



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

September 28, 2021

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Medical Officer

A. ACCIDENT INFORMATION

Identification: CEN20LA399

Location: Zeeland, Michigan

Date: September 19, 2020

B. GROUP IDENTIFICATION

No group was formed for the medical evaluation in this accident.

C. DETAILS OF INVESTIGATION

1. Purpose

This investigation was performed to evaluate the pilot for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

The Federal Aviation Administration (FAA) medical case review and the pilot's autopsy and toxicology reports were reviewed. At the request of the National Transportation Safety Board (NTSB), an Armed Forces Medical Examiner System (AFMES) forensic pathologist provided a consultation report on the pilot's cause and manner of death; this consultation report was reviewed. Investigator reports and relevant regulation and medical literature were also reviewed.

3. Findings

a. FAA Medical Case Review

According to the FAA medical case review, the 61-year-old male pilot had his last aviation medical examination on August 3, 2015. At that time, he was 68 inches tall, weighed 163 pounds, and reported 292 total civilian flight hours. He reported no active medical conditions or medication use. No significant issues

were identified and he was issued a third-class medical certificate limited by a requirement to wear corrective lenses for near and distant vision. After August 31, 2017, according to FAA regulation, that medical certificate was expired.¹ According to the medical case review, the pilot completed a BasicMed, Comprehensive Medical Examination Checklist (CMEC) on August 24, 2017, and a BasicMed course on August 31, 2017. The pilot's BasicMed course was not current as of the accident date.²

b. Autopsy

Holland Hospital Laboratory Services, Pathology Department, performed the pilot's autopsy at the request of the Ottawa County Medical Examiner. According to the autopsy report, the cause of death was atherosclerotic cardiovascular disease, and the manner of death was natural. The autopsy examination of the heart identified near-complete blockage of the left anterior descending coronary artery, as well as 50% narrowing of the left circumflex coronary artery. Microscopic examination of the heart muscle showed an area of old scarring from reduced blood supply. The autopsy did not identify any other significant natural disease. Multiple traumatic injuries were identified; the autopsy report stated these likely occurred after death.

c. Toxicology

Holland Hospital Laboratory Services performed toxicology testing at the request of the Ottawa County Medical Examiner. That testing identified caffeine in the pilot's blood and urine. Caffeine is a central nervous system stimulant that is commonly ingested, including in coffee, tea, soft drinks, and chocolate, and is an ingredient in certain anti-drowsiness and headache medications.^{3,4,5} Caffeine is generally not considered impairing.

¹ Office of the Federal Register. 14 CFR 61.23(d). Electronic Code of Federal Regulations. [https://www.ecfr.gov/current/title-14/chapter-I/subchapter-D/part-61/subpart-A/section-61.23#p-61.23\(d\)](https://www.ecfr.gov/current/title-14/chapter-I/subchapter-D/part-61/subpart-A/section-61.23#p-61.23(d)). Updated September 16, 2021. Accessed September 20, 2021.

² Effective May 1, 2017, BasicMed allows pilots who meet certain requirements to fly without current medical certification. Among those requirements, a pilot must have had a medical examination with a state-licensed physician using the CMEC within 48 months, and must have completed a BasicMed training course within 24 calendar months. Aircraft and operating restrictions also apply. For details, see [14 Code of Federal Regulations \(CFR\) Part 68](#), [14 CFR 61.113\(i\)](#), [14 CFR 61.23\(c\)\(3\)](#), and https://www.faa.gov/licenses_certificates/airmen_certification/basic_med/.

³ Federal Aviation Administration Civil Aerospace Medical Institute. Caffeine. Forensic Toxicology's WebDrugs. <https://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=24>. Updated January 16, 2019. Accessed September 20, 2021.

⁴ National Institutes of Health National Library of Medicine. Vivarin. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=587358ab-e28c-11e3-8b68-0800200c9a66>. Updated April 14, 2020. Accessed September 20, 2021.

⁵ National Institutes of Health National Library of Medicine. Fioricet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c018be7d-f7b8-45e2-97b8-8e7a71740657>. Updated January 1, 2021. Accessed September 20, 2021.

The FAA Forensic Sciences Laboratory did not identify any tested-for substances in the pilot's blood.⁶

d. AFMES Consultation Report

The AFMES forensic pathologist reviewed evidence including the pilot's autopsy report, toxicology information, microscope slides from the pilot's autopsy, narrative information about the crash provided by the NTSB, and the passenger's autopsy report. The AFMES forensic pathologist's opinion was that the pilot's cause of death was multiple injuries due to an aircraft mishap, that his manner of death was accident, and that the contribution of his atherosclerotic cardiovascular disease (severe coronary artery disease) to death could not be definitively determined. The AFMES forensic pathologist noted that the pilot sustained non-survivable traumatic injuries from the impact.

D. SUMMARY OF MEDICAL FINDINGS

The 61-year-old male pilot had his last aviation medical examination on August 3, 2015. At that time, he reported no active medical conditions or medication use. No significant issues were identified and he was issued a third-class medical certificate limited by a requirement to wear corrective lenses for near and distant vision. That certificate subsequently expired. The pilot completed a BasicMed Comprehensive Medical Examination Checklist (CMEC) and course in August 2017. The pilot's BasicMed course was not current as of the accident date.

Holland Hospital Laboratory Services, Pathology Department, performed the pilot's autopsy at the request of the Ottawa County Medical Examiner. According to the autopsy report, the cause of death was atherosclerotic cardiovascular disease, and the manner of death was natural. The autopsy examination of the heart identified near-complete blockage of the left anterior descending coronary artery, as well as 50% narrowing of the left circumflex coronary artery. Microscopic examination of the heart muscle showed an area of old scarring from reduced blood supply. The autopsy did not identify any other significant natural disease. Multiple traumatic injuries were identified.

One lab identified caffeine in the pilot's blood and urine. Caffeine is generally not considered impairing. Another lab did not identify any tested-for substances in the pilot's blood.

At the request of the National Transportation Safety Board (NTSB), an Armed Forces Medical Examiner System (AFMES) forensic pathologist reviewed evidence related to the pilot's cause and manner of death. The AFMES forensic pathologist's opinion was that the pilot's cause of death was multiple injuries due to an aircraft mishap and that his manner of death was accident.

⁶ The FAA Forensic Sciences Laboratory tests specimens for over 1,300 substances including toxins, prescription and over-the-counter medications, and illicit drugs; information about these substances can be found at the Civil Aerospace Medical Institute WebDrugs website (<https://jag.cami.jccbi.gov/toxicology>).