

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA22FA126

MEDICAL

Specialist's Factual Report

October 12, 2022

A. ACCIDENT

Location: Lexington, North Carolina
Date: February 16, 2022
Time: 17:07 Local
Airplane: Beech 58, N58LF

B. MEDICAL SPECIALIST

Specialist Michelle Watters, MD, PhD, MPH
National Transportation Safety Board, RE-1
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C. DETAILS OF THE INVESTIGATION

Purpose

This investigation was performed to evaluate the pilot 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 autopsy report, FAA Forensic Sciences Laboratory toxicology report,¹ and personal medical records 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 43-year-old male pilot held a second class medical certificate without limitation. At the time of the most recent exam (12/27/19), the pilot was 71 inches tall and weighed 211 pounds. He reported having 296 civil flight hours. He reported taking no medications and no medical conditions. No significant medical issues or concerns were identified.

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 North Carolina Office of the Chief Medical Examiner (NC OCME), Winston-Salem, North Carolina autopsy report, the cause of the pilot's death was multiple blunt force injuries and the manner of death was accident. Other than moderate atherosclerosis in his left anterior descending coronary artery, no significant natural disease was identified by the medical examiner.

1.3 Toxicology

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected the central nervous stimulant methylphenidate in the pilot's urine at 51 nanograms per milliliter (ng/mL); methylphenidate was also detected but not quantified in his cavity blood. The non-impairing pain and fever reducer medication acetaminophen (commonly marketed as Tylenol) was also detected in the pilot's cavity blood and urine.² Toxicology testing performed by the medical examiner did not detect ethanol in the pilot's pleural cavity blood.

Methylphenidate, commonly marketed as Ritalin or Concerta, is indicated for the treatment of attention deficit hyperactivity disorder (ADHD) and for the sleep disorder narcolepsy. Methylphenidate is a controlled substance and has a high potential for abuse; side effects can include psychotic or manic symptoms. Methylphenidate's therapeutic range is 10 to 60 ng/mL and it has a half-life of 2 to 7 hours.^{3,4}

ADHD, formerly called attention deficit disorder (ADD), is a mental health disorder that features inattention, impulsivity, and hyperactivity. It is also associated with impairments in motor inhibition, reaction time, visual-motor coordination, decision-making, and rule-governed behavior. In the inattention type, the person may be disorganized, easily distracted, and have difficulty sustaining focus. Adolescents and young adults with ADHD are 2 to 4 times more likely to have been the driver in a motor vehicle accident than peers without the illness.^{5,6} Results of a recent systematic review indicate that the use of therapeutic levels of stimulants to treat ADHD did not

² National Institutes of Health (NIH). U.S. National Library of Medicine (NLM). [DailyMed - ACETAMINOPHEN 325MG- acetaminophen tablet \(nih.gov\)](#) Updated 2/3/21.

³ NIH. NLM. [DailyMed - METHYLPHENIDATE capsule, extended release \(nih.gov\)](#) Updated 6/16/21.

⁴ Schulz, M, A Schmoldt, H Andresen-Streichert, and S Iwersen-Bergmann. 2020. Revisited: Therapeutic and toxic blood concentrations of more than 1100 drugs and xenobiotics. Additional File 1. *Critical Care* 24(1):195 doi: 10.1186/s13054-020-02915-5.

⁵ Barkley, RA, KR Murphy and D Kwasnik. 1996. Motor vehicle driving performance and risks in young adults with ADHD. *Pediatrics* 98:1089-1095.

⁶ Aduen PA, MJ Kofler, DJ Cox, DE Sarver, and E Lunsford. 2015. Motor vehicle driving in high incidence psychiatric disability: comparison of drivers with ADHD, depression, and no known psychopathology. *Journal of Psychiatric Research* 64:59-66.

worsen driving performance and generally improved driving performance in ADHD patients.⁷ For FAA medical certification, the airman needs to have a neuropsychological evaluation after stopping medications three months before testing. FAA does not allow the use of methylphenidate for medical certification. After reviewing the medical records, the FAA may deny or grant an unrestricted or special issuance medical certificate.⁸

1.4 Pre-event Medical Records

Records were obtained from the pilot's primary care doctor for the three years prior to the accident. The pilot's last annual physical examination was on 6/28/21; there was no abnormal findings and his medical conditions were described as stable. The pilot had the diagnoses of hypogonadism (failure of the testes to function properly) for which he received regular injections of testosterone, and attention deficit disorder without hyperactivity. The ADHD was first reported on 3/25/20; the pilot had reported inattention and a childhood diagnosis of ADHD. The pilot was prescribed 20 milligrams methylphenidate to be taken in the morning; the dosage was later reduced to 10 milligrams on 12/17/21 at the pilot's request to reduce fatigue when the medication wore off. The pilot reported better ability "to stay on track and get things done" while using the medication.

E. SUMMARY OF MEDICAL FACTS

The 43-year-old male pilot held a second class medical certificate without limitations. At the time of the most recent exam (12/27/19), he reported taking no medications and no medical conditions. According to the autopsy report, the cause of the pilot's death was multiple blunt force injuries and the manner of death was accident. Other than moderate atherosclerosis in his left anterior descending coronary artery, no significant natural disease was identified by the medical examiner.

Toxicology testing detected the stimulant methylphenidate in the pilot's urine at 51 ng/mL and in his cavity blood. Pre-event medical records revealed that the pilot was being treated for attention deficit disorder without hyperactivity since 3/25/20. He was currently taking 10 milligrams of methylphenidate each morning and reported better ability to stay on track. His most recent examination was on 6/28/21 and there were no abnormal findings.

Submitted by:

⁷ Gobbo MA and MR Louzã. 2014. Influence of stimulant and non-stimulant drug treatment on driving performance in patients with attention deficit hyperactivity disorder: a systematic review. *European Neuropsychopharmacology* 24(9):1425-43.

⁸ FAA [Guide for Aviation Medical Examiners \(faa.gov\)](https://www.faa.gov/decision-considerations-disease-protocols-attention-deficit-hyperactivity-disorder) Decision considerations Disease Protocols—Attention Deficit/Hyperactivity Disorder. Last modified 3/28/22.

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