



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

May 28, 2019

Michelle Watters, MD, PhD, MPH
Medical Officer

A. ACCIDENT: WPR18FA229; Phoenix, Arizona

On August 20, 2018, about 0645 mountain standard time, an Acroduster II experimental amateur-built airplane, N787WM, was substantially damaged following a loss of control and impact with terrain about 650 ft east-southeast of the southeast boundary of Deer Valley Airport (DVT), Phoenix, Arizona. Both the front and rear seat certified private pilots sustained fatal injuries. The airplane was registered to a private individual; however, it was reported that two days prior to the accident the rear seat pilot had purchased the airplane. The local flight was being operated under the provisions of Title 14 Code of Federal Regulations Part 91, and a flight plan was not filed. Visual meteorological conditions prevailed for the flight, which departed DVT about 0625.

It was reported that prior to the accident the pilot had performed 4 takeoffs and landings uneventfully. However, while in the traffic pattern for the fifth landing, and while turning from left downwind to left base leg for runway 25L, the airplane's left wing stalled, followed by a spin prior to impact with terrain. An initial onsite inspection of the wreckage revealed that all components necessary for flight were accounted for.

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 records for the rear-seated pilot, and pilots' autopsy reports and FAA Forensic Sciences toxicology data were reviewed. Other pertinent scientific and regulatory issues were examined.

Pilot 1 (rear seat)

FAA Medical Case Review and FAA Medical Certification File

According to the FAA medical case review, the 54-year-old male pilot held a third class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (4/30/2018), the pilot reported 912 total hours of civil flight experience. The pilot was 71 inches tall and weighed 179 pounds. The pilot reported taking no medications and reported no visits to health care providers in the previous three years. No other concerns were reported by the pilot and no significant issues were identified by the aviation medical examiner.

This rear-seat pilot had two prior medical certificates: 4/27/2016 and 4/15/2014. Except for the number of flight hours reported, the medical certificate evaluations were the same.

Autopsy

According to the autopsy performed by the Maricopa County Office of the Medical Examiner, the cause of death was multiple blunt force injuries and the manner of death was accident. A contributing cause of death was atherosclerotic cardiovascular disease as documented by the presence of a metallic stent in the left anterior descending coronary artery with 75-90% occlusion distal of the stent, 100% occlusion of the right coronary artery, 50% narrowing of the left circumflex artery, and extensive scarring of the posterior wall and septum of the left ventricle. In addition to the injuries to the head, neck, torso, and extremities, there was evidence of medical intervention including intubation. Lidocaine and etomidate were detected in blood received from the hospital. The pilot also had a well-defined 1 by 1.5 centimeter meningioma (a usually benign tumor of the brain's lining) that was not penetrating into his brain, and an enlarged thyroid.

Toxicology

Toxicological testing performed by the FAA's Forensic Sciences Laboratory identified no ethanol in the blood and salicylate and etomidate in the urine.¹ Salicylate (commonly from aspirin) is contained in over-the-counter medications and is used to treat mild pain or to reduce the chance of blood clots.² Etomidate is a general anesthetic.³ Glucose was detected in urine at 577 milligrams per deciliter (mg/dL) (postmortem normal is below 100 mg/dL glucose in urine) and the pilot's hemoglobin A1C was 8.8% (above 6.5% indicates diabetes⁴).

¹ The FAA Forensic Sciences laboratory tests for more than 1,300 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>.

² Federal Aviation Administration. Forensic Toxicology Drug Information. Salicylate.

<http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=123> Accessed 4/29/2019.

³ Federal Aviation Administration. Forensic Toxicology Drug Information. Etomidate.

<http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=61> Accessed 4/29/2019.

⁴ American Diabetes Association, Standards of Medical Care in Diabetes—2016, Volume 39, Supplement 1, January 2016

http://care.diabetesjournals.org/highwire/filestream/5646/field_highwire_adjunct_files/0/2016-Standards-of-Care.pdf.

Pilot 2 (front seat)

FAA Medical Case Review

According to the FAA medical case review, the 49-year-old female pilot held a third class medical certificate with the limitation that she must wear corrective lenses. At the time of the most recent exam (12/20/2016), the pilot reported 115 total hours of civil flight experience. The pilot was 68 inches tall and weighed 152 pounds. The pilot reported taking the asthma medications fluticasone (a steroid) and salmeterol (a beta agonist), a 12-year history of now well-controlled asthma, and no visits to health care providers in the previous three years. The pilot had one prior aviation medical exam on 8/5/14. No other concerns were reported by the pilot and no significant issues were identified by the aviation medical examiner.

Autopsy

According to the autopsy performed by the Maricopa County Office of the Medical Examiner, the cause of death was multiple blunt force injuries and the manner of death was accident. Injuries were noted to the head, chest, and extremities. With the exception of the blunt force injuries, examinations of the cardiovascular, respiratory, and nervous systems were unremarkable.

Toxicology

Toxicological testing performed by the FAA's Forensic Sciences Laboratory found celecoxib⁵ (a non-steroidal anti-inflammatory used to treat arthritis) and famotidine⁶ (a prescription or over the counter medication used to treat heartburn) in cavity blood. These two medications are generally not considered to be impairing. No ethanol was detected in cavity blood.

D. SUMMARY OF MEDICAL FINDINGS

Pilot 1 (rear seat)

The 54-year-old male pilot held a third class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (4/30/2018), the pilot reported taking no medications and reported no visits to health care providers in the previous three years. No other concerns were reported or identified.

According to the autopsy report, his cause of death was multiple blunt force injuries and the manner of death was accident. A contributing cause of death was atherosclerotic cardiovascular disease as documented by the presence of a metallic stent in the left anterior descending coronary artery with 75-90% occlusion distal of the stent, 100% occlusion of the right coronary artery, 50% narrowing of the left circumflex artery, and extensive scarring of the posterior wall and septum of the left ventricle. There was evidence of medical intervention including intubation. The pilot also had a well-defined meningioma and an enlarged thyroid.

⁵ Federal Aviation Administration. Forensic Toxicology Drug Information. Celecoxib. <http://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=313> Accessed 5/6/2019.

⁶ Federal Aviation Administration. Forensic Toxicology Drug Information. Famotidine. <http://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=293> Accessed 5/6/2019.

Toxicological testing identified salicylate and etomidate in the urine. Glucose was detected in urine at 577 mg/dL and the pilot's hemoglobin A1C was 8.8%.

Pilot 2 (front seat)

The 49-year-old female pilot held a third class medical certificate with the limitation that she must wear corrective lenses. At the time of the most recent exam (12/20/2016), the pilot reported taking the asthma medications fluticasone and salmeterol and having a 12-year history of now well-controlled asthma. No other concerns were reported or identified.

According to the autopsy report, her cause of death was multiple blunt force injuries and the manner of death was accident. With the exception of the blunt force injuries, examinations of the cardiovascular, respiratory, and nervous systems were overall unremarkable.

Toxicological testing found celecoxib and famotidine in the front seat pilot's cavity blood, neither medication is considered impairing. No ethanol was detected in cavity blood.