

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



Medical Factual Memorandum for Record

April 1, 2024

A. CASE

NTSB ID: CEN22FA424
Location: Longmont, Colorado
Date: September 17, 2022

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 Cessna pilot/certified flight instructor (CFI), Cessna student pilot and Sonex 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- Cessna CFI
- Toxicology report - Cessna CFI
- Autopsy report - Cessna student pilot
- Toxicology report - Cessna student pilot
- Autopsy report - Sonex pilot
- Toxicology report - Sonex pilot

2.0 Summary of Medical Facts

2.1 Cessna 172S Pilots

2.2 Cessna CFI

According to the FAA medical case review, the 22-year-old male Cessna CFI's last aviation medical examination was August 15, 2022. At that time, he was 69 inches tall and weighed 169 pounds. He reported no active medical issues and no medication use. He was issued a first-class medical certificate without limitation.

The Office of the Boulder County Coroner performed the autopsy of the Cessna CFI. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries. The manner of death was accident. Due to the extent of the injuries, examination of the of the heart was somewhat limited. The brain was absent. Within these limitations, the autopsy did not identify evidence of significant natural disease.

According to the autopsy report, cotinine was presumptively detected (detected by a screening test without secondary confirmation testing) in cavity blood.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem muscle and liver tissue of the Cessna CFI.¹ No tested-for substances were detected.

Cotinine is a metabolite of nicotine, which is a component of tobacco products and certain smoking cessation aids. Cotinine is not generally considered impairing.

2.3 Cessna Student Pilot

According to the FAA medical case review, the 23-year-old male student pilot's last medical examination was May 5, 2022. At that time, he was 71 inches tall and weighed 186 pounds. The student pilot reported that he had mild asthma and was taking the prescription asthma medication, montelukast. His asthma was documented as being qualified under Conditions Aviation Medical Examiners Can Issue (CACI) criteria.² He was issued a first-class medical certificate without limitation.

¹ 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.

² CACI criteria for asthma are detailed at https://www.faa.gov/ame_guide/media/C-CACIAsthma.pdf.

The Office of the Boulder County Coroner performed the autopsy of the student pilot. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries. The manner of death was accident. Due to the extent of the injuries, examination of the of the heart was limited. The brain was absent. Within these limitations, the autopsy did not identify evidence of significant natural disease.

According to the autopsy report, caffeine was presumptively detected (detected by a screening test without secondary confirmation testing) in cavity blood. Carboxyhemoglobin was measured in cavity blood and was not elevated.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem muscle and liver tissue from the student pilot.¹ Cetirizine was detected in liver tissue at 294 ng/g and muscle tissue at 69 ng/g.

Caffeine is a central nervous system stimulant that is commonly ingested, included in coffee, tea, soft drinks, and chocolate. It is also an ingredient in certain anti-drowsiness and headache medications.³ It is not generally considered impairing.

Cetirizine is a second-generation antihistamine medication that is available over the counter and is commonly used to treat allergy symptoms. Cetirizine typically carries a warning that users may experience drowsiness and should use caution when driving a motor vehicle or operating machinery.⁴ Data on sedation and psychomotor impairment from cetirizine are mixed, with some studies but not others finding some sedating and impairing effects.^{5,6,7} The FAA states that pilots should wait 48 hours after using cetirizine before flying, to allow time for the drug to be cleared from circulation.⁸

³ National Institutes of Health National Library of Medicine. Caffeine tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=6d9b3926-7198-5e00-e053-2a91aa0a9580>. Updated January 11, 2024. Accessed March 27, 2024.

⁴ National Institutes of Health National Library of Medicine. Zyrtec Allergy. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b165db38-b302-4220-8627-77cb07bb078c>. Updated May 19, 2023. Accessed February 27, 2024.

⁵ Adelsberg BR. Sedation and performance issues in the treatment of allergic conditions. *Arch Intern Med*. 1997;157(5):494-500.

⁶ Moskowitz H, Wilkinson CJ. Antihistamines and Driving-Related Behavior: A Review of the Evidence for Impairment. National Highway Traffic Safety Administration. DOT HS 809 714. May 2004. <https://www.nhtsa.gov/sites/nhtsa.gov/files/antihistamines20text.pdf>. Accessed February 27, 2024.

⁷ Du Q, Zhou Y. Placebo-controlled assessment of somnolence effect of cetirizine: a meta-analysis. *Int Forum Allergy Rhinol*. 2016;6(8):871-879. doi:10.1002/alr.21746.

⁸ Federal Aviation Administration. Allergy - antihistamine & immunotherapy medication. Guide for Aviation Medical Examiners. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/AllergyAntihistamineImmunotherapyMedication.pdf. Updated October 26, 2022. Accessed February 27,

3.0 Sonex Aircraft Xenos Pilot

According to the FAA medical case review, the 69-year-old male pilot's last aviation medical examination was July 14, 2017. At that time, he was 68 inches tall and weighed 190 pounds. He reported no active medical issues and no medication use. He was issued a third-class medical certificate limited by a requirement to wear corrective lenses. This certificate expired in 2019. The pilot completed a BasicMed course in January 2022, and reported that he had completed a Comprehensive Medical Examination Checklist (CMEC) in November 2019.⁹

The Office of the Boulder County Coroner performed the autopsy of the pilot. According to the autopsy report, the pilot's cause of death was multiple blunt force injuries. The manner of death was accident. Due to the extent of the injuries, examination of the of the brain, heart, and lungs was limited. Kidney tissue changes consistent with chronic high blood pressure were noted. Within the limitations of the autopsy, no other evidence of significant natural disease was identified.

According to the autopsy report, toxicology testing was performed at the request of the Office of the Coroner and was negative for tested-for substances.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem specimens from the pilot.¹ Tamsulosin was detected in cavity blood and liver tissue.

Tamsulosin is a prescription medication commonly used to treat symptoms of an enlarged prostate. It is not generally considered impairing.¹⁰

Submitted by:

JE Tuttle MD MHA FACS
Medical Officer

2024,

⁹ 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/.