



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

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Medical Officer

A. ACCIDENT: ANC15FA066 Kasilof, Alaska

On August 22, 2015, about 8:20 p.m. Alaska daylight time, a wheel-equipped Cessna 180 airplane, N3043E, sustained substantial damage after impacting tree-covered terrain while maneuvering low level about 5 miles southwest of Kasilof, Alaska. The private pilot and sole passenger sustained fatal injuries. The airplane was registered to, and operated by, the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan had been filed.

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

Methods

The pilot's FAA medical certification record, FAA medical case review, toxicology results, autopsy report, and the investigator's report were reviewed.

FAA Medical Certification Record

According to the FAA medical certification record, the 69-year-old pilot received his first medical certificate in 1985. His most recent medical exam was dated May 23, 2013. At that time, he was 69 inches tall, weighed 233 pounds, and reported he had accrued 1,678 total flight hours. He reported a history of gout and kidney stones treated with allopurinol and hydrochlorothiazide. Allopurinol lowers uric acid and reduces the risk of gout and certain

types of kidney stones. Hydrochlorothiazide increase urine output and is used to treat high blood pressure and prevent certain types of kidney stones.¹ The FAA Aviation Medical Examiner issued the pilot a Third Class Medical Certificate with the limitation: must have available glasses for near vision. The certificate was not valid for operations requiring a medical certificate after May 31, 2015.^a

Autopsy

According to the State of Alaska Medical Examiner's autopsy, the cause of death was blunt impacts of head, trunk, and extremities and the manner of death was accident. The heart was described as globoid with 4-chamber dilation. It weighed 560 grams (average for a 234-pound man is 403 grams, range 305-531 grams). The right ventricular wall measured 0.3 to 0.4 cm and the left was 1.3 cm. The average right ventricular free wall thickness is 0.38 cm (standard deviation 0.09 cm) and left is 1.23 cm (standard deviation 0.16 cm).² No focal lesions were identified in the heart muscle. The coronary arteries showed severe calcific atherosclerotic changes with 80% narrowing of the proximal left anterior descending and the right coronary arteries. Additionally, the left circumflex coronary arteries showed 40% narrowing.

Toxicology

The FAA Bioaeronautical Laboratory identified tetrahydrocannabinol (THC) in blood and its inactive metabolite tetrahydrocannabinol carboxylic acid (THC-COOH) in blood (0.0031 ug/ml) and liver (0.856 ug/g).^b

THC is the psychoactive compound found in marijuana. Therapeutic levels may be as low as 0.001 ug/ml (1.0 ng/ml).³ THC has mood altering effects including euphoria, relaxed inhibitions, sense of well-being, disorientation, image distortion, and psychosis.⁴

D. SUMMARY OF FINDINGS

The pilot had history of gout and kidney stones treated with allopurinol and hydrochlorothiazide. His medical certificate had expired 3 months before the accident.

The autopsy described dilated cardiomyopathy and coronary artery disease with 40% narrowing of the left circumflex coronary artery and 80% narrowing of the proximal left anterior descending and the right coronary arteries. However, no focal lesions were identified in the heart muscle.

Toxicology identified a very small amount of the active compound in marijuana, tetrahydrocannabinol (THC), in blood and its inactive metabolite THC-COOH in blood (0.0031 ug/ml) and liver (0.0856 ug/g).

^a According to the FAA's Guide for Aviation Medical Examiners, a third-class medical certificate is valid for the remainder of the month of issue; plus 24 calendar months for operations requiring a third class medical certificate, if the airman is age 40 or over on or before the date of the examination.

^b According to an email from the toxicologist from the FAA Bioaeronautical Laboratory dated November 3, 2015 the level of THC in the blood was below the calibration curve of 1 ng/ml.

References

- ¹ National Institute of Health, National Institute of Diabetes and Digestive and Kidney Disease, “Kidney Stones in Adults”. <http://www.niddk.nih.gov/health-information/health-topics/urologic-disease/kidney-stones-in-adults/Pages/facts.aspx> Accessed 03/18/2016
- ² Kitzman DW, Scholz DG, Hagen PT, Ilstrup DM, Edwards WD. Age-related changes in normal human hearts during the first 10 decades of life. Part II (Maturity): A quantitative anatomic study of 765 specimens from subjects 20 to 99 years old. Mayo Clinic Proc., 1988. 63(2): p. 137-46.
- ³ Federal Aviation Administration. CAMI toxicology Drug Information for: Tetrahydrocannabinol <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=194> Accessed 12/29/2015
- ⁴ National Highway Traffic Safety Administration. Drugs and Human Performance Fact Sheets. Marijuana. <http://www.nhtsa.gov/people/injury/research/job185drugs/cannabis.htm> Accessed 12/29/2015