



National Transportation Safety Board Aviation Accident Final Report

Location:	Roanoke, VA	Accident Number:	NYC02LA013
Date & Time:	10/16/2001, 2214 EDT	Registration:	N825MJ
Aircraft:	Embraer 145LR	Aircraft Damage:	Substantial
Defining Event:		Injuries:	33 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The captain briefed a "no go-around" for a night visual approach to a "Special Airport." The approach was not stabilized, and the airspeed decreased to the point of a stall. The airplane struck the runway in a nose high pitch attitude, on the aft fuselage, and settled on the landing gear. The first officer made initial callouts of slow airspeed and then stopped when the captain failed to respond to her callouts. After landing, the airplane was taxied to the gate where a post flight inspection limited to the main landing gear did not find the damage. When interviewed, the captain reported that she briefed "no go-around" because no takeoffs were authorized on the runway at night or in IMC conditions; however, the first officer knew this was incorrect, but did not challenge the captain. Both pilots had received CRM training, which included crewmember assertiveness, methods of fostering crew input, and situational awareness, and training on special use airports; however it was not followed by either pilot. The captain's handling of the airplane was outside the parameters specified in the company manuals. Both pilots were described to having good flying skills. The captain said the first officer was passive and quiet. The first officer reported the captain was defensive and did not take criticism very well. A definition of stabilized approach criteria was not found in the company manuals. An FAA Advisory Circular dated August 10, 2000 defined stabilized approach criteria, and actions to be taken if the approach was not stabilized.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the captain's failure to maintain airspeed which resulted in an inadvertent stall/mush, and hard landing. Factors were the failure of both pilots to follow company CRM and flight manual procedures, and the captain's improper approach briefing.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: LANDING

Findings

1. (C) CONTINUED - PILOT IN COMMAND
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. STALL/MUSH
4. PROCEDURE INADEQUATE - COMPANY/OPERATOR MANAGEMENT
5. INADEQUATE SURVEILLANCE OF OPERATION - FAA(ORGANIZATION)
6. (F) PROCEDURES/DIRECTIVES - NOT FOLLOWED - FLIGHTCREW
7. (F) CREW/GROUP BRIEFING - IMPROPER - PILOT IN COMMAND

Occurrence #2: HARD LANDING

Phase of Operation: LANDING - FLARE/TOUCHDOWN

Factual Information

HISTORY OF FLIGHT

On October 16, 2001, at 2214 eastern daylight time, an Embraer 145LR, N825MJ, operated by Mesa Airlines as US Airways Express flight 5733, was substantially damaged while landing at Roanoke Regional/Woodrum Field Airport (ROA), Roanoke, Virginia. The 2 certificated pilots, 1 flight attendant, and 30 passengers were not injured. Night visual meteorological conditions prevailed for the scheduled passenger flight. The flight was conducted on an instrument flight rules (IFR) flight plan under 14 CFR 121.

According to the pilots, the flight originated at Pittsburgh International Airport (PIT), Pittsburgh, Pennsylvania. No problems were reported with the en route or approach phases, and the flight was radar vectored for a visual approach to runway 33.

According to the captain:

"While on short final approach to landing at Roanoke "...[reported winds] of 280 at 25 [knots] gust to 40 [knots]), there was an abrupt drop in indicated airspeed. Upon simultaneous notification of the stick shaker, I applied power accordingly and landed without apparent incident.

As the landing was more firm than usual, the first officer and I mutually agreed to visually inspect the aircraft upon arrival at the gate. The visual post flight inspection noted nothing unusual, nor any damage to the aircraft.

As the occurrence noted no damage to aircraft, passengers, or crew, no further action was taken."

According to the first officer:

"We arrived into the Roanoke area approximately 9:45 PM, and began a visual approach to runway 33. The captain briefed that a go-around was not an option due to hills on the other side of the runway. Takeoffs were not authorized on 33 during night and IFR operations. Although we had a quartering crosswind at 15 mph gusting to 21 mph, I do not think there was any wind shear. The approach was normal until approximately 300 feet AGL, when I called that we were one dot high on the PAPI and Ref +5. The captain appeared to pull the thrust levers to idle and placed both hands back on the yoke. At 200-300 feet I called Ref -5, Ref -10, then the stick shaker activated for one second and we began to sink rapidly. I saw the airspeed reach 110 KIAS, the captain pushed the thrust levers up, but the engines did not spool up in time, and the stall stick shaker went off [again]. At this point, approximately 100 feet AGL, the aircraft seemed to stall and within seconds hit the end of the runway. The main gear hit the runway very hard, then the nose gear followed quickly. I do not recall the pitch attitude. The events happened very quickly, and by the time I thought about going around it was too late.

Immediately upon deplaning, I inspected the entire aircraft with a flashlight, paying particular attention to the landing gear. I did not notice any damage to the aircraft, and if I had, I would have reported it immediately. The captain verified that there was no damage and said that it was not necessary to have maintenance inspect the aircraft. I felt uneasy but complied."

The flight attendant stated:

"I strapped in, heard all the necessary commands from the computer in the cockpit: '300',

'200', '100'...then right after I heard the computer say the 100...I heard this alarming shaking noise and rapid beeping alarm...The aircraft immediately slammed to the ground."

According to a check captain for Mesa Airlines:

"At approximately midnight on October 16, 2001, I received a phone call from Captain... telling me she thought I was taking her plane the next morning...she told me about her arrival into ROA in strong gusty winds. She described it as a rough ride with a possible stick shaker and a hard landing at the end. I asked her if there was any damage to the aircraft. She said the FO and her had inspected the landing gear and tires during post flight and found no damage. I told her that if she was in doubt, she needed to report it as a hard landing...Upon arrival at the airport the next morning; I discovered that the Charlotte crew had the [accident] airplane and not myself. Wanting to pass on the information to...[that captain], I summarized the story from the night before...."

The check captain further reported that after relaying the information to the flight crew, he departed the airplane. He did not observe the flight crew deplane and conduct a visual check of the airplane.

The accident airplane was subsequently flown to Charlotte, North Carolina, where a crew swap took place. The departing flight crew did not report any damage on the airplane, and the damage was finally discovered by the accepting flight crew at Charlotte during a pre-flight inspection.

PERSONNEL INFORMATION

The accident occurred on the last flight, of the third day on the flight sequence, following 2 days off for both pilots. The flight sequence was scheduled to continue the following day.

Captain

The captain held an airline transport pilot certificate with a rating for multi-engine land airplanes, and a type rating for the Embraer 145. She also held a commercial pilot certificate with a rating for single engine land airplanes. In addition, she held a flight instructor certificate for single and multi-engine airplanes and instrument airplane. She was last issued a first class Federal Aviation Administration (FAA), airman medical certificate with no limitations on October 2, 2001.

She listed her total flight experience as 2,548 hours, with 1,410 hours in multi-engine airplanes and 213 hours in the EMB-145. Her total pilot-in-command experience was 1,499 hours, which included 174 hours as pilot in command in the EMB-145.

She reported that after college, she had accumulated her flight hours by working as a flight instructor. She was hired by Air Mid-west, a subsidiary of Mesa Airlines on January 24, 2000. Her initial assignment was as a first officer on the Beech 1900. She reported that she had accumulated about 600 hours in the Beech 1900 as a first officer prior to bidding and being accepted for a captain upgrade in the EMB-145 with Mesa Airlines.

First Officer

The first officer held a commercial pilot certificate with ratings for single and multi-engine land airplanes, and instrument airplanes. She was last issued a first class FAA airman medical certificate with no limitations on July 20, 2001.

She listed her total flight experience as 1,919 hours, with 1,531 hours in multi-engine airplanes and 758 hours in the EMB-145. Her total pilot-in-command experience was 356 hours.

The first officer reported that after college, she was employed by Boeing as an analyst, and then was hired by Mesa Airlines. When hired by Mesa Airlines, her total flight experience was about 400 hours. She was initially employed as a Beech 1900 first officer. At the time of the accident, she had been flying the EMB-145 for about 1 year.

During interviews, both pilots reported that they had not received a jet indoctrination course or any specialized training on swept wing aerodynamics.

AIRCRAFT INFORMATION

There were no entries in the airplane's log sheets regarding a hard landing at either Roanoke or Charlotte. However, the accepting flight crew at Charlotte, which discovered the damage on the airplane, entered a maintenance discrepancy of a tail strike due to overrotation.

AIRPORT INFORMATION

Runway 33 was 5,800 feet long, 150 feet wide, and had a grooved, asphalt surface. The landing threshold was not displaced, and the runway was painted with precision instrument approach markings.

A 4-light PAPI (precision approach path indicator) was located on the left side of the runway, and the glide slope was set for 3 degrees. A medium approach lighting system was available, and was 1,400 feet long. The useable landing runway beyond the ILS glideslope touchdown point on the runway was 4,849 feet. The touchdown elevation of the approach end of the runway was 1,143 feet. The elevation at the departure end of the runway was 1,166 feet.

The terrain beyond the departure end of runway 33 increased, to 1,500 feet at 1.4 nautical miles (NM); 2,000 feet at 2.6 nm; and 3,100 feet at 4.6 nm.

In addition, Roanoke was designated a special use airport by the FAA. The reason for the designation was mountainous terrain. According to the approach chart issued to Mesa Airlines pilots, for runway 33, "...Takeoffs from Runway 33 are not authorized at night or in IFR weather conditions due to high terrain...Rejected landing, missed approach, and engine inoperative procedures may require special attention due to high climb gradients required for obstacle clearance. Check to see if your company provides special procedures for this runway...."

The approach chart also contained a picture aligned with the runway, and the mountains were visible in the background.

The following comments was contained on the flight release signed by the captain, "...I also certify that I am familiar and current in accordance with FAR 121.445 [Special Use Airports]...."

In interviews, both the captain and first officer were asked the following question: Assume a flight operating under 14 CFR Part 121. The planned runway for landing was not authorized for takeoffs at night or in IMC conditions. Under these conditions, could a pilot execute a go-around at any time prior to touchdown, or a rejected landing once the airplane had touched down on the runway?

The captain responded that the go-around could not be performed once the airplane had

passed below minimums for the approach, and once the airplane had touched down, a rejected landing could not be performed.

The first officer responded that there were no restrictions in performing a go-around or rejected landing.

A check with Mesa Airlines revealed no restrictions on the execution of a go-around or rejected landing on runway 33 at Roanoke.

METEOROLOGICAL INFORMATION

The 2054 and 2154 weather observations at Roanoke reported winds from 300 degrees at 17 knots with gusts to 22 knots, and winds from 280 degrees at 16 knots, with gusts to 23 knots, respectively.

The flight crew had previously flown into Roanoke earlier in the day. They landed at 1848, and departed at 1930.

FLIGHT RECORDERS

The cockpit voice recorder had been overwritten, and contained no information on the accident. No transcript was prepared.

The digital flight data recorder (DFDR) was downloaded. There were 22 flights on the DFDR. The last two flights, Pittsburgh, to Roanoke, and Roanoke, to Charlotte, North Carolina, were examined in detail. In addition, all 22 flights on the DFDR were examined for pitch attitude and g load at liftoff, and g load at touchdown.

The maximum pitch attitude at takeoff on the 22 flights was less than the minimum specified by Embraer for a tail strike.

The maximum g load at the time of touchdown at Roanoke, was +2.75 gs for 0.25 seconds. This was the highest value recorded on the DFDR. The next highest g load recorded was 1.40 g.

Events were plotted using the FDR Subframe Reference Numbers (SRN), which matched elapsed time in whole seconds.

For the landing at Roanoke, between SRN 2420 and SRN 2440, the thrust levers varied between 43 and 53 degrees, and the airspeed fluctuated between 141 knots, and 131 knots. At SRN 2441, the right thrust lever was in the flight idle position (25 degrees), and at SRN 2442, the left thrust lever was also in the flight idle position.

Between SRN 2442, and SRN 2455, the thrust levers remained at idle, and the airspeed decayed from 137 to 128 knots. At SRN 2456, the thrust levers were advanced initially to 33 degrees, and at SRN 2464, they were further advanced to about 48 degrees. The airspeed continued to decay and at SRN 2468, the airspeed had decayed to 116 knots. Vapp had been calculated at 129 KIAS, and Vref had been calculated at 124 KIAS

At SRN 2470, the thrust levers were once again on the flight idle stops, and the airspeed had decayed to 104.55 knots.

The maximum g load was recorded 1.5 seconds later, and at 0.5 seconds later (SRN 2472), the main landing gear squat switch transitioned from air to ground was recorded at SRN 2472, with an airspeed of 102.55 knots.

WRECKAGE AND IMPACT INFORMATION

The airplane was removed from revenue service and inspected. Scraped skin was visible on the lower aft fuselage in an area 10 feet long and 3 feet wide. An internal examination revealed the airplane was safe for an unpressurized ferry flight to a heavy maintenance facility. There, it was determined that the airplane had broken and cracked frames and stringers, popped rivets, and the skin had been worn through in the lower aft pressure vessel.

ADDITIONAL INFORMATION

Training - Captain

The captain reported that she was initially hired by Air Midwest, a subsidiary of Mesa Airlines on January 24, 2000. As part of her training she completed 40 hours of basic indoctrination ground school, and equipment ground school. Special airports was included in the basic indoctrination, and the CRM training was included in the equipment ground school. According to training records from Air Midwest, Inc, she had completed training on Special Airports, and CRM. The time specified for CRM was 3 hours, and the special airports was included in the training module for operations specifications, which was listed as 5 hours in length.

When she bid a captain's position at Mesa Airlines on the EMB-145, due to a differences in the training at Air Midwest, and Mesa Airlines, she was required to complete the 40 hour Mesa Airlines basic indoctrination ground school, which also included CRM, and special airports. This was completed between April 20, 2001, and May 30, 2001. In addition, she completed the equipment ground school on the airplane.

Section 5 of Mesa Airline's training manual, Special Curriculum, covered security, hazardous material, special use airports, and crew resource management (CRM) training. The hours allocated for this subject was 10 hours for initial training, and 5 hours for recurrent training, with no specific breakdown into individual subjects. According to records from Mesa Airlines, both pilots had received special curriculum training.

Examination of the CRM training outline revealed that it included, but was not limited to the following subjects: crewmember personality types; methods of fostering crew input; crew briefings; situational awareness; importance of crewmember assertiveness; effective crew and ATC communications; assignment and division of cockpit duties; and cockpit discipline and proper cockpit procedures.

Examination of the special airports training outline, revealed it covered airport runways, airport facilities, approach/departure terrain and obstacles, and approach/departure procedures.

According to records from Mesa Airlines, the captain received a total of 32 hours of simulator training toward her type rating ride. Her type rating check ride was 3.0 hours in the simulator. After the checkride, she received an additional 4.0 hours of simulator time, dedicated to line orientated flight training (LOFT).

In addition, she received 32.7 hours of initial operating experience (IOE), which consisted of 21 flights with a check airman, performing the duties of a captain.

Training - First Officer

The first officer was an initial hire with Mesa Airlines, and completed Mesa Airlines 40 hour basic indoctrination ground school, which covered CRM and special airports. In addition, she completed equipment training on the Beech 1900. Later she upgraded to a first officer on the EMB-145, and completed that equipment ground school and simulator training. Her last ground training was recurrent training, which included CRM and special airports, and was completed between June 21, 2001, and July 3, 2001.

Pilot Upgrades

The Chief Pilot of Mesa Airlines reported that pilot upgrades were based upon seniority with the company, which included subsidiaries. In addition, Mesa Airlines did not have a procedure in place to identify people who were making their initial upgrade to captain, and had no previous swept wing experience. The captain was upgraded during a time of company expansion.

Flight Crew Perceptions

Captain

Interviews were conducted with people who had flown with the captain. These included her initial operating experience check airmen, type rating ride check airman, and first officers who had flown with her. Her aeronautical skills were described as average to good. Some captains said she had good people skills, while others said that her lack of people skills was a shortcoming. Most of the captains interviewed said she lacked experience as a captain.

According to interviews with the three check airmen who conducted the captain's IOE training, she had not experienced any problems. The captain had a good feel for the airplane. She also had a dominant personality. In addition, the check captains that conducted her type rating ride and line check were also interviewed. They reported no problems.

The first officer reported that she had not flown with the captain before. The first officer described the captain as upbeat and happy, but a new and inexperienced captain. The first officer said the captain was a little slow or behind the curve on paperwork initially, but flew the airplane satisfactorily. The first officer also reported that the captain was very defensive and did not accept criticism of her flight technique very well.

First Officer

Interviews were conducted with five captains who had flown with the first officer, and the simulator instructor who had given the first officer her last simulator check. All personnel interviewed described the first officer as a competent pilot with good aeronautical skills. One person rated her cockpit assertiveness as adequate, while the other five described her variously as passive, quiet, mild, and marginal assertiveness.

The captain reported that she had not flown with the first officer before. The captain reported that she got along with the first officer. The captain reported that the first officer had good aeronautical skills, and she was good with the airplane, and had good people skills. The captain also described the first officer as passive and quiet.

Load Manifest/Flight Release

According to the load manifest, the takeoff weight of the airplane was 40,680 pounds.

According to the flight release the fuel burn to the destination airport was estimated to be 1,751 pounds. According to stall speed chart (stick pusher speed), the stalling speed for the airplane with flaps set at 45 degrees, zero thrust, landing gear extended, and a weight of 39,000 pounds was 102 KCAS.

According to the Mesa Airlines EMB-145LR landing chart, with the wing flaps set at 45 degrees, the Vapp for 39,000 pounds was 129 KIAS, and the Vref speed was 124 KIAS. The actual landing distance for 2,000 feet pressure altitude was 2,706 feet.

Airspeed Call Outs.

According to the Mesa Airlines ERJ Company Flight Manual; Normal Procedures; Item 39 F:

On all types of approaches below 1,500 feet AFE [above field elevation], the PNF [pilot not flying] shall call out any abnormal sink rates and airspeeds."

The first officer reported that she made normal airspeed callouts initially on the approach. She reported that as the airplane slowed and passed through -5 and -10 knots that she made the callouts. When asked if she continued the callouts as the airplane further slowed, she responded that the captain did not appear to be responding to her callouts and she did not make any more callouts.

The Approach

According to the Mesa Airlines ERJ Company Flight Manual; Normal Procedures; Item 39 B:

"...Rate of descent shall be decreased so the aircraft is stabilized on a normal glide path before descent below 1,500 feet AFE."

Item 39 H states:

"At 1,000 AFE, the aircraft should be stabilized at Vapp."

The Landing

The captain was asked why she closed the throttles prior to touchdown, as the airplane was slow on the approach. She reported that she closed the throttles because it was company procedure to close the throttles at 50 feet.

Stabilized Approach Criteria

Stabilized approach criteria was defined in Advisory Circular AC-120-71, Standard Operating Procedures For Flight Deck Crewmembers, Appendix 2, Stabilized Approach Concepts and Terms; dated August 10, 2000.

The Mesa Airlines Company Flight Manual (CFM), and General Operations Manual (GOM) were reviewed. Airplane specific information was contained in the CFM. This manual also defined the airspeeds and procedures to be used when flying the airplane. References were found for the need to execute a stabilized approach. However, there was no criteria that defined the limits of a stabilized approach, and the action to be taken when those limits were exceeded, as defined in the Advisory Circular was found.

Occurrence Report

Mesa Airlines maintained an occurrence report that was filled out by the captain for a variety of purposes. Among the items listed was,

"...When an incident occurs resulting in GROUND, AIRCRAFT, OR PROPERTY DAMAGE...."

The captain was asked if there were any indications of a hard landing such as the passenger oxygen masks coming out of the compartment, and she said no. In addition, the captain reported that the company manual did not have direction on when to fill out an occurrence report, or the reporting of hard landing.

The direction in the manual did not specifically list a hard landing as a write-up item. However, the form did contain many different items to be checked, including a block to checked for hard landing.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	Age:	29, Female
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):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last Medical Exam:	10/21/2001
Occupational Pilot:		Last Flight Review or Equivalent:	06/10/2001
Flight Time:	2548 hours (Total, all aircraft), 213 hours (Total, this make and model), 1499 hours (Pilot In Command, all aircraft), 213 hours (Last 90 days, all aircraft), 62 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Commercial	Age:	26, 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 Valid Medical--no waivers/lim.	Last Medical Exam:	07/20/2001
Occupational Pilot:		Last Flight Review or Equivalent:	08/03/2001
Flight Time:	1919 hours (Total, all aircraft), 758 hours (Total, this make and model), 356 hours (Pilot In Command, all aircraft), 138 hours (Last 90 days, all aircraft), 48 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Embraer	Registration:	N825MJ
Model/Series:	145LR	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	145179
Landing Gear Type:	Retractable - Tricycle	Seats:	54
Date/Type of Last Inspection:	10/16/2001, Continuous Airworthiness	Certified Max Gross Wt.:	48722 lbs
Time Since Last Inspection:	3 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	3335.9 Hours	Engine Manufacturer:	Allison
ELT:	Installed, not activated	Engine Model/Series:	AE3007A1
Registered Owner:	Wells Fargo Bank Minnisota NA Trustee	Rated Power:	7426 lbs
Operator:	Mesa Airlines	Air Carrier Operating Certificate:	Flag carrier (121)
Operator Does Business As:	US Airways Express	Operator Designator Code:	MASA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	ROA, 1160 ft msl	Observation Time:	2154 EDT
Distance from Accident Site:	1 Nautical Miles	Direction from Accident Site:	340°
Lowest Cloud Condition:	Few / 10000 ft agl	Temperature/Dew Point:	8° C / -1° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	17 knots/ 22 knots, 300°	Visibility (RVR):	
Altimeter Setting:	30.04 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Pittsburgh, VA (PIT)	Type of Flight Plan Filed:	IFR
Destination:	Roanoke (ROA)	Type of Clearance:	IFR
Departure Time:	2109 EDT	Type of Airspace:	Class C

Airport Information

Airport:	Roanoke Regional (ROA)	Runway Surface Type:	Asphalt
Airport Elevation:	1176 ft	Runway Surface Condition:	Dry
Runway Used:	33	IFR Approach:	Visual
Runway Length/Width:	5800 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Substantial
Passenger Injuries:	30 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	33 None	Latitude, Longitude:	37.315278, -0.000833

Administrative Information

Investigator In Charge (IIC):	Robert L Hancock	Adopted Date:	06/25/2003
Additional Participating Persons:	Eric Gust; Mesa Airlines; Phoenix, AZ Lewis Gonzales; Federal Aviation Administration; Dallas, TX Manuel Monteiro; Embraer Aircraft Company; Hollywood, FL		
Publish Date:			
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.nts.gov/pubdms/ .		

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