



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

December 4, 2019

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Chief Medical Officer

A. ACCIDENT: CEN18FA232; Enid, OK

On June 19, 2018, about 0715 central daylight time, an Air Tractor 502B agricultural airplane, N2063B, registered to Deterding Aerial of Pond Creek, Oklahoma, was destroyed when it collided with a communications tower while maneuvering during aerial application operations near Enid, Oklahoma. The commercial pilot sustained fatal injuries. The aerial application flight was being conducted under the provisions of Federal Code of Regulations Part 137. Visual meteorological conditions prevailed and a flight plan was not filed. The flight originated at 0645 from the Pond Creek private airfield (2K1).

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, FAA blue ribbon medical file, autopsy report, toxicology findings, and the investigator's reports were reviewed. Relevant regulation and medical literature were reviewed as appropriate.

FAA Medical Case Review and Blue Ribbon Medical File

According to the FAA medical case review, the 52 year old male pilot reported 12,500 total flight hours as of his last medical exam, dated 1/10/2018. At that time, he was 71 inches tall and weighed 165 pounds. The pilot had been found to have alcohol dependence in 2006 following

multiple arrests for DUI. He spent time in jail and then 15 months in inpatient rehabilitation. He received a general medical denial as a result of his alcohol dependence in 2009. Since then, he persistently reapplied for a medical certificate and had been evaluated through the FAA Human Intervention Motivation Study (HIMS) which required periodic evaluations for being sober and neurocognitive testing. That testing initially identified some deficits thought to be related to his history of alcohol abuse. There was some impression of improvement over time; in 2014, the pilot received a special issuance second class medical certificate from the FAA and this was renewed until he developed a cancer of his tonsil in 2016. At that time, he underwent chemotherapy and radiation with resolution of the tumor. In 7/2017 he was issued a special issuance second class medical certificate for both his cancer and alcohol dependence. According to the information in the FAA file, follow up with the oncologist had not identified any recurrence as of April 2018. The pilot reported no use of medications at the time of his last exam. No significant abnormalities were identified on the physical exam and he was issued a second class medical certificate limited by a requirement he wear corrective lenses and marked, "Not valid for any class after 1/31/2019."

Autopsy

According to the autopsy performed by the Board of Medicolegal Investigations, Office of The Chief Medical Examiner, the cause of death was acute multiple blunt force trauma and the manner of death was accident. A vascular port was identified in the area of the right clavicle, but no significant natural disease was described, including no evidence of recurrent cancer.

Toxicology

Toxicology testing performed by the Board of Medicolegal Investigations, Office of The Chief Medical Examiner was negative for alcohol and tested-for drugs of abuse.

Toxicology testing performed by the FAA's Forensic Science Laboratory identified 0.149 ug/ml of doxylamine as well as citalopram and its metabolite desmethylocitalopram in the pilot's blood (source not labeled). All three were also found in urine.¹

Medication Descriptions

Doxylamine is a sedating antihistamine available over the counter in a number of cold and allergy products. It is also the active ingredient in some over the counter sleep aids. It carries a warning that it "may impair mental and/or physical ability required for the performance of potentially

¹ The FAA Forensic Sciences Laboratory has the capability to test 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>

hazardous tasks (e.g., driving, operating heavy machinery).” The blood levels that are usually expected to have effects are between 0.05 and 0.15 ug/ml.² In addition, doxylamine undergoes postmortem redistribution; as a result, levels in post mortem central blood may be significantly elevated above antemortem levels.³

Citalopram is a prescription antidepressant often marketed with the name Celexa.⁴ Records regarding the reason for the pilot’s use of this drug were not identified during this investigation. However, the most common reason for its use is to treat symptoms of major depression. Major depression itself is associated with significant cognitive degradation, particularly in executive functioning.⁵ Since the pilot’s health care prescriber could not be identified, the extent of his depressive symptoms around the time of the accident is unknown.

D. SUMMARY OF MEDICAL FINDINGS

The 52 year old pilot had a history of alcohol dependence but had been sober since 2006. He had some neurocognitive deficits that appeared to improve somewhat over continued abstinence. The FAA approved a special issuance second class medical certificate for him in 2014, dependent on his continued sobriety and participation in the Human Intervention Motivation Study (HIMS). In 2016, the pilot underwent successful chemotherapy and radiation treatment for tonsillar cancer. His special issuance second class medical certificate was reissued in July 2017 and January 2018.

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² Federal Aviation Administration. CAMI Toxicology Drug Information. Doxylamine. <http://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=53> Accessed 12/3/2019.

³ Eunyoung Han, Eunmi Kim, Hyojeong Hong, Sujin Jeong, Ji Hyun Kim, Sangwhan In, Heesun Chung, Sangki Lee. Evaluation of postmortem redistribution phenomena for commonly encountered drugs. Forensic Science International. 2014;219:265-271.

⁴ National Institutes of Health. US National Library of Medicine. Citalopram. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=2632b547-2e13-447f-ac85-c774e437d6a8> Accessed 12/3/2019.

⁵ Snyder HR. Major depressive disorder is associated with broad impairments on neuropsychological measures of executive function: A meta-analysis and review. Psychol Bull. 2013;139(1):81-132.