

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



Medical Factual Memorandum for Record

December 2, 2025

A. CASE

NTSB ID: ERA24FA058
Location: Pulaski, Tennessee
Date: December 7, 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 44-year-old female pilot's last aviation medical examination was January 20, 2023. At that time, she reported using the medication fexofenadine (an over-the-counter, non-sedating antihistamine commonly used to treat symptoms of seasonal allergies). She otherwise reported no active medical conditions. The pilot was issued a third-class medical certificate with the limitation that she must wear corrective lenses to meet vision standards at all distances.

The Middle Tennessee Regional Forensic Center performed the pilot's autopsy for the Giles County Medical Examiner. According to the pilot's autopsy report, her cause of death was multiple injuries, and her manner of death was accident. Due to the extent of her injuries, the autopsy was limited for evaluation of natural disease. The pilot's brain and heart were unavailable for examination, and examination of her lungs was limited.

At the request of the Middle Tennessee Regional Forensic Center, NMS Labs performed toxicological testing of postmortem liver tissue from the pilot. Alprazolam was detected in at 530 ng/g. Alpha-hydroxyalprazolam was detected at 56 ng/g.¹

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem specimens from the pilot.² Alprazolam was detected in liver tissue at 222 ng/g and was detected in muscle tissue at 81 ng/g. Alpha-hydroxyalprazolam was detected in liver tissue 57 ng/g and was detected in muscle tissue at 4 ng/g. Trazodone was detected in liver tissue at 286 ng/g and was detected in muscle tissue at 56 ng/g. Buspirone was detected in liver tissue at 55.5 ng/g and was detected in muscle tissue at 3.8 ng/g. Ondansetron, propranolol, fexofenadine, and azacyclonol were detected in both liver and muscle tissue. Oxymetazoline was detected in liver tissue and was not detected in muscle tissue.

Alprazolam (sometimes marketed as Xanax) is a potent prescription benzodiazepine medication used to treat generalized anxiety disorders and panic disorders. It typically carries a warning that use may cause central nervous system depression including increased sedation, reduced concentration, and reduced inhibitions. Alprazolam generally carries a warning that users should avoid engaging in hazardous occupations or activities requiring complete mental alertness such as operating machinery or driving a motor vehicle. Alpha-hydroxyalprazolam is an active

¹ Information about the tissue testing procedure, including tested-for substances, is available on the NMS Labs website at Test Code [8051T](#).

² 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.

metabolite of alprazolam.³ According to the FAA, alprazolam is a Do Not Issue/Do Not Fly medication.⁴

Trazodone is a prescription antidepressant medication that may be used to treat major depression, insomnia, generalized anxiety disorders, panic disorders and post-traumatic stress disorders. It typically carries a warning that use may slow thinking and impair motor skills, and that users should not drive, operate heavy machinery, or do other dangerous activities until they know how the drug affects them.⁵ The FAA considers trazodone a Do Not Issue/Do Not Fly medication.⁴

Buspirone is a prescription medication commonly used to treat anxiety. Use of buspirone may cause dizziness. Buspirone generally carries a warning that users should be cautious operating a motor vehicle or heavy machinery until they know how the drug will affect them.⁶ According to the FAA, buspirone is a Do Not Fly medication.⁴

Ondansetron is a prescription medication commonly used to treat and prevent nausea and vomiting.⁷ Multiple studies have found no significant effect of ondansetron on cognitive and psychomotor performance.^{8,9} According to the FAA Medical case review for this case, ondansetron is disqualifying for FAA medical certification due to side effects including serious heart rhythm irregularities, drowsiness, and dizziness.

³National Institutes of Health National Library of Medicine. Alprazolam tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d2fd0b3e-9b78-44d0-82a6-96d6c6238750>. Updated June 7, 2025. Accessed November 20, 2025.

⁴ Federal Aviation Administration. Aviation Medical Examiner's Guide. Do not issue/do not fly. https://www.faa.gov/ame_guide/media/DNI_DNF_tables.pdf. Updated June 28, 2023. Accessed November 20, 2025.

⁵ National Institutes of Health. National Library of Medicine. Trazadone hydrochloride. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1510cf89-a2ec-4ed5-80cb-bae84f9ec0a7>. Updated August 5, 2025. Accessed November 20, 2025.

⁶ National Institutes of Health, National Library of Medicine. Buspirone hydrochloride tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3da22999-f5fb-49fd-acde-c3006598e985>. Updated October 7, 2025. Accessed November 20, 2025.

⁷ National Institutes of Health. National Library of Medicine. Ondansetron tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=834bc56a-657d-4733-9a60-47040cb5c7bf>. Updated September 11, 2019. Accessed November 20, 2025.

⁸ Hall ST, Cueppens PR. A study to evaluate the effect of ondansetron on psychomotor performance after repeated oral dosing in healthy subjects. *Psychopharmacology (Berl)*. 1991;104(1):86-90. doi:10.1007/BF02244559.

⁹ Benline TA, French J. Anti-emetic drug effects on cognitive and psychomotor performance: granisetron vs. ondansetron. *Aviat Space Environ Med*. 1997;68(6):504-511.

Propranolol is a prescription medication commonly used to treat high blood pressure, migraine headaches, and chest pain caused by reduced blood flow to the heart (angina).¹⁰ Propranolol also may be used to treat various forms of anxiety including situational anxiety and post-traumatic stress disorders. Propranolol has minimal effects on cognition and treats the physical symptoms of anxiety such as high blood pressure, increased heart rate, and respiratory rate.¹¹ Propranolol is not generally considered impairing. Use of propranolol in pilots for anxiety, essential tremors, or migraines requires case-by-case FAA evaluation of the underlying condition and response to treatment.^{12,13}

Fexofenadine is an over-the-counter non-sedating antihistamine medication commonly used to treat symptoms of seasonal allergies. Azacyclonal is a metabolite of fexofenadine.¹⁴ Oxymetazoline is an over-the-counter nasal spray commonly used to treat nasal congestion from allergies.¹⁵ Fexofenadine and oxymetazoline are not generally considered impairing.

Submitted by:

JE Tuttle MD MHA FACS
Medical Officer

¹⁰ National Institutes of Health. National Library of Medicine. Propranolol hydrochloride. ER DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a4edba76-29b8-41fb-bf0b-d4633abba003>. Updated September 26, 2025. Accessed November 20, 2025.

¹¹ Szeleszczuk Ł, Frączkowski D. Propranolol versus Other Selected Drugs in the Treatment of Various Types of Anxiety or Stress, with Particular Reference to Stage Fright and Post-Traumatic Stress Disorder. *Int J Mol Sci*. 2022;23(17):10099. Published 2022 Sep 3. doi:10.3390/ijms231710099.

¹² Federal Aviation Administration. Aviation Medical Examiner's Guide. https://www.faa.gov/ame_guide/media/ame_guide.pdf. Page 314 "Essential Tremor Worksheet", and page 599 "Migraine Prophylaxis Worksheet". Updated September 24, 2025. Accessed November 20, 2025.

¹³ Federal Aviation Administration. Aviation Medical Examiner's Guide. https://www.faa.gov/ame_guide/app_process/exam_tech/item47/amd. Decision Considerations -Aerospace Medical Dispositions. Item 47: Psychiatric Conditions. Updated June 26, 2024. Accessed December 4, 2025.

¹⁴ National Institutes of Health National Library of Medicine Fexofenadine tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=9738127d-7308-454c-94c8-3229d507370f>. Updated June 7, 2010. Accessed November 20, 2025.

¹⁵ National Institutes of Health National Library of Medicine. Oxymetazoline hydrochloride spray. DailyMed. [sphttps://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=89c165ba-3ad5-49b5-a5bb-423dc8e15bad_ray](https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=89c165ba-3ad5-49b5-a5bb-423dc8e15bad_ray). Updated December 6, 2024. Accessed November 20, 2025.