

National Transportation Safety Board

Office of Research and Engineering

Washington, D.C. 20594

Performance Study

Specialist Report

Marie Moler

A. ACCIDENT

Location:	Silver City, Idaho
Date:	September 30, 2018
Time:	0837 mountain daylight time (MDT)
Airplane:	Cessna T210M, N732MV
NTSB Number:	WPR18FA276

B. SUMMARY

On September 30, 2018, about 0837 mountain daylight time, a Cessna T210M airplane, N732MV, collided with terrain approximately 4.5 miles northwest of Silver City, Idaho. The private pilot and two passengers were fatally injured. A postimpact fire ensued, and the airplane was destroyed. The airplane was registered to T and C Aircraft Corporation and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the accident site about the time of the accident and no flight plan was filed. The flight originated from Sunrise Skypark Airport (ID40), Marsing, Idaho, about 0810 and was destined for Murphy Airport (1U3), Murphy, Idaho.

C. PERFORMANCE STUDY

The NTSB Weather Study [1] reported that the two closest weather observation stations were 32 miles north-northeast of the accident site and 57 miles southwest, respectively. Temperatures and pressures were comparable and indicated Visual Flight Rules (VFR) conditions with gusty winds near terrain. A High-Resolution Rapid Refresh (HRRR) model for 0900 in the area indicated a surface wind from 245° at 15 kts with the wind remaining southwesterly to southerly up to altitudes of 14,000 ft (relative to mean sea level, or msl). The wind magnitude increased to 25 kts by 5,700 ft msl and the wind magnitude remained between 25 to 35 kts from 5,700 ft msl through 14,000 ft msl. The model indicated a chance of light to moderate low-level wind shear (LLWS) in between the surface and 6,000 ft msl. A chance of light to moderate clear-air turbulence existed in several layers between the surface and 12,500 ft msl. Further information is available in the Weather

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Study. Another airplane reported wind from the southwest at 38 kts, one mile from the wreckage location. Calculations for this Study used winds from 245° at 35 kts.

Radar was provided from 08:31:36 to 08:35 which recorded latitude, longitude, and altitude about every 12 seconds. This data corresponded with the airplane's final climb with increasing mountain elevation (Figure 1 and Figure 2). As the airplane climbed, its speed decreased from about 130 kts of calibrated airspeed to below 70 kts at the end of the data. Calibrated airspeeds are an estimate since the winds in the high-elevation, mountainous area at the time of the accident are not known. However, the slowing trend throughout the climb is apparent.

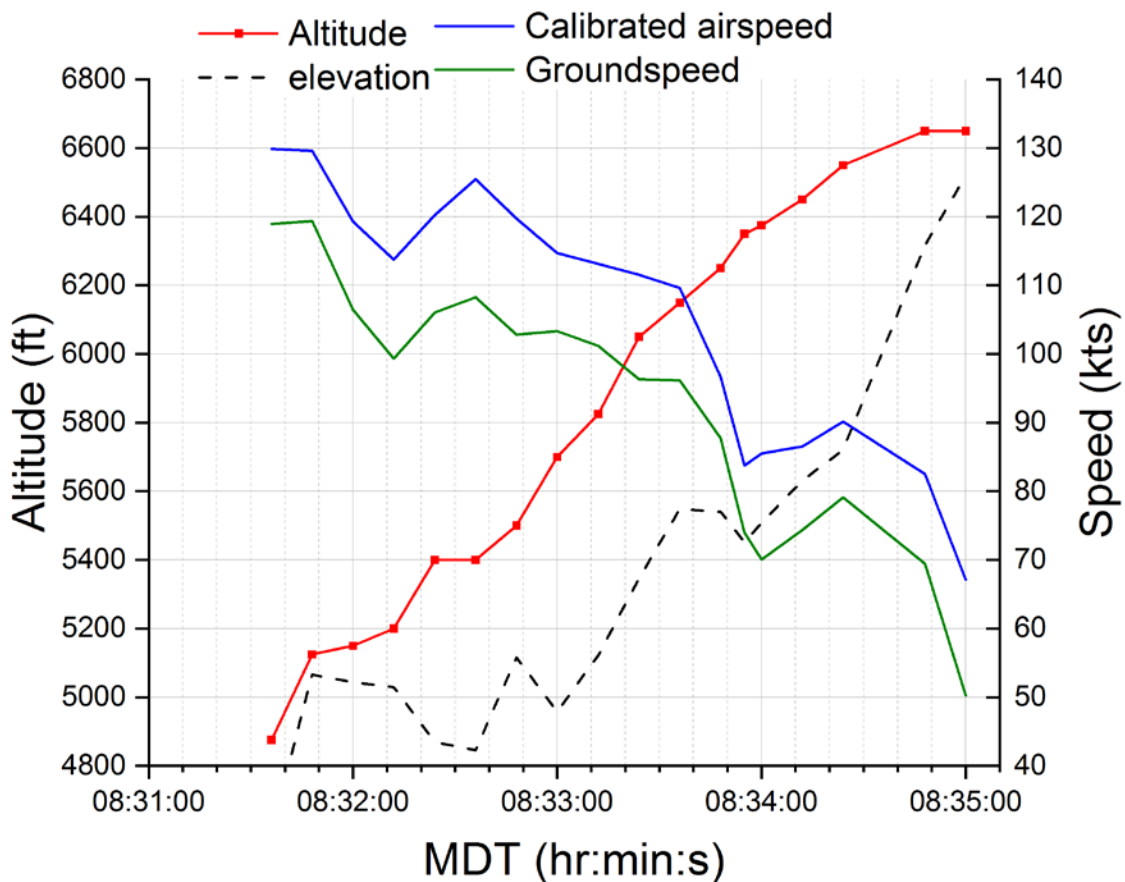


Figure 1. Recorded altitude (msl), terrain elevation, and calculated groundspeed and calibrated airspeed.

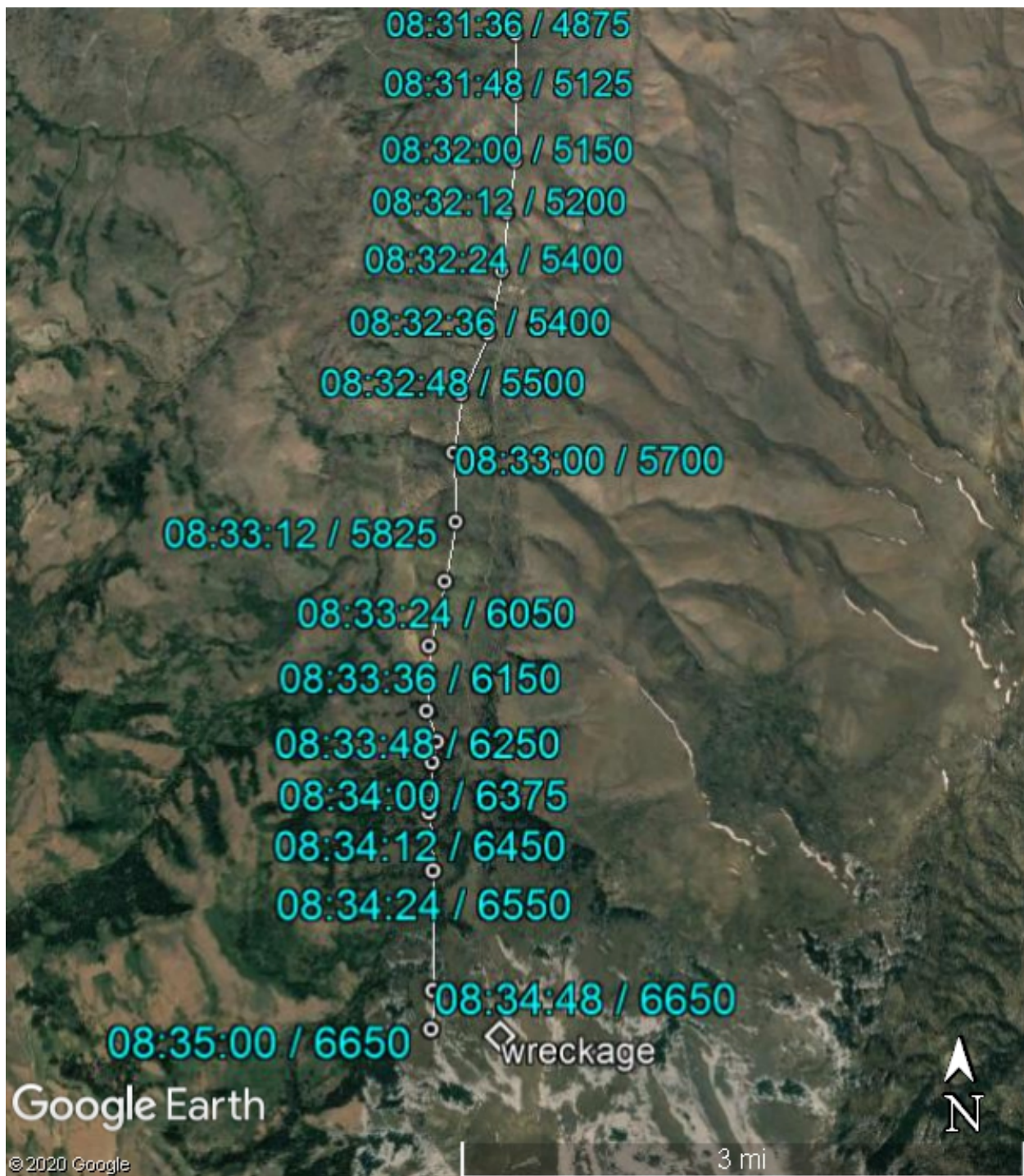


Figure 2. Accident flight in blue with select times and altitudes (msl) annotated in blue.

The airplane's stall speeds, reported by Cessna, are shown in the APPENDIX. The airplane's weight and balance were reported to be heavy and slightly forward. For wings level, flaps up, the stall speed of the airplane would be between 65 and 69 kts of calibrated airspeed, very close to the

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estimated airspeed of the slowing airplane at the end of the radar data. Any bank angle would raise the stall speed further.

Figure 3 shows the terrain near the end of the accident flight. The wreckage location was about 1,900 ft from the final radar location at an elevation of about 6,650 ft, which was level with the final recorded altitude. The wreckage lay along a heading of 345°, a 200° left turn from the final flight heading.

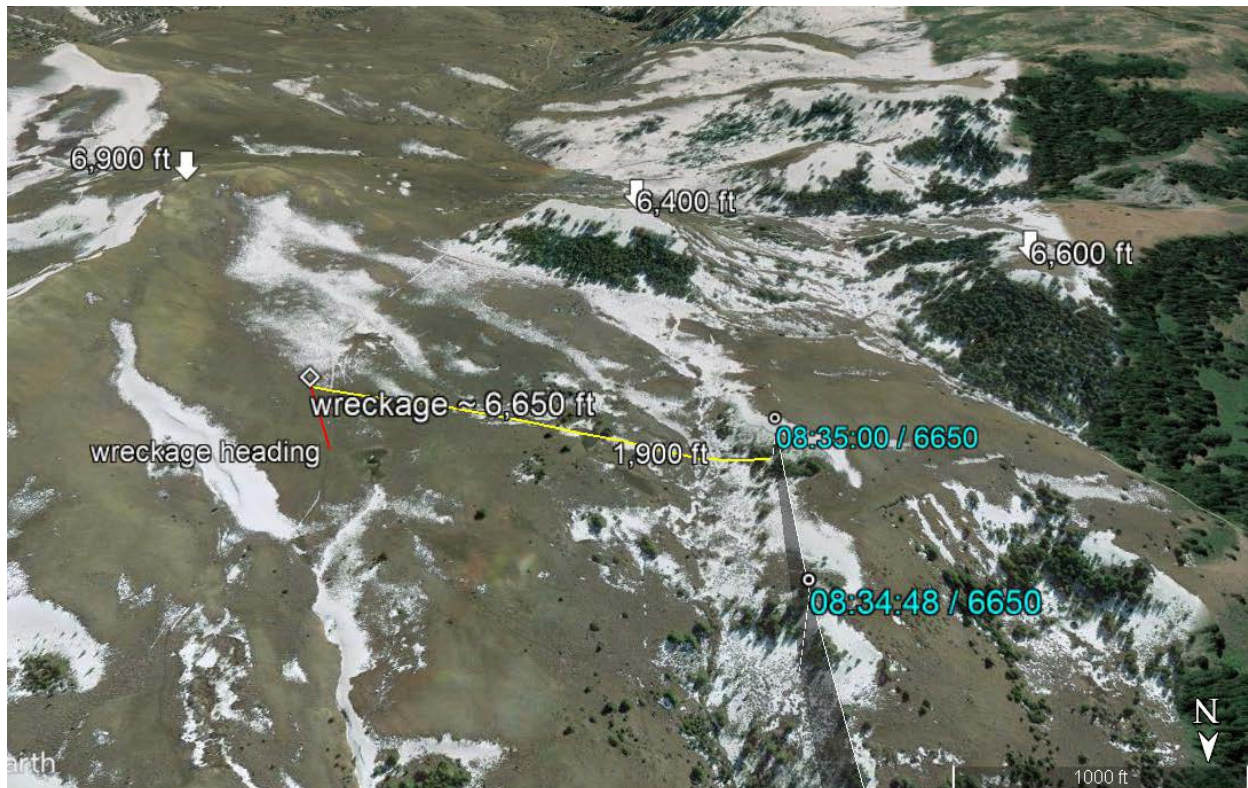


Figure 3. Accident flight in blue with select times and altitudes annotated in blue, wreckage location, and local elevation features.

The equation below determines the necessary bank angle, θ , to complete a level turn of radius R at constant speed V , neglecting winds (g is the gravitational constant, 32.2 ft/s²).

$$\theta = \tan^{-1} \left(\frac{V^2}{gR} \right)$$

Assuming a 1,900 ft diameter turn from the final radar location to the wreckage site at a speed of 70 kts, the equation results in a necessary bank angle of nearly 90°, which would not be reasonable for coordinated flight.

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D. CONCLUSIONS

The airplane was losing speed as it climbed over the rising terrain near the accident site and approaching or at its stall speed. Any further loss of airspeed, bank angle input, or other disturbance would have put the airplane below its stall speed.

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E. REFERENCES

1. Meteorology Weather Study, WPR18FA276, National Transportation Safety Board. 2018.

F. APPENDIX

CESSNA
MODEL T210M

SECTION 5
PERFORMANCE

STALL SPEEDS

CONDITIONS:
Power Off
Gear Up or Down

NOTES:

1. Maximum altitude loss during a stall recovery may be as much as 300 feet.
2. KIAS values are approximate.

MOST REARWARD CENTER OF GRAVITY

WEIGHT LBS	FLAP DEFLECTION	ANGLE OF BANK							
		0°		30°		45°		60°	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
3800	UP	64	65	69	70	76	77	91	92
	10°	62	64	67	69	74	76	88	91
	20°	56	59	60	63	67	70	79	83
	30°	50	56	54	60	59	67	79	79

MOST FORWARD CENTER OF GRAVITY

WEIGHT LBS	FLAP DEFLECTION	ANGLE OF BANK							
		0°		30°		45°		60°	
		KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
3800	UP	68	69	73	74	81	82	96	98
	10°	66	68	71	73	78	81	93	96
	20°	62	65	67	70	74	77	88	92
	30°	55	61	59	66	65	73	78	86