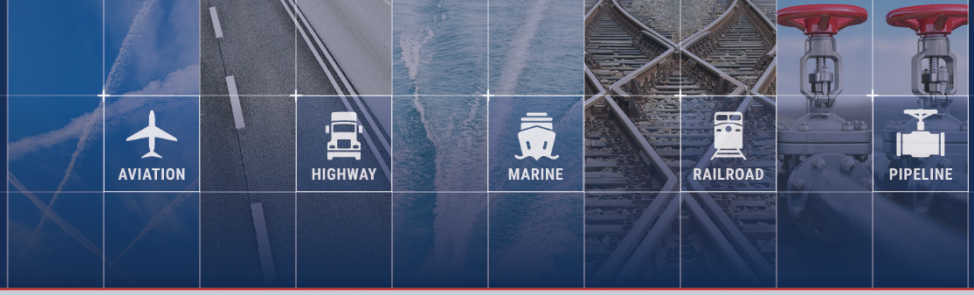

Aviation Investigation Factual Report

Location:	Payson, Arizona	**Accident Number:**	LAX03LA181
Date & Time:	June 5, 2003, 15:28 Local	**Registration:**	N644AW
Aircraft:	Airbus Industrie A320-321	**Aircraft Damage:**	None
Defining Event:		**Injuries:**	1 Serious, 139 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Factual Information

On June 5, 2003, at 1528 mountain standard time (MST), an Airbus Industries A320-321, N644AW, experienced an in-flight encounter with turbulence over Payson, Arizona. America West Airlines, Inc., operated the airplane as flight 402 under the provisions of 14 CFR Part 121 as a scheduled domestic passenger flight. The airplane was not damaged. The airline transport pilot rated captain, first officer, 2 flight attendants, and 136 passengers were not injured. The third flight attendant received serious injuries when she broke her foot during the turbulence event. Visual meteorological conditions prevailed for the cross-country flight to the Bradley International Airport (BDL), Windsor Locks, Connecticut. An instrument flight rules (IFR) flight plan had been filed. The flight departed Phoenix Sky Harbor International Airport (PHX), Phoenix, Arizona, at 1512.

According to the captain's statement, while on climb out to FL250 (25,000 feet), he requested to deviate around significant cumuliform cloud buildup. Air Traffic Control (ATC) granted the deviation request. The pilot flying (PF) used the autopilot to make a turn to the right. During the deviation, the flight crew noted an auxiliary buildup of cumuliform on radar. They continued the deviation to avoid both cells, and reset the heading on the autopilot. The captain estimated the distance to the second cell to be less than 10 nm. The crew disconnected the autopilot to expedite the turn. The captain reported that they disconnected the autopilot because he could not rely on the autopilot to assist with compliance with the altitude clearance they had received. The PF noted the altitude at FL250.

The captain stated that they encountered moderate turbulence in the vicinity of a secondary buildup. He stated that the nature of the turbulence was, "sudden and sharp." About 10 minutes later, the lead flight attendant (FA) notified the flight crew of the injury to the third flight attendant. The lead FA indicated that the other attendant fell as a result of the turbulence. The flight crew attempted to notify the airline's PHX station for about 10 minutes. When they were unable to contact the PHX station they went to an alternate radio (ARINC) frequency and reported the injury. The airline's System Operations Control (SOC) recommended that the flight continue to BDL. The flight crew notified the cabin crew about continuing on to BDL. Initially they all agreed to continue the flight. However, after further discussion, the flight crew contacted SOC and informed them that the injury was more severe than they had originally thought. The flight crew requested permission to divert to the nearest airport, Denver International Airport (DEN), Denver, Colorado, for medical attention.

The captain also stated that they did not initially anticipate any weather problems during climb out. However, the seatbelt signs were illuminated (ON), and the radar was on, and identifying weather returns.

In the first officer's written statement, he reported that while on the Siloh 1 departure from PHX

there was an area of convective weather that was observed visually and confirmed via the on-board weather radar. The flight was deviating around the convective activity, and while climbing through 25,000 feet, they encountered about 3 - 5 seconds of what he characterized as moderate turbulence.

According to the flight attendants, they received a briefing from the cabin prior to the passengers boarding the airplane. The flight crew did not mention any significant weather. No problems were noted with the takeoff. Minutes before the turbulence event, the flight crew made their welcoming announcements, which included a statement indicating that the seat belt sign would remain illuminated as there "may be some light turbulence on the climb out." In the injured FA's written incident statement, she indicated that the flight crew "gave us 2 bells indicating it was safe to get up." The injured FA was standing in the aft galley preparing to provide cabin service with another FA when the turbulence event took place.

The dispatch weather package provided from SOC to the captain predicted a 20-mile-wide line of cumulous buildup moving from 310 degrees at 15 knots with cloud tops at 33,000 feet (FL330). The package also included SIGMETS, which read in part, "convective SIGMET 2W, valid until 2255Z (1555 MST) from 50 miles WNW of Winslow, AZ to 50 miles WSW of St. Johns." Per company policy, the captain provided a predeparture briefing that included weather conditions to the lead FA. No special emphasis was placed on anticipated weather en route. During climb out, the FO advised the passengers that the seatbelt sign would remain on "for a few more minutes as the flight might experience flight turbulence in the climb." The operator reported that the flight crew did not receive any weather updates, and the flight crew reported that they received no weather updates from other aircraft in the area prior to the turbulence event.

A senior meteorologist for the National Transportation Safety Board prepared a report for the incident area. The southwest section of the National Weather Service (NWS) surface analysis chart showed a low-pressure system that extended west to northwest from the low over the California and Arizona border. Another low-pressure system was identified over the southwest section of New Mexico with a trough that extended northwest into the eastern portion of Arizona. A stationary front was identified east of the low-pressure system that ran north-to-south across New Mexico into southwest Texas. According to the Safety Board meteorologist, the turbulence incident occurred in-between the two low-pressure systems.

The closest official weather reporting facility was Winslow-Lindberg Regional Airport (INW), Winslow, Arizona, located 1 mile west of Winslow, and about 54 miles north-northeast of Payson, at 4,941 feet. A special weather observation issued at 1505 reported wind from 200 degrees at 16 knots gusting to 22 knots; visbility unrestriced at 10 miles; sky clear below 12,00 feet, temperature 27 degrees Celcius; dew point 1 degree Celsisus; altimeter 29.97 inches of Mercury (inHg). The remarks section of the aviation routine weather report (METAR) reported that the thunderstoms sensor was inoperative.

Upper air data values were obtained from the NWS Flagstaff Forecast Office (KFSX), site

number 72376, located about 20 miles northeast of Payson. Several cloud layers were noted between 18,000 feet to 41,000 feet, with a relative humidity in excess of 60 percent. The sounding indicated a maximum upward vertical velocity or updraft strength of 44 knots. According to the meteorologist, the expected maximum wind gust (T2) and Windex microburst index parameters were favorable for high-based thunderstorm conditions with wind gusts from 55 to 68 knots, respectively.

Satellite data imagery from the Geostationary Operations Environmental Satellite number 10 (GOES-10) at 1532, depicted an area of cumulus and cumulonimbus clouds that extended from Prescott through Flagstaff to Winslow, and then southeast towards the Show Low area. The visible imagery from GOES-10 at 1532, showed cumulus to cumulonimbus clouds forming northwest through the north and east of the Payson area along the Mogollon rim in the immediate vicinity of where the flight crew requested to deviate right of course around weather. The airplane's flight track was immediately downwind of towering cumulus clouds.

According to the senior meteorologist, there were no severe weather forecast alerts, SIGMET's, AIRMET's, or center weather advisories current over Arizona at the time of the accident. The NWS Aviation Weather Center issued Convective SIGMET 2W at 1355, valid until 1522. The information was provided to the flight crew. The area covered in the Convective SIGMET was along the route of flight. The advisory identified and navigation fixes from 50 miles west-northwest of Winslow, to 50 miles west-southwest of St. Johns, Arizona, and was issued for a line of thunderstorms. The thunderstorms were 20 miles wide moving from 310 degrees at 15 knots with cloud tops at 33,000 feet. Convective SIGMENT 4W issued at 1455, contained an advisory that was valid until 1655 for portions of Arizona. The advisory identified navigation fixes from 30 miles northwest of Prescott, to 20 miles west-northwest of Winslow, to 40 miles southwest of St. Johns, and was issued for a line of thunderstorms. The thunderstorms were 20 miles wide moving from 310 degrees at 25 knots, with cumulonimbus cloud tops at 37,000 feet. The line of thunderstorms extended northwest through east of the Payson area along the route of America West's flight path.

Albuquerque Center Weather Service Unit issued a Meteorological Impact Statement at 1246, valid until 2030. Thunderstorms were expected to remain isolated to widely scattered over the Arizona rim and New Mexico Gila region, with diminishing activity by 1830. The entire advisory was available to the America West flight dispatch office for flight planning use.

ADDITIONAL INFORMATION

The Federal Aviation Administration (FAA) issued Advisory Circular (AC 00-24B) titled Thunderstorms in 1983, where information is provided concerning the hazards associated with thunderstorms. In part, some of the avoidance rules identified by the FAA are:

Do avoid by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo. This is especially true under the anvil of large cumulonimbus.

Do clear the top of a known or suspected severe thunderstorm by at least 1,000 feet altitude for each 10 knots of wind speed at the cloud top. This should exceed the altitude capability of most aircraft.

Do circumnavigate the entire area if the area has 6/10 thunderstorm coverage.

Do regard as extremely hazardous any thunderstorm with tops 35,000 feet or higher whether the top is visually sighted or determined by radar.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	59,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1	**Last FAA Medical Exam:**	January 1, 2003
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 1, 2003
Flight Time:	18500 hours (Total, all aircraft), 2841 hours (Total, this make and model), 198 hours (Last 90 days, all aircraft), 44 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Airline transport; Commercial	**Age:**	38,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1	**Last FAA Medical Exam:**	March 1, 2003
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 1, 2003
Flight Time:	9500 hours (Total, all aircraft), 3975 hours (Total, this make and model), 138 hours (Last 90 days, all aircraft), 49 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Airbus Industrie	**Registration:**	N644AW
Model/Series:	A320-321	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	317
Landing Gear Type:	Retractable - Tricycle	**Seats:**	156
Date/Type of Last Inspection:	April 1, 2002 Continuous airworthiness	**Certified Max Gross Wt.:**	166400 lbs
Time Since Last Inspection:	4135.2 Hrs	**Engines:**	2 Turbo fan
Airframe Total Time:	34545.5 Hrs as of last inspection	**Engine Manufacturer:**	International Aero Engines
ELT:	Not installed	**Engine Model/Series:**	V2527-A1
Registered Owner:	Wilmington Trust Company	**Rated Power:**	24800 Lbs thrust
Operator:	America West Airlines, Inc.	**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:		**Operator Designator Code:**	AWXA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	INW,4941 ft msl	**Distance from Accident Site:**	54 Nautical Miles
Observation Time:	15:05 Local	**Direction from Accident Site:**	30°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.72 inches Hg	**Temperature/Dew Point:**	35°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Phoenix, AZ (PHX)	**Type of Flight Plan Filed:**	IFR
Destination:	Hartford, CT (HFD)	**Type of Clearance:**	IFR
Departure Time:	15:12 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Serious, 4 None	**Aircraft Damage:**	None
Passenger Injuries:	135 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 139 None	**Latitude, Longitude:**	34.26139,-111.34333

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	Chris Clark; Federal Aviation Administration; Scottsdale, AZ Tom Lulkovich; America West Airlines/US Airways; Phoenix, AZ Mark Sloper; Airline Pilot's Association, International; Phoenix, AZ Dorene Feoette; Association of Flight Attendants Council 66; Phoenix, AZ
Report Date:	November 9, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=57166