



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

June 2, 2020

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Medical Officer

A. ACCIDENT: ERA19FA200; Fletcher, North Carolina

On June 26, 2019, about 1030 eastern daylight time, an experimental, amateur-built Rans S-6S, N661PF, was destroyed when it impacted terrain near the Six Oaks Airport (NC67), Fletcher, North Carolina. The commercial pilot and flight instructor were fatally injured. The airplane was registered to and operated by PF Flyers Inc. under the provisions of Title 14 *Code of Federal Regulations* Part 91 as an instructional flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the local flight.

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 Federal Aviation Administration (FAA) medical case review, and pilots' FAA medical certification files, autopsy reports, and FAA Forensic Sciences toxicology reports were reviewed. Other pertinent scientific and regulatory information was reviewed.

Commercial Pilot

FAA Medical Certification Files and FAA Medical Case Review

According to the FAA medical certification files, the 76-year-old male commercial pilot held a second class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (2/27/18), the commercial pilot was 73 inches tall and weighed 195 pounds; he reported 13,560 total number of flight hours. The commercial pilot reported taking no medications and having a remote history of several surgeries.

Medical certification records dated back to 1966. On the 2007 and 2009 medical certification examinations, use of a CPAP [continuous positive airway pressure] machine for obstructive sleep apnea (OSA) was noted. The commercial pilot had a special issuance for OSA. Reported

apnea-hypoxia index was 18 episodes/hour (indicating moderate OSA) and no daytime sleepiness was reported; the commercial pilot stated that the evaluation for OSA was performed because of snoring. On the medical certification exams in 2016, 2017, and 2018, the aviation medical examiner reported that the pilot was not at risk for OSA.

Autopsy

According to the autopsy report from the Buncombe County (North Carolina) Medical Examiner, the cause of death in the commercial pilot was multiple blunt force injuries and the manner of death was accident. The medical examiner reported moderate to severe two-vessel coronary artery atherosclerosis. No other significant natural disease was identified.

Toxicology

Toxicological testing performed by the medical examiner was negative for ethanol in the commercial pilot's cavity blood. FAA Forensic Sciences Laboratory toxicology testing of the commercial pilot's blood was negative for ethanol; his urine was negative for tested for compounds.¹

Flight Instructor

FAA Medical Certification Files and FAA Medical Case Review

According to the FAA medical certification files, the 72-year-old male flight instructor's last medical exam was on 9/28/17. At that exam, the flight instructor was 71 inches tall and weighed 142 pounds, and he reported 8,500 total flight hours. The pilot received a special issuance third class medical certificate with the limitation that he must have available glasses for near vision; this certificate was not valid after 9/30/18. The special issuance was for diabetes and coronary artery disease. According to the FAA medical case review, the flight instructor applied for Basic Medical certification on 9/4/18; he completed the basic med course and comprehensive medical checklist on that date.

At his most recent exam on 9/28/17, the flight instructor reported taking the medications pravastatin for high cholesterol, metformin and sitagliptin for type 2 diabetes, and metoprolol and lisinopril for high blood pressure. These medications are not generally considered impairing. The flight instructor reported taking aspirin, which is used as an anticoagulant. He had a history of coronary artery disease treated with a three vessel coronary artery bypass grafts in 1997. Prior to that, he had an angioplasty in 1986. Starting with the 1986 exam, the flight instructor provided documentation of his cardiovascular work-up that included assessments by his cardiologist, results from stress tests, stress echocardiograms, cardiac monitoring, and cardiac imaging. Imaging in 2015 showed evidence of a previous heart attack (first suggested on nuclear studies in 2011) and cardiac monitoring showed periods of ventricular tachycardia. The flight instructor underwent a cardiac catheterization in 2015. In July 2016, an FAA convened cardiac panel stated he did not meet the criteria for medical certification. The flight instructor regained his special issuance for his coronary artery disease and ventricular arrhythmia after his 9/28/17 medical certification examination. His Holter monitoring (a review of his heart rhythm) on 6/17/17 showed no ventricular arrhythmia; his nuclear stress test on 2/14/18 was normal with no evidence of ischemia.

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/>.

In addition to the medical records provided to the FAA for the coronary artery disease, the flight instructor provided documentation of his diabetes status starting with his medical certification exam in 1997. His hemoglobin A1C on 9/22/17 was 6.9%.² At the 9/28/17 exam, the flight instructor reported right eye cataract surgery a month prior to the exam; the eye evaluation provided by his ophthalmologist reported he had good vision and no complications from the surgery.

Autopsy

According to the autopsy report from the Buncombe County (North Carolina) Medical Examiner, the cause of death in the flight instructor was multiple blunt force injuries and the manner of death was accident. The medical examiner reported the pilot had cardiomegaly (420 grams), severe atherosclerosis in the left anterior descending coronary artery, moderate atherosclerosis in his left circumflex coronary artery and right coronary artery, patent three vessel grafts, a 26 centimeter long sternotomy scar, and a fibrotic scar in his left ventricle indicating a remote heart attack.

Toxicology

Toxicological testing performed by the medical examiner was negative for ethanol in the flight instructor's chest cavity blood. FAA's Forensic Sciences Laboratory detected the high cholesterol medication rosuvastatin, the high blood pressure medication metoprolol, the heartburn medication famotidine (commonly marketed as Pepcid), and the diabetes medication sitagliptin in the instructor pilot's cavity blood and liver tissue.^{3,4,5,6} All are considered non-impairing and sitagliptin taken alone or in combination with metformin is considered acceptable to the FAA since these diabetes medications are not likely to cause low blood sugar.⁷

D. SUMMARY OF MEDICAL FINDINGS

Commercial Pilot

The 76-year-old male commercial pilot held a second class medical certificate with the limitation that he must wear corrective lenses. At the time of the most recent exam (2/27/18), he reported taking no medications. No significant medical concerns were reported or identified.

² Hemoglobin A1C is a measure of the percentage of hemoglobin molecules that have a glucose molecule attached to them. The test measures the average blood glucose over the past three months. Above 6.5% indicates diabetes. For diabetic individuals, often the A1C goal is below 7.0%. [National Institutes of Health. U.S. National Library of Medicine. MedlinePlus. A1C. <https://medlineplus.gov/a1c.html> Page last updated 3/25/20.]

³ Federal Aviation Administration. Updated 1/16/19. Forensic Toxicology's WebDrugs. Rosuvastatin. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=318>

⁴ Federal Aviation Administration. Updated 1/16/19. Forensic Toxicology's WebDrugs. Metoprolol. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=171>

⁵ Federal Aviation Administration. Updated 1/16/19. Forensic Toxicology's WebDrugs. Famotidine. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=293>

⁶ Federal Aviation Administration. Updated 1/16/19. Forensic Toxicology's WebDrugs. Sitagliptin. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=382>

⁷ FAA. Updated 6/26/19. Acceptable combinations of diabetes medications. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/diabetesmeds_acceptablecomb.pdf

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Flight Instructor Pilot

The 72-year-old male flight instructor held a third class medical certificate with the limitation that he must have available glasses for near vision; this certificate was not valid after 9/30/18. The flight instructor held a special issuance for diabetes and coronary artery disease. At the time of the accident, he had applied for Basic Med. He reported taking medications for high cholesterol, high blood pressure, and diabetes. He reported having a history of ventricular arrhythmia, cardiac catheterization in 2015, a three vessel coronary artery bypass graft procedure in 1997, and an angioplasty in 1986. Recent cardiovascular work-up reports provided to FAA showed that he had a remote heart attack and that Holter monitoring in 2017 and nuclear stress test in 2018 showed no ventricular arrhythmia or evidence of ischemia, respectively.

According to the autopsy report from the Buncombe County (North Carolina) Medical Examiner, the cause of death in the flight instructor was multiple blunt force injuries and the manner of death was accident. The medical examiner reported the pilot had cardiomegaly, severe to moderate atherosclerosis in his coronary arteries, patent three vessel grafts, a sternotomy scar, and a fibrotic scar in his left ventricle indicating a remote heart attack.

Toxicological testing detected the non-impairing medications rosuvastatin, metoprolol, famotidine, and sitagliptin in the instructor pilot's cavity blood and liver tissue.