

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ANC22FA053

MEDICAL

Specialist's Factual Report

October 12, 2022

A. ACCIDENT

Location: Valdez, Alaska
Date: 7/11/2022
Time: 17:30 Local
Airplane: Champion 7EC; N4340C

B. MEDICAL SPECIALIST

Specialist Michelle Watters, MD, PhD, MPH
National Transportation Safety Board, RE-1
Washington, DC

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 certification file and the pilot's autopsy and FAA Forensic Sciences Laboratory toxicology reports¹ were reviewed. Other relevant medical and regulatory issues were reviewed.

D. FACTUAL INFORMATION

1.0 Pilot

1.1 FAA Medical Certification File

According to the FAA medical certification file, at the time of the accident, the 38-year-old male student pilot had a third class medical certificate with the limitation that he must wear corrective lenses. At the time of his most recent and only exam (8/18/21), the pilot was 64 inches tall and weighed 130 pounds. He reported having 20 total flight hours. He reported taking no medications and having no medical conditions. No significant medical 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 autopsy report from the Alaska State Medical Examiner Office, Anchorage, Alaska, the pilot's cause of death was multiple blunt force injuries and the manner of death was accident. While the exam was limited by the injuries, no evidence of significant natural disease was identified.

1.3 Toxicology

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected the inactive metabolite of delta-9-tetrahydrocannabinol (THC), carboxy-delta-9-tetrahydrocannabinol (THC-COOH), in the pilot's cavity blood at 2.5 nanograms per milliliter (ng/mL) and in urine at 20.4 ng/mL. Meclizine, an antihistamine used for motion sickness and vertigo, was also detected in his cavity blood at 10.4 ng/mL. The therapeutic range for meclizine is 10 to 100 ng/mL and it has a half-life of about 5 to 6 hours. Its side effects may include drowsiness.^{2,3}

Cannabis

The marijuana plant (*Cannabis species*) contains chemicals called cannabinoids; delta-9-tetrahydrocannabinol (THC) is the primary psychoactive cannabinoid compound. THC's mood-altering effects include euphoria and relaxation. In addition, marijuana causes alterations in motor behavior, time and space perception, and cognition. Significant performance impairments are usually observed for at least 1-2 hours following marijuana use, and residual effects have been reported up to 24 hours.⁴

THC is rapidly metabolized but the rate of metabolism is not linear and depends on the means of ingestion (smoking, oil, and edibles), potency of the product, frequency of use, and user characteristics. The primary metabolite of THC, 11-hydroxy-delta-9-THC, is equally psychoactive, but is rapidly metabolized to the non-psychoactive metabolite THC-COOH. THC is fat soluble, so is stored in fatty tissues and can be released back into the blood long after consumption. So, while the psychoactive effects may last a few hours, THC can be detected in the body for days or weeks. Very little THC is excreted in urine. Instead, THC-COOH can be found in urine days to weeks after the last use of the drug. Thus, both blood and urine test

² National Institutes of Health (NIH). U.S. National Library of Medicine (NLM).. [DailyMed - MECLIZINE HYDROCHLORIDE- meclizine tablet MECLIZINE HYDROCHLORIDE tablet \(nih.gov\)](#)
Updated 12/6/21.

³ FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Meclizine.
<https://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=155>

⁴ National Highway Traffic Safety Administration. April 2014 (revised). Drugs and Human Performance Fact Sheets. Cannabis/Marijuana.
<https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/809725-drugshumanperformfs.pdf>

results do not necessarily reflect recent use and cannot be used to prove that the user was experiencing effects of the drug at the time of testing.⁵

E. SUMMARY OF MEDICAL FACTS

The 38-year-old male pilot held a third class medical certificate with the limitation that he must wear corrective lenses. He reported taking no medications and having no medical conditions. According to the autopsy, the pilot's cause of death was multiple blunt force injuries and the manner of death was accident. No significant natural disease was identified. THC-COOH was detected in the pilot's cavity blood at 2.5 ng/mL and in urine at 20.4 ng/mL. Meclizine was detected in cavity blood at 10.4 ng/mL.

Submitted by:

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Medical Officer, RE-1

⁵ Compton, R. July 2017. Marijuana-Impaired Driving - A Report to Congress. (DOT HS 812 440). Washington, DC: National Highway Traffic Safety Administration.
<https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812440-marijuana-impaired-driving-report-to-congress.pdf>