



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Williston, Florida	Accident Number:	MIA08LA123
Date & Time:	June 20, 2008, 10:20 Local	Registration:	N381CP
Aircraft:	CIRRUS DESIGN CORP SR-20	Aircraft Damage:	Substantial
Defining Event:	Fire/smoke (non-impact)	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot was conducting a solo flight and had completed two full-stop landings with the intention of completing three more; however, he aborted the subsequent takeoff twice. When the student pilot attempted to stop during the second aborted takeoff, he noticed that the brakes were not functioning properly. As the airplane exited the runway on to the taxiway, smoke was emanating from under the wings. The student pilot, airport supervisor, and fire department extinguished fires on both main landing gear. Data retrieved from the airplane's primary flight display and multi-functional display revealed that the student pilot executed two landings, followed by two sequential aborted takeoffs, within a time frame of 22 minutes. During that time, ground speeds reached 73 knots and engine power during taxi ranged from 920 to 1,270 rpm. Review of the airplane's pilot operating handbook (POH) revealed that the maximum recommended continuous engine power for taxiing is 1,000 rpm. If the engine power is exceeded and proper braking procedures are not observed during taxi, wheel brake damage or fire could occur. The student pilot also did not comply with the safety information section in the POH, which recommended adequate cooling time for the brakes after heavy use. Examination of the landing gear brake assemblies revealed no evidence of a mechanical malfunction. The combination of the high-speed aborted takeoffs and the excessive taxi speed resulted in both wheel brakes failing and catching on fire.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The student pilot's failure to follow the manufacturer's recommended taxiing procedures.

Findings

Personnel issues	Use of policy/procedure - Pilot
Aircraft	Surface speed/braking - Incorrect use/operation

Factual Information

History of Flight

Takeoff-rejected takeoff	Fire/smoke (non-impact) (Defining event)
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On June 20, 2008, at 1020 eastern daylight time, a Cirrus SR-20, N381CP, had the wheel brakes catch fire at the Williston Municipal Airport (X60), Williston, Florida. The student pilot reported no injuries and the airplane incurred substantial damage. The flight was operated by Commercial Airline Pilot Training, LLC, under the provisions of Title 14 Code of Federal Regulations Part 91, as an instructional flight. Visual meteorological conditions prevailed and a visual flight rules flight plan was filed.

The student pilot, with 82 hours in the Cirrus SR-20, stated he was on a solo instructional cross-country flight from Flagler County Airport, Palm Coast, FL. While at X60, he completed 2 full stop landings and taxied back to the runway with the intent to make three additional landings at the airport. The pilot's initial takeoff was aborted and he taxied back to the runway for a second takeoff. The pilot aborted the second takeoff. When he attempted to stop, he noticed that the brakes were not functioning properly. As the pilot exited the runway he noticed smoke coming from under the wings. He quickly secured the fuel and avionics and grabbed the on-board fire extinguisher before exiting the airplane. Despite the efforts of the pilot, the airport supervisor, and fire department, the right main landing gear was completely destroyed by the fire. The fire burned through the bottom of the fuselage, and continued up the right side of the cabin behind the wing. The lower surface of the right wing incurred thermal heat damage. The left main landing gear incurred thermal heat damaged on top of the wheel pant assembly.

The left main landing gear assembly and the remaining components from the right main landing gear assembly were sent to the Parker Hannifin Wheel and Brake Division, Avon, OH, for a teardown examination with Federal Aviation Administration oversight. The examination revealed that the O-rings from the left-hand brake cylinder had deformed and taken on a "square appearance". A subsequent functional inspection showed that the brake assembly held pressure in accordance with established production parameters. The right-hand landing gear assembly was destroyed by the magnesium fire and the remnants could not be tested.

The airplane was equipped with an Avidyne avionics system which consisted of a primary flight display (PFD) and a multi-functional display (MFD). Each of these had the ability to store data. The data from the PFD and MFD were extracted and analyzed by the National Transportation Safety Board's Vehicle Recorder Division. The data indicated that the pilot, within a time frame of 22 minutes, executed two landings at X60 followed by the 2 aborted takeoffs, with ground taxi speeds ranging from 35 knots to 73 knots between each event. The engine speed during taxi ranged from 920 RPM to 1270 RPM.

The Cirrus SR-20 Pilot Operating Handbook (POH) states that the maximum continuous engine speed for taxiing is 1000 RPM and if the engine speed is exceeded and proper braking procedures are not observed, wheel brake damage or fire could occur. At the time of the accident there were no references to high-speed aborted takeoff limitations in the POH.

Student pilot Information

Certificate:	Student	Age:	22, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	December 8, 2007
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	82 hours (Total, all aircraft), 82 hours (Total, this make and model), 52 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CIRRUS DESIGN CORP	Registration:	N381CP
Model/Series:	SR-20	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1856
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	June 10, 2008 100 hour	Certified Max Gross Wt.:	3000 lbs
Time Since Last Inspection:	29 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	272 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-360
Registered Owner:	ATG-GA LEASING LLC	Rated Power:	200 Horsepower
Operator:	CAPT LLC	Operating Certificate(s) Held:	None
Operator Does Business As:	Commercial Airline Pilot Training Program	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	GNV,152 ft msl	Distance from Accident Site:	23 Nautical Miles
Observation Time:	09:53 Local	Direction from Accident Site:	207°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	240°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	30°C / 19°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Williston, FL (X60)	Type of Flight Plan Filed:	VFR
Destination:	Williston, FL (X60)	Type of Clearance:	None
Departure Time:	10:20 Local	Type of Airspace:	

Airport Information

Airport:	Williston Municipal Airport X60	Runway Surface Type:	Asphalt
Airport Elevation:	76 ft msl	Runway Surface Condition:	Dry
Runway Used:	23	IFR Approach:	None
Runway Length/Width:	6390 ft / 150 ft	VFR Approach/Landing:	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	29.354166,-82.472778(est)

Administrative Information

Investigator In Charge (IIC):	Obregon, Jose
Additional Participating Persons:	Robert B Donahue; FAA/ FSDO; Tampa, FL Bradley T Miller; Cirrus Design Corporation; Duluth, MN Russ Seliga; CAPT, LLC; Palm Coast, FL
Original Publish Date:	March 23, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=68281

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](#).