

Aviation Investigation Final Report

Location:	St. Augustine, Florida	Accident Number:	ERA19LA282
Date & Time:	September 24, 2019, 10:02 Local	Registration:	N108LS
Aircraft:	Cessna 337	Aircraft Damage:	Substantial
Defining Event:	Miscellaneous/other	Injuries:	2 Serious
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The pilot was conducting a practical test with a designated pilot examiner to add a multiengine rating to her pilot certificate. After performing airwork in the local area, they returned to the departure airport to conduct takeoffs and landings. The pilot initiated the takeoff and reported that the airplane accelerated to 85 mph, then rotated as normal. She then reported that the airplane "discontinued climbing"; shortly thereafter, the examiner took control of the airplane. The examiner stated that there was inadequate runway remaining on which to land; however, the airplane would not fly out of ground effect. He maneuvered to avoid obstructions and the airplane impacted terrain with a descent rate between 400 to 600 feet per minute.

Postaccident examination of the front engine and its systems revealed no evidence of preimpact failure or malfunction. The rear propeller was found in the feathered position. Onboard engine monitor data for the accident flight revealed that, during the accident takeoff, the front engine was operating normally, while the rear engine was operating at a level below idle power. A successful postaccident test run of the rear engine revealed no evidence of malfunctions or anomalies that would have precluded normal operation. The airplane owner's manual advised that, during takeoff, the pilot should apply rear engine power first, followed by front engine power, and monitor the engine instruments throughout the takeoff roll for signs of power loss. A placard on the instrument panel advised, "Do not initiate single engine take-off."

Although the reason that the rear engine was operating at such a low level during the accident takeoff could not be determined, both pilots should have recognized that the rear engine was not operating as expected during the takeoff roll and aborted the takeoff. The continuation of the takeoff in this condition resulted in the airplane's inability to climb and its subsequent descent and impact with terrain.

Probable Cause and Findings

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

The failure of the pilot and examiner to recognize that the rear engine was not developing power, which resulted in an attempted partial-power takeoff and the airplane's subsequent descent and impact with terrain.

Findings	
Aircraft	(general) - Incorrect use/operation
Personnel issues	Identification/recognition - Pilot
Personnel issues	Identification/recognition - Designated examiner

Factual Information

History of Flight		
Takeoff	Miscellaneous/other (Defining event)	
Maneuvering	Off-field or emergency landing	
Landing-flare/touchdown	Hard landing	

On September 24, 2019, about 1002 eastern daylight time, a Cessna 337G, N108LS, was substantially damaged when it was involved in an accident near St. Augustine, Florida. The private pilot and designated pilot examiner sustained serious injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 flight test.

The pilot and examiner departed on the flight portion of the practical test for the pilot's multiengine rating. They conducted air work and then returned to the departure airport to perform takeoffs and landings. After landing, the pilot cleared the runway and requested with the tower controller to perform traffic pattern work. The controller indicated that there would be a delay of five to ten minutes, which the pilot acknowledged, and held the airplane short of the runway. While waiting for a takeoff clearance, the examiner questioned the pilot about the rear engine temperature, which the pilot determined was within limits. The controller subsequently cleared the airplane for an expedited takeoff.

The pilot stated that all instrument indications were normal and the airplane accelerated to 85 mph then rotated. She then reported that the airplane "discontinued climbing" and shortly thereafter, the examiner assumed control of the airplane. The examiner reported that he could not land on the remaining runway; however, the airplane would not fly out of ground effect. The examiner began a left turn to land in an open area on the airport, and the airplane began to descend. He leveled the wings and slowed the airplane as it approached the touchdown area, and the airplane impacted terrain with a descent rate around 400 to 600 feet per minute.

Examination of the airplane before recovery by a Federal Aviation Administration (FAA) inspector revealed that the rear propeller blades were in the feathered position, and the rear engine cowl flaps were open. The front propeller blades exhibited considerable distortion and were rotated in the propeller hub. Examination of the throttle quadrant revealed that the throttle and propeller controls for both engines were full forward, while both mixture controls were in the idle cut-off position. The airplane was recovered for further examination of both engines.

Examination of the rear engine in advance of an engine run revealed no evidence of any preimpact failure or malfunction of the engine or its systems. An external fuel tank was plumbed into the airframe boost pump fuel inlet. The engine started normally without hesitation or stumbling. The engine was warmed up, then powered to 1,600 rpm, where the propeller control was cycled several times. The engine was then advanced to full power and left

for about 5 minutes to stabilize. During that time, the No. 3 cylinder head temperature approached the maximum limit, and engine power was reduced allowing the engine to cool. The throttle was then advanced to full for about 1 minute and the rpm increased without hesitation or stumbling. The engine was brought back to idle for several minutes to duplicate some of the delay on the ground, then again advanced to full throttle; no anomalies were noted. The rear engine was secured using the mixture and the propeller remained in a normal low pitch position.

Damage to the front engine oil filter adapter precluded operational testing of the engine. The front engine and its systems were examined, and no discrepancies were noted that would have precluded normal operation.

Review of recorded engine monitor data revealed that, when power was applied for the accident takeoff, the front engine was within 100 rpm of its rated takeoff power, while at the same time the rear engine was at 137 rpm, and remained at that value for the remainder of the recorded data. Further review of the recorded data revealed that the rear engine oil temperature while on the ground awaiting takeoff clearance reached a maximum of 227°F, which was 13°F below the maximum red line value.

A placard on the instrument panel stated, "Do not initiate single engine take-off." The owner's manual indicated that, during takeoff, it was recommended to advance the rear engine throttle ahead of the front engine throttle and to periodically monitor fuel flow and rpm throughout the takeoff. If either of these indicators was below normal, the takeoff should be discontinued immediately while sufficient runway remained. The owner's manual also indicated that full throttle checks on the ground are not recommended.

Certificate:	Private	Age:	73,Female
Airplane Rating(s):	Single-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 3 With waivers/limitations	Last FAA Medical Exam:	August 26, 2019
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 23, 2019
Flight Time:	668.7 hours (Total, all aircraft), 140.7	7 hours (Total, this make and model),	668.7 hours (Pilot In

Pilot Information

668.7 hours (Total, all aircraft), 140.7 hours (Total, this make and model), 668.7 hours (Pilot In Command, all aircraft), 41 hours (Last 90 days, all aircraft)

Check pilot Information

Certificate:	Airline transport; Flight instructor	Age:	76,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	3-point
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	August 20, 2019
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	January 16, 2018
Flight Time:	5254 hours (Total, all aircraft), 10 hours (Total, this make and model), 4474 hours (Pilot In Command, all aircraft), 7.9 hours (Last 90 days, all aircraft), 5.7 hours (Last 30 days, all aircraft), 1.3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N108LS
Model/Series:	337 G	Aircraft Category:	Airplane
Year of Manufacture:	1973	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	33701488
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	July 12, 2019 Annual	Certified Max Gross Wt.:	4630 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	3842.8 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	Not installed	Engine Model/Series:	IO-360-G
Registered Owner:	On file	Rated Power:	210 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	SGJ,10 ft msl	Distance from Accident Site:	
Observation Time:	09:56 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.96 inches Hg	Temperature/Dew Point:	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St. Augustine, FL (SGJ)	Type of Flight Plan Filed:	Unknown
Destination:	St. Augustine, FL (SGJ)	Type of Clearance:	Unknown
Departure Time:	10:02 Local	Type of Airspace:	

Airport Information

Airport:	Northeast Florida Regional SGJ	Runway Surface Type:	Asphalt
Airport Elevation:	10 ft msl	Runway Surface Condition:	Dry
Runway Used:	31	IFR Approach:	None
Runway Length/Width:	7997 ft / 150 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 Serious	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	29.959167,-81.339721

Administrative Information

Investigator In Charge (IIC):	Monville, Timothy
Additional Participating Persons:	Peter J Kandravi; FAA/FSDO; Orlando, FL Kurt Gibson; Continental Motors, Inc.; Mobile, AL
Original Publish Date:	May 6, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=100332

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.