National Transportation Safety Board
Aviation Accident Final Report

Location:	CALDWELL, NJ	**Accident Number:**	NYC00FA001
Date & Time:	10/02/1999, 0751 EDT	**Registration:**	N88VA
Aircraft:	Cessna 401B	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Serious, 5 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot aborted the takeoff run after the airspeed indication rose to about 80 miles per hour, but would not go any higher. He could not stop the airplane, before it went off the end of the runway, over a berm, and into a drainage ravine. When the airplane was pulled out of the ravine, both pitot covers were still in place, around the pitot tubes. The runway was 4,553 feet long, calculated takeoff distance was about 2,525 feet, and calculated accelerate-stop distance was approximately 2,950 feet. Tire skid marks started around 3,600 feet from the approach end of the runway, and led to the wreckage. About a year earlier, another airplane was destroyed when it ran into the same ravine, which was located about 200 feet from the end of the runway.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate preflight, which resulted in an attempted takeoff with the pitot covers installed. An additional cause was the pilot's delayed decision to abort the takeoff, while factors included the misleading airspeed indications, and the proximity of the drainage ravine to the end of the runway.

Findings

Occurrence #1: OVERRUN
Phase of Operation: TAKEOFF - ABORTED

Findings
1. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
2. AIRCRAFT PROTECTIVE COVERING - NOT REMOVED - PILOT IN COMMAND
3. (F) FLIGHT/NAV INSTRUMENTS,AIRSPEED INDICATOR - INACCURATE
4. (F) ABORT - DELAYED - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: LANDING - ABORTED

Findings
5. (F) TERRAIN CONDITION - RAVINE

Factual Information

HISTORY OF FLIGHT

On October 2, 1999, at 0751 Eastern Daylight Time, a Cessna 401B, N88VA, was destroyed during an aborted takeoff at Essex County Airport (CDW), Caldwell, New Jersey. The certificated private pilot received minor injuries, four passengers also received minor injuries, and three passengers received serious injuries. Visual meteorological conditions prevailed at the time of the accident. An instrument flight rules flight plan had been filed for the flight, between Caldwell and Michiana Regional Transportation Center (SBN), South Bend, Indiana. The personal flight was conducted under 14 CFR Part 91.

According to the pilot, the preflight and engine run-up were uneventful. The airplane lined up on Runway 22, the pilot increased the power, and the airplane began the takeoff roll. Engines were operating normally, and the pilot was anticipating a rotation airspeed of 105 miles per hour. However, after reaching about 80 miles per hour, the airplane did not appear to accelerate further. Approximately 2/3 of the way down the runway, the pilot decided to abort the takeoff. He applied the brakes, and the airplane began a skid to the right. It veered off the runway near the departure end, continued over a berm, and dropped into a drainage ravine containing a deep stream.

One of the passengers stated that he saw the pilot do a walk-around inspection of the airplane before the flight. He also noted that the pilot had used a checklist, and that the pilot had mentioned that the gross weight of the airplane was under the maximum allowed. The passenger further stated that after the startup and initial taxi, the pilot performed an engine run-up, checking the left engine first, followed by the right. He taxied to the hold short line, and after a short delay, positioned the airplane on the runway. The pilot added power to the engines, then released the brakes, and began the takeoff roll. The pilot told the passenger to look for a takeoff speed of 105 miles per hour, but "we just didn't make it," and the pilot decided to abort the takeoff. The airplane veered off the runway and onto the grass, but then the pilot "did a great job of keeping it straight." The pilot shouted, "hold on", and the airplane proceeded over the berm and into the ravine. After the airplane came to a stop, the passenger saw flames on the left side of the airplane. Along with the other occupants, he exited the airplane to the right, where an emergency exit window had popped out.

A witness on the ground observed the airplane as it taxied onto Runway 22. According to the witness, the pilot brought the engines up to 100 percent power, then released the brakes. As the airplane passed mid-field, the witness wondered to himself, "Why has he not rotated?" About 3/4 of the way down the runway, the airplane still hadn't rotated. The witness wondered if the pilot would abort the takeoff. Then, about 4/5 of the way down the runway, the witness saw brown dust, and assumed the pilot was applying brakes. Throughout the takeoff attempt, the witness "noticed no change in engine noise - it seemed to be at 100 percent power throughout."

PERSONNEL INFORMATION

The pilot held a private pilot certificate with ratings for single engine and multi-engine land airplanes. He had about 740 hours of flight time, with approximately 120 hours in the accident airplane. He had recently received training in the airplane, in preparation for his commercial certification. The pilot's latest second class medical certificate was issued on July 15, 1999.

METEROLOGICAL INFORMATION

At 0753, weather recorded at Caldwell included calm winds, clear skies, temperature 50 degrees Fahrenheit, and dewpoint 46 degrees Fahrenheit.

AIRPORT INFORMATION

Runway 22 was 4,553 feet long and 80 feet wide, with a grass overrun of approximately 200 feet. At the end of the overrun, there was a 5-foot berm, and beyond that, a steeply-banked drainage ravine. In the ravine, about 10 feet below the crest, there was a stream that varied in depth from 2 to 4 feet. Where the accident occurred, the stream's width was about 20 feet.

According to the airport manager, the drainage ravine had been in place for about 40 years. Although it normally contained a slow-moving stream, during times of rainfall, the volume and speed of the water could increase significantly, since it served as the primary conduit to the local floodplain. Significant impediments to either covering, or diverting the waters of the ravine, included environmental concerns, and the quantity and type of debris that passed through it during times of heavy rainfall.

On October 9, 1998, a Piper Seneca was also destroyed when it overran the end of the runway, and went into the ravine.

WRECKAGE AND IMPACT INFORMATION

On-scene examination revealed the presence of tire material and tire skid marks, starting about 950 feet before the departure end of the runway. The marks veered off the right side of the runway, beginning about 170 feet prior to the departure end, and terminated about 50 feet to the right of centerline, on the crest of the berm. The airplane was located within the drainage ravine, with its nose crushed into the opposite bank. Parts of the airplane's fuselage and engines were under water. Both engines exhibited fire damage, as did both wings' undersides, trailing edges, flaps, and tip tanks.

When the airplane was lifted out of the ravine, the pitot covers were still in place, around the pitot tubes. In addition, both red, "REMOVE BEFORE FLIGHT" pitot cover streamers were found wrapped and knotted around the pitot tube masts.

Throughout the examination process, the wing flaps appeared to be down. However, the cockpit flap control lever and the mechanical "following" indicator were in the "flaps up" position. After the airplane was moved to a hangar, an interior, centerline access panel was removed from the floor of the passenger cabin. Underneath the access panel, the chain-link operating mechanisms for the flaps were located, and their relative positions correlated to the flaps being down.

In the Cessna 401B flight manual found in the airplane, under the "before takeoff" checklist, the following was listed: "Wing flaps - UP 0 degrees." The pilot initially stated that he did not change any of the airplane's configurations after he decided to abort the takeoff. However, in a subsequent interview, the pilot said he thought he did lower the flaps, and pulled back on the yoke, to dissipate airspeed after aborting the takeoff.

ADDITIONAL INFORMATION

Weight and balance calculations were completed, using the passenger weights provided by the pilot, a baggage weight estimated at 60 pounds, and full fuel. It resulted in a gross weight of approximately 6,180 pounds, compared to a maximum allowable gross weight of 6,300

pounds.

Within the airplane's flight manual, there was a chart depicting the distance required to take off and climb to 50 feet. Conditions for the performance calculation included: flaps up, maximum continuous power, cowl flaps open, an indicated airspeed of 105 miles per hour, maximum gross weight, at sea level and 50 degrees Fahrenheit. Under those conditions, the airplane should have needed about 2,525 feet of runway to take off. Skid marks, which led to the wreckage, began approximately 3,600 feet from the approach end of the runway.

An accelerate-stop distance calculation was made, using the chart found in the Cessna 401B owner's manual. Utilizing the conditions present at the time of the accident, the accelerate-stop distance was approximately 2,950 feet.

On October 3, 1999, the wreckage was released to a representative of MacDan Aviation, Caldwell, New Jersey. It was subsequently turned over to a representative of Universal Loss Management, Inc., West Trenton, New Jersey.

Pilot Information

Certificate:	Private	**Age:**	43, 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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	07/15/1999
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	738 hours (Total, all aircraft), 118 hours (Total, this make and model), 623 hours (Pilot In Command, all aircraft), 31 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N88VA
Model/Series:	401B 401B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	401B-0118
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	07/02/1999, Annual	**Certified Max Gross Wt.:**	6300 lbs
Time Since Last Inspection:	32 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	4686 Hours	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-E
Registered Owner:	AP INTERNATIONAL CORPORATION	**Rated Power:**	300 hp
Operator:	FRANK FERRARI, PRESIDENT	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	CDW, 173 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	0753 EDT	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear / 0 ft agl	**Visibility**	6 Miles
Lowest Ceiling:	None / 0 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	Calm /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	10°C / 8°C
Precipitation and Obscuration:			
Departure Point:	(CDW)	**Type of Flight Plan Filed:**	IFR
Destination:	SOUTH BEND, IN (SBN)	**Type of Clearance:**	IFR
Departure Time:	0751 EDT	**Type of Airspace:**	Class D

Airport Information

Airport:	ESSEX COUNTY AIRPORT (CDW)	**Runway Surface Type:**	Asphalt
Airport Elevation:	173 ft	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	None
Runway Length/Width:	4553 ft / 80 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Serious, 4 Minor	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Serious, 5 Minor	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	PAUL R COX	**Report Date:**	03/02/2001
Additional Participating Persons:	NATE GLINBIZZI; TETERBORO, NJ, ROBERT AUGUST; WICHITA, KS, GEORGE HOLLINGSWORTH; MOBILE, AL,		
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.ntsb.gov/pubdms/.		