National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

WPR22FA011

WEIGHT & BALANCE AND PERFORMANCE SUMMARY

May 23, 2023

A. ACCIDENT

Location: Reserve, NM
Date: October 15, 2021
Aircraft: Cessna 175, N7584M
NTSB IIC: Maja Smith

B. WEIGHT & BALANCE AND PERFORMANCE SUMMARY

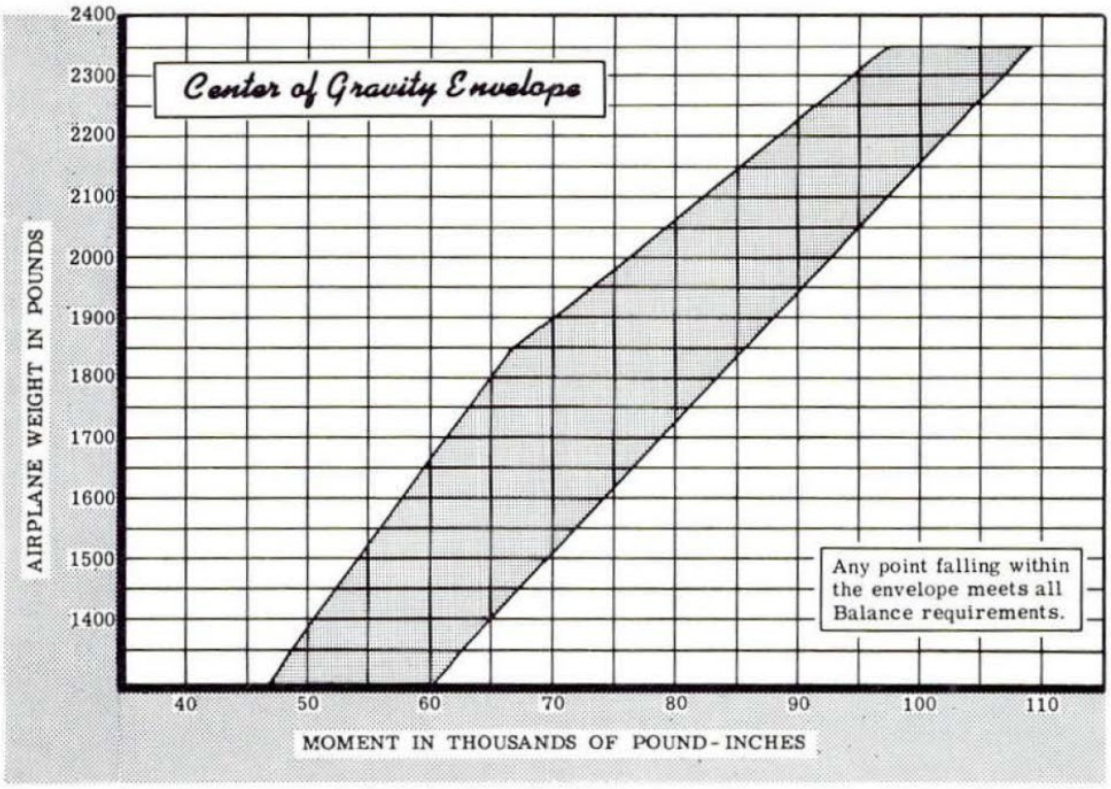
An estimated weight and balance of the airplane prior to flight was calculated using the following:

- Manufacturer's Pilot Operating Handbook (POH) for a 1959 Cessna 175
- Reported weight of the occupants
- Full fuel (42 usable gallons), and approximately 1 hour of flight available (10 gallons)

Utilizing both a full fuel load and a 10 gallon fuel load, reported occupant weights, and the published empty weight of the airplane (via POH), the estimated airplane weight was under the maximum gross weight by 147 pounds (with full fuel) and 245 pounds (with 10 gallons). The estimated center of gravity (CG) locations for both estimated airplane weights, were identified using the Center of Gravity Envelope graph (via POH) and were found to be inside the published CG envelope.

Fuel - Full			
Item	Weight	Arm	Moment
Airplane	1386	73.86	52700
Front (Pilot + P	364	72.5	13350
Rear (Pass)	176	99	12300
Oil	19	120	4000
Fuel - Full	258	99	12300
Totals	2203	42.96	94650

Fuel - -10 Gallons			
Item	Weight	Arm	Moment
Airplane	1386	73.86	52700
Front (Pilot +	364	72.5	13350
Rear (Pass)	176	99	12300
Oil	19	120	4000
Fuel - -10 Ga	60	99	3000
Totals	2005	42.57	85350



C. CLIMB PERFORMANCE

The automated weather observation station located on the Grant County Airport, Silver City, New Mexico reported that, at about the time of the accident, the temperature was 12° C, dewpoint was -5° C, and the barometric pressure was 30.29 inHg.

The calculated density altitude at the accident site around the time of the accident was 8,564 feet and the calculated pressure altitude was 7,151 feet.

Utilizing the available published performance data noted within the airplane's POH, the estimated density altitude and pressure altitude conditions, the airplane loaded at maximum gross weight would have had an expected climb performance of about 449 feet per minute (fpm).

The available performance data within the published POH includes the original power plant, a 175 hp, Continental GO-300 engine. The accident airplane was equipped with a 180 hp, Lycoming O-360 engine.

Submitted by:

Kristyn Blocher
Air Safety Investigator