

## CEN13FA420

Oak Ridge, LA; 7/18/2013

### MEDICAL FACTUAL

There were two pilots on board the aircraft in this accident including a certified pilot who was a student in an Agricultural Aviation Basic Operations course (certified pilot/Ag student) and a certified flight instructor (CFI) who was instructing him. For each pilot, the FAA blue ribbon medical file and the toxicology reports were reviewed by Mary Pat McKay, Chief Medical Officer for the National Transportation Safety Board. In addition, the investigator's reports and interviews were reviewed.

The certified pilot/Ag student was 28 years old. According to his FAA blue ribbon medical file, his first medical certification had been awarded on 7/22/2008. He reported a previous orthopedic procedure on his left wrist and answered "no" to every other question including use of medications. His second and last medical certification was awarded 11/1/2010; no other medical history or medications were reported.

According to the pathologist, the cause of death was multiple blunt injuries. No significant natural disease was identified.

Toxicology analysis performed by the Civil Aerospace Medical Institute identified hydroxychloroquine in liver and blood. In addition, tetrahydrocannabinol (THC, the major active ingredient in marijuana) was found in lung (2.3205 ug/ml), liver (0.0445 ug/ml), and blood (0.0337 ug/ml). Tetrahydrocannabinol carboxylic acid, THC's major metabolite, was also found in liver (1.205 ug/ml), lung (0.1387 ug/ml), and blood (0.1243 ug/ml).

Hydroxychloroquine is used to treat malarial and to decrease inflammation in patients with lupus erythematosus and rheumatoid arthritis. The precise mechanism of action is unknown. It carries the following FDA warning: Adverse effects reported with this drug include psychosis, dizziness, and vertigo.<sup>1</sup>

The certified flight instructor was 74 years old at the time of the accident. According to his FAA blue ribbon medical file, his first medical certification had been awarded on 11/19/1965. He maintained an unrestricted medical certificate until it became limited by the need to wear corrective lenses in 1988. This limitation remained thereafter. The CFI continued to be medical certified until he obtained a first class medical certificate on 10/4/1993. He next attempted to obtain a medical certificate in February 2001 and for the first time reported taking medication for hypertension. His blood pressure was elevated at 170/90 at that exam and his certification was deferred for further evaluation. He passed a stress test and began taking additional blood pressure medications. When he was re-evaluated in September, 2001, his blood pressure was controlled and a second class medical certificate was issued. In 2002, he reported a history of a

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<sup>1</sup> Drugs.com. Hydroxychloroquine tablets Official FDA information, side effects, and uses. <http://www.drugs.com/pro/hydroxychloroquine-tablets.html> Accessed 4/3/2014

loss of consciousness but with the FAA asking further questions, he was apparently reporting being anesthetized for two surgical procedures. The nature of these procedures was not further described. He continued to maintain a second class certificate until 2008 when he reported the development of prostate cancer. He also had undergone an extensive evaluation for exercise related shortness of breath including an echocardiogram, a stress test, a cardiac catheterization, and pulmonary function testing. The cardiac tests were essentially unremarkable and the pilot was found to have chronic obstructive pulmonary disease (COPD), obesity, and mild to moderate obstructive sleep apnea. The pilot was treated with continuous positive airway pressure and COPD medications. The FAA required the results of all this treatment and testing and awarded the pilot a special issuance second class medical certificate on 5/12/2009. He continued to have annual recertification exams and after supplying follow up information, to be awarded special issuance medical certifications. In 2010, one of his treating physicians noted he had lost weight and no longer required any treatment for sleep apnea. In 2011 he passed a small kidney stone. Each of these years and in December 2012, he was awarded a special issuance second class medical certificate. At his last physical his height is recorded as 72 inches and his weight at 258 pounds. He reported taking doxazosin, nifedipine, and Diovan for his hypertension.

According to the autopsy, the cause of death was multiple injuries. In addition, significant natural disease was identified, primarily hypertensive arteriosclerotic cardiovascular disease. This included “mild to moderate calcific atherosclerosis no evidence of significant luminal stenosis or acute thrombosis” and globoid enlargement of the heart to 690 grams (average for a man of his weight would have been 425 with a range from 322 to 561<sup>2</sup>), hypertrophy or thickening of the left ventricle, and changes to the small vessels of the kidney consistent with chronic hypertension.

Toxicology analysis performed by the Civil Aerospace Medical Institute identified doxazosin, phentermine (0.612 ug/ml), valsartan, and yohimbine in the CFI’s blood and liver. Doxazosin is marketed under the brand name Cardura. Chemically, it is a selective inhibitor of the alpha1 subtype of alpha-adrenergic receptors; it is used to treat hypertension and symptoms of benign prostatic hypertrophy. Valsartan is marketed under the brand name Diovan and is an angiotensin II receptor antagonist used to treat hypertension. Phentermine is a sympathomimetic amine used in the short term treatment of obesity and marketed under the brand names Adipex and Qsymia.<sup>3</sup> Yohimbine is an  $\alpha_2$  receptor antagonist and is available by prescription for the treatment of male sexual dysfunction but may also be found marketed as an herbal supplement.

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<sup>2</sup> Kitzman DW, S.D., 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): p. 137-46.

<sup>3</sup> Drugs.com. Phentermine official FDA information, uses and side effects.  
<http://www.drugs.com/pro/phentermine.html> Accessed 4/10/2014.