Aviation Investigation Final Report

Location:	RIMROCK, Washington	**Accident Number:**	SEA96LA108
Date & Time:	June 1, 1996, 15:00 Local	**Registration:**	N2965N
Aircraft:	Cessna 120	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot attempted to take off from a 2,471-foot-long rough turf runway. He reported that the takeoff attempt went normally until the airplane reached a speed of 40 to 45 MPH and that the airplane did not accelerate beyond that speed. Unable to accelerate or to get airborne by the point on the runway at which he was accustomed to doing so, the pilot aborted the takeoff and initiated braking. The tailwheel-equipped airplane nosed over onto its back about 200 feet short of the runway end. After the accident, an FAA inspector computed the airplane to be 32 pounds over maximum gross weight. The U.S. Government and Washington state airport directories indicated that the unattended airport was closed form October 1 through June 1. Density altitude at the airport was calculated to be 3,424 feet.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's delay in aborting the takeoff, and his excessive use of brakes while decelerating the airplane during the aborted takeoff. Factors relating to the accident were: the pilot's loading the airplane above its maximum gross weight, high density altitude, and the rough surface of the runway.

Findings

Occurrence #1: NOSE OVER
Phase of Operation: TAKEOFF - ABORTED

Findings
1. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
2. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
3. (C) ABORTED TAKEOFF - DELAYED - PILOT IN COMMAND
4. (C) BRAKES(NORMAL) - EXCESSIVE - PILOT IN COMMAND
5. (F) AIRPORT FACILITIES,RUNWAY/LANDING AREA CONDITION - ROUGH/UNEVEN
6. AIRPORT/FACILITIES - CLOSED

Factual Information

On June 1, 1996, at approximately 1500 Pacific daylight time, a Cessna 120, N2965N, sustained substantial damage when it nosed over during an aborted takeoff at Tieton State Airport near Rimrock, Washington. The private pilot received a minor injury; his single passenger was uninjured. Visual meteorological conditions prevailed and no flight plan was filed for the 14 CFR 91 local flight.

The pilot was attempting to take off on runway 20, which according to the U.S. Government Airport/Facility Directory (A/FD) is a 2,471 by 140 foot turf runway with a rough surface. The airport elevation is 2,961 feet above sea level. The pilot reported that the takeoff proceeded normally until the airplane reached an indicated airspeed of 40 to 45 MPH, but that "after that the indicated airspeed didn't increase." He reported what happened during the rest of the accident sequence as follows:

After landing and taking off about 30 or 40 times from this strip, and in this airplane, over the last five or six years, I knew where I should be developing lift and able to get the mains off the rough ground and build airspeed in ground effect. This was not happening. Even though the airspeed indicator had not risen over about 40 or 45 I was still attempted [sic] to ease the yoke back and see if the airplane wanted to fly....The plane still did not want to lift into ground effect. Based on previous experience I should have had the plane developing lift before the camp ground [just beyond midfield according to a hand-drawn sketch furnished with the pilot's statement.] When I passed the camp ground, went a little further and still was not developing lift, I pulled all the power...and started applying the [brakes]. I eased back on the yoke lowering the tail to the ground and then continued to hold the yoke in my gut while applying brakes. As we slowed I applied more brakes....The tail rose and I saw the nose go down as we nosed over the front and came to rest upside down...approximately 200 [feet] from the end of the strip.

The pilot reported the weather at the airport as clear, 30 miles visibility, temperature 72 degrees F, and altimeter setting 30.80 inches Hg, with no precipitation or restrictions to visibility. He stated in his narrative that the wind sock at the top of the field "was hanging limp at the time I launched." Based on the reported temperature and altimeter setting and the field elevation, density altitude was computed by the investigator to be 3,424 feet.

The FAA investigator assigned to the accident, an operations air safety inspector from the Flight Standards District Office at Renton, Washington, furnished a post-accident weight and balance computation which indicated (based on weight and balance data in the aircraft records, and fuel and occupant loading reported by the pilot) that the aircraft's gross weight at the time of the accident was 32 pounds over its maximum gross weight (1,482 pounds actual versus 1,450 pounds maximum.)

The pilot made the following recommendations on his accident report as to how the accident could have been prevented: "(1) greater power (2) less weight (3) abort sooner (4) go easier on the brakes as airplane slows."

The A/FD and the Pilot's Guide to Washington Airports (published by the Washington State Department of Transportation Aeronautics Division, which also maintains the unattended airport) both indicate that Tieton State Airport is closed from October 1 through June 1. The A/FD contains an instruction to contact the state Aeronautics Division prior to use of the airport.

Pilot Information

Certificate:	Private	**Age:**	38,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--no waivers/lim.	**Last FAA Medical Exam:**	May 5, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	428 hours (Total, all aircraft), 300 hours (Total, this make and model), 329 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N2965N
Model/Series:	120 120	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	13223
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	June 12, 1995 Annual	**Certified Max Gross Wt.:**	1450 lbs
Time Since Last Inspection:	200 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3276 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	C-85-12F
Registered Owner:	YAKIMA 65N FLYING CLUB	**Rated Power:**	85 Horsepower
Operator:	LYNN L. HARDEN	**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**	30 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(WA49)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	15:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	TIETON STATE WA49	**Runway Surface Type:**	Grass/turf
Airport Elevation:	2961 ft msl	**Runway Surface Condition:**	Rough
Runway Used:	20	**IFR Approach:**	None
Runway Length/Width:	2471 ft / 140 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	46.780792,-120.879928(est)

Administrative Information

Investigator In Charge (IIC):	Nesemeier, Gregg
Additional Participating Persons:	
Original Publish Date:	April 3, 1997
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=42379