

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



Medical Factual Memorandum for Record

March 20, 2025

A. CASE

NTSB ID: ERA23FA181
Location: Venice, Florida
Date: April 5, 2023

B. MEDICAL SPECIALIST

Specialist JE Tuttle MD MHA FACS
National Transportation Safety Board
Washington, DC

C. DETAILS

1.0 Description of Review

For purposes of evaluating the pilot for potentially impairing medical conditions and substances, the above Medical Specialist reviewed the following sources of medical information, along with selected relevant regulation, medical literature, and investigator reports.

- Federal Aviation Administration (FAA) final medical case review
- Autopsy report - pilot
- Toxicology report - pilot

2.0 Summary of Medical Facts

According to the FAA medical case review, the 64-year-old male pilot's last aviation medical examination was June 3, 2016. At that time, he reported having type II diabetes and high cholesterol. He reported taking simvastatin, a prescription medication commonly used to treat high cholesterol; saxagliptin and metformin, prescription oral medications commonly used to help control blood sugar in type II diabetes; and aspirin, an over-the-counter anti-inflammatory medication commonly used to treat pain and fever and decrease cardiovascular risk. At the time of the examination, the pilot's hemoglobin A1c (HbA1c) was 7.8%.¹ The Aviation Medical Examiner (AME) issued him a second-class medical certificate via AME-Assisted Special Issuance (AASI), with the limitation that the medical certificate was not valid for any class after June 30, 2017.² The medical certificate was no longer valid at the time of the accident. The pilot had completed a BasicMed course and had reported completing a BasicMed Comprehensive Medical Examination Checklist (CMEC), most recently in June 2021.³

According to the FAA medical case review, the pilot had received a Letter of Eligibility in 2004 for diet-controlled diabetes mellitus. In 2011, the pilot received an Authorization for Special Issuance for second-class medical certification for diabetes treated with oral medication; he was granted another such Authorization in 2015.

The District Twelve Medical Examiner's Office performed the pilot's autopsy. According to the pilot's autopsy report, the cause of death was blunt impact injuries, and his manner of death was accident. Examination of his coronary arteries revealed 50%-60% stenosis of the four major coronary arteries and/or their distal branches from atherosclerotic plaque. The aorta was found to have multiple areas of complex atherosclerotic plaque without aneurysm. Examination of the brain, lungs and remainder of the heart identified no other significant natural disease.

¹ HbA1c is an indirect measure of a person's average blood sugar over approximately the preceding 3 months. For a person with diabetes, HbA1c of less than 7% generally indicates good diabetes control.

Centers for Disease Control. A1C Test for Diabetes and Prediabetes. <https://www.cdc.gov/diabetes/diabetes-testing/prediabetes-a1c-test.html>. Updated January 2025. Accessed February 26, 2025.

² AASI is a process by which an AME may issue a medical certificate under the provisions of an applicant's FAA Authorization for Special Issuance if the applicant provides specific required medical information from treating physician(s). AASI determinations are subject to review by the FAA. Additional information about the AASI process is available on the [FAA AME Guide website](#).

³ BasicMed provisions allow pilots who meet certain requirements to fly without current medical certification. Among those requirements, a pilot must have completed a BasicMed training course within 24 calendar months and must have had a medical examination with a state-licensed physician using the CMEC within 48 months. Aircraft and operating restrictions also apply. For details, see 14 Code of Federal Regulations (CFR) Part 68, 14 CFR 61.113(3) and https://www.faa.gov/licenses_certificates/airmen_certification/basic_med/.

At the request of the District Twelve Medical Examiner's Office, the University of Florida Forensic Toxicology laboratory performed toxicological testing of the pilot's cavity blood and bile. According to the autopsy report, no tested-for substances were detected.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem cavity blood and vitreous fluid of the pilot.⁴ Ethanol was detected in cavity blood at 0.013 g/dL, and ethanol was not detected in vitreous fluid. Glucose was detected in vitreous fluid at 162 mg/dL and the HbA1c was 12.1% in cavity blood.^{5,6,7}

Ethanol is a type of alcohol. It is the intoxicating alcohol in beer, wine, and liquor, and, if consumed, can impair judgment, psychomotor performance, cognition, and vigilance.⁸ FAA regulation imposes strict limits on flying after consuming ethanol, including prohibiting pilots from flying with a blood ethanol level of 0.04 g/dL or greater.⁹ Alcohol consumption is not the only possible source of ethanol in postmortem specimens. Ethanol can sometimes be produced by microbes in a person's body after death. Postmortem ethanol production is made more likely by extensive traumatic injury and can cause an affected toxicological specimen to test positive for ethanol while another specimen from the same person tests negative.¹⁰

⁴ The FAA Forensic Sciences laboratory has the capability to test for around a thousand substances including toxins, prescription and over-the-counter medications, and illicit drugs.

⁵ . The FAA Forensic Sciences Laboratory considers postmortem glucose levels to be abnormal if 125 mg/dL in vitreous fluid. The choice of this value is discussed in FAA Aerospace Medicine Technical Report DOT/FAA/AM-00/22. Vitreous glucose decreases after death, so negative vitreous glucose is not considered abnormal.

⁶ For many people with diabetes, goal blood glucose levels range between 70 mg/dl and 180 mg/dL.

American Diabetes Association Professional Practice Committee; 6. Glycemic Goals and Hypoglycemia: Standards of Care in Diabetes—2025. *Diabetes Care* 1 January 2025; 48 (Supplement_1): S128–S145. <https://doi.org/10.2337/dc25-S006>.

⁷ A HbA1c of 12.1% indicates an average blood glucose of 298 mg/dL for the 3 months prior to testing. The percentage of glycosylated hemoglobin does not vary significantly from antemortem to postmortem testing.

Lepik D, Tõnisson M, Kuudeberg A, Väli M. Glycated haemoglobin (HbA1c) for postmortem diagnosis of diabetes. *Forensic Sciences Research*. 2018;3(2):170-177. doi: <https://doi.org/10.1080/20961790.2018.1452354>

⁸ Cook CCH. Alcohol and aviation. *Addiction*. 1997;92(5):539-555.

⁹ 14 Code of Federal Regulations §91.17.

¹⁰ Generally, vitreous fluid is better protected from postmortem microbial activity, and therefore from postmortem ethanol production, than are other postmortem specimens.

Kugelberg FC, Jones AW. Interpreting results of ethanol analysis in postmortem specimens: a review of the literature. *Forensic Sci Int*. 2007;165(1):10-29. doi: 10.1016/j.forsciint.2006.05.004.

Submitted by:

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Medical Officer