

# National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR21LA030

## MEDICAL

Specialist's Factual Report

September 30, 2022

## **A. ACCIDENT**

Location: Las Vegas, Nevada  
Date: 10/29/2020  
Time: 9:39 Local  
Airplane: Cessna 310; N101G

## **B. MEDICAL SPECIALIST**

Specialist Michelle Watters, MD, PhD, MPH  
National Transportation Safety Board, RE-1  
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## **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 certification file and the pilot's autopsy and FAA Forensic Sciences Laboratory toxicology reports<sup>1</sup> were reviewed. Other relevant medical and regulatory issues were reviewed.

## **D. FACTUAL INFORMATION**

### **1.0 Pilot**

#### **1.1 FAA Medical Certification File**

According to the FAA medical certification file, at the time of the accident, the 73-year-old male pilot held a second class medical certificate with the limitation he must wear corrective lenses and possess glasses for near and intermediate vision. At the time of his most recent exam (12/2/19), the pilot was 73 inches tall and weighed 222 pounds. He reported having 12,339 total flight hours. He reported taking no medications and having no medical conditions. No significant medical concerns were identified.

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<sup>1</sup> 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 Clark County Coroner's Office, Las Vegas, Nevada, the pilot's cause of death was blunt trauma and the manner of death was accident. The medical examiner reported that the pilot had 50% stenosis of his left anterior descending artery and 80% stenosis of his right coronary artery.

## 1.3 Toxicology

Toxicology testing performed by the forensic pathologist detected ethanol in the pilot's liver tissue at 0.200 grams per hectogram (gm/hg).<sup>2</sup> Toxicology testing performed by the FAA Forensic Sciences Laboratory detected ethanol in the pilot's muscle tissue at 0.015 gm/hg; ethanol was not detected in his brain tissue. The antihistamine diphenhydramine was detected in the pilot's urine and liver tissue.

*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. Ethanol can be produced after death by microbial activity. Extensive trauma increases the spread of bacteria and raises the risk of ethanol production after death.<sup>3</sup>

*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, including driving or operating heavy machinery. The therapeutic range is 25 to 100 ng/mL and it has a half-life of 3 to 14 hours.<sup>4</sup> FAA provides guidance on wait times before flying after using this medication; post-dose observation time is 60 hours and the medication is not for daily use.<sup>5,6</sup>

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<sup>2</sup> Grams per hectogram in tissue samples are directly comparable to grams per deciliter in liquid samples.

<sup>3</sup> 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.

<sup>4</sup> FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Diphenhydramine. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=50>.

<sup>5</sup> FAA. 11/13/19. What over-the-counter (OTC) medications can I take and still be safe to fly? OK-20-0302 [https://www.faa.gov/licenses\\_certificates/medical\\_certification/media/OTCMedicationsforPilots.pdf](https://www.faa.gov/licenses_certificates/medical_certification/media/OTCMedicationsforPilots.pdf)

<sup>6</sup> FAA. 7/2/21. [AllergyAntihistamineImmunotherapyMedication.pdf \(faa.gov\)](#)

## **E. SUMMARY OF MEDICAL FACTS**

The 73-year-old male pilot had a second class medical certificate with the limitation he must wear corrective lenses and possess glasses for near and intermediate vision. He reported taking no medications and having no medical conditions. According to the autopsy, the pilot's cause of death was blunt trauma and the manner of death was accident. The pilot was reported to have 50% stenosis of his left anterior descending artery and 80% stenosis of his right coronary artery. Toxicology testing detected ethanol in the pilot's liver tissue at 0.200 gm/hg and muscle tissue at 0.015 gm/hg; no ethanol was detected in his brain tissue. Diphenhydramine was detected in his urine and liver tissue.

Submitted by:

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