Aviation Investigation Final Report

Location:	Butler, Pennsylvania	**Accident Number:**	IAD05LA079
Date & Time:	June 17, 2005, 16:59 Local	**Registration:**	N1654T
Aircraft:	Cessna 414	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	4 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot conducted a landing to a 3,598-foot runway with a quartering tailwind. During the landing roll the pilot applied increasing levels of braking pressure; however, the desired braking action was not achieved. The airplane subsequently overran the runway and impacted a fence, resulting in substantial damage. The pilot later stated that the landing was conducted without wing flaps because they were inoperative, and had been for several flights prior to the accident flight. The pilot also stated that another individual on a prior flight had advised him that the brakes felt "spongy." Following the accident, brake system pressure was measured at the brake bleeder ports for both the left and right brakes. After pumping the brakes, maximum pressures of 150 psi for the left system, and 50 psi for the right system were noted.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to conduct the flight with a known equipment deficiency. A factor was the tailwind condition.

Findings

Occurrence #1: OVERRUN
Phase of Operation: LANDING - ROLL

Findings
1. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - PILOT IN COMMAND

2. FLIGHT CONTROL,FLAP - INOPERATIVE
3. LANDING GEAR,NORMAL BRAKE SYSTEM - INADEQUATE
4. (F) WEATHER CONDITION - TAILWIND

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING - ROLL

Findings
5. OBJECT - FENCE

Factual Information

On June 17, 2005, at 1659 eastern daylight time, a Cessna 414, N1654T, was substantially damaged during a runway overrun at Butler County Airport (BTP), Butler, Pennsylvania. The certificated commercial pilot and three passengers were not injured. Visual meteorological conditions prevailed, and an instrument flight rules flight (IFR) plan was filed for the 14 CFR Part 91 personal flight, which departed Greenville Downtown Airport (GMU), Greenville, South Carolina, about 1430, and was destined for Butler, Pennsylvania.

HISTORY OF FLIGHT

In a written statement, and during a telephone interview, the pilot stated that as the airplane passed in the vicinity of Pittsburgh, Pennsylvania, he elected to cancel his IFR clearance and proceed under visual flight rules to his destination. During the descent, he had difficulty receiving the reported weather conditions at Butler County Airport, and subsequently over flew the airport in an attempt to observe the winds. He was unable to see the windsock, or any other wind indicators, such as flags, smoke, or blowing dust.

With the landing gear in the down position, and at 150 knots airspeed, he entered the downwind leg of the traffic pattern for a landing on runway 08. While on the final leg of the approach, the pilot slowed the airplane to about 130 knots, and further slowed to 120 knots when he crossed the displaced threshold. He then reduced the throttles to idle, and reported that the airspeed further decreased to about 110 knots, about 10 to 20 feet above the runway.

The airplane touched down smoothly, within the first 200 feet of the runway. The pilot began to "work in the brakes," but then realized that the desired braking action was not being achieved. He then began to "pump the brakes," which improved braking, but not significantly. The pilot then "stood on the brakes"; however, the airplane continued forward. The pilot briefly thought about trying to turn the airplane left by using the left brake and increasing power on the right engine, but then decided against the maneuver. The airplane departed the end of the runway, accelerated down sloped terrain, and stopped after hitting a fence. A postcrash fire ensued, which was quickly extinguished by local firefighters.

In a written statement, the pilot's wife reported that she was occupying the right seat at the time of the accident. During the landing roll, she observed the pilot attempting to slow the airplane by applying increasing intensities of braking pressure, and observed the airplane's failure to slow.

A witness reported in a written statement, that he observed the accident while sitting on his front porch. The witness saw the airplane landing "with the wind from behind," blowing in an easterly direction. The airplane touched down "extremely fast" and seemed not to slow down.

It then swerved toward the taxiway, and subsequently departed the end of the runway. The witness also reported that another airplane was waiting on a taxiway to depart from runway 26 at the time the accident occurred.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single engine and multiengine land, and instrument airplane. He also held a flight instructor certificate with ratings for airplane single engine and multiengine, and instrument airplane. His most recent second-class FAA medical certificate was issued on June 1, 2004. The pilot reported 2,233 total hours of flight experience, of which 369 hours were in the accident airplane make and model.

AIRCRAFT INFORMATION

The airplane's most recent annual inspection was completed on March 10, 2005 at 3,054 total hours of flight time. It had accrued 85 hours of flight time since that date.

METEOROLOGICAL INFORMATION

The weather reported at the airport, at 1659, included winds from 310 degrees at 10 knots, gusting to 15 knots, temperature 66 degrees Fahrenheit, dew point 50 degrees Fahrenheit, and an altimeter setting of 29.84 inches of mercury.

AIRPORT INFORMATION

Butler County Airport was comprised of a single 3,998-foot by 100-foot asphalt runway. A review of NOTAMS issued for the airport revealed that on June 2, 2005, the threshold for runway 08 was displaced 400 feet. Examination of the runway revealed a skid mark, consistent with the left main landing gear, was present beginning about 1,500 feet from the departure end of the runway. A skid mark consistent with the right main landing gear began about 600 feet from the departure end.

TESTS AND RESEARCH

Examination of both main landing gear tires revealed several minor longitudinal cuts, but no other evidence of damage, or flat spots were noted. Brake system pressure was measured at the brake bleeder ports for both the left and right brakes. After pumping the brakes, maximum pressures of 150 psi for the left system, and 50 psi for the right system were noted. Examination of the brake pads revealed that there were between .19 and .11 inches of lining remaining.

According to data retrieved from the airplane's electronic flight instrument system, the airplane touched down about 400 feet from the displaced threshold of the runway at about 103 knots

indicated airspeed. The airplane had then slowed to 66 knots, about 800 feet from the departure end of the runway, at a point where the airplane's indicated heading and ground track coincided. The airplane departed the end of the runway at 40 knots. Additionally, the system calculated that the winds at the time of the landing were from 285 degrees at 11 to 15 knots.

In a subsequent interview conducted by Federal Aviation Administration (FAA) inspectors, the pilot stated that the landing was conducted with the flaps in the retracted position, because they were inoperative. An inspection of the airplane revealed that the flap circuit breaker was found in the tripped position, and that once reset, any attempt to actuate the flaps resulted in the circuit breaker tripping again. When asked about the flap discrepancy, the pilot stated that the problem with the flaps began on June 8, 2005. An inspection of the flap motor revealed that it would have to be replaced; however, the pilot elected not to have the work done. The pilot subsequently attended re-currency training, where he was instructed that the flaps "were not required." Another individual who had flown the airplane advised the pilot that the brakes were "spongy," and that maximum braking effort could not easily be obtained.

The pilot stated that the reason he chose runway 08 for landing was because the airplane's instrument system showed that the winds at altitude were 3 to 5 knots, and he considered them to be negligible. He also stated that he wanted to land over the construction activity, which had displaced the threshold of the runway, rather than into it.

A review of the Cessna 414 Owner's Manual revealed that under the "Landing" heading of the "Description and Operating Details" section, "landings on hard-surface runways are performed with 45 degrees flaps from 107 MPH IAS [92 KIAS] approach, using as little power is practicable."

According to the Cessna 414 Owner's Manual "Landing Performance" chart, assuming sea level elevation, a temperature of 59 degrees Fahrenheit, a gross weight of 5,300 pounds, and 45 degrees of wing flaps, a 570 feet of ground roll would be required, or 1,630 feet to clear a 50 foot obstacle. The chart did not provide any factor for a landing without wing flaps, or a tailwind condition.

ADDITIONAL INFORMATION

During their examination of the airport, the FAA inspectors found that the automated weather observing system installed had a defective transmitter. It was replaced on July 6, 2005. The inspectors also observed that the airport windsock was faded, and it too was replaced.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 1, 2004
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	June 1, 2005
Flight Time:	2233 hours (Total, all aircraft), 369 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N1654T
Model/Series:	414	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	414-0434
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	March 1, 2005 Annual	**Certified Max Gross Wt.:**	6350 lbs
Time Since Last Inspection:	85 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3054 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520
Registered Owner:	Upstate Aviation LLC	**Rated Power:**	325 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:	BTP,1248 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	17:15 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 4500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.84 inches Hg	**Temperature/Dew Point:**	21°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Greenville, SC (GMU)	**Type of Flight Plan Filed:**	IFR
Destination:	Butler, PA (BTP)	**Type of Clearance:**	None
Departure Time:	14:30 Local	**Type of Airspace:**	

Airport Information

Airport:	Butler County Airport BTP	**Runway Surface Type:**	Asphalt
Airport Elevation:	1248 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	8	**IFR Approach:**	None
Runway Length/Width:	3998 ft / 100 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 None	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	40.776668,-79.949722

Administrative Information

Investigator In Charge (IIC):	Muzio, David
Additional Participating Persons:	Robert Lowery; FAA/FSDO; West Mifflin, PA
Original Publish Date:	January 31, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=61738