NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

November 16, 2017

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Chief Medical Officer

A. ACCIDENT: DCA17FA109; Charleston, WV

On May 5, 2017 at 6:51 a.m. eastern daylight time (EDT), Air Cargo Carriers flight 1260, a Shorts SD3-30, N334AC, crashed during landing on runway 5 at the Charleston Yeager International Airport (CRW), Charleston, West Virginia. The airplane was destroyed and the two pilots suffered fatal injuries. The flight was operating under the provisions of 14 CFR Part 135 as a cargo flight from Louisville International Airport (SDF), Louisville, Kentucky. Instrument meteorological conditions prevailed at the time of the accident.

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 pilots for any medical conditions, the use of any medications or illicit drugs, and the presence of any toxins.

2. Methods

   The FAA medical case review, blue ribbon FAA medical records, autopsy reports, toxicology findings, and the investigators' reports were reviewed. For the pilot, his continuous positive airway pressure (CPAP) machine was interrogated to document his use of the device. In addition, based on information provided by the pilot's significant other, personal dental records were also review for the pilot.

   Pilot

   FAA Medical Files

   According to the FAA medical files, the 47 year old male pilot first received a medical certificate in 1991. He next applied for and received a

medical certificate in 1997. Beginning in 1998 he was found to be hypertensive, requiring medication for adequate control of his blood pressure, and to have his certificate limited by a requirement for corrective lenses. In 2012, he underwent a sleep study (polysomnography) for complaints of daytime sleepiness and loud snoring. At that time, he weighed 330 pounds. His apnea-hypopnea index (AHI) was 101.7/hour and his blood oxygen saturation dropped as low as 56%.[1] He was placed on treatment with a continuous positive airway pressure (CPAP) machine and retested to demonstrate the treatment stopped the episodes of not breathing.

At the time of the pilot's last aviation medical exam, dated 6/23/2016, he reported 3600 total hours of civilian flight experience. According to the records, at that time he was 71 inches tall, and weighed 300 pounds. He reported hypertension and obstructive sleep apnea along with the use of a combination product including the medications lisinopril and hydrochlorothiazide to control his blood pressure and CPAP to control his sleep apnea.[2] These drugs are not generally considered impairing. He was issued a second class medical certificate limited by a requirement to possess glasses that correct for near vision and marked, "Not valid for any class after 6/30/2017."

Autopsy

According to the autopsy performed by the State of West Virginia, Office of the Chief Medical Examiner, the cause of death for the pilot was multiple injuries and the manner of death was accident.

Examination of the body for natural disease identified hypertensive and atherosclerotic heart disease. The heart was enlarged at 520 grams; average for a 300 pound man is 456 grams with a range of 346-602 grams.[3] There was concentric hypertrophy of the left ventricle consistent with the pilot's obesity and hypertension; the septum measured 2.1 cm and the left ventricular wall measured 2.0 cm thick. In addition, there was hypertrophy of the right ventricular wall which measured 0.6 cm. Average values are 1.2 cm for the left ventricle and septum and 0.3 cm for the right

[1] An apneic episode is the complete absence of airflow though the mouth and nose for at least 10 seconds. A hypopnea episode is when airflow decreases by 50 percent for at least 10 seconds or decreases by 30 percent if there is an associated decrease in the oxygen saturation or an arousal from sleep. The apnea-hypopnea index (AHI) sums the frequency of both types of episodes per hour. An AHI of less than 5 is considered normal. An AHI of 5-15 is mild; 15-30 is moderate and more than 30 events per hour is considered severe sleep apnea.

[2] National Institutes of Health. US National Library of Medicine. Lisinopril and HCTZ. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3984e6b9-2d88-47f0-af09-cce428bba14f Accessed 11/13/2017.

[3] Kitzman DW, Scholz DG, Hagen PT, Ilstrup DM, Edwards WD. Age-related changes in normal human hearts during the first 10 decades of life. Part II (Maturity): A quantitative anatomic study of 765 specimens from subjects 20 to 99 years old. Mayo Clinic Proc., 1988;63(2):137-46.

ventricle.[3] Finally, the medical examiner described, "moderate fibrocalcific atherosclerosis involving one coronary artery" without any further specifics or details such as the location of the finding or the quality of the nearby myocardium.

Toxicology

Toxicology testing performed by the State of West Virginia, Office of The Chief Medical Examiner identified no evidence of ethanol, drugs of abuse, or carbon monoxide.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory did not identify any tested-for substances.[4]

Review of Information from the CPAP Machine

The pilot's CPAP machine data was downloaded by NTSB investigators. (See the CPAP Report.) According to this information, the pilot was generally very compliant with his use of CPAP and had used it an average of 7 ½ hours each of his 7 sleeping periods preceding the accident with a measured AHI of less than 2. Specifically, on Monday, May 2, the captain began using his CPAP machine at 0659 local and continued until 1630. On May 3, the CPAP machine data indicates it was in use from 0654 until 1242. On May 4, he used his CPAP between 0712 and 1511.

Personal Dental Records

Information provided by the pilot's significant other included old pill bottles; each of the bottles contained a small number of unused tablets. The pilot had filled prescriptions for medications containing hydrocodone from three separate prescribers on three recent occasions; February 2015, March 2016, and November 2016. Hydrocodone is an opioid available by prescription as a Schedule 2 controlled substance and carries the following warning, "May impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery."[5] In combination with acetaminophen, it is commonly marketed as Norco, Vicodin, and Lortab/Lorcet. Records were obtained from each of the hydrocodone prescribers, each of whom were dentists. On each of these occasions, the pilot had had a tooth extracted or root canal treatment.

Copilot

FAA Medical Files

According to the FAA files, the 31 year old female copilot received her

[4] Testing included more than 1300 substances, see http://jag.cami.jccbi.gov/toxicology/default.asp?offset=0 for a complete listing.

[5] National Institutes of Health. US National Library of Medicine. Hydrocodone bitartrate. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fa32969f-7210-47ec-bbd1-f62bea8989a7 Accessed 11/13/2017.

first aviation medical certificate in November 2014, limited by a requirement for corrective lenses. At the time of the pilot's last aviation medical exam, dated 12/18/2016, she reported 320 total hours of civilian flight experience. According to the records, at that time she was 62 inches tall, weighed 118 pounds, and had reported no medical conditions and no medications to the FAA. She was issued a first class medical certificate limited by a requirement to wear corrective lenses.

Autopsy

According to the autopsy performed by the State of West Virginia, Office of the Chief Medical Examiner, the cause of death for the copilot was multiple injuries and the manner of death was accident. No significant natural disease was identified.

Toxicology

Toxicology testing performed by the State of West Virginia, Office of The Chief Medical Examiner identified no evidence of ethanol, drugs of abuse, or carbon monoxide.

Toxicology testing performed by the FAA's Bioaeronautical Sciences Research Laboratory did not identify any tested-for substances.[4]

D. SUMMARY OF MEDICAL FINDINGS

The 47 year old male pilot had hypertension treated with medication (lisinopril and hydrochlorothiazide) and obstructive sleep apnea treated with continuous positive airway pressure (CPAP). He was compliant with his CPAP regimen and had reported both conditions to the FAA. He received a special issuance second class medical certificate limited by a requirement to possess glasses that correct for near vision and marked, "Not valid for any class after 6/30/2017." Following the accident, review of the data from his CPAP machine indicated he had used the device 7 out of the preceding 7 sleep periods for an average of 7 ½ hours each time, indicating good compliance with the treatment. According to the autopsy performed by the State of West Virginia, Office of the Chief Medical Examiner, the cause of death for the pilot was multiple injuries and the manner of death was accident. Examination of the body for natural disease identified hypertensive and atherosclerotic heart disease. Toxicology testing performed by the State of West Virginia, Office of The Chief Medical Examiner and the FAA's Bioaeronautical Sciences Research Laboratory did not identify any tested-for substances. Investigation of pill bottles obtained from the pilot's significant other demonstrated occasional use of opioid medications related to invasive dental procedures but no other findings.

The 31 year old female copilot had reported no medical conditions or medications to the FAA. According to the autopsy performed by the State of West Virginia, Office of the Chief Medical Examiner, the cause of death for the copilot was multiple injuries and the manner of death was accident. No significant natural disease was identified. Toxicology testing performed by the State of West Virginia, Office of The Chief Medical Examiner

and the FAA's Bioaeronautical Sciences Research Laboratory did not identify any tested-for substances.