



National Transportation Safety Board Aviation Incident Final Report

Location:	Denver, CO	Incident Number:	DEN041A050A
Date & Time:	03/05/2004, 2025 MST	Registration:	N467UA
Aircraft:	Airbus Industrie A320-232	Aircraft Damage:	Minor
Defining Event:		Injuries:	73 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The captain on the United A320 said that during their pushback, a TED A320 was being pushed back at an angle from its gate toward their position. The captain said he relayed his concern to the ground crew, but did not receive a clear response. As the TED A320 approached, two persons from their push crew ran out, "apparently to get a better view. Both airplanes were finally stopped in close proximity. We were positioned to the east of our push line, toward the other aircraft." The captain said that he requested that his tug remain in place in case they had to return to the gate for a sick passenger. When it was determined the passenger could fly, they started engines and released the pushback crew. He said the crew disconnected and they received a salute and a release from guidance for a left turn out. The captain said the TED A320 was still connected to its tug and one of its ground crew was standing to the left front of the airplane facing aft. "He was looking toward us and holding his right hand overhead, and with his left arm out and slightly raised, indicating the wingtip clearance distance." The captain said, "I taxied slowly forward at idle thrust and eased toward the left." After a short distance, the wingtips collided causing minor damage to both airplanes. The United first officer said both he and the captain looked at a ground crew member standing in front and between the two airplanes, looking at us with wand raised and other arm held out horizontally indicating wing clearance. I called for taxi and we were cleared for a left turn out. With wing man guidance and a visual check I told the captain we were cleared on the right. We started to move and I glanced forward. When I looked back out to the right, the wing walker was gone, and then the wingtips made contact. One of the ground crew members on the TED A320 said he was wing walking for the airplane on the first officer's side. Another ground crew member was on the captain's side of the TED A320. The first ground crew member said the other ground crew member stopped the pushback. He said he went around to see what was happening. As he did, the first ground crew member saw the wings of the two airplanes "about 20 to 30 feet apart." The first ground crew member said he looked at the first officer on the United A320 and gave him "the hold sign." He said he then went to the tug operator to discuss the position of the airplane. As he was talking with the tug operator, the United A320 proceeded to move and clipped the wing of the TED A320. United Airlines pushback procedures for Gates A46 and A48 at the Denver International Airport cited, "The coordination of the pushback must include ... verbal agreement between gate crews ... on which aircraft is

being moved first, [and] continual visual observance of the clearance between aircraft ..."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: the flight crew's failure to maintain clearance from the other airplane and the ground crews' failure to follow proper pushback procedures. Factors contributing to the incident were the flight crew's inadequate visual lookout, the other airplane ground crew's confusing visual signals to the flight crew, and the flight crew's inability to understand the signals being given to them.

Findings

Occurrence #1: ON GROUND/WATER COLLISION WITH OBJECT

Phase of Operation: TAXI - TO TAKEOFF

Findings

1. (C) CLEARANCE - NOT MAINTAINED - FLIGHTCREW
2. (F) VISUAL LOOKOUT - INADEQUATE - FLIGHTCREW
3. (C) PROCEDURES/DIRECTIVES - IMPROPER - GROUND PERSONNEL
4. (F) COMMUNICATIONS - CONFUSING - GROUND PERSONNEL
5. (F) COMMUNICATIONS - NOT UNDERSTOOD - FLIGHTCREW

Factual Information

On March 5, 2004, at 2025 mountain standard time, an Airbus Industrie A320-232, N467UA, owned by United Air Lines, Incorporated, and operated as United Airlines Flight 1443, collided during taxi for takeoff with an Airbus Industrie A320-232, N482UA, being operated as TED Flight 831, at the Denver International Airport (DEN), Denver, Colorado. The TED A320 was standing and connected to a tug at the time of the incident. Both airplanes sustained minor wingtip damage. The airline transport certificated captain, airline transport certificated first officer, 4 cabin crew members and 67 passengers on the United A320 were not injured. The airline transport certificated captain, airline transport certificated first officer, 4 cabin crew members and 130 passengers on the TED A320 were not injured. Both airplanes were operating on instrument flight rules flight plans under the provisions of Title 14 CFR Part 121. Flight 1443 was planned to fly from DEN to Phoenix, Arizona. Flight 831 was planned to fly from DEN to Ontario, California. Night visual meteorological conditions prevailed.

In his written statement, the captain on the United A320 said that during their pushback, the TED A320 was being pushed back at an angle from its gate toward their position. The captain said he relayed his concern to the ground crew, but did not receive a clear response. As the TED A320 approached, two persons from their push crew ran out, "apparently to get a better view. Both airplanes were finally stopped in close proximity. We were positioned to the east of our push line, toward the other aircraft." The captain said that he requested that his tug remain in place in case they had to return to the gate for a sick passenger. When it was determined the passenger could fly, they started engines and released the pushback crew. He said the crew disconnected and they received a salute and a release from guidance for a left turn out. The captain said that to their right, the TED A320 was still connected to its tug and one of its ground crew was standing to the left front of the airplane facing aft. "He was looking toward us and holding his right hand overhead, and with his left arm out and slightly raised, indicating the wingtip clearance distance." The captain said, "I taxied slowly forward at idle thrust and eased toward the left. After a short distance, the wingtips collided."

The captain on the United A320 said that communicating with their tug was difficult due to language and non-standard phraseology used by the pushback crew. The captain said clarification was needed and asked for at least two times. The captain said, "The ground communicator had no apparent knowledge of SOP (standard operating procedures) language or response for the pushback procedure."

The first officer on the United A320 said that after the passenger issue was resolved, they started their engines. "Engine start was normal and after my after start flow the captain announced I have a salute and release from guidance, and then taxi clearance." The first officer said both he and the captain looked at a ground crew member standing in front and between the two airplanes, looking at us with wand raised and other arm held out horizontally indicating wing clearance. I called for taxi and we were cleared for a left turn out. With wing man guidance and a visual check I told the captain we were cleared on the right. We started to move and I glanced forward. When I looked back out to the right, the wing walker was gone, and then the wingtips made contact. I had no time to react before impact."

One of the ground crew members on the TED A320 said he was wing walking for the airplane on the first officer's side. Another ground crew member was on the captain's side of the TED A320. The first ground crew member said the other ground crew member stopped the

pushback. He said he went around to see what was happening. As he did, the first ground crew member saw the wings of the two airplanes "about 20 to 30 feet apart." The first ground crew member said he looked at the first officer on the United A320 and gave him "the hold sign." He said he then went to the tug operator to discuss the position of the airplane. As he was talking with the tug operator, the United A320 "proceeded to move and clipped the wing."

An examination of the United A320 showed crush damage to the leading edge spoiler of the right wing, just inboard of the winglet. An examination of the TED A320 showed crush and tearing damage to the underside of the left winglet.

The United Airlines pushback procedures for Gates A46 and A48 at the Denver International Airport cited, "The coordination of the pushback must include ... verbal agreement between gate crews ... on which aircraft is being moved first, [and] continual visual observance of the clearance between aircraft ..."

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	54, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	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 Single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	02/02/2004
Occupational Pilot:		Last Flight Review or Equivalent:	09/02/2002
Flight Time:	5937 hours (Total, all aircraft), 2000 hours (Total, this make and model), 4063 hours (Pilot In Command, all aircraft), 206 hours (Last 90 days, all aircraft), 85 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Flight Instructor	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):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	12/19/2003
Occupational Pilot:		Last Flight Review or Equivalent:	11/01/2002
Flight Time:	3683 hours (Total, all aircraft), 1192 hours (Total, this make and model), 197 hours (Last 90 days, all aircraft), 56 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Airbus Industrie	Registration:	N467UA
Model/Series:	A320-232	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	1359
Landing Gear Type:	Retractable - Tricycle	Seats:	145
Date/Type of Last Inspection:	04/09/2002, Continuous Airworthiness	Certified Max Gross Wt.:	169750 lbs
Time Since Last Inspection:	6554 Hours	Engines:	2 Turbo Jet
Airframe Total Time:	10929 Hours as of last inspection	Engine Manufacturer:	International Aero Engines
ELT:	Not installed	Engine Model/Series:	V2500
Registered Owner:	United Air Lines, Incorporated	Rated Power:	25000 lbs
Operator:	United Air Lines, Incorporated	Operating Certificate(s) Held:	Flag carrier (121)
Operator Does Business As:	United Airlines	Operator Designator Code:	UALA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	DEN, 5431 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	1953 MST	Direction from Accident Site:	180°
Lowest Cloud Condition:	Few / 1600 ft agl	Visibility	2 Miles
Lowest Ceiling:	Broken / 2600 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	200°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.63 inches Hg	Temperature/Dew Point:	-1° C / -2° C
Precipitation and Obscuration:			
Departure Point:	Denver, CO (DEN)	Type of Flight Plan Filed:	IFR
Destination:	Phoenix, AZ (PHX)	Type of Clearance:	None
Departure Time:	2025 MST	Type of Airspace:	Class B

Airport Information

Airport:	DENVER INTL (DEN)	Runway Surface Type:	Unknown
Airport Elevation:	5431 ft	Runway Surface Condition:	Unknown
Runway Used:	NA	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	6 None	Aircraft Damage:	Minor
Passenger Injuries:	67 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	73 None	Latitude, Longitude:	39.858611, -104.666944

Administrative Information

Investigator In Charge (IIC):	David C Bowling	Report Date:	10/28/2004
Additional Participating Persons:	John Stevenson; Federal Aviation Administration; Denver, CO John McCoy; United Airlines; San Francisco, CA		
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/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).