



Aviation Investigation Final Report

Location:	Philadelphia, Pennsylvania	Accident Number:	GAA19CA234
Date & Time:	March 24, 2019, 15:30 Local	Registration:	N358MN
Aircraft:	Cessna T310	Aircraft Damage:	Substantial
Defining Event:	Landing gear not configured	Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The flight instructor in the retractable-landing gear, multiengine airplane reported that, while performing aerial survey training for a newly hired pilot, the airplane was slowed to the mission airspeed of 117 knots, which meant reduced power and the use of more than 15° of flaps. He added that he then pulled the landing gear warning circuit breaker to silence the landing gear warning horn to ensure clear communication but that he did not pull the landing gear motor circuit breaker. The pilot receiving instruction reported that he did not know that the instructor had pulled the landing gear warning circuit breaker.

The instructor further reported that, while returning to the departure airport, the landing checklist was "accomplished" 15 to 20 miles from the airport. He saw that the pilot was "falling behind on power and descent management" and that the airplane was high and fast for the approach. The instructor advised the pilot to correct but then began to assist the pilot when it "was taking longer [than anticipated.]" The airplane decelerated into the white airspeed arc, and the instructor moved the landing gear selector switch into the down position and added full flaps. He added that, because the flaps were added shortly after the landing gear selector switch was put into the down position, he could not tell by the flight characteristics that the landing gear had not extended. Neither he nor the pilot noticed that there was no green down-and-locked position light indicator. The airplane landed with the landing gear retracted.

The airplane sustained substantial damage to the fuselage and both engines.

The instructor added that, while configuring the airplane on the runway, he observed that the landing gear warning horn and landing gear motor circuit breakers were tripped. The director of maintenance reported that, during a postaccident examination, the airplane was lifted onto jacks and an emergency gear extension and three electrical landing gear retractions were conducted, and no defects were found.

In a photograph provided by the flight instructor, the landing gear warning horn and landing gear motor circuit breakers are right next to each other. Despite the instructor's statement that he did not pull the

landing gear motor switch, given the proximity of the breakers to each other, it is likely that the pilot inadvertently pulled the landing gear motor switch when he pulled the landing gear warning horn switch, which prevented the gear from extending.

The airplane manufacturer's Pilot's Operating Handbook contained a note in the section titled, "Landing Gear Warning Horn," which states,

Do not pull landing gear warning circuit breaker to silence horn as this turns off the landing gear control relay, thus the landing gear cannot be retracted.

Probable Cause and Findings

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

The pilot's and flight instructor's failure to verify that the landing gear were extended, which resulted in a gear-up landing. Contributing to the accident was the flight instructor's inadvertent pulling of the landing gear motor circuit, which prevented the landing gear from extending.

Findings

Personnel issues	Task monitoring/vigilance - Student/instructed pilot
Personnel issues	Task monitoring/vigilance - Instructor/check pilot
Aircraft	Gear extension and retract sys - Not used/operated
Personnel issues	Use of equip/system - Instructor/check pilot
Aircraft	(general) - Unintentional use/operation

Factual Information

History of Flight

Landing	Landing gear not configured (Defining event)
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Pilot Information

Certificate:	Commercial; Flight instructor	Age:	47,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
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; Instrument airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	March 21, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 27, 2018
Flight Time:	(Estimated) 7636 hours (Total, all aircraft), 3800 hours (Total, this make and model), 7611 hours (Pilot In Command, all aircraft), 54 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Pilot Information

Certificate:	Commercial	Age:	26,Male
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):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Without waivers/limitations	Last FAA Medical Exam:	March 7, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	February 25, 2018
Flight Time:	(Estimated) 849 hours (Total, all aircraft), 12 hours (Total, this make and model), 704 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N358MN
Model/Series:	T310 R	Aircraft Category:	Airplane
Year of Manufacture:	1976	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	310R0881
Landing Gear Type:	Retractable - Tricycle	Seats:	3
Date/Type of Last Inspection:	December 6, 2018 Annual	Certified Max Gross Wt.:	5725 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	7124.8 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	C126 installed, not activated	Engine Model/Series:	TSIO-520-EB
Registered Owner:		Rated Power:	300 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPNE, 105 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	19:54 Local	Direction from Accident Site:	214°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	250°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.09 inches Hg	Temperature/Dew Point:	17°C / -7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Farmingdale, NY (FRG)	Type of Flight Plan Filed:	None
Destination:	Philadelphia, PA (PNE)	Type of Clearance:	VFR; VFR flight following
Departure Time:	14:30 Local	Type of Airspace:	Class D

Airport Information

Airport:	NORTHEAST PHILADELPHIA PNE	Runway Surface Type:	Asphalt
Airport Elevation:	119 ft msl	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	None
Runway Length/Width:	7000 ft / 150 ft	VFR Approach/Landing:	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	40.087501,-75.005554(est)

Administrative Information

Investigator In Charge (IIC):	Benhoff, Kathryn
Additional Participating Persons:	Kirk Jaeger, FAA; Philadelphia, PA
Original Publish Date:	November 6, 2019
Note:	This accident report documents the factual circumstances of this accident as described to the NTSB.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=99347

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