Aviation Investigation Final Report

Location:	SISTERS, Oregon	**Accident Number:**	SEA96LA199
Date & Time:	August 22, 1996, 12:41 Local	**Registration:**	N2465K
Aircraft:	Piper PA-38-112	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot reported that he made an uneventful full flap landing at the airstrip for the completion of the first leg of the instructional cross-country flight. Also, he stated that he did not feel comfortable with the takeoff because he was aware that the airplane was heavy and the density altitude was high. During takeoff, the student followed along as the instructor (CFI) operated the controls until rotation. At that point, the CFI had full control of the airplane. The student stated that he noticed the airspeed was decreasing below 70 knots during the climb, and called out the airspeed when it dropped to 55 knots. At about this time, the student lightly pushed forward on the control yoke, but the CFI continued to pull back. The airplane entered a stall, and the nose and right wing dropped. The airplane then collided with hilly terrain about a half mile north of the airstrip. Weight and balance calculations showed the airplane was about 100 lbs over the maximum certificated gross weight. The density altitude was calculated at 5,252 feet. During an examination, the flaps were found fully extended and the elevator trim was in a nearly full nose up position. No evidence of a mechanical failure or malfunction was found during an engine examination.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: inadequate preflight planning/preparation by the flight instructor (CFI), and his failure to obtain and/or maintain adequate airspeed, which resulted in an inadvertent stall. Excessive gross weight, high density altitude, and improper use of flaps were related factors.

Findings

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

Findings
1. (C) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND(CFI)
2. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND(CFI)
3. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
4. (F) FLAPS - IMPROPER USE OF - PILOT IN COMMAND(CFI)
5. (C) AIRSPEED - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND(CFI)
6. (C) STALL - INADVERTENT - PILOT IN COMMAND(CFI)

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

Findings
7. TERRAIN CONDITION - MOUNTAINOUS/HILLY

Factual Information

On August 22, 1996, at 1241 Pacific daylight time, a Piper PA-38-112, N2465K, registered to and operated by Jack's Aircraft as a 14 CFR Part 91 instructional flight, collided with the terrain shortly after takeoff from the Sisters Airport, Sisters Oregon. Visual meteorological conditions prevailed at the time and a visual flight rules flight plan was filed. The airplane was substantially damaged and the flight instructor and student pilot were seriously injured.

In a written statement, the flight instructor reported that he does not recall any of the events of the accident due to serious head injuries, however, he does recall that the flight to Sisters was uneventful. After landing, the flight instructor recalls opening the door to the airplane and feeling that the temperature was cool. The instructor felt that the conditions may not produce the density altitude affect and aircraft performance that he wanted for the lesson. The instructor stated that he did not remember anything else after this point.

During a telephone interview and subsequent written statement, the student pilot reported that they had departed from Lebanon earlier in the day for a round trip cross country flight to Sisters. The student reported that the flight from Lebanon was uneventful except that the stall warning horn continuously sounded. After a full flap landing was made at Sisters on runway 2, the student stated that they closed the flight plan and walked around before departing back to Lebanon. The student reported that he does not recall if the flaps were retracted prior to beginning the takeoff roll, and that he was uncomfortable about taking off. The student stated that he was aware that the airplane was heavy, and that he and his flight instructor talked about density altitude effects prior to departing from Lebanon. The student opted to follow on the controls with the flight instructor for the ground roll and rotation. At this point, the student stated that the flight instructor took full control of the airplane. During the climb-out, the student noticed that the airplane was in a nose high attitude and the airspeed was decreasing below 70 knots. The student stated that he called out the airspeed as the airspeed decreased to 55 knots. The student stated that at this time he lightly pushed forward on the control yoke, however, the instructor pulled back and the airspeed decreased to 40 knots and the airplane entered a stall. The student stated that the nose dropped and the airplane did an "immediate 70 degree left bank and immediate 70 degree right bank." The airplane then nosed down and collided with the terrain with the right wing low.

The student pilot reported that there were no mechanical failures or malfunctions with the airplane at the time of the accident.

The wreckage was located approximately one-quarter mile off the end of runway 2, and one-quarter mile north on hilly terrain. The Northwest Airport/Facility Directory for the Sisters Eagle Air airport states "Rising terrain off departure end of Rwy 02. Check density altitude/acft performance prior to takeoff." At the time of the accident, the temperature was approximately

85 degrees. Density altitude was calculated at 5,252 feet.

The weight and balance was calculated for this leg of the flight from data provided from both pilots, and weight and balance calculations from the Tomahawk Pilot's Operating Handbook. The calculations indicate that the gross weight of the airplane was exceeded by approximately 100 pounds.

During the post crash inspection of the airframe, the wing flaps were found in the fully extended position. The elevator trim tab was found in the nearly full nose up position. Both fuel cells were ruptured and only a small amount of fuel was present at the time of the inspection. The engine was examined and no evidence of a mechanical failure or malfunction was found.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	30,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 11, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	1136 hours (Total, all aircraft), 22 hours (Total, this make and model), 899 hours (Pilot In Command, all aircraft), 251 hours (Last 90 days, all aircraft), 89 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N2465K
Model/Series:	PA-38-112 PA-38-112	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	38-79A0650
Landing Gear Type:	Tricycle	**Seats:**	2
Date/Type of Last Inspection:	September 4, 1995 Annual	**Certified Max Gross Wt.:**	1670 lbs
Time Since Last Inspection:	65 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2664 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-235-L2C
Registered Owner:	JACK HEALY	**Rated Power:**	112 Horsepower
Operator:	JACK'S AIRCRAFT	**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:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	29°C / 2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		**Type of Flight Plan Filed:**	VFR
Destination:	LEBANON , OR (S30)	**Type of Clearance:**	None
Departure Time:	12:37 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	SISTERS EAGLE AIR 6K5	**Runway Surface Type:**	Asphalt
Airport Elevation:	3168 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	2	**IFR Approach:**	None
Runway Length/Width:	3550 ft / 50 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	44.409595,-121.920402(est)

Administrative Information

Investigator In Charge (IIC):	Eckrote, Debra
Additional Participating Persons:	TAMRA THOMPSON; HILLSBORO , OR KRIS WETHERELL; FEDERAL WAY , WA MARK PLATT; VAN NUYS , CA
Original Publish Date:	May 23, 1997
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=42452