



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

February 14, 2022

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Medical Officer

A. ACCIDENT: ERA20LA297 – Pembroke Park, Florida

Date/Time: August 28, 2020; 9:02 a.m. (EDT)
Aircraft: Rockwell 500-S, N900DT
Injuries: 2 Fatal
Flight Conducted under Part 91 instructional flight.

B. GROUP IDENTIFICATION

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

C. DETAILS OF INVESTIGATION

Purpose

This investigation was performed to evaluate the right-seated and left-seated pilots 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 autopsies and FAA Forensic Sciences Laboratory toxicology¹ reports for the right-seated and left-seated pilots were reviewed. Other pertinent scientific and regulatory issues were reviewed.

Right-seated pilot

FAA Medical Case Review

According to the FAA medical case review, at the time of the accident, the 53-year-old male right-seated pilot held a second class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (8/3/20), the right-seated pilot was 70 inches tall and weighed 188 pounds. He reported having 26,700 total flight hours and taking no medications or having any medical conditions.

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, as well as illicit drugs. [Methodology \(faa.gov\)](https://www.faa.gov/forensic/methodology)

Autopsy

According to the autopsy performed by the Broward County Medical Examiner, Fort Lauderdale, Florida, the cause of death in the right-seated pilot was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified by the medical examiner.

Toxicology

Confirmatory toxicological testing performed for the medical examiner's office was negative for tested-for drugs in the right-seated pilot's cavity blood. Toxicological testing performed by the FAA's Forensic Sciences Laboratory detected cetirizine in the right-seated pilot's liver and muscle tissue. *Cetirizine* is a second-generation antihistamine used to relieve hay fever and allergy symptoms. It is available over the counter, commonly marketed as Zyrtec. Although designed to be less sedating, cetirizine does have some sedating properties. The elimination half-life is between 6.5 and 10 hours. FAA provides guidance on wait times before flying after using this medication.^{2,3}

Left-seated pilot

FAA Medical Case Review

According to the FAA medical case review, at the time of the accident, the 56-year-old male left-seated pilot held a first class medical certificate without limitations. At the time of the most recent exam (7/21/20), the left-seated pilot was 69 inches tall and weighed 208 pounds. He reported having no civil flight experience⁴ and taking no medications or having any medical conditions.

Autopsy

According to the autopsy performed by the Broward County Medical Examiner, Fort Lauderdale, Florida, the cause of death in the left-seated pilot was multiple blunt force injuries and the manner of death was accident. Putrefaction of some organs was reported. No significant natural disease was identified by the medical examiner.

Toxicology

Toxicology testing performed for the medical examiner's office was positive for ethanol in the left-seated pilot's liver tissue at 0.03 grams per hectogram (gm/hg); no ethanol was detected in his brain tissue.⁵ Confirmatory toxicological testing was negative for tested-for drugs in the left-seated pilot's liver tissue. Toxicological testing performed by the FAA's Forensic Sciences Laboratory identified ethanol in the left-seated pilot's brain tissue at 0.012 gm/hg, muscle tissue at 0.011 gm/hg, and urine at 0.013 grams per deciliter (gm/dL). N-propanol was detected in his urine and his tissues were reported to have exhibited putrefaction. The non-impairing over-the-

² FAA. Updated 1/16/19. Forensic Toxicology Drug Information. Cetirizine.

<https://jag.cami.jcabi.gov/toxicology/DrugDetail.asp?did=131>

³ 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

⁴ While no flight hours were reported by the left-seated pilot on his most recent FAA medical certification form, he reported 4,442 flight hours in 2014. On NTSB Form 6120 (Pilot/Operator Aircraft Accident/Incident Report), his employer reported that the left-seated pilot had 8,029 flight hours at the time of the accident.

⁵ Grams per hectogram in tissue samples are directly comparable to grams per deciliter in liquid samples.

counter heartburn medicine famotidine (commonly marketed as Pepcid) was detected in the left-seated pilot's liver tissue and urine.⁶

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 often in conjunction with other alcohols such as n-propanol. Extensive trauma increases the spread of bacteria and raises the risk of ethanol production after death.⁷

D. SUMMARY OF MEDICAL FINDINGS

Right-seated pilot

The 53-year-old male right-seated pilot held a second class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (8/3/20), he reported taking no medications or having any medical conditions. According to the autopsy, the cause of death for the right-seated pilot was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified by the medical examiner. Toxicological testing detected the antihistamine cetirizine in the right-seated pilot's liver and muscle tissue.

Left-seated pilot

The 56-year-old male left-seated pilot held a first class medical certificate without limitations. At the time of the most recent exam (7/21/20), he reported taking no medications or having any medical conditions. According to the autopsy, the cause of death for the left-seated pilot was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified by the medical examiner.

Toxicology testing was positive for ethanol in the left-seated pilot's liver tissue at 0.03 gm/hg, muscle tissue at 0.011 gm/hg, and urine at 0.013 gm/dL. One laboratory detected ethanol in his brain tissue at 0.012 gm/hg; no ethanol was detected in his brain tissue by another laboratory. N-propanol was detected in his urine and his tissues were reported to have exhibited putrefaction. The non-impairing heartburn medicine famotidine was detected in the left-seated pilot's liver tissue and urine.

⁶ FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Famotidine. <https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=293>

⁷ 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.