



Aviation Investigation Final Report

Location:	Denver, Colorado	Incident Number:	CEN15IA337
Date & Time:	August 4, 2015, 18:00 Local	Registration:	N779SW
Aircraft:	Boeing 737	Aircraft Damage:	Minor
Defining Event:	Ground collision	Injuries:	1 Minor, 148 None
Flight Conducted Under:	Part 121: Air carrier - Scheduled		

Analysis

During the pushback of a scheduled domestic passenger flight, the airplane's left wing collided with a provisioning truck, rolling the truck onto its side and resulting in minor damage to the airplane. The truck driver stated that he was waiting to service an inbound airplane at the adjacent gate and was likely parked within the safety zone of the incident airplane's gate. The gate lead/pushback driver for the incident airplane stated that he walked past the truck during the pre-pushback walk around but did not recall seeing the truck within the safety zone.

The gate lead reported problems with his headset and personal life stress. It is likely that the gate lead was distracted by both during his walk around. Additionally, a guide agent positioned at the airplane's right wing stated that he saw the provisioning truck but assumed that it was not an issue since the gate lead had conducted a walkaround before pushback.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be:

The gate lead/pushback driver's failure to recognize that the provisioning truck was within the safety zone of the gate during his walkaround due to distractions, which resulted in the subsequent collision between the airplane and the truck. Contributing to the collision was the provisioning truck driver's failure to recognize he was parked in the safety zone of an active gate adjacent to his assigned gate, and the guide agent's improper assumption that the safety zone was properly cleared by the gate lead/pushback driver.

Findings

Personnel issues	Monitoring environment - Ground crew
Personnel issues	Task monitoring/vigilance - Ground crew
Personnel issues	Lack of communication - Ground crew
Personnel issues	Attention - Ground crew

Factual Information

History of Flight

Pushback/tow-engine oper	Ground collision (Defining event)
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On August 4, 2015, about 1800 mountain daylight time, a Boeing 737-700 airplane, N779SW, sustained minor damage when it collided with a provisioning truck at Denver International Airport (DEN), Denver, Colorado. The flight crew and passengers on board the airplane were not injured. The driver in the service truck sustained minor injuries. The aircraft was registered to and operated by Southwest Airlines under the provisions of 14 Code of Federal Regulations Part 121 as a scheduled domestic passenger flight. Visual meteorological conditions prevailed prior to and during the ground operations. The flight was originating at the time of the collision.

The airplane was parked at Gate C28. A video of the event was provided to the investigator-in-charge by Southwest Airlines. The video started at a time stamp of 05:56:43 PM (MDT) on August 4, 2015. When the video started the provisioning truck was already parked on the far side of the airplane. The following is a timeline of the significant events captured by the video:

- 05:57:44 – Luggage belt pulls away from the right front side of the airplane
- 05:58:15 – The jet bridge starts to pull away from the airplane
- 05:58:36 – The gate lead appears to start his walk around
- 05:59:02 – The gate lead moves a safety cone from under the left wing and starts to walk towards the rear of the airplane (after this he is no longer visible to the camera)
- 05:59:29 – The gate lead is visible again under the empennage of the airplane
- 06:00:28 – The gate lead boards the airplane tug and the wing walker walks towards the right wing tip
- 06:00:53 – The Southwest Airlines (SWA) airplane scheduled for gate 26 arrives and starts to turn towards the gate
- 06:01:02 – The tug driver started to push the SWA airplane at gate 28 back as the SA airplane at gate 26 continued to pull in
- 06:01:17 – The collision between the airplane's left wing and the provisioning truck started
- 06:01:24 – The airplane stopped moving backwards and the truck stopped its roll

The outboard trailing edge of the left wing collided with the fiberglass box on the passenger's side of the provisioning truck. The provisioning truck rolled and came to rest on the driver's side of the truck. The pushback driver immediately stopped the operations and the driver of the provisioning truck egressed from the truck without further incident. The trailing edge of the wing sustained minor impact damage to the skin, 2 inches in width and 18 inches in length.

According to an interview with the lead agent/tug driver for gate 28, this was his first airplane of the day. He conducted a walk around the airplane but did not recall seeing the provisioning truck parked inside of the safety area. After understanding that he was cleared to push back by both the wing walker and the pilot, he started to push back. He stopped the push when he felt the tug or jerk of the airplane as it hit the provisioning truck. He commented that his headset was having issues. He also commented that he was stressed and potentially distracted by personal issues.

In an interview with the guide agent, he stated that he did see the provisioning truck but it was not clear to him that it was in the safety area for gate 28. He assumed that it was clear and no issue as the lead agent/tug driver had walked passed it during his walk around and had subsequently announced that the walk around was complete. He was on the opposite side of the airplane during the pushback and commented that a second wing walker would have prevented this from happening.

According to an interview with the provisions agent, he had parked outside of the safety area for gate 26 but acknowledged later that he was likely within the safety area for gate 28. He was awaiting an inbound airplane to service at gate 26. He also commented that he had never been told to remain clear of safety areas for adjacent gates, only to move his truck if he were asked. He did not receive such a request from the ground crew for gate 28.

The Ground Operations Manual – 5.19.2 Pushback Procedures and Radio Communications and the Prepsh Checklist (WN-1095 – REV. 11/12) for the pushback driver included an observation for the driver to ensure that the safety zone was clear of FOD, personnel, and equipment. The Provisioning Manual – Safety Section – 10.5 Driving and Ramp Safety 2.6.7 (Parking of Provisioning Vehicles Between Safety Zones – stated "Employees holding short at the gate for incoming aircraft should always make sure they are outside the safety zone. In addition, they should be aware of incoming flights that are to arrive at the adjacent gate and of flights that are pushing from an adjacent gate."

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	61
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	March 11, 2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 23, 2015
Flight Time:	22952 hours (Total, all aircraft), 16152 hours (Total, this make and model), 19950 hours (Pilot In Command, all aircraft), 203 hours (Last 90 days, all aircraft), 56 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Co-pilot Information

Certificate:	Airline transport	Age:	39
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):		Restraint Used:	3-point
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	May 19, 2015
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	May 9, 2015
Flight Time:	12801 hours (Total, all aircraft), 2726 hours (Total, this make and model), 3086 hours (Pilot In Command, all aircraft), 260 hours (Last 90 days, all aircraft), 76 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	Registration:	N779SW
Model/Series:	737 700	Aircraft Category:	Airplane
Year of Manufacture:	2000	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	27884
Landing Gear Type:	Retractable - Tricycle	Seats:	143
Date/Type of Last Inspection:	July 29, 2015	Certified Max Gross Wt.:	154500 lbs
Time Since Last Inspection:		Engines:	2 Turbo fan
Airframe Total Time:	54165 Hrs at time of accident	Engine Manufacturer:	CFM INTL.
ELT:	C91A installed, not activated	Engine Model/Series:	CFM56 SERIES
Registered Owner:	Southwest Airlines	Rated Power:	
Operator:	Southwest Airlines	Operating Certificate(s) Held:	Flag carrier (121)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KDEN,5433 ft msl	Distance from Accident Site:	
Observation Time:	17:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 11000 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	40°	Turbulence Severity Forecast/Actual:	/ N/A
Altimeter Setting:	30.06 inches Hg	Temperature/Dew Point:	31°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	San Diego, CA (SAN)	Type of Flight Plan Filed:	IFR
Destination:	San Jose, CA (SJC)	Type of Clearance:	None
Departure Time:	14:26 Local	Type of Airspace:	

Airport Information

Airport:	Denver International Airport KDEN	Runway Surface Type:	
Airport Elevation:	5433 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	5 None	Aircraft Damage:	Minor
Passenger Injuries:	143 None	Aircraft Fire:	None
Ground Injuries:	1 Minor	Aircraft Explosion:	None
Total Injuries:	1 Minor, 148 None	Latitude, Longitude:	39.861667,-104.673057(est)

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer
Additional Participating Persons:	LeRoy Sutton; FAA FSDO; Denver, CO Erin Carroll; Southwest Airlines; Dallas, TX
Original Publish Date:	September 12, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this incident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91711

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).