



National Transportation Safety Board Aviation Accident Final Report

Location:	Pueblo, CO	Accident Number:	DEN04FA041
Date & Time:	01/21/2004, 0040 MST	Registration:	N200JE
Aircraft:	Dassault Aviation DA-20 Falcon Jet	Aircraft Damage:	Substantial
Defining Event:		Injuries:	5 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The captain reported that he obtained weather briefings prior to and during the flight. The briefings did not include any NOTAMS indicating a contaminated runway at their destination airport. The captain obtained a report from the local fixed base operator that a Learjet had landed earlier and reported the runway as being okay. The tower was closed on their arrival, so they made a low pass over the airport to inspect the runways. Based on the runway and wind conditions, they decided their best choice for landing was on runway 08L. The captain said the landing was normal and the airplane initially decelerated with normal braking. As they encountered snow and ice patches, the captain said he elected to deploy the thrust reversers. The captain said that as the thrust reversers deployed, the airplane began to yaw to the left and differential braking failed to realign the airplane with the runway. The captain said the airplane departed the left side of the runway and rotated counter clockwise before coming to rest on a southwesterly heading. A witness on the airport said, "I watched them touch down. I heard the [thrust] reversers go on and then off, and then on again. As they came back on for the second time, that's when the plane started making full circles on the runway. This happened two, maybe three times before going off the side of the runway." The airplane's right main landing gear collapsed on departing the runway, causing substantial damage to the right wing, right main landing gear and aft pressure bulkhead. At the accident site, the right engine thrust reverser was partially deployed. The left engine thrust reverser was fully deployed with the blocker doors extended. An examination of the airplane revealed a stuck solenoid on the right engine thrust reverser. No other system anomalies were found. Approximately 33 minutes prior to the accident, the pilot requested from Denver Air Route Traffic Control Center, the weather for the airport. Denver Center reported the conditions as "winds calm, visibility 6 miles with light mist, 3,000 overcast, temperature zero degrees Centigrade (C) dew point -1 degree C, altimeter three zero 30.20, and there was at least a half inch of slush on all surfaces." The pilot acknowledged the information. The NOTAM log for the airport showed that at 2115, the airport issued a NOTAM stating there was "1/2 inch wet snow all surfaces." The airport operations manager reported that at the time of the accident the runway surface was covered with 3/4 inch of wet snow. The airport conducts a 24 hour, 7 days a week operation; however, operations support digresses to fire coverage only after 2300.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's improper in-flight planning/decision to land on the contaminated runway, the stuck thrust reverser solenoid resulting in partial deployment of the right engine thrust reverser, and the pilot's inability to maintain directional control of the airplane due to the asymmetric thrust combined with a contaminated runway. Factors contributing to the accident were the wet, snow-covered runway, the airport's failure to remove the snow from the runway, and the pilot's failure to recognize the reported hazardous runway conditions by air traffic control.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: LANDING - ROLL

Findings

1. (C) THRUST REVERSER - FAILURE,PARTIAL

Occurrence #2: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: LANDING - ROLL

Findings

2. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
3. (C) DIRECTIONAL CONTROL - NOT POSSIBLE - PILOT IN COMMAND
4. (F) AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION - SNOW COVERED
5. (F) AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION - WET
6. (F) UNSAFE/HAZARDOUS CONDITION WARNING - NOT RECOGNIZED - PILOT IN COMMAND
7. (F) AIRPORT SNOW REMOVAL - NOT PERFORMED - AIRPORT PERSONNEL

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Findings

8. TERRAIN CONDITION - GROUND

Occurrence #4: GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Findings

9. LANDING GEAR,MAIN GEAR - COLLAPSED

Factual Information

HISTORY OF FLIGHT

On January 21, 2004, at approximately 0040 mountain standard time, a Dassault Aviation DA-20 Falcon Jet, N200JE, operated by Jet Ex, Incorporated, was substantially damaged during landing on runway 08L at the Pueblo Memorial Airport (PUB), Pueblo, Colorado. The airline transport certificated captain, airline transport certificated first officer, and the 3 passengers on board the airplane reported no injuries. The personal flight was being conducted on an instrument flight rules flight plan from St. Louis, Missouri, to PUB, under the provisions of Title 14 CFR Part 91. Night visual meteorological conditions prevailed at the time of the accident. The flight originated at 2315 central standard time.

The captain reported that he was the pilot-in-command and the pilot flying at the time of the accident. He said he obtained weather briefings from the St. Louis Flight Service Station and from Denver Air Route Traffic Control Center (ARTCC). He said they did not include any NOTAMS (Notice to Airman) of a contaminated runway at PUB. The captain said they had obtained a report from the local fixed base operator at PUB that a Learjet had landed earlier and reported the runway as being okay. The captain said the tower was closed on their arrival, so they made a low pass to inspect the runways. Based on the runway and wind conditions, they decided their best choice for landing was on runway 08L. The captain said the landing was normal and the airplane initially decelerated with normal braking. As they encountered snow and ice patches, the captain said he elected to deploy the thrust reversers. The captain said that as the thrust reversers deployed, the airplane began to yaw to the left and differential braking failed to realign the airplane with the runway. The captain said the airplane departed the left side of the runway and rotated counter clockwise approximately 200-225 degrees before coming to rest on a southwesterly heading.

The first officer confirmed the captain's statements. He said that his last flight with the captain prior to the accident flight had been less than a year previous.

Both pilots said there were no prior problems with the thrust reversers. The captain stated that he seldom used the thrust reversers during landing for passenger comfort, but always performed the required check of them during taxi for takeoff.

The company reported that the pilot received several weather reports en route stating that visual meteorological conditions prevailed at PUB. The pilot circled the airport to determine runway conditions and then decided to land on runway 08, as it appeared to have very little to no snow on it. After a normal touchdown, the pilot applied the brakes. The airplane was not slowing quickly, so the pilot deployed the thrust reversers. The airplane yawed and departed the runway. The company's chief pilot stated he was unaware of any problems associated with the thrust reversers.

A witness on the airport said that at 0003, he received a radio call from the crew stating they needed fuel and that they were 35 minutes out. The witness said he did not know the exact time the airplane touched down, but estimated it was around their estimated time of arrival. The witness said, "I watched them touch down. I heard the [thrust] reversers go on and then off, and then on again. As they came back on for the second time, that's when the plane started making full circles on the runway. This happened two, maybe three times before going off the

side of the runway. At this point, I dialed 9-1-1 and requested assistance."

At 0007:20, the pilot requested from Denver ARTCC the weather for PUB. Denver ARTCC reported to the pilot that the conditions at PUB were "winds calm, visibility six, light mist, overcast three thousand, temperature zero, dew point minus one, Pueblo altimeter three zero two zero, and there is at least a half inch of slush on all surfaces." The pilot acknowledged the information.

AIRCRAFT INFORMATION

The airplane, serial number 133, was owned and operated by Jet Ex, Incorporated. It was used primarily for business. The airplane was being maintained under a manufacturer's inspection program. The most recent continuous airworthiness inspection was conducted on September 17, 2003. At the time of the inspection, the airplane had a total time of 8,351.5 hours. At the time of the accident, the airplane had a total time of 8,378.5 hours.

METEOROLOGICAL INFORMATION

At 0035, the Aviation Routine Weather Report for PUB was 2,800 overcast, 7 miles visibility with blowing snow in the area, temperature 32 degrees Fahrenheit (F), dew point 31 degrees F, winds calm, and altimeter 30.20 inches.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest approximately in a field 150 feet north and 5,000 feet down from the approach end of runway 8L (10,496 feet by 150 feet, wet asphalt). The airplane was resting upright on the right wing, left main landing gear, and fuselage.

The right main landing gear was folded up into the right main gear inboard door. The gear door and bottom wing skin aft of the door were crushed inward. The right main landing gear outboard and rear bulkheads were bent inward and buckled aft.

The right wing outboard leading edge flap was crushed downward and aft beginning at the wing tip and running approximately 6 feet inboard. The top and bottom wing skins aft of the leading edge flap were crushed aft, starting at the wing tip and running approximately 7 feet inboard. The right flap was bent upward at the outboard flap track. The outboard flap track jackscrew was bent outward. The flap top skin was wrinkled.

The aft pressure bulkhead was bent and buckled outward approximately 1 inch on the right side fuselage beginning at the leading edge of the right engine nacelle pylon and proceeding downward to the bottom of the fuselage. Fuselage skin immediately aft of this area was buckled.

The right engine showed dirt and debris in the engine inlet. The right engine thrust reverser was observed partially deployed. The blocker doors on the left thrust reverser were in the stowed position. The left engine showed dirt and debris in the engine inlet. The left engine thrust reverser was observed fully deployed with the blocker doors extended.

Cockpit readings showed the power levers at flight idle with the thrust reverser activation levers in the stowed position. The flap indicator showed 40 degrees of flap extension. The airbrakes and landing gear indicators showed they were in the extended position. The antiskid switch was on. An examination of the brakes showed no excessive wear, overheating, or evidence of fluid leakage.

MEDICAL AND PATHOLOGICAL INFORMATION

Local police requested and obtained blood and urine samples from the pilot and copilot, shortly after the accident. Test results on the pilot and copilot were negative for drugs and alcohol.

TESTS AND RESEARCH

The NOTAM log for PUB showed that on January 20, 2004, at 2115, PUB was reporting 1/2 inch wet snow on all surfaces. The next NOTAM issued for PUB was at 0130 stating the airport was closed.

The airport operations manager reported that at the time of the accident the runway surface was covered with 3/4 inch of wet snow.

According to airport officials, the Pueblo Memorial Airport is open for operations 24 hours a day, 7 days a week. However, the air traffic control tower closes daily at 2200. After that time the airport operates under a common traffic advisory frequency. Airport operations personnel are on the field until approximately 2300. Aircraft landing at PUB after 2300 and requesting services must coordinate with the on-field fixed base operator in advance. The airport maintains a fire department, which is manned 24-hours a day.

The thrust reversers were examined on March 24, 2004, at Pueblo, Colorado. Both thrust reversers were manufactured by Aeronca (Left, Part Number 232-20100-505, right, Part Number 232-20100-506) and placarded for "Fan Jet Falcon [models] C, D, E, and F." A functional test of the left thrust reverser showed normal operation. A functional test of the right thrust reverser (serial number 118-2) revealed a stuck solenoid, which prevented the thrust reverser from operating when bleed air was applied.

ADDITIONAL INFORMATION

Parties to the investigation were the FAA Flight Standards District Office, Denver, Colorado, and Jet Ex, Incorporated.

Pilot Information

Certificate:	Airline Transport	Age:	45, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 None	Last Medical Exam:	08/12/2003
Occupational Pilot:		Last Flight Review or Equivalent:	09/11/2003
Flight Time:	3750 hours (Total, all aircraft), 1900 hours (Total, this make and model), 2350 hours (Pilot In Command, all aircraft), 60 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	36, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 1 None	Last Medical Exam:	03/20/2003
Occupational Pilot:		Last Flight Review or Equivalent:	04/05/2003
Flight Time:	2850 hours (Total, all aircraft), 110 hours (Total, this make and model), 2600 hours (Pilot In Command, all aircraft), 150 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Dassault Aviation	Registration:	N200JE
Model/Series:	DA-20 Falcon Jet	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	133
Landing Gear Type:	Retractable - Tricycle	Seats:	11
Date/Type of Last Inspection:	09/17/2003, Continuous Airworthiness	Certified Max Gross Wt.:	28660 lbs
Time Since Last Inspection:	27 Hours	Engines:	2 Turbo Jet
Airframe Total Time:	8378.5 Hours	Engine Manufacturer:	General Electric
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	CF700-2D2
Registered Owner:	JET EX INC	Rated Power:	4500 lbs
Operator:	JET EX INC	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	PUB, 4726 ft msl	Observation Time:	0035 MST
Distance from Accident Site:	1 Nautical Miles	Direction from Accident Site:	80°
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	0° C / -1° C
Lowest Ceiling:	Overcast / 2800 ft agl	Visibility	7 Miles
Wind Speed/Gusts, Direction:		Visibility (RVR):	
Altimeter Setting:	30.2 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	St. Louis, MO (CPS)	Type of Flight Plan Filed:	IFR
Destination:	Pueblo, CO (PUB)	Type of Clearance:	IFR
Departure Time:	2315 CST	Type of Airspace:	Class D

Airport Information

Airport:	Pueblo Memorial Airport (PUB)	Runway Surface Type:	Asphalt
Airport Elevation:	4726 ft	Runway Surface Condition:	Snow--wet; Wet
Runway Used:	08L	IFR Approach:	None
Runway Length/Width:	10496 ft / 150 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	3 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 None	Latitude, Longitude:	38.289167, -104.496389

Administrative Information

Investigator In Charge (IIC):	David C Bowling	Adopted Date:	06/30/2004
Additional Participating Persons:	Carl M Miller; Federal Aviation Administration; Denver, CO Bob Leathers; Dassault Falcon Jet; Denver, CO		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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