



Aviation Investigation Factual Report

Location:	Greenville, South Carolina	Accident Number:	ERA18FA264
Date & Time:	September 27, 2018, 13:46 Local	Registration:	N114TD
Aircraft:	Dassault FALCON 50	Aircraft Damage:	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	Injuries:	2 Fatal, 2 Serious
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Factual Information

HISTORY OF FLIGHT

On September 27, 2018, about 1346 eastern daylight time, a Dassault Falcon 50, N114TD, was substantially damaged when it was involved in an accident at Greenville Downtown Airport (GMU), Greenville, South Carolina. The two pilots were fatally injured, and the two passengers were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 135 on-demand air taxi flight.

The airplane departed from St. Pete-Clearwater International Airport (PIE), Clearwater, Florida, at 1230. According to the cockpit voice recorder (CVR), during the approach to GMU, the flight crew had difficulties understanding the navigation fixes that air traffic control had provided. The CVR also showed that the flight crew did not use any prelanding checklist or discuss that no braking was available with the brake system in the "#1-ON" position (the pilot was the copilot for the previous four flights in the airplane, during which this condition was present). At 1345:34, the CVR recorded the sound of the airplane touching down. At 1345:38, the pilot stated that the brakes were not operating. He and the copilot commented about the lack of brakes several more times before the airplane went over an embankment and came to a stop.

Air traffic controllers at GMU reported that the airplane touched down "normally" at a standard touchdown point on the runway. They saw the airplane's thrust reverser deploy and watched as the airplane continued down the runway without decelerating. An airport security video captured the airplane's touchdown and showed that the thrust reverser and the airbrakes were deployed. The video also showed the airplane as it continued to the end of the runway and went over the embankment.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate and a type rating for the Dassault Falcon 50 with a limitation for second-in-command privileges only. He also held type ratings for Learjet and Westwind business jets.

The co-pilot held a private pilot certificate with ratings for airplane single and multiengine land. He did not hold any type ratings nor did he hold an instrument rating.

AIRCRAFT INFORMATION

The Dassault Falcon 50 was a midsize long-range business jet. The three engines were mounted at the rear of the airplane with the left engine identified as No. 1, the center engine identified as No. 2, and the right engine identified as No. 3. A thrust reverser was located on the No. 2 engine. The airplane was equipped with two independent hydraulic systems, which provided hydraulic power to several onboard systems including the airplane's brakes. System 1 provided hydraulic pressure for normal braking (with antiskid), while system 2 provided hydraulic pressure for emergency braking and parking brake.

Selection of normal or emergency braking was done via a switch labeled "BRAKE" that was located on the instrument panel. The "#1-ON" position of the switch selected normal braking utilizing system 1, and provided antiskid protection, while the "2-OFF" position selected emergency braking and did not provide antiskid.

Review of the airplane maintenance records revealed that, on August 13, 2018, a 12-month avionics check was completed, at which time the airplane had accumulated 14,003 total hours and 7,541 total cycles.

According to the operator's director of maintenance, the airplane had been kept in storage in a hangar for about 4 years. In June 2018, a work order was generated to return the airplane to a serviceable status. The work order included a 12-month inspection, a 12-month or 500-hour inspection, a 24-month inspection, and a 36-month inspection. The work order also indicated that 1C, 3C, and 5C checks were to be completed and that a total of 103 discrepancies found during the ongoing inspections needed to be addressed. The work order was about 60% complete at the time of the accident, and there were no maintenance log entries made indicating that the airplane was airworthy and returned to service.

The work order did not include removal of the landing gear for overhaul. The last overhaul of the landing gear (main and nose) was completed on July 23, 2002. During the overhaul, the electrical harness for the landing gear position sensors and antiskid transducers was removed and replaced. The overhaul interval was 12 years (plus a grace period of 5 months) or 6,000 landings, whichever came first. As a result, a landing gear overhaul should have been performed no later than December 23, 2014.

METEOROLOGICAL INFORMATION

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site as well as runway and tire track evidence showed that the airplane departed the left edge of the runway near the departure end, traveled across the flat grassy area at the end of the runway, continued down a 50-foot embankment, and came to rest on the airport perimeter road about 425 ft from the runway. The wreckage was oriented on a heading of about 160°. There was no fire. Fuel was observed leaking from the wings at the accident site. The nose landing gear was separated and found about midway down the embankment. The fuselage was separated immediately aft of the cockpit area. The slats and flaps were extended. Both the right and left airbrakes (spoilers) were extended. Both main landing gear were fractured at the trunnion and displaced aft into the flaps.

A review of the airplane braking system components at the scene of the accident showed that the parking brake handle was in the stowed position and the brake switch was found in the "#1-ON" position. Next to the brake switch was a sticker indicating, "ATA# 32-5 'INOP' DATE: 9/27/18" (ATA code 32-5 involves the antiskid system). Detailed examination of the wheel speed transducers that the antiskid system used showed signs of field splices on the right-side inboard and outboard transducers and no signs of field splices on the left-side inboard and outboard transducers.

Computed tomography performed on the antiskid system components revealed a broken solder joint on the left-side inboard transducer and a bent pin connection on the right-side inboard transducer. Functional tests of the antiskid wheel speed transducers revealed a failure in the operation of the left-side inboard wheel speed transducer; the other three transducers passed their respective functional tests.

Visual inspection of the wiring for the right-side wheel speed transducers found that the wiring to the right outboard transducer was reversed.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies of the pilot and copilot were performed by the Office of the Medical Examiner, County of Greenville, South Carolina. Their cause of death was multiple blunt force injuries.

Toxicology testing of the pilot was performed at the FAA Forensic Sciences Laboratory. The results for the pilot were negative for carbon monoxide, ethanol, and drugs. The results for the copilot were negative for carbon monoxide and ethanol; ketamine, an anesthetic that is often used during attempted resuscitation, was detected in the copilot's specimens.

ADDITIONAL INFORMATION

According to the pilot who conducted four flights in the airplane before the accident flight, upon application of the brakes with the brake switch in the "#1-ON" position, braking was normal at low speeds (estimated to be 15-20 knots) but at faster speeds, no braking was available. Braking was restored when the brake switch was placed in the "#2-OFF" position. This pilot stated that he reported the brake system failure to the company's director of maintenance after the first two flights (in late August and early September 2018) and indicated his belief that the source of the problem was the antiskid system. This pilot also stated that the last two flights occurred 7 and 8 days before the accident flight and that the accident pilot was the copilot for all four flights.

None of the available maintenance records indicated the brake system issue or showed maintenance actions that were performed to resolve the issue.

According to the abnormal procedures section of the airplane's flight manual, a failure of the (normal) brake system or an inoperative antiskid system in-part required the flight crew to move the brake switch to the "#2 / OFF" position. The manual also stated that if both normal and emergency braking was inoperative, that the thrust reverser and parking brake could be used to bring the airplane to a stop.

Pilot Information

Certificate:	Airline transport	Age:	49,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	None
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	August 7, 2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	11650 hours (Total, all aircraft)		

Co-pilot Information

Certificate:	Private	Age:	66,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	None
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	March 22, 2017
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	5500 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Dassault	Registration:	N114TD
Model/Series:	FALCON 50 Undesignat	Aircraft Category:	Airplane
Year of Manufacture:	1980	Amateur Built:	
Airworthiness Certificate:	Transport	Serial Number:	17
Landing Gear Type:	Retractable - Tricycle	Seats:	12
Date/Type of Last Inspection:	August 27, 2014 Continuous airworthiness	Certified Max Gross Wt.:	40780 lbs
Time Since Last Inspection:	0 Hrs	Engines:	3 Turbo fan
Airframe Total Time:	14002.8 Hrs as of last inspection	Engine Manufacturer:	Honeywell
ELT:	C91 installed, activated, did not aid in locating accident	Engine Model/Series:	TFE-731
Registered Owner:	Global Aircraft Acquisitions LLC	Rated Power:	
Operator:	Air America Flight Services INC	Operating Certificate(s) Held:	On-demand air taxi (135)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KGMU, 1048 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	13:53 Local	Direction from Accident Site:	18°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:		Visibility (RVR):	
Wind Speed/Gusts:	6 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.02 inches Hg	Temperature/Dew Point:	27°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	St Petersburg-Clearwater, FL (PIE)	Type of Flight Plan Filed:	IFR
Destination:	Greenville, SC (GMU)	Type of Clearance:	IFR
Departure Time:	12:30 Local	Type of Airspace:	Class D

Airport Information

Airport:	Greenville Downtown GMU	Runway Surface Type:	Asphalt
Airport Elevation:	1048 ft msl	Runway Surface Condition:	Dry
Runway Used:	19	IFR Approach:	RNAV
Runway Length/Width:	5393 ft / 100 ft	VFR Approach/Landing:	Full stop

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	2 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal, 2 Serious	Latitude, Longitude:	34.839443,-82.348609(est)

Administrative Information

Investigator In Charge (IIC):	Boggs, Daniel
Additional Participating Persons:	Dwayne Morrison; FAA/FSDO; Columbia, SC David Studmann; Honeywell; Phoenix, AZ Jay Sigmann; Dassault Falcon Jet Corp.; New Castle, DE Nicolas Courjaud; BEA Matthew Baranyk; Meggitt Kevin Kurko; Meggitt
Report Date:	April 30, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=98361

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](#).