



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

September 19, 2019

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Chief Medical Officer

A. ACCIDENT: WPR19FA022; Guthrie Center, IA

On November 9, 2018, about 1715 central standard time, a Piper PA28-236, N91770, collided with terrain about 2 miles south of Guthrie County Regional Airport (GCT), Guthrie Center, Iowa. The private pilot, student pilot, and two passengers sustained fatal injuries, and the airplane was destroyed. The airplane was registered to C&D Farms II LLC., and operated by the pilots under the provisions of Title 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Visual meteorological conditions prevailed, and no flight plan had been filed. The crosscountry flight departed Le Mars Municipal Airport (LRJ), Le Mars, Iowa, at 1618 with a planned destination of Osceola Municipal Airport (I75), Osceola, Iowa.

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. Because of the pilot's findings, passenger toxicology was reviewed.

2. Methods

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

Pilot

FAA Medical Case Review

According to the FAA medical case review, the 49 year old male pilot 1,895 total flight hours as of his last exam, dated 2/27/2018. At that time, he was 68 inches tall and weighed 199 pounds. He had reported no chronic medical conditions and no use of medications to the FAA. The physical examination did not identify any abnormalities and he was issued a third class medical certificate without limitations.

Autopsy

According to the autopsy performed by the Iowa Department of Public Health, Iowa Office of the State Medical Examiner, the cause of death was multiple blunt force injuries. The carboxyhemoglobin level was found to be 59.2%. The remainder of the exam was unremarkable.

Toxicology

Toxicology testing performed by NMS labs at the request of the medical examiner did not identify any tested-for substances.

Toxicology testing performed by the FAA's Forensic Science Laboratory identified carboxyhemoglobin at 58% and no other tested-for substances.¹

Student Pilot Rated Passenger

FAA Medical Case Review

According to the FAA medical case review, the 36 year old male pilot rated passenger reported 10 total flight hours as of his only exam, dated 5/29/2018. At that time, he was 73 inches tall and weighed 220 pounds. He reported no chronic medical conditions and no use of medications. No significant abnormalities were identified on the exam and he was issued a third class medical certificate limited by a requirement that he wear corrective lenses.

Autopsy

According to the autopsy performed by the Iowa Department of Public Health, Iowa Office of the State Medical Examiner, the cause of death was multiple blunt force injuries. The carboxyhemoglobin level was found to be 45.3%. The brain demonstrated extensive injuries; no significant natural disease was identified in what was available for examination. The remainder of the exam was unremarkable.

Toxicology

Toxicology testing performed by NMS labs at the request of the medical examiner did not identify any tested-for substances.

¹ The laboratory at 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>

Toxicology testing performed by the FAA's Forensic Science Laboratory identified carboxyhemoglobin at 48% and no other tested-for substances.

Passenger Information

Blood from the two rear seated passengers were also tested for carboxyhemoglobin by the FAA's Forensic Science Laboratory; results demonstrated levels of 41% and 20%.

Carboxyhemoglobin

Carbon monoxide (CO) is an odorless, tasteless, colorless, nonirritating gas formed by hydrocarbon combustion. CO binds to hemoglobin with much greater affinity than oxygen, forming carboxyhemoglobin; elevated levels result in impaired oxygen transport and utilization.² Nonsmokers may normally have up to 3 percent carboxyhemoglobin in their blood; heavy smokers may have levels of 10 to 15 percent.³ Acutely, low levels of CO may cause vague symptoms like headache and nausea but increasing levels (40 percent and above) lead to confusion, seizures, loss of consciousness, and death.⁴

D. SUMMARY OF MEDICAL FINDINGS

The 49 year old male pilot and the 36 year old student pilot rated passenger had not reported any chronic medical conditions or use of medications to the FAA. For both, according to the autopsy performed by the Iowa Department of Public Health, Iowa Office of the State Medical Examiner, the cause of death was multiple blunt force injuries. No significant natural disease was identified. However, toxicology testing identified severely elevated levels of carboxyhemoglobin (58% for the pilot, 48% for the student pilot rated passenger, and 41% and 20% for the passengers) in all the plane's occupants.

² Clardy PF, Manaker S, Perry H. Carbon monoxide poisoning. UpToDate Reference Manual. <http://www.uptodate.com/contents/carbon-monoxide-poisoning?source=preview&language=en-US&anchor=H9&selectedTitle=1~34#H9> Accessed 12/23/2015.

³ Ernst A, Zibrak JD. Carbon monoxide poisoning. N Engl J Med 1998; 339:1603.

⁴ Reisdorff Ej and Wiegstein JG. Carbon Monoxide Poisoning. In Emergency Medicine, A Comprehensive Study Guide. Tintinalli, J ed. 4th edition. 1996: 914-919.