



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Bismarck, ND	<b>Accident Number:</b>	CHI05LA109
<b>Date &amp; Time:</b>	05/03/2005, 2100 CDT	<b>Registration:</b>	N2338V
<b>Aircraft:</b>	Piper PA-31T	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation -		

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## Analysis

The airplane was substantially damaged during an emergency landing when the landing gear did not extend properly. The pilot noted that when he attempted to lower the landing gear on approach to the intended destination nothing happened. He elected to divert to an airport with additional capabilities and assistance available. The pilot stated that he executed the emergency gear extension procedure, however, this procedure was not successful. The left main landing gear appeared to be fully extended, the nose landing gear was in a "dragging" condition, and the right main landing gear was retracted when observed by the tower controller prior to landing. The pilot noted that the red gear unlocked indicator light was illuminated and the green landing gear down/locked indicators were not illuminated. Since no further options were available to extend the gear, the pilot executed an emergency landing. The airplane touched down on the left main wheel which did not collapse initially. The right wing subsequently dropped and contacted the runway. The pilot applied left wheel brakes, however, the airplane departed the right side of the runway pavement and came to rest in the grass. The left main landing gear collapsed and a runway light was damaged in the process. The post-accident inspection revealed that a hydraulic powerpak drain line (Piper part number 46138-00) was ruptured. The drain line was located in the nose section of the airplane, forward of the cabin pressure bulkhead. The rupture was approximately one-half inch long. Hydraulic fluid was observed in the vicinity of the line rupture. The hydraulic reservoir was empty.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Rupture of the hydraulic powerpak drain line which resulted in a loss of hydraulic fluid and the inability to properly lower the landing gear despite the pilot's execution of the emergency extension procedures. A contributing factor was the runway light struck during the emergency landing.

## Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION  
Phase of Operation: APPROACH

### Findings

1. (C) HYDRAULIC SYSTEM,LINE - RUPTURED
2. (C) FLUID,HYDRAULIC - LOSS,PARTIAL

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Occurrence #2: WHEELS UP LANDING  
Phase of Operation: EMERGENCY LANDING

### Findings

3. (C) GEAR EXTENSION - NOT POSSIBLE - PILOT IN COMMAND
4. REMEDIAL ACTION - ATTEMPTED - PILOT IN COMMAND

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Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT  
Phase of Operation: EMERGENCY LANDING

### Findings

5. (F) OBJECT - RUNWAY LIGHT

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Occurrence #4: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER  
Phase of Operation: EMERGENCY LANDING

### Findings

6. TERRAIN CONDITION - GROUND

## Factual Information

On May 3, 2005, about 2100 central daylight time, a Piper PA-31T, N2338V, piloted by a private pilot, was substantially damaged during an emergency landing on runway 21 (6,600 feet by 100 feet, asphalt) at Bismarck Municipal Airport (BIS), Bismarck, North Dakota. The flight was operating under 14 CFR Part 91 on an instrument flight rules (IFR) flight plan. Visual meteorological conditions prevailed. The pilot and passenger reported no injuries. The flight departed Jeffco Airport (BJC), Denver, Colorado, at 1630 with an intended destination of Bowman Municipal Airport (BPP), Bowman, North Dakota.

In his written statement, the pilot noted that when he attempted to lower the landing gear on approach to BPP nothing happened. He elected to divert to BIS due to additional capabilities and assistance available there.

The pilot stated that he executed the emergency gear extension procedure outlined in the pilot's operating handbook. However, this procedure was not successful. He reported that the nose landing gear was in a "dragging/trailing" position when observed through the engine cowling site mirror. He noted that the red gear unlocked indicator light was illuminated and the green landing gear down/locked indicators were not illuminated.

The pilot noted that the BIS tower controller informed him that the left main landing gear appeared to be fully extended, the nose landing gear was in a "dragging" condition, and the right main landing gear was retracted.

Since no further options were available to extend the gear, the pilot prepared for and executed an emergency landing. He noted that the airplane touched down on the left main wheel which did not collapse initially. The right wing subsequently dropped and contacted the runway. The pilot reported that he applied the left wheel brakes, however, the airplane departed the right side of the runway pavement and came to rest in the grass. The left main landing gear collapsed and a runway light was damaged in the process.

The post-accident inspection revealed that a hydraulic powerpak drain line (Piper part number 46138-00) was ruptured. The drain line was located in the nose section of the airplane, forward of the cabin pressure bulkhead. The rupture was approximately one-half inch long. Hydraulic fluid was observed in the vicinity of the line rupture. The hydraulic reservoir was empty.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	57, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<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>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 Valid Medical--no waivers/lim.	<b>Last Medical Exam:</b>	01/01/2005
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	11/01/2004
<b>Flight Time:</b>	6778 hours (Total, all aircraft), 397 hours (Total, this make and model), 6600 hours (Pilot In Command, all aircraft), 77 hours (Last 90 days, all aircraft), 42 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	Piper	<b>Registration:</b>	N2338V
<b>Model/Series:</b>	PA-31T	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	31T-8020049
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	8
<b>Date/Type of Last Inspection:</b>	02/01/2005, AAIP	<b>Certified Max Gross Wt.:</b>	9000 lbs
<b>Time Since Last Inspection:</b>	50 Hours	<b>Engines:</b>	2 Turbo Prop
<b>Airframe Total Time:</b>	7332 Hours	<b>Engine Manufacturer:</b>	Pratt & Whitney Canada
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	PT6A-28
<b>Registered Owner:</b>	REMC Leasing, LLC	<b>Rated Power:</b>	620 hp
<b>Operator:</b>	REMC Leasing, LLC	<b>Air Carrier Operating Certificate:</b>	None

## Meteorological Information and Flight Plan

Observation Facility, Elevation:	BIS, 1661 ft msl	Observation Time:	2052 CDT
Distance from Accident Site:	0 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	9° C / -13° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	Calm, 360°	Visibility (RVR):	
Altimeter Setting:	30 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Denver, CO (BJC)	Type of Flight Plan Filed:	IFR
Destination:	Bismarck, ND (BIS)	Type of Clearance:	IFR
Departure Time:	1630 CDT	Type of Airspace:	Class D

## Airport Information

Airport:	Bismarck Muni (BIS)	Runway Surface Type:	Asphalt
Airport Elevation:	1661 ft	Runway Surface Condition:	Dry
Runway Used:	21	IFR Approach:	Visual
Runway Length/Width:	6600 ft / 100 ft	VFR Approach/Landing:	Full Stop

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None		

## Administrative Information

Investigator In Charge (IIC):	Tim Sorensen	Adopted Date:	09/13/2005
Additional Participating Persons:	Rodney Vigstol; FAA-Fargo FSDO; Fargo, ND		
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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