



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	New Russia, OH	<b>Accident Number:</b>	NYC03LA107
<b>Date &amp; Time:</b>	05/15/2003, 1710 EDT	<b>Registration:</b>	N208AD
<b>Aircraft:</b>	Cessna 208B	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Minor

**Flight Conducted Under:** Part 91: General Aviation - Positioning

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## Analysis

The pilot departed in a Cessna 208B, and shortly after takeoff, he experienced a power loss. He set up for a forced landing and during the ground roll, the nose wheel sunk into the soft terrain and the airplane nosed over. Fuel was found in both wings; however, the fuel line between the fuel selector and the engine contained only trace amounts of fuel. One fuel selector was found in the OFF position, and the other fuel selector was mid-range between the OFF and ON positions. The airplane was equipped with an annunciator warning light and horn to warn if either fuel selector was turned off. The annunciator was popped out and did not make contact with the annunciator panel. The warning horn was checked and found to be inoperative, and the electrical circuitry leading to the horn was checked and found to be operative. The engine was test run with no problems noted. According to the Pilot's Operating Handbook, the position of the fuel selectors are to be checked three times before takeoff: including cabin preflight, before engine start, and before takeoff. The pilot reported that he departed with both fuel selectors on and had not touched them when the power loss occurred. A representative of Cessna Aircraft Company reported that there was sufficient fuel forward of the fuel selector valves to takeoff and fly for a few miles prior to experiencing fuel exhaustion.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to verify the position of the fuel selectors prior to takeoff, which resulted in a power loss due to fuel starvation. A factor was the failure of the fuel selector warning horn.

## Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (F) WARNING SYSTEM(OTHER) - INOPERATIVE
2. (C) FUEL TANK SELECTOR POSITION - NOT VERIFIED - PILOT IN COMMAND
3. FLUID,FUEL - STARVATION

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Occurrence #2: FORCED LANDING  
Phase of Operation: DESCENT - EMERGENCY

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

### Findings

4. TERRAIN CONDITION - SOFT

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Occurrence #4: NOSE OVER  
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

## Factual Information

On May 15, 2003, about 1710 eastern daylight time, a Cessna 208B, N208AD, operated by DK&L Company LLC, Anderson, Indiana, was substantially damaged during a forced landing in New Russia, Ohio, after departure from Lorain County Regional Airport (LPR), Lorain/Elyria, Ohio. The certificated airline transport pilot received minor injuries. Visual meteorological conditions prevailed for the positioning flight destined for Anderson Municipal Airport-Darlington Field (AID), Anderson, Indiana. The flight was operated on an instrument flight rules (IFR) flight plan under 14 CFR Part 91.

According to the pilot, the accident flight was his third flight of the day. The first flight was a positioning flight from Anderson to Smith Field (SMD), Fort Wayne, Indiana. There, cargo was loaded onto the airplane, and subsequently flown to Lorain, where it was off-loaded. The pilot reported that he originally departed Anderson with 2,200 pounds of fuel onboard, and at Lorain, about 1,600 pounds remained, equally split between the two tanks. He did not request or obtain any fuel at Lorain, and departed about 1705. He established radio contact with Cleveland approach control and received his clearance while en route.

At 1708:20, the controller cleared the flight to proceed direct to Anderson, Indiana, and to climb to 8,000 feet.

At 1708:31, the pilot reported that he would like to return to the airport.

At 1708:48, the controller advised the pilot of a low altitude alert, and questioned if he was returning to the airport.

At 1708:56, the pilot replied that he was, after which radio contact was lost.

When interviewed, the pilot reported that before takeoff, both fuel selectors were ON, and he did not touch them or change their positions. The initial climb was conducted at 90 to 100 knots, with a 10 to 15 degree pitch attitude. He momentarily leveled at 2,200 feet, and sensed a decrease in engine torque. The low fuel pressure light illuminated, and the fuel flow was lower than normal. The pilot turned the boost pump and ignition ON, and there was no change in engine condition or fuel flow, and the low fuel pressure light remained illuminated. He then advanced the power lever to the full power position, and there was no response from the engine. The pilot heard what he thought was an engine noise, which he described as a decreasing sound. He set up for a forced landing in a field, and after the airplane came to rest, he switched off both fuel selectors. The pilot reported that he did not feather the propeller as he was too busy.

According to an inspector from the Federal Aviation Administration (FAA), the airplane came to rest near a residence, inverted. A witness observed the pilot exit the cockpit, and reported that he did not re-enter the airplane prior to being removed from the scene by an ambulance. The left wing was separated from the fuselage at the aft attach point. The fuselage was wrinkled and the vertical stabilizer and rudder were crushed.

In the cockpit, the left fuel selector was found in the OFF position, and the right fuel selector was found between ON and OFF. The power lever was full forward, and the safety wire on the emergency power lever was in place and secure.

The right wing was removed, and about 100 gallons of fuel, similar in sight, smell, and feel to Jet-A was drained from the wing. A large fuel spill was present near the left wing, and when

the wing was moved, fuel drained from the wing.

Examination of the fuel line between the fuel selectors and the engine revealed trace fuel. The fuel filter mounted on the engine contained trace amounts of fuel. Rotation was obtained on the power turbine and compressor turbine with no binding.

According to the Pilot's Operating Handbook for the Cessna 208B, the electric fuel boost pump was designed to turn on automatically when the fuel pump selector switch was placed in the NORMAL position and a loss of fuel pressure was sensed in the system.

When electrical power was applied to the accident airplane, and with the fuel pump switch in the NORMAL position, the electric fuel pump rotated and pumped liquid.

The airplane was equipped with a fuel selector shutoff warning system, which consisted of two horns, labeled #1 and #2, and a red fuel shutoff warning light on the annunciator panel. The system operates in two modes, one during engine start, and the other, after engine start.

If one or both fuel tank selector was turned off and the engine starter engaged, both warning horns would sound, and the FUEL SELECT OFF light on the annunciator panel would illuminate.

After engine start with both fuel selectors turned off, the #1 warning horn will sound and the FUEL SELECT OFF light on the annunciator panel would illuminate. In addition, after engine start, with one fuel selector turned off, and the remaining fuel in the other tank is 25 gallons or less, the #1 horn would sound and the FUEL SELECT OFF light on the annunciator panel light would illuminate.

The warning light for FUEL SELECT OFF was popped out about 1/16 of an inch which disengaged both bulbs in the unit from illuminating. None of the other lights on the annunciator panel were found extended. When pushed in and engaged, the lights would have illuminated even if the pilot had only one fuel selector turned to the off position.

When the test feature of the accident airplane's warning system was activated, the FUEL SELECT OFF light illuminated; however, the #1 horn which was used for situations after engine start did not sound. In addition, when both fuel selectors were placed in other than the ON position, the FUEL SELECT OFF light illuminated, but the horn still did not sound.

The Fuel Selectors Off Warning System and the electrical continuity to the warning horn were checked and found to be operative. According to the party representative of Cessna Aircraft Co. the inoperative #1 horn was potted and sealed. He said that the horn was a non-repairable item, and discarded after failure. In addition, he also reported that there was sufficient fuel in the fuel system beyond the fuel selector valve for the airplane to takeoff and fly for a few miles prior to experiencing fuel exhaustion.

According to the checklist contained in the Cessna 208 Pilot's Operating Handbook, the position of the fuel selectors are to be checked three times prior to takeoff; Preflight Inspection, Cabin; Before Starting Engine; and Before Takeoff.

The engine was run at the Pratt & Whitney Canada (PWC) facility in Bridgeport, West Virginia. According to the report from PWC party representative:

"....Engine start, acceleration to ground idle, acceleration to high power, deceleration and stabilization at flight idle, low idle, and shut down were normal. There were no unusual conditions or behavior observed from the engine during test...."

The pilot reported that he had 1,500 hours in make and model, all of it in the accident airplane. He had completed initial ground and flight training in the Cessna 208 on October 31, 2001. He last completed recurrent ground and simulator training on September 20, 2002.

## Pilot Information

<b>Certificate:</b>	Airline Transport; Commercial; Private	<b>Age:</b>	32, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land; Single-engine Sea	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--w/ waivers/lim.	<b>Last Medical Exam:</b>	04/09/2003
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	12/09/2002
<b>Flight Time:</b>	3500 hours (Total, all aircraft), 1500 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	Cessna	<b>Registration:</b>	N208AD
<b>Model/Series:</b>	208B	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	208B-0063
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	04/17/2003, Continuous Airworthiness	<b>Certified Max Gross Wt.:</b>	8750 lbs
<b>Time Since Last Inspection:</b>	69.2 Hours	<b>Engines:</b>	1 Turbo Prop
<b>Airframe Total Time:</b>	12059 Hours	<b>Engine Manufacturer:</b>	Pratt & Whitney Canada
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	PT6A-114A
<b>Registered Owner:</b>	DK&L Company LLC	<b>Rated Power:</b>	675 hp
<b>Operator:</b>	DK&L Company LLC	<b>Air Carrier Operating Certificate:</b>	On-demand Air Taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	LKLA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	LPR, 793 ft msl	Observation Time:	1653 EDT
Distance from Accident Site:	4 Nautical Miles	Direction from Accident Site:	80°
Lowest Cloud Condition:	Few / 7500 ft agl	Temperature/Dew Point:	18° C / 12° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	9 knots, 360°	Visibility (RVR):	
Altimeter Setting:	29.86 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Lorain, OH (LPR)	Type of Flight Plan Filed:	IFR
Destination:	Anderson, IN (AID)	Type of Clearance:	IFR
Departure Time:	1703 EDT	Type of Airspace:	Class E

## Airport Information

Airport:	Lorain County Regional Airport (LPR)	Runway Surface Type:	Dirt
Airport Elevation:	793 ft	Runway Surface Condition:	Wet
Runway Used:	NA	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

## Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	41.323611, -82.257222

## Administrative Information

Investigator In Charge (IIC):	Robert L Hancock	Adopted Date:	07/29/2004
Additional Participating Persons:	Jeffrey B Verco; Federal Aviation Administration; Cleveland, OH Tom Moody; Cessna Aircraft Co.; Wichita, KS Tom Berthe; Pratt & Whitney Canada; Burlington, VT		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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