

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR22FA011

MEDICAL

Specialist's Factual Report

May 15, 2023

A. ACCIDENT

Location: Reserve, New Mexico
Date: October 15, 2021
Time: 09:59 Local
Airplane: Cessna 175; N7584M

B. MEDICAL SPECIALIST

Specialist Michelle Watters, MD, PhD, MPH
National Transportation Safety Board, RE-1
Washington, DC

C. DETAILS OF THE INVESTIGATION

Purpose

This investigation was performed to evaluate the pilot for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

Methods

The Federal Aviation Administration (FAA) medical case review and the pilot's autopsy and FAA Forensic Sciences Laboratory toxicology reports¹ were reviewed. Other relevant medical and regulatory issues were reviewed.

D. FACTUAL INFORMATION–PILOT

1.0 FAA Medical Case Review

According to the FAA medical case review, the 74-year-old female pilot had an FAA third class medical certificate with the limitation that she must wear corrective lenses. Her most recent FAA medical certification examination was on 11/30/20. At that time, she reported 2,636 total flight hours and was 65 inches tall and weighed 166 pounds. She reported taking losartan for high blood pressure, rosuvastatin for high cholesterol, and levothyroxine for hypothyroidism.

2.0 Autopsy

According to the autopsy report from the Office of the Medical Investigator, University of New Mexico School of Medicine, Albuquerque, New Mexico, the pilot's

¹ The FAA Forensic Sciences Laboratory has the capability to test for more than 1,000 substances including toxins, common prescription and over-the-counter medications, and illicit drugs.
<https://jag.cami.jccbi.gov/toxicology/>

cause of death was blunt trauma, and the manner of death was accident. Other than an enlarged heart (395 grams), no significant natural disease was identified by the medical examiner.

3.0 Toxicology

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected the sedating antihistamine diphenhydramine in her femoral blood at 57 nanograms per milliliter (ng/mL), cardiac blood at 87 ng/mL, and in her urine. The high blood pressure medication losartan and the high cholesterol medication rosuvastatin were detected in her cardiac blood and urine; these medications are generally considered non-impairing.²

Diphenhydramine is a sedating antihistamine (commonly marketed as Benadryl) and is available over the counter in many products used to treat colds, allergies, and insomnia. Diphenhydramine carries the warning that use of the medication may impair mental and physical ability to perform potentially hazardous tasks. The therapeutic range is 50 to 100 ng/mL, and it has a half-life of 3 to 14 hours.³ Diphenhydramine undergoes postmortem redistribution and central levels may be two to three times higher than peripheral levels.⁴ FAA provides guidance on wait times before flying after using this medication; post-dose observation time is 60 hours.^{5,6}

E. SUMMARY OF MEDICAL FACTS

The 74-year-old female pilot had an FAA third class medical certificate with the limitation that she must wear corrective glasses. At her most recent FAA medical certification examination on 11/30/20. She reported taking losartan for high blood pressure, rosuvastatin for high cholesterol, and levothyroxine for hypothyroidism. According to the autopsy report, the pilot's cause of death was blunt trauma, and the manner of death was accident. Other than an enlarged heart (395 grams), no significant natural disease was identified. Toxicology testing detected diphenhydramine in her femoral blood at 57 nanograms per milliliter (ng/mL),

² FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs.

Losartan. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=151>.

Rosuvastatin. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=318>.

³ Schulz, M, A Schmoldt, H Andresen-Streichert, and S Iwersen-Bergmann. 2020. Revisited: Therapeutic and toxic blood concentrations of more than 1100 drugs and xenobiotics. Additional File 1. *Critical Care* 24(1):195 doi: 10.1186/s13054-020-02915-5

⁴ Han, E, E Kim, H Hong, S Jeong, J Kim, S In, H Chung, and S Lee. 2012 Evaluation of postmortem redistribution phenomena for commonly encountered drugs. *Forensic Sci Int.* 219(1-3):265-271.

⁵ FAA. 11/13/19. OK-20-0302 [Over the Counter Medications \(faa.gov\)](https://www.faa.gov/over-the-counter-medications)

⁶ FAA. Updated 10/26/22. [AllergyAntihistamineImmunotherapyMedication.pdf \(faa.gov\)](https://www.faa.gov/allergy-antihistamine-immunotherapy-medication)

cardiac blood at 87 ng/mL, and in her urine. The generally non-impairing medications losartan and rosuvastatin were detected in her cardiac blood and urine.

Submitted by:

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