

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR21FA211

MEDICAL

Specialist's Factual Report

November 30, 2022

A. ACCIDENT

Location: Eden, Utah
Date: 5/29/2021
Time: 10:00 Local
Airplane: Cessna 172S; N1727T

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 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 21-year-old male pilot held a first class medical certificate without limitation. His most recent and only examination was on 8/12/19. He reported 0 flight hours and was 72 inches tall and weighed 249 pounds. 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 Medical Examiner, Utah Department of Health, Taylorsville, Utah, the pilot's cause of death was thermal injuries, and the manner of death was accident. The medical examiner reported the pilot was status-post cardiopulmonary resuscitation. No evidence of significant natural disease was identified by the medical examiner.

1.3 Toxicology

Toxicology testing performed by the Utah Department of Health detected the short acting anesthetic ketamine in the pilot's hospital blood; no morphine, fentanyl, lorazepam, and midazolam were detected. Toxicology testing performed by the FAA Forensic Sciences Laboratory detected ketamine and its metabolite norketamine in his heart blood at 177 nanograms per milliliter (ng/ml) and 156 ng/mL, respectively; they were both detected in his liver tissue. The short-acting anesthetic propofol was detected in the pilot's heart blood. The narcotic pain medications morphine and fentanyl and fentanyl's metabolite norfentanyl were detected in his heart blood at 586 ng/mL, 5.3 ng/mL, and 1.1 ng/mL, respectively; all three were detected in his liver tissue. Lorazepam was detected in the pilot's heart blood at 36 ng/mL and in his liver tissue. Midazolam was detected in his liver tissue. Lorazepam and the short-acting midazolam are administered for sedation, amnesia, or to relieve anxiety before medical procedures.^{2,3}

2.0 Student Pilot

2.1 FAA Medical Case Review

This was an introductory flight for the 26-year-old male prospective student pilot. No FAA medical certification examination had been performed.

2.2 Autopsy

According to the autopsy report from the Office of the Medical Examiner, Utah Department of Health, Taylorsville, Utah, the student pilot's cause of death was thermal and blunt force injuries, and the manner of death was accident. No evidence of significant natural disease was identified by the medical examiner.

² FAA. Updated 1/16/19. [CAMI Toxicology Drug Information for: Ketamine \(jccbi.gov\)](#), [CAMI Toxicology Drug Information for: Norketamine \(jccbi.gov\)](#), [CAMI Toxicology Drug Information for: Propofol \(jccbi.gov\)](#), [CAMI Toxicology Drug Information for: Morphine \(jccbi.gov\)](#), [CAMI Toxicology Drug Information for: Fentanyl \(jccbi.gov\)](#), [CAMI Toxicology Drug Information for: Norfentanyl \(jccbi.gov\)](#)

³ NIH. NLM. [DailyMed - LORAZEPAM injection \(nih.gov\)](#) Updated 9/12/22. [DailyMed - MIDAZOLAM HYDROCHLORIDE injection, solution \(nih.gov\)](#). Updated 12/14/21.

2.3 Toxicology

Toxicology testing performed by the Utah Department of Health and FAA Forensic Sciences Laboratory did not detect any ethanol and tested for drugs in the student pilot's blood.

E. SUMMARY OF MEDICAL FACTS

The 21-year-old male pilot held a first class medical certificate without limitation. His most recent and only examination was on 8/12/19. He reported taking no medications and having no medical conditions. According to the autopsy report, the pilot's cause of death was thermal injuries, and the manner of death was accident. No evidence of significant natural disease was identified. The medical examiner reported the pilot was status-post cardiopulmonary resuscitation. Toxicology testing detected medications commonly administered for resuscitation or severe pain management which included ketamine, norketamine, propofol, morphine, fentanyl, norfentanyl, lorazepam, and midazolam.

The 26-year-old male student pilot never had an FAA medical certification examination. According to the autopsy report, the student pilot's cause of death was thermal and blunt force injuries, and the manner of death was accident. There was no evidence of significant natural disease. Toxicology testing did not detect any ethanol and tested for drugs in the student pilot's blood.

Submitted by:

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