driver of the tow tug was tasked with tow repositioning the B777 airplane from gate E-11 to an American Airlines maintenance hangar. He reported that he arrived at the airplane to be towed at 1800 hours, and he checked the equipment. He used the interphone system to contact the brake rider and advised he was ready for brake release and waited approximately 15 minutes. He then received clearance from the brake rider to pushback and tow forward. He later reported the brake rider did</p>					
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not specify what route to follow. He began the pushback and the wing tip walkers left the tow when forward motion began. He entered taxi lane 6S, and reported that since the tow operation was approaching spot 6 near a "roadway", and since he had not yet heard from the cockpit, he elected to stop the tow operation. He got out of the tow vehicle, and noted that the headset cord was broken and not attached to the airplane; the cord was laying on the ground while the plug remained connected to the service interphone system jack located on the nose landing gear strut assembly. At that time he was advised on the damage to the airplanes. He later reported he did not brief the members of the tow team about the route to follow.

A review of communications between the American Airlines Operations Tower Coordinator (tower coordinator) and the B777 brake rider revealed the coordinator advised the brake rider to give way to an inbound company MD80 airplane, push tail east, and to take "...it on the centerline." Further review of the communications between the coordinator and the brake rider revealed he contacted the coordinator and advised that he was trying to get the attention of the brake rider but was unsuccessful. Another individual broadcast that the B777 clipped the B737 airplane.

The captain of the B737 reported that his flight was parked at the gate (Gate E34) with the parking brake on, and the agent had just closed the door. He and the first officer were completing the checklist when they felt a slight movement. He called ground personnel on the interphone who reported to him that the airplane had been contacted by another airplane. He then called ramp control who confirmed that his airplane had been contacted and appeared to be damaged. He (captain) instructed ramp control personnel to have the jet bridge brought back in position and he exited the airplane and inspected his airplane noting the damage. He noted the B777 was 150 feet west of his aircraft's position on the "south tow line" and that airplane appeared to have damage to the left wingtip. He returned to his airplane and had the passengers deplane. He was assigned another airplane for the flight and proceeded on the trip sequence. He further reported that at no time prior to the collision had his airplane moved from its position.

Postincident examination of the B737 airplane revealed the rudder was fractured in two pieces.

## TESTS AND RESEARCH

Postincident drug and alcohol testing of samples from the tug driver and the brake rider were negative.

As previously mentioned in the History of Flight section of this report, the airplane was towed following taxi lane 6S, while the Tower Coordinator advised the brake rider to tow following the "centerline", and the brake rider reportedly advised the tow tug driver to follow the center line. Taxi lane 6S is designated to be used for Boeing 757 airplanes, while taxi lane designated 6C is designated for B777 and smaller airplanes.

A Notices to Airman (NOTAM) was submitted by the Miami-Dade Aviation Department to the Miami International Flight Service Station on August 10, 2001, advising that the outer taxi lanes between concourses D and E were designated "6S" and "6N" which were restricted to Boeing 757 airplanes and smaller airplanes. The taxi lane between the outer taxi lanes was designated "6C", and is unrestricted. The NOTAM was reportedly disseminated by Miami-Dade Aviation Department to all airlines via a burst facsimile.

The driver of the tow tug reported that prior to the incident tow, he had never been trained in the significance of the taxi lanes designated 6S, 6C, or 6N. Additionally, he reported that on the day of the incident, he towed 4 different airplanes prior to towing the incident airplane; all the tows were uneventful. Prior to towing that day, he last towed an airplane a minimum of 6 years earlier.

Since coming back to the ramp after being away for 6 years, he had not received additional training in towing operations, and prior to the incident tow he had never towed a B777 airplane. Review of the tow tug driver's training records revealed he had not been trained in tow operations

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involving B777 airplanes. His training records reflect that he was qualified for tow operations for DC-10, B727, B757, B767, and A300 airplanes on February 8, 1991. Additionally, his training records reflect that he was "Tow Crew Qualified Miami" on January 1, 1996. His training records did not reflect any further tow training.

At the time of the incident American Airlines did not require tow training specific to a B777 airplane if the tow was conducted by or for maintenance, and the person had received wide body tow training.


According to the American Airlines operations manager who oversees training for ramp services and safety, the B777 came into their fleet in June 2000, and at the time of the incident, the training department at Miami was not aware of the tow training curriculum for the B777 airplane. She further stated that the training department first became aware of the B777 training curriculum approximately 1 week after the incident. The B777 tow training curriculum was implemented approximately the beginning of October 2002.


Review of records 2 days after the incident showing tow qualified American Airlines personnel at Miami revealed a total of 59 employees. Review of the airline tow qualified list 3 days after the incident revealed a total of 41 employees, and review of the airline tow qualified list for Miami 4 days after the incident revealed a total of 18 employees.

The brake rider in the B777 airplane is a mechanic with the airline and at the time of the tow operation his training records reflect that he had not been trained on B777 Cockpit Towing procedures, although he had received ground handling training in the airplane in March 2002. He had been trained in March 2002, that taxi lane 6C was to be used by wide body aircraft.

Postincident testing of the tow tug involved in the incident revealed the interphone system operationally checked good (i.e. two way communications were heard from the tug to the cockpit using two exemplar headset cords connected together simulating the incident tow). The testing was performed on a different airplane than the incident airplane. Additionally, examination of another B777 airplane in American Airlines fleet at Miami revealed no designated point on the airplane to support the headset cord providing strain relief.

Review of the markings on the ground for gate E34 revealed that with a B737 parked nearly perfectly on that spot, a portion of the right horizontal stabilizer extended approximately 10-12 inches beyond the fuchsia colored line.

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<b>Landing Facility/Approach Information</b>						
Airport Name		Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
Miami International Airport		KMIA	8 Ft. MSL			
Runway Surface Type: Unknown						
Runway Surface Condition: Unknown						
Type Instrument Approach: Unknown						
VFR Approach/Landing: Unknown						
<b>Aircraft Information</b>						
Aircraft Manufacturer		Model/Series		Serial Number		
Boeing		737-823		30083		
Airworthiness Certificate(s): Transport						
Landing Gear Type: Retractable - Tricycle						
Homebuilt Aircraft? No		Number of Seats: 189	Certified Max Gross Wt. 146300 LBS		Number of Engines: 2	
Engine Type:		Engine Manufacturer:		Model/Series:	Rated Power:	
Turbo Fan		CFM International		56-7B	LBS	
- Aircraft Inspection Information						
Type of Last Inspection		Date of Last Inspection	Time Since Last Inspection		Airframe Total Time	
			Hours		Hours	
- Emergency Locator Transmitter (ELT) Information						
ELT Installed? Yes		ELT Operated?		ELT Aided in Locating Accident Site? No		
<b>Owner/Operator Information</b>						
Registered Aircraft Owner		Street Address				
American Airlines, Inc.		4333 Amon Carter Blvd., # 5569				
		City		State	Zip Code	
		Fort Worth		TX	76155	
Operator of Aircraft		Street Address				
Same as Reg'd Aircraft Owner		Same as Reg'd Aircraft Owner				
		City		State	Zip Code	
Operator Does Business As:				Operator Designator Code: AAAL		
- Type of U.S. Certificate(s) Held:						
Air Carrier Operating Certificate(s): Flag Carrier/Domestic						
Operating Certificate:			Operator Certificate:			
Regulation Flight Conducted Under: Part 121: Air Carrier						
Type of Flight Operation Conducted: Scheduled; International; Passenger/Cargo						
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**First Pilot Information**

Name On File	City On File	State On File	Date of Birth On File	Age 53
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport; Commercial; Flight Engineer

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): Airplane Multi-engine; Airplane Single-engine; Instrument Airplane

Type Rating/Endorsement for Accident/Incident Aircraft? Yes	Current Biennial Flight Review?
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Medical Cert.: Class 1	Medical Cert. Status: Unknown	Date of Last Medical Exam: 06/2002
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time										
Pilot In Command(PIC)										
Instructor										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

Seatbelt Used?	Shoulder Harness Used?	Toxicology Performed? No	Second Pilot? Yes
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**Flight Plan/Itinerary**

Type of Flight Plan Filed: IFR	
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Departure Point Same as Accident/Incident Location	State	Airport Identifier KMIA	Departure Time	Time Zone EDT
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Destination Panama City	State	Airport Identifier MPTY	
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Type of Clearance: IFR

Type of Airspace: Class B

**Weather Information**

Source of Briefing:  
Company

Method of Briefing: Unknown

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**Weather Information**


WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
KMIA	1756	EDT	8 Ft. MSL	NM	Deg. Mag.
Sky/Lowest Cloud Condition: Scattered			2300 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Broken		3200 Ft. AGL	Visibility: 10	SM	Altimeter: 29.97 "Hg
Temperature: 30 °C	Dew Point: 26 °C	Wind Direction: 120		Density Altitude: Ft.	
Wind Speed: 13	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): Ft.	Visibility (RVV)	SM	Intensity of Precipitation:		
Restrictions to Visibility: None					
Type of Precipitation: None					

**Accident Information**

Aircraft Damage: Minor	Aircraft Fire: None	Aircraft Explosion: None
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Classification: U.S. Registered/U.S. Soil

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants				4	4
Other Crew					
Passengers				99	99
- TOTAL ABOARD -				105	105
Other Ground					
- GRAND TOTAL -				105	105

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## Administrative Information

Investigator-In-Charge (IIC)

Timothy W. Monville

## Additional Persons Participating in This Accident/Incident Investigation:

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