Aviation Investigation Final Report

Location:	Perham, Minnesota	**Accident Number:**	CHI04LA285
Date & Time:	September 29, 2004, 10:30 Local	**Registration:**	N7977H
Aircraft:	Piper PA-12	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The airplane was substantially damaged when it impacted terrain after takeoff from runway 12. The local instructional flight was originating at the time of the accident. The flight instructor stated that after takeoff the airplane "did not want to climb out of ground effect, upon pulling back further on the elevator something was preventing the full travel of the stick." He reported that about 1,000 feet down the runway the dual student input too much left rudder causing a skidding turn to the left. He noted that the airplane's heading was approximately 30 degrees from the runway heading at that point. He was reportedly unable to obtain more elevator travel and correct the skid prior to impact with the ground. The dual student reported that takeoff rotation was normal and the airplane subsequently "weathervaned" into the right crosswind. He reportedly "induced cross controls" in order to track the runway centerline. In post-accident interviews with Federal Aviation Administration (FAA) inspectors, the dual student reported that he had used right rudder inputs to compensate for the right crosswind condition. FAA inspectors conducted a post-accident inspection of the accident site and the accident aircraft. They noted that ruts in the grass leading to the wreckage site departed the runway pavement about 850 feet from the takeoff end and were angled approximately 45 degrees relative to the centerline. Elevator control continuity was confirmed during the aircraft inspection. No blockage or restriction of the elevator was observed. Winds were from the south at 10 to 15 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The dual student's improper compensation for the crosswind condition and his subsequent

failure to maintain control of the airplane. An additional cause was the flight instructor's inadequate remedial action. A contributing factor was the crosswind condition.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - DUAL STUDENT
2. (C) COMPENSATION FOR WIND CONDITIONS - IMPROPER - DUAL STUDENT
3. (C) REMEDIAL ACTION - INADEQUATE - PILOT IN COMMAND(CFI)
4. (F) WEATHER CONDITION - CROSSWIND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. TERRAIN CONDITION - GROUND

Occurrence #3: NOSE OVER
Phase of Operation: OTHER

Factual Information

On September 29, 2004, about 1030 central daylight time, a Piper PA-12, N7977H, piloted by a flight instructor and dual student, was substantially damaged during an in-flight collision with terrain after takeoff from runway 12 (4,100 feet by 75 feet, asphalt) at Perham Municipal Airport (16D), Perham, Minnesota. The instructional flight was being conducted under 14 CFR Part 91 without a flight plan. Visual meteorological conditions prevailed. The dual student sustained minor injuries and the flight instructor was not injured. The local flight was originating at the time of the accident.

The flight instructor reported in his written statement that the accident flight was to be the dual student's second training session in preparation for a seaplane rating. He noted that the preflight inspection prior to the accident flight was normal.

The flight instructor stated that the airplane lifted off about 62 miles per hour (mph) and "assumed [a] nose up attitude." He noted that rotation was about 7 mph faster than normal. He stated: The airplane "did not want to climb out of ground effect, upon pulling back further on the elevator something was preventing the full travel of the stick." He reported that about 1,000 feet down the runway the dual student applied too much left rudder causing a skidding turn to the left. He noted that the airplane's heading was approximately 30 degrees from the runway heading at this point. He was reportedly unable to obtain more elevator travel and correct the skid prior to impact with the ground.

In post-accident conversations, the flight instructor stated it was his belief that elevator travel was limited at the time of the accident due to something being stuck in the control system. In addition, he noted that the aircraft was nose heavy subsequent to the installation of amphibious floats about four months prior to the accident. He stated that on previous flights he compensated for the increased nose heaviness by maintaining additional airspeed into the landing flare.

The dual student was flying the aircraft. In his written statement he noted that the takeoff was initiated with a right crosswind. He stated that takeoff rotation was normal at 62 mph. He reported that the airplane subsequently "weathervaned" into the wind and he "induced cross controls" in order to track the runway centerline.

The dual student stated that about 50 feet above ground level (agl) the aircraft began to sink and drifted toward the left infield, where it impacted the ground "in a somewhat wings level" attitude. The airplane came to rest inverted.

In post-accident interviews with Federal Aviation Administration (FAA) inspectors, the dual student reported that he had used right rudder inputs to compensate for the right crosswind

condition.

FAA inspectors conducted a post-accident inspection of the accident site and the accident aircraft. They noted that ruts in the grass leading to the wreckage site departed the runway pavement about 850 feet from the takeoff end and were angled approximately 45 degrees relative to the centerline.

Elevator control continuity was confirmed during the aircraft inspection. No blockage or restriction of the elevator was observed.

Maintenance records indicated that the airplane was disassembled and rebuilt in June 2002. At that time, records show that the aircraft elevator control system was modified to incorporate certain PA-18 provisions in accordance with Supplemental Type Certificate (STC) SA564AL. The STC was applicable only to landplanes because a conformity inspection was never performed on a float-equipped airplane.

According to maintenance records, installation of amphibious floats was completed on May 28, 2004, by the manufacturer of the floats. This modification was completed according to STC SA00901CH. The float manufacturer noted that, according to the STC, compatibility with previous modifications was the responsibility of the installer. The logbook entry noted a tachometer time of 129.1 hours at the time of installation.

The tachometer reportedly indicated 188 hours at the accident site.

The flight instructor recalled winds at the time of the accident as being variable from the south at 10 knots, gusting to 15 knots. Winds recorded by the Detroit Lakes Airport (DTL) Automated Weather Observing System, located 18 miles northwest of 16D, at 1035, were from 180 degrees at 10 knots.

Flight instructor Information

Certificate:	Commercial	**Age:**	51,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	November 26, 2003
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	March 20, 2004
Flight Time:	6275 hours (Total, all aircraft), 1537 hours (Total, this make and model), 385 hours (Last 90 days, all aircraft), 90 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Private	**Age:**	50,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	November 20, 2002
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	1260 hours (Total, all aircraft), 1 hours (Total, this make and model), 1220 hours (Pilot In Command, all aircraft), 7 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7977H
Model/Series:	PA-12	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	12-873
Landing Gear Type:	Amphibian	**Seats:**	2
Date/Type of Last Inspection:	August 6, 2004 Annual	**Certified Max Gross Wt.:**	1935 lbs
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2621 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-235
Registered Owner:	On file	**Rated Power:**	160 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DTL,1396 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	10:35 Local	**Direction from Accident Site:**	319°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	15°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Perham, MN (16D)	**Type of Flight Plan Filed:**	None
Destination:	(16D)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Perham Muni 16D	**Runway Surface Type:**	Asphalt
Airport Elevation:	1371 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	12	**IFR Approach:**	None
Runway Length/Width:	4100 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	46.604167,-95.604446

Administrative Information

Investigator In Charge (IIC):	Sorensen, Timothy
Additional Participating Persons:	William H Johnson; FAA-Minneapolis FSDO; Minneapolis, MN
Original Publish Date:	September 13, 2005
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=60289