



Aviation Investigation Final Report

Location:	Spartanburg, South Carolina	Accident Number:	NYC08TA130
Date & Time:	March 11, 2008, 17:15 Local	Registration:	N1044Y
Aircraft:	Cessna 180	Aircraft Damage:	Substantial
Defining Event:	Aircraft wake turb encounter	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Public aircraft		

Analysis

After joining the downwind traffic pattern leg for landing on a 5,202-foot-long runway, the pilot of a Cessna 180 observed a Lear 45 taxi on to the runway for departure. As he turned the airplane on to the left base leg, he noticed that the Learjet was still on the runway. After joining the final approach leg, the Learjet started the takeoff roll and lifted off. As the pilot flared for touchdown, the accident airplane was "pushed hard" to the right, the right main landing gear touched down, then the airplane bounced and "threw to the left hard." The left wing then made ground contact, was substantially damaged, and the airplane ground-looped. According to the Aeronautical Information Manual (AIM), pilots should adjust their operations and flight path as necessary to preclude serious wake encounters. When landing behind a departing larger aircraft on the same runway, they should note where the larger aircraft's rotation point was and land well before the rotation point. The AIM also states that the flight disciplines necessary to ensure vortex avoidance during visual flight rules operations must be exercised by the pilot. Vortex visualization and avoidance procedures should be exercised by the pilot using the same degree of concern as in collision avoidance and that wake turbulence may be encountered by aircraft in flight as well as when operating on the airport movement area.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's encounter with wake turbulence during approach as a result of his inadequate in-flight planning.

Findings

Environmental issues	Wake turbulence - Awareness of condition
Personnel issues	(general) - Pilot

Factual Information

History of Flight

Landing	Aircraft wake turb encounter (Defining event)
Landing-flare/touchdown	Abnormal runway contact

HISTORY OF FLIGHT

On March 11, 2008, about 1715 eastern daylight time, a Cessna 180, N1044Y, operated by the South Carolina Forest Commission, was substantially damaged during landing at Spartanburg Downtown Memorial Airport (SPA), Spartanburg, South Carolina. The certificated commercial pilot was not injured. Visual meteorological conditions prevailed, and a company visual flight rules (VFR) flight plan was filed for the local public use flight, conducted under 14 Code of Federal Regulations Part 91.

According to the pilot, after joining the downwind traffic pattern leg for landing on runway 23, he observed a "Lear 45" taxi on to the runway for departure. As he turned the airplane on to the left base leg, he noticed that the Learjet was still on the runway. After joining the final approach leg, the Learjet started the takeoff roll and lifted off. As the pilot flared for touchdown, the accident airplane was "pushed hard" to the right, the right main landing gear touched down, the airplane bounced, and "threw to the left hard." The left wing then made ground contact and the airplane ground looped.

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, the pilot held a commercial pilot certificate with a rating for airplane single-engine land. His most recent FAA second-class medical certificate was issued January 30, 2008. He reported 2,030.8 hours of flight experience.

AIRCRAFT INFORMATION

According to FAA and maintenance records, the airplane was manufactured in 1957. The airplane's most recent annual inspection was completed on September 17, 2007. At the time of the inspection, the airplane had accumulated 9,620 total hours of operation and the engine had accumulated 78 hours of operation since its last overhaul.

METEOROLOGICAL INFORMATION

A recorded weather observation taken at Greenville-Spartanburg International Airport (GSP), Greenville, South Carolina, located approximately 13 nautical miles west of the accident site,

about 22 minutes prior to the accident, included; winds at 260 degrees at 9 knots, 10 statute miles visibility, broken clouds at 7,000 feet, broken clouds at 9,000 feet, temperature 17 degrees Celsius, dew point 1 degree Celsius, and an altimeter setting of 29.99 inches of mercury.

AIRPORT INFORMATION

According to the Airport Facility Directory, SPA was a public use airport. It had one runway, oriented in a 5/23 configuration. Runway 23 was asphalt, in good condition. It was 5,202 feet long by 100 feet wide and was equipped with a vertical approach slope indicator.

WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by an FAA inspector revealed that the left wing aft spar, and two of its ribs were bent. The left wing skin was buckled and wrinkled, and the left aileron and elevator were damaged.

ADDITIONAL INFORMATION

According to the Aeronautical Information Manual (AIM), pilots should adjust their operations and flight path as necessary to preclude serious wake encounters. When landing behind a departing larger aircraft on the same runway, they should note where the larger aircraft's rotation point was and land well before the rotation point.

The AIM also states that government and industry groups are making concerted efforts to minimize or eliminate the hazards of trailing vortices. However, the flight disciplines necessary to ensure vortex avoidance during VFR operations must be exercised by the pilot. Vortex visualization and avoidance procedures should be exercised by the pilot using the same degree of concern as in collision avoidance and that wake turbulence may be encountered by aircraft in flight as well as when operating on the airport movement area.

Pilot Information

Certificate:	Commercial	Age:	57, Male
Airplane Rating(s):	Single-engine land	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 With waivers/limitations	Last FAA Medical Exam:	January 30, 2008
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	June 29, 2007
Flight Time:	2030 hours (Total, all aircraft), 30 hours (Total, this make and model), 1985 hours (Pilot In Command, all aircraft), 60 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N1044Y
Model/Series:	180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	32853
Landing Gear Type:	Tailwheel	Seats:	4
Date/Type of Last Inspection:	September 17, 2007 Annual	Certified Max Gross Wt.:	2650 lbs
Time Since Last Inspection:	78 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	9620 Hrs as of last inspection	Engine Manufacturer:	Continental
ELT:	C91A installed, not activated	Engine Model/Series:	O-470-K-17F
Registered Owner:	USDA Forest Service	Rated Power:	235 Horsepower
Operator:	South Carolina Forest Commission	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	GSP,964 ft msl	Distance from Accident Site:	13 Nautical Miles
Observation Time:	16:53 Local	Direction from Accident Site:	270°
Lowest Cloud Condition:	7000 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 9000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	260°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.98 inches Hg	Temperature/Dew Point:	17°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Spartanburg, SC (SPA)	Type of Flight Plan Filed:	Company VFR
Destination:	(SPA)	Type of Clearance:	None
Departure Time:	14:30 Local	Type of Airspace:	

Airport Information

Airport:	Spartanburg Downtown Memorial SPA	Runway Surface Type:	Asphalt
Airport Elevation:	801 ft msl	Runway Surface Condition:	Dry
Runway Used:	23	IFR Approach:	None
Runway Length/Width:	5202 ft / 100 ft	VFR Approach/Landing:	Full stop;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	34.915832,-81.95639(est)

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd
Additional Participating Persons:	Todd Clamp; FAA/FSDO; West Columbia, SC
Original Publish Date:	May 6, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=67651

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