



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

April 4, 2019

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Chief Medical Officer

A. ACCIDENT: CEN18FA297; Alexandria, MN

On July 28, 2018, about 1923 central daylight time, an Aeronca 7AC single-engine airplane, N85506, impacted powerlines and terrain while maneuvering at a low altitude near Alexandria, Minnesota. The pilot was fatally injured, and the airplane was substantially damaged. The airplane was registered to a private individual and operated by the private pilot under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Day visual meteorological conditions prevailed at the time of the accident. The local area flight departed Chandler Field Airport (AXN), Alexandria, Minnesota, about 1918.

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

2. Methods

The FAA medical case review, autopsy report, toxicology findings, and the investigator's reports were reviewed. Relevant scientific literature and regulatory information was reviewed as appropriate.

FAA Medical Case Review

According to the FAA medical case review, the 64 year old male pilot had reported 500 total hours of flight experience as of his last aviation medical exam, dated 10/28/2016. At that time, he was 73 inches tall and weighed 216 pounds. He had reported having had a DUI in 1993, occasional hay

fever for which he used a prescription nasal spray (fluticasone), and use of aspirin and lisinopril to lower his risk of a heart attack to the FAA. Lisinopril is a prescription blood pressure medication.¹ None of these drugs are considered impairing. No significant physical abnormalities were identified during the last examination and he was issued a second class medical certificate limited by a requirement that he have available glasses for near vision.

Autopsy

According to the autopsy performed by Midwest Medical Examiner's Office, the cause of death was blunt force injuries to the head and the manner of death was accident.

The pilot's heart was enlarged and thickened; it weighed 480 grams and left ventricle was 1.5 cm, the interventricular septum was 2.0 cm, and the right ventricle was 0.4 cm in thickness. Average cardiac weight for a 216 pound man is 387 grams with a range of 293 to 511 grams and average thickness are 1.3, 1.3, and 0.3 cm respectively.² In addition, coronary artery disease was identified with diffuse calcification of the right coronary artery left anterior descending coronary artery, and left circumflex coronary artery, as well as about 40% stenosis in the proximal and middle portions of the right coronary artery, and up to 60% stenosis in the proximal portion of the left anterior descending coronary artery. The remainder of the cardiac exam was unremarkable.

Toxicology

Toxicology testing performed by the NMS Labs identified 0.035 gm/dl of ethanol in iliac blood.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory identified ethanol at 0.029 gm/dl in heart blood and 0.053 gm/dl in vitreous. In addition, naproxen was found 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.³ Federal Aviation Regulations, Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of

¹ National Institutes of Health. US National Library of Medicine. DailyMed. Lisinopril. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=27ccb2f4-abf8-4825-9b05-0bb367b4ac07> Accessed 4/3/2019.

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): 137-46.

³ Cook, C.C., Alcohol and aviation. Addiction (Abingdon, England), 1997. 92(5): 539-555.

a civil aircraft while having 0.040 gm/dl or more ethanol in the blood.⁴ 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.⁵ However, intact vitreous is relatively protected from the effects of microbial activity. Because of the characteristics of the wall of globe, ethanol may be slow to collect in vitreous and levels may drop more slowly than blood levels after drinking has stopped.

Naproxen is a mild anti-inflammatory drug available over the counter, often marketed with the name Aleve. It is not considered impairing.⁶

D. SUMMARY OF MEDICAL FINDINGS

The 64 year old male pilot had reported a 1993 DUI, hay fever, and use of aspirin and lisinopril to prevent a heart attack to the FAA.

According to the autopsy performed by Midwest Medical Examiner's Office, the cause of death was blunt force injuries to the head and the manner of death was accident.

The pilot's heart was enlarged and thickened; it weighed 480 grams and left ventricle was 1.5 cm, the interventricular septum was 2.0 cm, and the right ventricle was 0.4 cm in thickness. In addition, coronary artery disease was identified with diffuse calcification of the right coronary artery left anterior descending coronary artery, and left circumflex coronary artery, as well as about 40% stenosis in the proximal and middle portions of the right coronary artery, and up to 60% stenosis in the proximal portion of the left anterior descending coronary artery. The remainder of the cardiac exam was unremarkable.

Toxicology testing in two labs identified 0.035 gm/dl of ethanol in iliac blood, 0.029 gm/dl in heart blood, and 0.053 gm/dl in vitreous. In addition, naproxen was found in urine.

⁴ 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.

⁵ Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=60> Accessed 12/02/2016.

⁶ National Institutes of Health. US National Library of Medicine. DailyMed. Naproxen. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=eddc0d8b-154a-43a3-8ade-6c746f21ba81> Accessed 4/3/2019.