

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



CEN22LA321

MEDICAL

Specialist's Factual Report

December 19, 2022

A. ACCIDENT

Location: Boswell, Oklahoma
Date: 7/17/22
Time: 20:00 Local
Airplane: Just Highlander; N7514N

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 and student 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 and student pilot's autopsy and FAA Forensic Sciences Laboratory toxicology reports¹ were reviewed. Other relevant medical and regulatory issues were reviewed.

D. FACTUAL INFORMATION

1.0 Pilot

1.1 FAA Medical Case Review

According to the FAA medical case review, at the time of the accident, the 28-year-old male pilot held a third class medical certificate without limitation. At his most recent and only FAA medical certification exam (7/2/19), the pilot was 70 inches tall and weighed 184 pounds. No civil flight experience was reported on his form. He reported taking no medications and having no medical conditions. No significant medical concerns were identified.

¹ The FAA Forensic Sciences Laboratory has the capability to test for more than 1,300 substances including toxins, common prescription and over-the-counter medications, and illicit drugs. <https://jag.cami.jccbi.gov/toxicology/>

1.2 Autopsy

According to the autopsy report from the Office of the Chief Medical Examiner, Oklahoma City, Oklahoma, the cause of death of the pilot was multiple blunt force trauma due to plane crash and the manner of death was accident. No significant natural disease was identified.

1.3 Toxicology

Toxicology testing performed by the Office of the Chief Medical Examiner was negative for ethanol and tested-for drugs in the pilot's femoral blood. Toxicology testing performed by the FAA Forensic Sciences Laboratory detected the antihistamine cetirizine in the pilot's heart blood at 12 nanograms per milliliter (ng/mL) and urine at 278 ng/mL. The allergy medication fexofenadine, its metabolite azacyclonol, and the high blood pressure medication losartan were detected in his heart blood and urine; these substances are generally considered non-impairing.²

Cetirizine is a second-generation antihistamine used to relieve hay fever and allergy symptoms. It is available over the counter, commonly marketed as Zyrtec. Although designed to be less sedating, cetirizine does have some sedating properties. The therapeutic range is between 190 and 1,450 ng/mL; the elimination half-life is between 6.5 and 10 hours. FAA provides guidance on wait times before flying after using this medication. Post-dose observation time is 48 hours, and the medication is not for daily use.^{3,4}

2.0 Student Pilot

2.1 FAA Medical Case Review

According to the FAA medical case review, at the time of the accident, the 20-year-old male student pilot did not have an FAA medical certificate.

2.2 Autopsy

According to the autopsy report from the Office of the Chief Medical Examiner, Oklahoma City, Oklahoma, the cause of death of the student pilot was multiple blunt force trauma due to single engine plane crash and the manner of death was accident.

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

Fexofenadine. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=210>

Azacyclonol. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=16>

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

³ FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Cetirizine. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=131>

⁴ FAA. Updated 10/26/22. [AllergyAntihistamineImmunotherapyMedication.pdf \(faa.gov\)](#)

Although only a limited exam was performed, the medical examiner reported that no significant natural disease was identified.

2.3 Toxicology

Toxicology testing performed by the Office of the Chief Medical Examiner was negative for ethanol and tested-for drugs in the student pilot's femoral blood. Toxicology testing performed by the FAA Forensic Sciences Laboratory detected ethanol in the student pilot's heart blood at 0.019 grams per deciliter (gm/dL) and liver tissue at 0.010 grams per hectogram (gm/hg),⁵ but not in his brain tissue. N-propanol was also detected in his heart blood. Putrefaction was noted in tissue specimens.

Ethanol is a social drug commonly consumed by drinking beer, wine, or liquor. It acts as a central nervous system depressant; it impairs judgment, psychomotor functioning, and vigilance. Ethanol is water soluble, and after absorption it quickly and uniformly distributes throughout the body's tissues and fluids. The distribution pattern parallels water content and blood supply of the tissue. A small amount of ethanol can be produced after death by microbial activity, usually in conjunction with other alcohols such as *propanol*.⁶ Extensive trauma increases the spread of bacteria and raises the risk of ethanol production after death.⁷

E. SUMMARY OF MEDICAL FACTS

The 28-year-old male pilot held a third class medical certificate without limitation. His most recent and only FAA medical certification examination was on 7/2/19, where he reported taking no medications and having no medical conditions. According to the autopsy report, the cause of death of the pilot was multiple blunt force trauma and the manner of death was accident. No significant natural disease was identified. Toxicology testing detected cetirizine in the pilot's heart blood at 12 ng/mL and urine at 278 ng/mL. The non-impairing medications fexofenadine, azacyclonol, and losartan were detected in his heart blood and urine.

The 20-year-old male student pilot did not hold an FAA medical certificate. According to the autopsy report, the cause of death of the student pilot was multiple blunt force trauma and the manner of death was accident. Although only a limited exam was performed, no significant natural disease was identified. Toxicology testing detected ethanol in the student pilot's heart blood at 0.019 gm/dL and liver tissue at 0.010 gm/hg; no ethanol was detected in his femoral blood or brain tissue. N-

⁵ Grams per hectogram in tissue samples are directly comparable to grams per deciliter in liquid samples.

⁶ Federal Aviation Administration. Updated 1/16/19. Forensic Toxicology Drug Information. Ethanol.

<http://jag.cami.iccbi.gov/toxicology/DrugDetail.asp?did=60>

⁷ Kugelberg, FC and AW Jones. 2007. Interpreting results of ethanol analysis in postmortem specimens: a review of the literature. *Forensic Science International* 165(1):10-29.

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Submitted by:

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