



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

February 26, 2018

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Chief Medical Officer

A. ACCIDENT: CEN17FA016; Oregonia, OH

On October 16, 2016, at 1740 eastern daylight time, an amateur-built experimental Makela Urho J RV-4, N2626C, collided with an aerial cable and the terrain in Oregonia, Ohio. The private pilot and the pilot-rated passenger were both fatally injured. The airplane was destroyed by impact forces and a post-impact fire. The aircraft was registered to the pilot and was operated under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, which was not operated on a flight plan. The local flight originated from a private airstrip in Wilmington, Ohio, about 1708.

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 any medical conditions, the use of any medications/illicit drugs, and the presence of any toxins.

2. Methods

The FAA medical case review, autopsy reports, toxicology findings, and the investigator's reports were reviewed.

FAA Medical Case Review

According to the FAA medical case review, the 36 year old male pilot had reported 660 total hours of flight experience as of his last aviation medical exam, dated 7/25/2013. At that time, he was 68 inches tall, weighed 180 pounds, and had reported no chronic medical conditions and no use of

medications to the FAA. He was issued a third class medical certificate limited by a requirement to wear corrective lenses.

Autopsy

According to the autopsy performed at the request of the Montgomery County OH Coroner's Office, the cause of death was multiple blunt force injuries. No significant natural disease was identified.

Toxicology

Toxicology testing performed by the Montgomery County Coroner's Office Toxicology Laboratory identified 11% carbon monoxide, ethanol at 0.038 ± 0.004 gm%, tetrahydrocannabinol (THC, the primary psychoactive substance in marijuana) at 15 ± 4 ng/ml and its inactive metabolite, 11-carboxytetrahydrocannabinol (THC-COOH) at 10 ± 3 ng/ml in cavity blood.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified ethanol at 0.059 gm% in urine, 0.037 gm% in muscle, 0.036 gm% in brain, and 0.033gm% in blood (unknown source). In addition, 10.1 ng/ml of tetrahydrocannabinol (THC) and 13.1 ng/ml of 11-carboxytetrahydrocannabinol (THC-COOH) was identified in blood. THC-COOH was also identified in urine.

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses it can cause coma and death. The effects of ethanol on aviators are generally well understood; it significantly impairs pilots' performance, even at very low levels.¹ Federal Aviation Regulations, Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood.² Because ingested alcohol is distributed throughout the body, levels from different post mortem tissues are usually similar. Ethanol may also be produced in body tissues by microbial activity after death.³

Marijuana is a psychoactive drug with therapeutic levels as low as 0.001 ug/ml.⁴ According to NHTSA's Drugs and Human Performance Fact Sheets, "It is difficult to establish a relationship between a person's marijuana blood or plasma concentration and performance impairing effects. Concentrations of parent drug and metabolite are very dependent

¹ Cook, C.C., Alcohol and aviation. *Addiction* (Abingdon, England), 1997. 92(5): 539-555.

² US Government Printing Office .eCFR- Code of Federal Regulations. 91.17. <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=14:2.0.1.3.10.1.4.9>. Accessed 6/16/2016.

³ Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. <http://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=60> Accessed 12/02/2016.

⁴ Federal Aviation Administration. CAMI toxicology Drug Information for: Marijuana <http://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=154> Accessed 1/28/2013

on pattern of use as well as dose. THC concentrations typically peak during the act of smoking, while peak 11-OH THC concentrations occur approximately 9-23 minutes after the start of smoking. Concentrations of both analytes decline rapidly and are often < 0.005 ug/mL at 3 hours.

D. SUMMARY OF MEDICAL FINDINGS

The 36 year old male pilot had reported no chronic medical conditions and no chronic medication use to the FAA.

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