



National Transportation Safety Board Aviation Accident Final Report

Location:	WEST PALM BEACH, FL	Accident Number:	DCA97MA049
Date & Time:	05/12/1997, 1529 EDT	Registration:	N90070
Aircraft:	Airbus Industrie A300B4-605R	Aircraft Damage:	Minor
Defining Event:		Injuries:	1 Serious, 1 Minor, 163 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The flight was assigned an airspeed of 230 knots and cleared to descend from FL240 to 16,000 feet in preparation for landing at Miami. The FDR indicated that while the autopilot was engaged in the descent, the power levers moved from the mechanical autothrottle limit of 44 degrees to the manual limit of 37 degrees. As the aircraft leveled at 16,000 feet the airspeed decreased. The F/O began a right turn to enter a holding pattern and added some power, which stabilized the airspeed at 178 knots. However, the right bank and the resultant angle of attack (AOA) continued to increase, despite left aileron input by the autopilot. As the autopilot reached the maximum input of 20 degrees, bank angle increased past 50 degrees, and the AOA increased rapidly from 7 degrees to 12 degrees. At this point the stick shaker activated, the autopilot independently disconnected, the power was increased, and full left rudder was used to arrest the roll. The bank angle reached 56 degrees, and the AOA reached 13.7 degrees at 177 knots. The aircraft then pitched down, and entered a series of pitch, yaw, and roll maneuvers as the flight controls went through a period of oscillations for about 34 seconds. The maneuvers finally dampened and the crew recovered at approximately 13,000 feet. One passenger was seriously injured and one flight attendant received minor injuries during the upset. According to wind tunnel and flight test data the A300 engineering simulator should adequately represent the aircraft up to 9 degrees AOA. Unlike the accident aircraft; however, the simulator recovered to wings level promptly when the lateral control inputs recorded by the FDR were used. The roll disagreement between the simulator and accident aircraft began at 7 degrees AOA, and it appears that some effect not modeled in the simulator produced the roll discrepancy. Just prior to the upset the accident aircraft entered a cloud deck. The winds were approximately 240 degrees, 35 knots, and the ambient air temperature was approximately minus 4 degrees C. An atmospheric disturbance or asymmetric ice contamination were two possible explanations considered, but unproven.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flightcrew's failure to maintain adequate airspeed during leveloff which led to an

inadvertent stall, and their subsequent failure to use proper stall recovery techniques. A factor contributing to the accident was the flightcrew's failure to properly use the autothrottle.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - NORMAL

Findings

1. (C) AIRSPEED - NOT MAINTAINED - FLIGHTCREW
2. (F) AUTOPILOT - IMPROPER USE OF - FLIGHTCREW
3. (C) STALL - INADVERTENT - FLIGHTCREW

Occurrence #2: ALTITUDE DEVIATION, UNCONTROLLED
Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. (C) REMEDIAL ACTION - IMPROPER - FLIGHTCREW

Factual Information

On May 12, 1997, about 1529 eastern daylight time, an Airbus A300B4-605R, N90070, flight 903, registered to Wilmington Trust Company Trustee, operated by American Airlines Inc., as a 14 CFR Part 121 scheduled domestic passenger flight, experienced an inflight loss of control, about 10 miles north of HEATT intersection in the vicinity of West Palm Beach, Florida. Instrument meteorological conditions prevailed and an IFR flight plan was filed. The airplane sustained minor damage. The airline transport pilot-in-command (PIC), commercial pilot first officer, 6 flight attendants, and 155 passengers sustained no injuries. One passenger sustained serious injuries, and one flight attendant received minor injuries. The flight originated from General Edward Lawrence Logan International Airport, Boston, Massachusetts, about 2 hours 16 minutes before the accident.

According to American Airlines safety personnel, the PIC stated the cabin seatbelt signs were illuminated, and they were level at 16,000 feet. They had received an air traffic control (ATC) clearance to hold at HEATT intersection located southeast of West Palm Beach. Weather was depicted in the vicinity of the holding fix on the weather radar. They requested and received clearance from ATC to hold north of the holding fix. As they were approaching the holding fix, they encountered a loss of control. The airplane pitched up and down, rolled to the left and right, and descended rapidly. The flightcrew initiated the "Escape" procedure and recovered the airplane. The PIC was advised of passenger injuries by the flight attendants. He declared an emergency with ATC and landed at Miami International Airport, Miami, Florida, without further incident.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Flight Engineer	Age:	41, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):		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 Without Waivers/Limitations	Last Medical Exam:	02/27/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	12000 hours (Total, all aircraft), 500 hours (Total, this make and model), 7000 hours (Pilot In Command, all aircraft)		

Co-Pilot Information

Certificate:	Commercial; Flight Engineer; Private	Age:	38, 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:	07/22/1996
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Airbus Industrie	Registration:	N90070
Model/Series:	A300B4-605R A300B4-605	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	513
Landing Gear Type:	Retractable - Tricycle	Seats:	
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	Unknown
Airframe Total Time:		Engine Manufacturer:	
ELT:		Engine Model/Series:	
Registered Owner:	WILMINGTON TRUST COMPANY	Rated Power:	
Operator:	AMERICAN AIRLINES	Air Carrier Operating Certificate:	Flag carrier (121)
Operator Does Business As:		Operator Designator Code:	AALA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PBI, 18 ft msl	Observation Time:	1443 EDT
Distance from Accident Site:		Direction from Accident Site:	
Lowest Cloud Condition:	Unknown	Temperature/Dew Point:	23° C / 22° C
Lowest Ceiling:	Broken / 2500 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	4 knots, 200°	Visibility (RVR):	
Altimeter Setting:	29 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	BOSTON, MA (BOS)	Type of Flight Plan Filed:	IFR
Destination:	MIAMI, FL (MIA)	Type of Clearance:	IFR
Departure Time:	1156 EDT	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor, 8 None	Aircraft Damage:	Minor
Passenger Injuries:	1 Serious, 155 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 1 Minor, 163 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	RICHARD G RODRIGUEZ	Adopted Date:	02/11/2000
Additional Participating Persons:	MAX ROJAS		
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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