



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

MEDICAL FACTUAL REPORT

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Medical Officer

A. ACCIDENT: CEN17FA046 - Mt Vernon, Indiana

On December 2, 2016, about 1237 central standard time, a Gordon Pegazair P 100, N129LZ (deregistered N-number), impacted a field near Mt Vernon, Indiana. The airplane was destroyed by impact forces. The commercial pilot was fatally injured. The airplane was owned and operated by the pilot under 14 *Code of Federal Regulations* Part 91 as a personal flight that was not operating on a flight plan. Visual meteorological conditions prevailed at the time of the accident. The flight originated from Carmi Municipal Airport (CUL), Carmi, Illinois about 1150.

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

Methods

The FAA medical case review, FAA medical certification file, FAA Bioaeronautical Sciences Research Laboratory toxicology report, and autopsy report were reviewed.

FAA medical case review and medical certification files

According to the FAA documents, the 64-year-old male pilot reported 2,500 total flight hours at his most recent FAA medical certification exam, dated March 21, 2012. At that time, he was 71 inches tall and weighed 191 pounds. According to a note from the aviation medical examiner, the pilot reported he had seen a neurologist in September 2011 because a friend said he "wasn't remembering right" and reported the evaluation, including an EEG and MRI, did not identify any abnormal findings. The FAA files did not contain the neurology evaluation records. The pilot reported he used no medications, and the physical examination did not identify any significant medical issues. The pilot was issued a third class medical certificate with a limitation requiring him to wear of corrective lenses. At the time of the accident, he was

operating an airplane that required a valid FAA medical certificate, but his certification was no longer valid after March 31, 2014.

Personal Medical Records

Neurology records

According to records from the pilot's treating neurologist from September 2011 until August 2015, the pilot was evaluated for episodes of altered consciousness that first occurred in April 2011. The evaluation including an EEG, MRI, and lab work which did not identify any specific disease. His initial working diagnosis in September 2011 was partial complex seizures, possibly post-traumatic in origin. Following a re-evaluation in November 2011, the neurologist wrote "patient with episodes of transient neurological dysfunction with a working diagnosis of post-traumatic partial complex seizure versus psychological/stress contribution to episodes and encephalopathy...I have again emphasized need for no driving or other activities which puts life/limb at risk if he were to lose consciousness. I am anticipating a 6 month restriction but as he is doing much better in all aspects of his care, I will consider lifting restriction at follow up." The pilot cancelled a follow up visit and was not seen in the clinic again until June 2014.

In June 2014 the neurologist reevaluated the pilot and determined he had an early neurodegenerative process with significant visual spatial and language dysfunction. The physician wrote, the pilot's neurocognitive changes were more consistent with losing his train of thought than partial complex seizures. The pilot's most recent documented neurology evaluation was dated August 31, 2015. On that visit, the physician documented he was no longer working as a commercial pilot and had had worsening memory problems including loss of train of thoughts and word finding difficulty. The neurologist's assessment was amnesia, memory loss, and mild cognitive impairment. The physician prescribed donepezil "in an attempt to keep the patient functioning at the same level for as long as possible."¹

Primary care records

Personal medical records from the pilot's primary care provider from February 2014 through August 2016 were reviewed. The pilot had progressive neurocognitive deficits including altered mental status and memory loss. According to notes from the pilot's most recent medical evaluation dated August 31, 2016, the pilot was evaluated for an annual examination and had a history of transient ischemic attacks, alteration of consciousness, and encephalopathy.² No significant abnormalities were identified on that exam. However, a detailed mental status and neurological examination were not documented. The pilot's last significant neurologic event was in April 2016, when the pilot experienced transient episodes of altered mental status, loss of balance, slurred speech and weakness. At that time, he was no longer taking donepezil. The pilot was referred to neurology, but records of this visit were not located.

Autopsy

The Autopsy was performed at the Posey County Coroner's Office by a forensic pathologist who determined the cause of death was multiple blunt force injuries. The autopsy did not identify any significant natural disease.

¹ Donepezil is marketed as Aricept its sole indication is the treatment of dementia of the Alzheimer's type.

² Encephalopathy is a broad spectrum of brain disorders ranging from subtle memory loss to severe dementia, seizures, and coma.

Toxicology

FAA Bioaeronautical Sciences Research Laboratory toxicology testing detected ethanol at 0.070 gm/dl in vitreous and 0.038 gm/dl in blood.³ No carbon monoxide or tested-for-drugs were detected.⁴ 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.⁵ 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.⁶ Furthermore, adverse clinical symptoms have been noted with blood ethanol levels as low as 0.020 g/dl. 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. However, vitreous humor from an intact eye and urine do not suffer from such production to any significant extent in relation to blood.⁷

D. SUMMARY OF MEDICAL FINDINGS

The 64-year-old male pilot was issued a third class medical certificate on March 21, 2012. He reported a history of a neurology evaluation in September 2011 for memory issues, but no records of the evaluation were contained in the FAA records. On that examination, he denied any other medical concerns or the use of medications. At the time of the accident, he was operating an airplane that required a valid FAA medical certificate, but his certification was no longer valid after March 31, 2014.

Personal medical records documented a history of a progressive neurodegenerative disease beginning in 2011. His symptoms included significant visual spatial and language dysfunction and he was diagnosed with alterations of consciousness and encephalopathy. In August 2015 he was prescribed the Alzheimer's treatment medication donepezil. His most recent record of altered consciousness was April 2016 when the pilot reported transient episodes of altered mental status, loss of balance, slurred speech and weakness. At that time, he was no longer using any medications. Following that event, no records of a detailed neurologic evaluation were located.

The Posey County Coroner's Office forensic pathologist determined the cause of death was multiple blunt force injuries. No natural disease as identified.

FAA Bioaeronautical Sciences Research Laboratory toxicology testing detected the ethanol (the potentially impairing chemical found in beer and wine) at 0.070 gm/dl in vitreous and 0.038 g/dl in blood. No carbon monoxide or tested-for-drugs were detected.

³ The autopsy report documented the eyes were intact.

⁴ The FAA Bioaeronautical Sciences Research laboratory tests for more than 1300 substances including toxins, common prescription and over-the-counter medications as well as illicit drugs. See: <http://jag.cami.jccbi.gov/toxicology/default.asp?offset=0> for a complete listing.

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

⁶ 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 6/21/2018.

⁷ Federal Aviation Administration. Forensic Toxicology Drug Information. Ethanol. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=60> Accessed 6/21/2018