Aviation Investigation Final Report

Location:	ROGERS CITY, Michigan	**Accident Number:**	CHI99LA218
Date & Time:	July 7, 1999, 16:40 Local	**Registration:**	N9964D
Aircraft:	Piper PA-22-150	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot said he flew over the airport, observed the wind sock '...wiggling up and down...,' and decided to land on runway 27 because the winds were from 290 degrees at 10 to 20 miles per hour. He said he knew the winds were coming from the airplane's right side and were gusty. The pilot said a strong gust of wind pushed the airplane toward the left side of the runway. The pilot said he applied full right aileron control and the hand brakes as a crosswind correction. The pilot said the nose wheel collided with a runway edge light that caused the nose wheel fork to separate from the nose landing gear strut. The airplane nosed over shortly after that. The Piper PA-22 series airplanes do not have individual toe brakes. The brake system is activated by a brake handle that causes both brakes to work simultaneously. Reported winds at the time of the accideent were 330 degrees with a steady wind at 17 miles per hour (mph) and gusts to 26 mph. According to the regulations the airplane was certified under, its demonstrated cross wind component is 10 mph. The FAA's cross wind component chart showed the accident airplane's steady wind cross wind component was 16 mph. The airplane's demonstrated cross wind figure is not published in the manufacturer's owner's handbook or airplane flight manual.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT'S INADEQUATE COMPENSATION FOR THE CROSSWIND.

Findings

Occurrence #1: LOSS OF CONTROL - ON GROUND/WATER
Phase of Operation: LANDING - ROLL

Findings
1. WEATHER CONDITION - CROSSWIND
2. CROSSWIND COMPONENT - NOT CORRECTED - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING - ROLL

Findings
3. OBJECT - RUNWAY LIGHT

Occurrence #3: NOSE OVER
Phase of Operation: LANDING - ROLL

Factual Information

On July 7, 1999, at 1640 eastern standard time (est), a Piper PA- 22-150, N9964D, piloted by a private pilot, was substantially damaged when it nosed over after departing the left edge of runway 27 (3,017' X 60' dry asphalt) at the Presque Isle County Airport, Rogers City, Michigan. Visual meteorological conditions prevailed at the time of the accident. The personal 14 CFR Part 91 flight was not operating on a flight plan. The pilot reported no injuries. The flight departed West Branch, Michigan, at 1530 est.

The pilot said he flew over the airport and decided to land on runway 27 after observing the wind sock. During an interview the pilot said the wind was from about 290 degrees and the wind sock was wobbling up and down. He said the wind speed was between 10 and 20 miles per hour (mph). According to the pilot, he flew N9964D at 84 mph while on final approach "...and encountered slight turbulence... ."

The pilot said he "Touched [the airplane] down at about stall speed, 50 [mph], and was corrected for slight cross wind." He said he applied full right yoke into the wind and began applying the hand brake. As the airplane slowed down it was "...suddenly pushed hard to the left..." side of the runway. During an interview with the pilot he said he thought the 90 degree cross wind component for N9964D was 10 mph.

The airplane's nose landing gear tire struck a runway edge lighting assembly as it began rolling onto the sod clearway next to the runway. The nosewheel fork separated from the nose strut during the collision sequence. The pilot said he "...pulled the yoke full to the rear but the aircraft still nosed down and suddenly flipped over on its back."

The Piper PA-22-150 (PA-22) was certified under the 1949 version of Civil Air Regulation (CAR) Part 3. According to CAR 3.145, "There shall be no uncontrollable looping tendency in 90-degree cross winds up to a velocity equal to 0.2Vso at any speed at which the aircraft may be expected to be operated upon the ground... ."

The PA-22's gross weight stall speed with flaps fully extended (Vso) is 49 miles per hour (mph). Its stall speed with flaps fully retracted (Vs1) is 53 mph. According to CAR 3.145, the demonstrated crosswind component for the PA-22 is about 10 mph at Vso and 11 mph at Vs1.

CAR 3.755(a), entitled, "Markings and placards," say that "...markings and placards specified [below] are required for all airplanes." The requirements do not include the demonstrated cross wind capability. CAR 3.777(b), entitled, "Airplane Flight Manual," says that "...airplanes having a maximum certificated weight of 6,000 pounds or less [are not required to have an] Airplane Flight Manual... ." The regulation says that "...information prescribed in this part for inclusion in the Airplane Flight Manual shall be made available to the operator by the

manufacturer in the form of clearly stated placards, markings and listing." The requirements do not include a demonstrated cross wind capability for the airplane. Excerpts of CAR 3 are appended to this report.

The demonstrated crosswind capability for the PA-22 was not found in the PA-22 Owner's Handbook. It was not found on the Type Certificate Data sheets, and it was not found in the Piper PA-22 Aircraft Flight Manual. The only information relating to its 90 degree cross wind capabilities was found in the now superceded FAA's "Flight Training Handbook," AC61-21A. The section, in part, "Federal Aviation Regulations require that all airplanes, type-certificated since 1962, have safe ground handling characteristics with a 90 degree cross wind component equal to 0.2Vso." An excerpt of this manual section is appended to this report.

The FAA published a replacement text for AC61-21A. Its title is, "Airplane Flying Handbook," FAA-H-8083-3. A review of the text's information related to cross wind landings revealed no method that a pilot could calculate an airplane's crosswind capability, or calculate the 90 degree cross wind speeds. Excerpts' from the publication is appended to this report.

Reported winds at the time of the accident airport were 330 degrees at 15 knots (17 mph) with gusts to 23 knots (26 mph). According to a cross wind component chart in AC61-21A, N9964D had a steady 90 degree crosswind component of about 14 knots (16 mph) with a gust 90 degree crosswind component of 20 knots (23 mph). The FAA chart is appended to this report.

The pilot's logbook showed the pilot had obtained a 14 CFR Part 61.56 Flight Review on July 7, 1999. The flight Review logbook entry states, "Instruction for BFR. Power on and off stalls. Navigation practice." The last logged flight before this entry was on August 19, 1998. The entry read, "Cross wind landing." The entry showed one landing.

The Piper PA-22 series airplanes do not have individual toe brakes. The brake system is activated by a handle that is directly below the center of the instrument panel. The handle activates both brakes at the same time.

Pilot Information

Certificate:	Private	**Age:**	63,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	June 22, 1999
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	215 hours (Total, all aircraft), 59 hours (Total, this make and model), 155 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N9964D
Model/Series:	PA-22-150 PA-22-150	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-6755
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 1, 1999 Annual	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:	10 Hrs	**Engines:**	Reciprocating
Airframe Total Time:	2830 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320
Registered Owner:	HERMAN T. ALLEN	**Rated Power:**	150 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Not reported
Observation Facility, Elevation:	PZQ ,670 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	16:44 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots / 23 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	24°C / 13°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	NEW HAVEN , MI (57D)	**Type of Flight Plan Filed:**	None
Destination:	(PZQ)	**Type of Clearance:**	None
Departure Time:	15:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	PRESQUE ISLE COUNTY ARPT. PZQ	**Runway Surface Type:**	Asphalt
Airport Elevation:	670 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	27	**IFR Approach:**	
Runway Length/Width:	3017 ft / 60 ft	**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	45.420143,-83.80989(est)

Administrative Information

Investigator In Charge (IIC):	Gattolin, Frank
Additional Participating Persons:	VITO CARELLO;
Original Publish Date:	December 4, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46758