



Aviation Investigation Final Report

Location:	Pasco, Washington	Accident Number:	WPR22LA353
Date & Time:	September 20, 2022, 07:09 Local	Registration:	N528DV
Aircraft:	Cessna 525B	Aircraft Damage:	Destroyed
Defining Event:	Landing gear not configured	Injuries:	10 None
Flight Conducted Under:	Part 91: General aviation - Business		

Analysis

After an uneventful flight, a jet airplane on a business flight was landing at its destination. The pilot reported to the tower controller that the airport was in sight and requested to land. The pilot further reported that, while on left base, he started to lower the flaps and extended the gear handle. He did not recall confirming whether the gear was down and locked but reported that there were no landing caution annunciations or aural warnings. Before making contact with the runway, the pilot noticed that the airplane floated longer than expected and upon touchdown realized that the landing gear was not extended.

The airplane skidded down the runway and came to a stop just past the departure end of the runway. The pilot secured the engines and assisted the passengers out of the airplane. During the evacuation, the pilot reported that the airplane was on fire near the right engine. Shortly thereafter, the airplane was engulfed in flames.

When the airplane was raised for recovery, all three landing gear were free from their uplocks and dropped down to the extended position. Postaccident examination confirmed the main landing gear uplocks were in the gear release (unlocked) position. In addition, the left main landing gear door was also partially extended on the airplane after it came to rest. The landing gear handle was observed in the down (extended) position during the examination. Accounting for the position of the landing gear uplocks, the landing gear door upon landing, and the witnesses' observation of the airplane not having its landing gear extended, it is likely that the pilot positioned the landing gear handle to the down (extended) position just before or during landing. Nevertheless, the pilot failed to ensure that the landing gear was down and locked before landing.

Examination of the landing gear handle and landing gear circuit cards revealed no anomalies.

A review of the ADS-B data revealed that the airplane's airspeed was fast on the approach and landing. The airplane's groundspeed was about 143 knots as it passed over the runway threshold, which was above the airspeed that the landing gear not extended warning system would activate (130 knots). Additionally, the airplane's flaps were likely configured in the takeoff/approach setting (15°), which would not activate the landing gear not extended warning system. Stabilized approach criteria for airspeed and configuration were not maintained on the approach and landing.

Probable Cause and Findings

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

The failure of the pilot to ensure the landing gear was extended before landing. Contributing was the pilot's failure to fly a stabilized approach, and his configuration of the airplane that prevented activation of the landing gear not extended warning system on final approach.

Findings

Personnel issues	Use of checklist - Pilot
Personnel issues	Monitoring equip/instruments - Pilot
Personnel issues	Expectation/assumption - Pilot
Aircraft	Gear position and warning - Capability exceeded
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Approach	Miscellaneous/other
Landing-flare/touchdown	Landing gear not configured (Defining event)

On September 20, 2022, about 0709 Pacific daylight time, a Cessna 525B, jet airplane, N528DV, was destroyed when it was involved in an accident near Pasco, Washington. The pilot and 9 passengers were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 business flight.

The pilot reported that the flight to Tri-Cities Airport (PSC), Pasco, Washington, was uneventful; he reported to the tower controller that the airport was in sight and requested to land on runway 03L. The pilot further reported that, while on left base, he lowered the flaps to the first notch (takeoff/approach setting) and started to extend the gear handle. He did not recall confirming whether the gear was down and locked but reported that there were no landing caution annunciation or aural warnings. He said the flaps remained at the 15° setting for the approach. Before making contact with the runway, the pilot noticed that the airplane floated longer than expected and upon touchdown realized that the landing gear was not extended.

The airplane slid down the runway and came to a stop near the departure end of the runway. The pilot secured the engines and assisted the passengers out of the airplane. During the evacuation, the pilot reported that the airplane was on fire near the right engine. Shortly thereafter, the airplane was engulfed in flames.

A video of the landing recorded from the right front seat in the cockpit revealed that throughout the duration of the recording the engines sounded normal, there were no aural warnings, and no passenger or crew dialogue were noted. The airplane was on final approach to runway 03L and as the airplane touched down, sounds consistent with the underside of the aircraft contacting and sliding down the runway were noted. The turnoff markings for taxiway Charlie were visible just above the glareshield. About 20 seconds after contact with the runway, the amber master caution light briefly illuminated. A few seconds later the amber master caution light briefly illuminated again and the runway 21R markings were visible just above the glareshield. The video recording did not capture the airplane coming to rest or the evacuation.

Two witnesses observed the airplane as it landed. The tower controller, using binoculars, noticed that the airplane did not have its landing gear extended and its bottom looked flush just before touchdown. However, the controller did not have enough time to notify the pilot.

Another witness, who was working at the airport, observed that the airplane was coming in faster than he had seen in the past and did not have its landing gear out.

When the airplane was recovered, a Federal Aviation Administration (FAA) inspector observed that when the airplane was raised from the runway, all three-landing gear were free from their uplocks and dropped down to the extended position. In addition, a review of the accident pictures revealed that the left main landing gear door was partially extended on the runway when the airplane came to rest. The right main landing gear door position could not be determined from the pictures.

The examination of runway 03L revealed that the airplane touched down about 3,000 ft past the runway threshold and continued to skid until it came to rest about 160 ft past the runway threshold for the departure runway. Remnants of the skid were seen throughout the landing roll.

A review of the ADS-B data revealed that the airplane's groundspeed was about 143 knots as it passed over the runway threshold. Since the wind was reported calm, the airplane's airspeed would be about equivalent to its groundspeed.

A postaccident examination of the airplane revealed significant thermal damage to a majority of the fuselage, the left wing, and the inboard portion of the right wing. On the bottom portion of the fuselage, the auxiliary landing gear skid was observed to be worn. Both of the main landing gear uplock hooks were observed in the gear release (unlocked) position. The left main landing gear down lock was examined and no anomalies were noted. The right main landing gear uplock hook end was separated consistent with impact damage. In the cockpit, the flaps indicator showed the flap setting between the takeoff/approach and landing position. All circuit breakers were in, and the landing gear handle was in the down, extended position. Additionally, the emergency landing gear extension handle was observed in the stowed position.

The landing gear handle was examined and revealed no evidence of failures or malfunctions that would have precluded normal operation. The landing gear printed circuit boards were tested and revealed no anomalies. Additionally, the engine FADECs were evaluated and revealed that no exceedances were recorded and that both engines were operating normally on the day of the accident.

According to the airplane's flight and operating manuals:

When the gear handle is moved to the DOWN position hydraulic fluid is routed through the uplocks to release them, and then to the extend side of the actuating cylinders. The green LH, RH, and NOSE gear indicating lights illuminate as each gear locks down.

A landing gear or tone audio warning is provided by the warning/caution advisory system if either of the following conditions occur, and the landing gear are not down.

- Airspeed below 130 KIAS and either throttle is below approximately 85% N2 . Warning can be silenced.

- Flaps are extended beyond the takeoff and approach setting. Warning cannot be silenced.

- V_{APP} - The landing approach airspeed (1.23 V_{SR1}) with flaps 15°, landing gear up.

- V_{SR1} – The stalling speed or minimum steady flight speed obtained in the specific configuration.

The landing Distance – Feet chart depicted at 12,400 pounds and a temperature of 10° C, the V_{APP} speed was 116 KIAS.

According to the FAA Airplane Flying Handbook:

Pilots may consider the following elements when attempting to set up and fly a stabilized approach to landing. The pilot should focus on the elements that lead to a stabilized approach rather than the order of the elements or the insistence on meeting all of the approach criteria. For a typical piston aircraft, an approach is stabilized when the following criteria are met:

Airspeed. The aircraft speed is within +10 /-5 KIAS of the recommended landing speed specified in the AFM.

Configuration. The aircraft is in the correct landing configuration with flaps as required; landing gear extended and is in trim.

Pilot Information

Certificate:	Airline transport	Age:	66, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 Waiver time limited special	Last FAA Medical Exam:	September 19, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 13, 2022
Flight Time:	(Estimated) 9800 hours (Total, all aircraft), 2150 hours (Total, this make and model), 9200 hours (Pilot In Command, all aircraft), 24 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N528DV
Model/Series:	525B	Aircraft Category:	Airplane
Year of Manufacture:	2009	Amateur Built:	
Airworthiness Certificate:	Commuter	Serial Number:	525B0329
Landing Gear Type:	Retractable - Tricycle	Seats:	8
Date/Type of Last Inspection:	September 12, 2022 Continuous airworthiness	Certified Max Gross Wt.:	13870 lbs
Time Since Last Inspection:		Engines:	2 Turbo fan
Airframe Total Time:	3252.7 Hrs at time of accident	Engine Manufacturer:	WILLIAMS
ELT:	C126 installed, activated, did not aid in locating accident	Engine Model/Series:	FJ44-3A
Registered Owner:	PACIFIC CATARACT & LASER INSTITUTE INC PC	Rated Power:	2820 Lbs thrust
Operator:	PACIFIC CATARACT & LASER INSTITUTE INC PC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPSC,402 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	06:53 Local	Direction from Accident Site:	274°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	9°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chehalis, WA (CLS)	Type of Flight Plan Filed:	IFR
Destination:	Pasco, WA	Type of Clearance:	IFR
Departure Time:	06:30 Local	Type of Airspace:	Class D

Airport Information

Airport:	TRI-CITIES PSC	Runway Surface Type:	Asphalt
Airport Elevation:	410 ft msl	Runway Surface Condition:	Dry
Runway Used:	3L	IFR Approach:	Visual
Runway Length/Width:	7707 ft / 150 ft	VFR Approach/Landing:	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Destroyed
Passenger Injuries:	9 None	Aircraft Fire:	On-ground
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	10 None	Latitude, Longitude:	46.26975,-119.11312(est)

Administrative Information

Investigator In Charge (IIC):	Nixon, Albert
Additional Participating Persons:	Taha Rabbani; FAA ; Spokane, WA Patrick Lusch; FAA/ AVP-100; Washington, DC Andrew Hall; Textron Aviation; Wichita, KS
Original Publish Date:	September 11, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=105974

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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](#).