



National Transportation Safety Board Aviation Accident Final Report

Location:	Mineral Wells, TX	Accident Number:	FTW04FA024
Date & Time:	11/18/2003, 1410 CST	Registration:	N418MA
Aircraft:	Cessna 550	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Serious, 3 None
Flight Conducted Under:	Part 91: General Aviation - Instructional		

Analysis

A designated pilot examiner (DPE) was administering a type-rating check ride from the jump seat (located behind co-pilot's seat), and instructed the second-in-command (SIC) (required for the check ride and occupying the front right seat) to reduce the power on one engine to simulate a single engine approach. Approximately 23 seconds later, the airplane began to "drop rapidly." To arrest the descent, both pilots simultaneously applied full power on both engines, and the applicant (occupying the front left seat) increased the airplane's pitch attitude to 12 degrees. However, the airplane continued to descend and touched down short of the landing threshold for the runway. A post-impact fire consumed the airplane. According to the applicant, after takeoff, he demonstrated several maneuvers, and was then provided vectors for a VOR instrument approach. While executing the approach, it was "really bumpy", and they hit a gust of wind, which resulted in him having to correct the airplane's attitude back to straight and level flight. When the airplane was approximately one mile from the end of the runway, he looked outside and saw that he was high on the approach and extended the flaps to 40 degrees. Shortly after, the PIC reduced power on the left engine to simulate a single-engine approach. When the airplane was approximately 1/4 to 1/2-mile from the end of the runway, at 400 feet mean sea level (msl) (about 366 feet above ground level), Vref 110, the airplane began to sink rapidly, and it impacted the ground. The applicant said that he, "never experienced wind shear like that before...and in hindsight it would have been more helpful if they had a better understanding of the wind conditions before they tried to land." Under current FAA regulations, even though the pilot in the right seat (the applicant's flight instructor) acted as the SIC for the purpose of the check ride, the applicant was not type rated in the airplane, and technically, could not be designated as the pilot-in-command (PIC). The instructor was type rated in the airplane; and therefore, was the PIC.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The pilot-in-command's failure to maintain control of the airplane while executing a simulated engine failure on final approach. A factor was the windshear.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings

1. (F) WEATHER CONDITION - WINDSHEAR

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: APPROACH

Findings

2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: UNDERSHOOT

Phase of Operation: DESCENT - UNCONTROLLED

Findings

3. TERRAIN CONDITION - BERM

Factual Information

HISTORY OF FLIGHT

On November 18, 2003, approximately 1410 central standard time, a Cessna 550 turbojet, N418MA, was destroyed when it landed short of the runway while attempting to land at Mineral Wells Airport (MWL), near Mineral Wells, Texas. The airline transport pilot, commercial pilot, and the passenger were not injured. The Federal Aviation Administration (FAA) designated pilot examiner (DPE) was seriously injured. The airplane was registered to and operated by a private company. No flight plan was filed for the flight that originated at Meacham International Airport (FTW), Fort Worth, Texas, about 1335. Visual meteorological conditions prevailed for the instructional flight conducted under 14 Code of Federal Regulations Part 91.

According to the commercial pilot, he was being administered a check ride to earn a type rating for the airplane. His flight instructor, who was seated in the front right seat, acted as the second-in-command (SIC) for the purpose of the check ride. The DPE sat in the seat located behind the front right seat, and the passenger was seated in the cabin. The DPE, who normally conducted the check ride from the front right seat, said his hip was hurting, and asked the airline transport pilot to act as SIC for the flight, and he agreed. Under current FAA regulations, even though the instructor was acting as the SIC for the purpose of the check ride, the applicant was not type rated in the airplane, and technically, could not be designated as the pilot-in-command (PIC). The instructor was type rated in the airplane; and therefore, was the PIC.

For the purpose of this report, the SIC was the commercial rated pilot occupying the left seat, and the PIC was the airline transport pilot (instructor), occupying the right seat.

The check ride began with a 1 hour and 15-minute oral examination. After this was completed, the SIC conducted a pre-flight inspection of the airplane. The PIC obtained weather information and informed air traffic control of the intended flight plan, which was to climb to an altitude of 10,500 feet, conduct maneuvers, then execute the VOR RWY 31 approach into Mineral Wells Airport, before returning back to Meacham International Airport.

After takeoff, the SIC was asked to demonstrate several maneuvers, including stalls, steep turns, unusual attitude recoveries, and loss of cabin pressurization; after which, the PIC provided vectors to Mineral Wells for the VOR RWY 31 instrument approach. The SIC said that while executing the approach, it was "really bumpy" and they hit a gust of wind, which resulted in him having to correct the airplane's attitude back to straight and level flight. When the airplane was approximately 1-mile from the end of the runway, the SIC looked outside and saw that he was high on the approach and extended the flaps to 40 degrees. Shortly after, the PIC reduced power on the left engine to simulate a single-engine approach and stated it would be a touch and go landing. When the airplane was approximately 1/4 to 1/2-mile from the end of the runway, while descending through 400 feet mean sea level (msl) (about 366 feet above ground level), Vref 110, the airplane began to "dive" and "drop rapidly." Both pilots simultaneously applied full power on both engines, and the SIC increased the airplane's pitch attitude to 12 degrees. However, the airplane continued to descend and touched down short of the runway. It then veered left and slid before it came to an abrupt stop onto a berm located to the left of the runway.

The SIC said the airplane hit the ground so hard that the gear had sheered from the airplane and the wings were damaged. After the airplane came to a sudden stop, the SIC saw that the PIC was "dazed" and that the DPE had been thrown to the back of the airplane. A post impact fire started to consume the left side and rear of the airplane. All four occupants exited the airplane in less than 10 seconds.

The SIC added that he had received all of his flight instruction in the airplane from the PIC, but the flight instruction did not include a simulated engine-out on short final approach. The SIC also added that he had, "never experienced wind shear like that before...and in hindsight it would have been more helpful if they had a better understanding of the wind conditions before they tried to land."

According to the PIC, he said that the DPE asked him if he would sit in the front right seat during the check ride, and he agreed. While the DPE was administering the oral exam to the SIC, the PIC called Mineral Wells Airport and obtained the current weather conditions. He also calculated the airplane's Vref speed, which was 108 knots.

Once airborne, the SIC demonstrated maneuvers, and then the PIC vectored him for the VOR RWY 31 approach at Mineral Wells Airport. The PIC stated that when the airplane was over the Millsap VORTAC, which was 4 nautical miles from the end of the runway, the DPE instructed him to reduce power on the left engine. Seconds after the left power lever was reduced to flight idle, the PIC said, "the aircraft sank," and the DPE instructed him to bring the power up on both engines. As power was being restored to the left engine, the SIC rotated the airplane upward to about 15 degrees. He did not recall the airplane's indicated airspeed. Prior to impact, a downdraft moved the airplane to the left of the runway centerline, and the airplane landed short of the runway. When it came to rest, the left wing and aft section of the airplane caught on fire.

According to the DPE, he said that he administered the check ride from the "jump seat", which on this airplane, was the seat behind the co-pilot's seat. During segments of the flight, he left his seat and stood between the two pilot seats and observed. The DPE said the flight was normal until they were established on the VOR RWY 31 approach. When the airplane was on the procedure turn inbound (about 6 nautical miles from the end of the runway), he instructed the PIC to "retard the left throttle simulating a single engine approach." One hundred feet prior to the minimum descent altitude (MDA), he instructed the PIC to restore power to the left engine and continue with a normal landing. The airspeed was 110 knots, two knots above Vref. At that time, the DPE returned to the jump seat and attached his safety belt. He said, "I felt the airplane sinking rapidly and turned around and yelled, max power, pull the nose up to go-around. I then checked my safety belt because my buckle did not seem tight and the aircraft hit the ground. Evidently, my buckle was not securely fastened, for I was tossed around the airplane like a ping-pong ball." The DPE said that once the airplane came to rest, the passenger kicked the door open, and the post-impact fire began to rapidly consume the airplane.

A cockpit voice recorder (CVR) was removed from the airplane and sent to the Safety Board's audio laboratory in Washington DC. A CVR Group convened on December 3-4, 2003. Participants included the FAA, Cessna Aircraft Company, and the operator.

A timed transcript of the recording was produced. The recording began at 1339:31 as the crew discussed frequencies and prepared for takeoff. At 1342:34, a controller at Meacham

International Airport cleared the airplane for takeoff. After conducting several maneuvers, the crew began the VOR RWY 31 approach into Mineral Wells at 1400:45. While on final approach, at 1409:35, the DPE said, "and you just lost your engine." Two seconds later, the PIC stated, "all right your left engine's dead." At 1409:43, the SIC confirmed that the landing gear was down. Nine seconds later, the PIC said, "airspeed" several times, followed by the DPE saying, "push'em both up." At 1410:00, the sound of an impact was heard and the recording ended.

The accident occurred during the hours of daylight approximately 32 degrees, 46 minutes north latitude, and 098 degrees, 03 minutes, west longitude.

PILOT INFORMATION

The PIC held an airline transport pilot certificate with ratings for airplane single-engine land, multi-engine land, and single-engine sea. He also held a commercial pilot certificate with a rating for rotorcraft-helicopter and was also a certified airframe and power plant mechanic. In addition to being a certified flight instructor for airplane single engine land, multi-engine land, and instrument airplane, he held numerous type rating certificates. He reported a total of 16,500 flight hours, of which approximately 500 hours were in a Cessna 550.

His most recent FAA second class medical certificate was issued on December 23, 2002.

The SIC held a commercial pilot certificate with ratings for airplane single-engine land, multi-engine land, and instrument airplane. He was also a certified flight instructor for airplane single engine land, multi-engine land, and instrument airplane. He reported a total of 1,650 flight hours, of which approximately 110 hours were in the Cessna 550.

His most recent FAA second class medical certificate was issued on February 27, 2003.

METEOROLOGICAL INFORMATION

At 1353, the weather at Mineral Wells airport reported wind from 320 degrees at 25 knots gusting to 30 knots, visibility 10 statute miles, clear skies, temperature 64 degrees Fahrenheit, dewpoint 37 degrees Fahrenheit, and a barometric pressure setting of 29.81 inches of Mercury.

AIRPORT INFORMATION

Mineral Wells Airport runway 31 was a 6,000-foot long by 100-foot wide asphalt runway, which was equipped with a 4-light precision approach path indicator (PAPI) system. The airport was uncontrolled and the field elevation was 974 feet msl.

WRECKAGE INFORMATION

The airplane was examined at the accident site on November 19, 2003, and all major components were accounted for at the scene. Examination of the accident sight revealed the airplane initially contacted sloping terrain located approximately 350 feet short of the landing threshold for runway 31. It then veered left, and slid approximately 166 feet before it came to rest on a berm on a heading of 250 degrees magnetic. A post-impact fire ensued and the airplane was destroyed.

Examination of the airplane revealed no mechanical deficiencies.

ADDITIONAL INFORMATION

The airplane was released to a representative of the owner's insurance company on December

23, 2003.

Pilot Information

Certificate:	Airline Transport	Age:	59, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	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 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	12/23/2002
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	16500 hours (Total, all aircraft), 500 hours (Total, this make and model)		

Co-Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	44, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):		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 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	02/27/2003
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N418MA
Model/Series:	550	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	550-0144
Landing Gear Type:	Retractable - Tricycle	Seats:	8
Date/Type of Last Inspection:	Continuous Airworthiness	Certified Max Gross Wt.:	12500 lbs
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:		Engine Manufacturer:	Pratt & Whitney
ELT:	Installed, not activated	Engine Model/Series:	JT15-D4
Registered Owner:	Haalo, Ltd.	Rated Power:	2500 lbs
Operator:	Haalo, Ltd.	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	MWL, 933 ft msl	Distance from Accident Site:	
Observation Time:	1353 CST	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	25 knots / 30 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	320°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.81 inches Hg	Temperature/Dew Point:	18° C / 3° C
Precipitation and Obscuration:			
Departure Point:	Fort Worth, TX (FTW)	Type of Flight Plan Filed:	None
Destination:	Mineral Wells, TX (MWL)	Type of Clearance:	VFR
Departure Time:	1335 CST	Type of Airspace:	Unknown

Airport Information

Airport:	Mineral Wells Airport (MWL)	Runway Surface Type:	Asphalt
Airport Elevation:	974 ft	Runway Surface Condition:	Dry
Runway Used:	31	IFR Approach:	VOR
Runway Length/Width:	6000 ft / 100 ft	VFR Approach/Landing:	Go Around

Wreckage and Impact Information

Crew Injuries:	1 Serious, 2 None	Aircraft Damage:	Destroyed
Passenger Injuries:	1 None	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious, 3 None	Latitude, Longitude:	32.781389, -98.060000

Administrative Information

Investigator In Charge (IIC):	Leah D Yeager	Report Date:	06/30/2004
Additional Participating Persons:	Dale Johnson; FAA/FSDO; Fort Worth, TX Tom Moody; Cessna Aircraft Company; Wichita, KS		
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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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).