



# Aviation Investigation Final Report

<b>Location:</b>	Constantine, Michigan	<b>Accident Number:</b>	CEN14CA252
<b>Date &amp; Time:</b>	May 25, 2014, 10:30 Local	<b>Registration:</b>	N365WM
<b>Aircraft:</b>	Aerospatiale AS 365 N2 DAUPHIN	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Settling with power/vortex ring state	<b>Injuries:</b>	3 None
<b>Flight Conducted Under:</b>	Part 91: General aviation - Positioning		

## Analysis

The pilot reported that he positioned the helicopter to land on a westerly heading with the light and variable wind from the west. About 200 feet above the ground he noticed that the helicopter was descending so he increased the collective to arrest the rate of descent. The torque gage was increasing from 50% to 60%. He lowered the collective in attempt to get into clean air and then pulled back on the cyclic to arrest the forward airspeed. The pilot attempted to control the helicopter to the ground, maintain an upright attitude, and avoid obstacles. The helicopter landed hard and bounced once before it came to rest in the parking lot. The pilot reported no preaccident mechanical malfunctions or failures with the helicopter that would have precluded normal operation. A video of the accident sequence was reviewed and matched the pilot's statement. The video did not reveal any anomalies with the helicopter or the engine sounds. A postaccident examination revealed substantial damage to the right fuselage and lower right vertical stabilizer. The video evidence and pilot statement are consistent with the helicopter entering a vortex ring state (settling with power) condition, which allowed the helicopter to descend more rapidly than expected and land hard.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of control while entering a vortex ring state (settling with power) condition, which resulted in a hard landing.

## Findings

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<b>Aircraft</b>	Descent rate - Not attained/maintained
<b>Personnel issues</b>	Aircraft control - Pilot

## Factual Information

### History of Flight

<b>Landing-flare/touchdown</b>	Hard landing
<b>Landing-flare/touchdown</b>	Settling with power/vortex ring state (Defining event)

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	31
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	5-point
<b>Instrument Rating(s):</b>	Airplane; Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	March 3, 2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	April 10, 2014
<b>Flight Time:</b>	2268 hours (Total, all aircraft), 130 hours (Total, this make and model), 1286 hours (Pilot In Command, all aircraft), 56 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Aerospatiale	<b>Registration:</b>	N365WM
<b>Model/Series:</b>	AS 365 N2 DAUPHIN	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	1991	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Transport	<b>Serial Number:</b>	6429
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	5
<b>Date/Type of Last Inspection:</b>	March 6, 2014 AAIP	<b>Certified Max Gross Wt.:</b>	9370 lbs
<b>Time Since Last Inspection:</b>	46 Hrs	<b>Engines:</b>	2 Turbo shaft
<b>Airframe Total Time:</b>	6782 Hrs at time of accident	<b>Engine Manufacturer:</b>	Turbomeca
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	Arriel 1C2
<b>Registered Owner:</b>	WEST MICHIGAN AIR CARE	<b>Rated Power:</b>	738 Horsepower
<b>Operator:</b>	WEST MICHIGAN AIR CARE INC	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	ZYWA

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KHAI,824 ft msl	<b>Distance from Accident Site:</b>	8 Nautical Miles
<b>Observation Time:</b>	10:14 Local	<b>Direction from Accident Site:</b>	24°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	3 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.17 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 13°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	KALAMAZOO, MI (9MI9)	<b>Type of Flight Plan Filed:</b>	VFR
<b>Destination:</b>	Constantine, MI	<b>Type of Clearance:</b>	VFR;Traffic advisory;VFR flight following
<b>Departure Time:</b>	10:15 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	3 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 None	<b>Latitude, Longitude:</b>	41.8325,-85.668334(est)

## Administrative Information

**Investigator In Charge (IIC):** Lindberg, Joshua

**Additional Participating Persons:**

**Original Publish Date:** June 18, 2014

**Last Revision Date:**

**Investigation Class:** [Class](#)

**Note:** This accident report documents the factual circumstances of this accident as described to the NTSB.

**Investigation Docket:** <https://data.nts.gov/Docket?ProjectID=89279>

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