Aviation Investigation Final Report

Location:	Tuscaloosa, Alabama	**Accident Number:**	DCA19LA070
Date & Time:	January 28, 2019, 22:05 Local	**Registration:**	N720CK
Aircraft:	Boeing 727 200	**Aircraft Damage:**	Substantial
Defining Event:	Landing gear not configured	**Injuries:**	4 None
Flight Conducted Under:	Part 121: Air carrier - Non-scheduled		

Analysis

The flight from LRD to the TCL area was normal, with no weather or operational issues.

As the flight was on final approach, with the power near idle, the captain called for flaps 15 and gear down. A red status light for the nose gear illuminated indicating it was not down and locked. All flight crewmembers reported they saw the light.

The flight engineer recommended recycling the gear lever, and the First Officer recommended a go-around to troubleshoot. The Captain declined and continued the approach. He did not call for or conduct any checklists for abnormal gear operation.

The airplane landed long, and upon derotation, the forward fuselage contacted the runway with the nose gear retracted, resulting in substantial damage. The airplane came to rest with less than 500 feet of pavement remaining.

The aircraft operation manual notes that attempting to extend gear while simultaneously operating flaps at idle power may result in unreliable gear operation. A crew operating the accident airplane two days prior reported having a gear issue under those conditions. Recycling the gear lever cleared the problem.

It is likely that if the crew had conducted a go-around and completed the abnormal checklists and/or cycled the gear, the nose gear would have extended. Had it not extended, a go-around would have allowed for a more stabilized approach and landing with more runway available.

Probable Cause and Findings

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

the captain's decision to continue the landing with an unsafe gear indication.

Findings

Personnel issues	Lack of action - Pilot
Aircraft	Gear extension and retract sys - Malfunction

Factual Information

History of Flight

Landing	Landing gear not configured (Defining event)

HISTORY OF FLIGHT

On January 28, 2019, at 20:08 central standard time (CST), Kalitta Charters II, LLC flight 720, a Boeing 727-2B6, N720CK, landed with the nose gear retracted on runway 4 at the Tuscaloosa Regional Airport (TCL), Tuscaloosa, Alabama. The airplane was substantially damaged and there were no injuries to the three flight crew and one non-revenue company mechanic onboard. The flight was operating under the provisions of 14 *Code of Federal Regulations* (CFR) Part 121 as a cargo flight from Laredo International Airport (LRD), Laredo, Texas. Night visual meteorological conditions prevailed at the time of the accident.

The flight departed LRD at 18:26 CST on an IFR flight plan. There were no irregularities or operational issues reported during the takeoff and enroute portion of the flight. According to the flight crew, the captain was the pilot flying when the accident occurred.

At 19:58, the Birmingham Approach air traffic controller advised the crew that the wind at TCL was from 200 degrees at 4 knots. The crew acknowledged and advised that they would use runway 4. The controller instructed them to report the airport in sight. At 20:01, the crew reported the airport in sight, and the controller cleared them for the visual approach. There was no communication regarding any difficulty with the airplane.

According to the flight crew, about 12 miles from the airport the captain called for flaps 15 and gear down. After the gear was selected down, the CVR recorded the first officer stating, "yeah it's down, but [unintelligble] the lights [unintelligble]"

The crew reported that they noted a red warning light for the nose gear position, and heard the audible gear warning horn. The CVR recorded the captain queried, "what horn was that?" and the first officer (FO) responded, "[unintelligible] gear warning horn."

The flight engineer (FE) stated that he recommended that they recycle the gear, the captain declined. The FO stated that he recommended that they go around to troubleshoot, the captain declined. The CVR recorded multiple automated "sink rate, pull up" warnings and the captain responded, "yeah, yeah, I got it." The FO then queried, "you gonna go around?", and the captain responded, "ah I'm gonna go… I got, it, I got it."

The captain reportedly stated that the airplane had a history of a microswitch issue, and pressed on the gear handle and light. As the power was reduced to idle, the gear warning horn and the GPWS audible alerts sounded. The captain stated in an interview that he asked for the gear to be recycled, and also that

he smelled smoke and did not want to delay. Neither the FO, FE, or non-revenue mechanic, reported these items, nor were any of these items audible on the CVR.

The captain continued the approach and after landing, upon derotation, the forward fuselage contacted the runway and the airplane quickly slid to a stop with the nose gear retracted. After the airplane came to a stop, the captain stated, "it wasn't down," and the FO made a radio call to tower. About five seconds later the FO stated, "shoulda gone around," and the captain responded, "yeah, shoulda."

INJURIES TO PERSONS

None.

DAMAGE TO AIRCRAFT

Skin and stringers in the vicinity of the nose gear well were substantially damaged, the nose gear assembly required replacement. The forward pressure bulkhead was damaged in the vicinity of the forward accessory compartment.

OTHER DAMAGE

There was minor damage to runway pavement.

PERSONNEL INFORMATION

The Captain, age 60, reported 23,700 total time, including 6,800 in the B727. He held an ATP certificate for airplane multiengine land and commercial certificate for airplane single engine land. He had an FAA first class medical dated 10/23/2018 with a restriction for corrective lenses. He held type ratings for the Boeing 727, 737, 757, and 767. He also holds a flight engineer certificate and private pilot (foreign based) certificate.

He was hired by Kalitta Charters II, LLC on 9/30/2017. His last simulator proficiency check was on 9/22/2018. In the 90 days preceding the accident, he flew 104 hours and 6 hours in the preceding 30 days. He was hired as a captain with previous flying experience in the Boeing 727. He reported to the company that his logbook was destroyed in a natural disaster so his total times prior to employment with Kalitta Charters II, LLC are estimates.

The first officer, age 46, held an ATP certificate with airplane multiengine land and a commercial certificate for airplane single engine land. He also held a Commercial certificate with ratings for rotorcraft- helicopter and instrument helicopter. He held a First Class Medical dated 10/30/2018 with no restrictions. He held type ratings for the Boeing 727 and Cessna Citation (CE-500).

He was hired by Kalitta Charters II, LLC on 7/11/2018 and completed his line operating experience on 11/13/2018. His last simulator consolidation check was on 12-01-2018. His total flight time for all aircraft is 1,850 hours with 105 hours in the Boeing 727. He had a total of 810 hours airplane multiengine time.

The Flight Engineer, age 60, held a Flight Engineer certificate with a turbojet powered rating and an A&P certificate. He was hired by Kalitta Charters II, LLC on 12/02/2013. He logged 315 hours as a flight engineer in the past 12 months

AIRCRAFT INFORMATION

The accident airplane was a Boeing 727-2B6, serial number 21298, manufactured in 1977. It was equipped with three Pratt & Whitney JT8D-15 engines. The aircraft had a maximum gross weight of 194,800 lbs. The weight at the time of the landing accident was 145,049 lbs. The aircraft's last continuous airworthiness inspection was 1/20/2019 and the total airframe hours were 57,932.

The nose landing gear was removed, replaced and signed off 2/12/2010. The nose landing gear actuator was replaced on 4/08/2017 after a discrepancy was reported that the nose gear would not extend and had to be cycled up and down.

The nose gear operates via System A hydraulic pressure. When the landing gear lever on the flight deck is placed into the down position, a cable drives the landing gear selector valve in the main wheel well. Hydraulic fluid is then ported to the pressure side of the nose gear lock actuator and nose gear extend/retract actuator. A transfer cylinder mounted on the aft bulkhead of the wheel well momentarily equalizes hydraulic pressure on the nose gear actuator at the start of each extension cycle to relieve the nose gear of the actuator force until the uplock is released. During the neutral force period the lock actuator unlocks the gear and starts the drag brace folding.

According to the Kalitta Charters II, LLC Boeing 727 Aircraft Operations Manual Vol. II Ch. 20, Landing Gear:

"The nose gear transfer cylinder assists in unlocking the nose gear during normal gear extension and requires full System A hydraulic pressure for normal operation. Simultaneous operation of the landing gear and flaps will cause a large volume demand on the system and with engines at or near idle RPM, hydraulic pump volume output may not be sufficient to maintain normal system pressure of 2800-3100 psi. With this condition the nose gear transfer cylinder may not operate properly to assist in unlocking the nose gear and noisy or unreliable nose gear operation may result."

One day prior to the accident, a different flight crew experienced an indication that the nose landing gear failed to extend. This flight was also landing at TCL, and the crew reported they were high and fast, and that power was near idle, and flaps were in transit when the gear was selected down. After extending the landing gear, the crew received a red warning light for the nose gear. The green nose gear down and lock light was not illuminated. The crew requested delaying vectors and referenced the abnormal checklist for landing gear indications. They attempted to swap out the green down and lock bulb with another bulb but still did not receive the light. The gear was cycled, the red unsafe indication extinguished, and they then received a green down and lock indication for the nose wheel. The event was not written up in the maintenance logbook. The Captain said he felt he may have induced the problem since he operated the landing gear and flaps simultaneously with the thrust near idle. The captain of that flight said he informed the accident captain of the gear indication issues.

METEOROLOGICAL INFORMATION

Night visual conditions prevailed. Wind was reported from 200 degrees at 4 knots.

COMMUNICATIONS

There were no communications difficulties with the accident flight.

AERODROME INFORMATION

Tuscaloosa Regional Airport (TCL), was located about 3 miles northwest of Tuscaloosa, Alabama at an elevation of 170 feet mean sea level (msl). The airport has an FAA Air Traffic Control Tower which operates from 0700-2200 local time daily. The runway, 4/22 had an asphalt surface 6,499 feet long and 150 feet wide. There were no reported abnormalities with the airport or facilities.

FLIGHT RECORDERS

The cockpit voice recorder (CVR) was an L-3 FA2100-2010, designed to record a minimum of 2 hours of audio in solid state memory. The CVR was undamaged and the audio information was extracted from the recorder normally, without difficulty. The event was captured near the beginning of the two hour recording on channels 1 and 2. While the recording in general was good, the combined channel only contained radio reception and radio calls and no HOT microphone information. The CAM channel did pick up inter-cockpit speech, but at a much lower level than radio reception that was consistent with cockpit speaker audio.

The flight data recorder was downloaded at the NTSB recorders laboratory. The data quality was poor. There were no landing gear parameters. Pressure altitude and airspeed parameters were obviously erroneous values.

WRECKAGE AND IMPACT INFORMATION

A witness mark consistent with the lower forward fuselage contact with the runway began on runway 4 approximately abeam taxiway A2, and ended at the stopping point of the airplane approximately abeam taxiway A1, with 458 feet of runway remaining.

MEDICAL AND PATHOLOGICAL INFORMATION

The flight crew underwent post-accident drug and alcohol testing, results were negative.

ORGANIZATIONAL AND MANAGEMENT INFORMATION

Kalitta Charters II, LLC operated as a 14 Code of Federal Regulations Part 121 cargo airline based in Ypsilanti, Michigan conducting just-in-time cargo service for the automotive industry. They operated a fleet of 5 B727 aircraft (as well as 9 other airplanes). They employed 69 pilots of which there were 30 Captains and 39 First Officers.

Pilot Information

Certificate:	Airline transport	**Age:**	60
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	5-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:**	October 23, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 22, 2018
Flight Time:	23700 hours (Total, all aircraft), 6800 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Airline transport	**Age:**	46
Airplane Rating(s):	Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	5-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:	Class 1	**Last FAA Medical Exam:**	October 30, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	December 1, 2018
Flight Time:	1850 hours (Total, all aircraft), 105 hours (Total, this make and model), 535 hours (Pilot In Command, all aircraft), 91 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft), 6.1 hours (Last 24 hours, all aircraft)		

Flight engineer Information

Certificate:	Flight engineer	**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Center
Other Aircraft Rating(s):		**Restraint Used:**	5-point
Instrument Rating(s):		**Second Pilot Present:**	Yes
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	12000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Boeing	**Registration:**	N720CK
Model/Series:	727 200 2B6F	**Aircraft Category:**	Airplane
Year of Manufacture:	1977	**Amateur Built:**	
Airworthiness Certificate:	Transport	**Serial Number:**	21298
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	January 20, 2019	**Certified Max Gross Wt.:**	140875 lbs
Time Since Last Inspection:		**Engines:**	3 Turbo fan
Airframe Total Time:	57932.1 Hrs at time of accident	**Engine Manufacturer:**	
ELT:	C126 installed, not activated	**Engine Model/Series:**	
Registered Owner:	Kalitta Charters Ii Llc	**Rated Power:**	
Operator:	Kalitta Charters Ii Llc	**Operating Certificate(s) Held:**	Supplemental

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	TCL	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Laredo, TX (LRD)	**Type of Flight Plan Filed:**	IFR
Destination:	Tuscaloosa, AL (KTCL)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	Class D

Airport Information

Airport:	Tuscaloosa Regional Airport KTCL	**Runway Surface Type:**	Asphalt
Airport Elevation:	170 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	4	**IFR Approach:**	Visual
Runway Length/Width:	6499 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	4 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	33.220001,-87.61

Administrative Information

Investigator In Charge (IIC):	English, William
Additional Participating Persons:	
Original Publish Date:	March 13, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98914

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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.