

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



CEN21FA360

MEDICAL

Specialist's Factual Report

January 24, 2023

A. ACCIDENT

Location: Victoria, Minnesota
Date: August 7, 2021
Time: 17:40 Local
Airplane: Mooney M20M; N9156Z

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 pilot-rated passenger 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 pilot-rated passenger'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 72-year-old male pilot was on BasicMed (2/18/20). His most recent FAA medical certification examination was on 8/31/15, where he was issued a third class medical certificate with the limitation that he must wear corrective lenses. At that examination, he reported 730 total flight hours and was 73 inches tall and weighed 239 pounds. The pilot reported taking nebivolol to treat high blood pressure and simvastatin to treat high cholesterol.

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 Midwest Medical Examiner's Office, Ramsey, Minnesota, the cause of death of the pilot was multiple blunt force injuries, and the manner of death was accident. While the examination was somewhat limited by extensive injuries, calcific atherosclerosis was identified in his right coronary artery.

1.3 Toxicology

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected diphenhydramine in the pilot's liver and heart tissue. Ethanol was not detected in his brain tissue and was inconclusive in his liver tissue. Blood was not available for testing.

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. Diphenhydramine can affect psychomotor performance and attention. A report by FAA found that pilots who had used a first-generation antihistamine such as diphenhydramine were involved in more fatal accidents while flying in IMC conditions than pilots who had used non-sedating second and third generation antihistamines.² The therapeutic range of diphenhydramine is 25 to 100 nanograms per milliliter and it has a half-life of 3 to 14 hours.³ 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.^{4,5}

2.0 Pilot-rated passenger

2.1 FAA Medical Case Review

According to the FAA medical case review, at the time of the accident, the 42-year-old male pilot-rated passenger held a third class medical certificate without limitation. At his most recent FAA medical certification examination on 7/29/20, he

² Gildea, KM, CR Hileman, P Rogers, GJ Salazar, LN Paskoff. July 2018. Antihistamines and Fatal Aircraft Mishaps in Instrument Meteorological Conditions. Final Report. Civil Aerospace Medical Institute, FAA, Oklahoma City, OK. DOT/FAA/AM-18/9.

³ FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Diphenhydramine. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=50>.

⁴ 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

⁵ FAA. Updated 10/26/22. [AllergyAntihistamineImmunotherapyMedication.pdf \(faa.gov\)](#)

reported 10 flying hours and was 68 inches tall and weighed 207 pounds. He reported taking the non-steroidal anti-inflammatory medication ibuprofen. The pilot-rated passenger had an FAA letter of eligibility on file for a history of depression dated 10/15/10.

2.2 Autopsy

According to the autopsy report from the Midwest Medical Examiner's Office, Ramsey, Minnesota, the cause of death of the pilot-rated passenger was multiple blunt force injuries, and the manner of death was accident. While the examination was somewhat limited by injuries, no significant natural disease was identified by the medical examiner.

2.3 Toxicology

Toxicology testing performed by the FAA Forensic Sciences Laboratory did not detect any tested-for drugs in the pilot-rated passenger's liver tissue. Ethanol was not detected in his brain tissue and was inconclusive in his muscle tissue. Blood was not available for testing.

E. SUMMARY OF MEDICAL FACTS

The 72-year-old male pilot was on BasicMed (2/18/20). His most recent FAA medical certification examination was on 8/31/15, where he was issued a third class medical certificate with the limitation that he must wear corrective lenses and reported treatment for high blood pressure and high cholesterol. According to the autopsy report, the cause of death of the pilot was multiple blunt force injuries, and the manner of death was accident. While the examination was somewhat limited by extensive injuries, calcific atherosclerosis was identified in his right coronary artery. Toxicology testing detected diphenhydramine in the pilot's liver and heart tissue. Ethanol was not detected in his brain tissue and was inconclusive in his liver tissue.

The 42-year-old male pilot-rated passenger held a third class medical certificate without limitation. At his most recent FAA medical certification examination on 7/29/20, he reported taking ibuprofen. According to the autopsy report, the cause of death of the pilot-rated passenger was multiple blunt force injuries, and the manner of death was accident. While the examination was somewhat limited by injuries, no significant natural disease was identified. Toxicology testing did not detect any tested-for drugs in the pilot-rated passenger's liver tissue. Ethanol was not detected in his brain tissue and was inconclusive in his muscle tissue.

Submitted by:
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