



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

MEDICAL FACTUAL REPORT

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Medical Officer

A. ACCIDENT: WPR17FA029 - Glamis, California

On November 25, 2016 about 1145 Pacific standard time, a Bellanca 7GCAA, N88373, was substantially damaged when it impacted terrain following a loss of control while on approach to landing at a private airstrip near Glamis, California. The private pilot sustained fatal injuries and his passenger sustained serious injuries. The airplane was registered to and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and no flight plan was filed for the personal flight. The flight originated from an open desert landing area about 5 minutes prior to the accident.

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, personal health care records, FAA Bioaeronautical Sciences Research Laboratory toxicology report, and autopsy report were reviewed.

FAA Medical Case Review

According to the FAA medical case review, the 59-year-old male pilot was 70 inches tall and weighed 189 pounds at the time of his most recent FAA medical certification exam, dated September 26, 2016. At that time, he reported 430 total flight hours. He reported a history of colon cancer treated in 2008 with no evidence of recurrence and no other current medical concerns or the use of any medications. The FAA had evaluated records of the pilot's cancer treatment annually until 2015 when they found him eligible for an unlimited medical certificate. The aviation medical examiner (AME) found no other significant medical issues and issued a third class medical certificate with a requirement to wear corrective lenses for near and distant vision.

Autopsy

The Imperial County California Coroner's autopsy report documented the cause of death was multiple traumatic injuries and the manner was accident. The heart was enlarged with left ventricular hypertrophy and coronary artery disease with 75% narrowing of the right coronary, 90% narrowing of the left anterior descending, and 25% narrowing of the left circumflex coronary arteries. The autopsy did not find evidence of ischemic heart muscle damage. No other significant natural disease identified.

Toxicology

FAA Bioaeronautical Sciences Research Laboratory toxicology testing was positive for acetaminophen at 28.86 ug/ml in urine, sertraline in urine and at 0.063 ug/ml in cavity blood, its metabolite desmethylsertraline in urine and blood, and trazodone in urine and at 0.101 ug/ml in cavity blood.

Acetaminophen is a non-sedating pain and fever reducing medication sold alone or combination with cough and cold treatments and marketed as under many names including Tylenol.¹

Sertraline is a prescription antidepressant. The accepted therapeutic range is from 0.010 to 0.200 ug/ml.² While not specifically known to directly cause impairment, the underlying depression is associated with significant cognitive degradation, particularly in executive functioning.^{3,4} As a result, the FAA has a specific process to certify pilots with depression who require antidepressant treatment. The FAA's Guide for Aviation Medical Examiners states "The use of a psychotropic drug is disqualifying for aeromedical certification purposes – this includes all antidepressant drugs, including selective serotonin reuptake inhibitors (SSRIs). However, the FAA has determined that airmen requesting first, second, or third class medical certificates while being treated with one of four specific SSRIs may be considered (see Item 47., Psychiatric Conditions – Use of Antidepressant Medications). The Authorization decision is made on a case by case basis. The Examiner may not issue."⁵

Trazodone is another prescription antidepressant that is significantly sedating; it is often used as a sleep aid. The accepted therapeutic range is from 0.5 to 3.0 ug/ml.⁶ It carries this precaution, "Antidepressants may impair the mental and/or physical ability required for the performance of potentially hazardous tasks, such as operating an automobile or machinery;

¹ National Institutes of Health. National Library of Medicine (U.S.). 2018. *DailyMed*. Bethesda, MD. Tylenol - acetaminophen. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5d7d1300-bcb8-466a-880b-310b360ee132> Accessed 04/23/2018.

² Federal Aviation Administration. Civil Aerospace Medical Institute. Toxicology Drug Information: Sertraline. <http://jag.cami.jccbi.gov/toxicology/DrugDetail.asp?did=218> Accessed 04/24/2018.

³ National Institutes of Health. National Library of Medicine (U.S.). 2018. *DailyMed*. Bethesda, MD. Sertraline. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f9641190-9151-4f7e-89ff-1e7a818c30ee> Accessed 4/23/2018.

⁴ Snyder HR. Major depressive disorder is associated with broad impairments on neuropsychological measures of executive function: A meta-analysis and review. *Psychol Bull.* 2013;139(1):81-132.

⁵ Federal Aviation Administration. Airman Medical Examiner's Guide, 2018. Issued March 28, 2018. http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/guide.pdf Pg. 326. Accessed 4/23/2018.

⁶ Baselt, Randall. 2014. Disposition of Toxic Drugs and Chemicals in Man, Tenth Edition. Seal Beach, California Biomedical Publications. Trazodone - Pages 2029-2031.

the patient should be cautioned accordingly. Trazodone hydrochloride may enhance the response to alcohol, barbiturates, and other CNS depressants.”⁷

Personal Medical Records

Personal medical records from January 2014 through November 2016 were reviewed. The pilot's medical conditions included colon cancer successfully treated with surgical removal and radiation in 2008, chronic pain resulting from the cancer therapy treated with oxycodone until June 2016, and depression and anxiety treated with a number of different psychotropic medications.

According to the pilot's psychiatrist in a note dated November 2, 2016 (about 3 weeks before the accident), the pilot had a five-year history of anxiety and depression and had been treated with sertraline for the preceding 2 years. The provider documented that the pilot "Recently tried to decrease sertraline from 50 to 25 mg/day and had increased irritability and anxiety and increased dose back to 50 mg/day after 4 days with improvement in symptoms. Reports residual symptoms of marked frustration when things aren't going well [once a week] and [is] always feeling rushed or "in a hurry," and anhedonia (not enjoying flying and other activities as much as he used to) ... Sleeping well with trazodone."

The psychiatrist's mental status examination found the pilot did not express ideations of harm to himself or others. However, the patient's mood was anxious, and depressed, with a Beck depression inventory score of 18 (consistent with mild or borderline clinical depression).⁸ The psychiatrist's diagnostic impression was major depressive disorder (moderate severity) and he prescribed sertraline 75 mg daily, hydroxyzine 50 mg as needed for anxiety, and trazodone 100 to 200 mg at bedtime for sleep. Sertraline and trazodone are described in the toxicology section of this report. Hydroxyzine is a prescription sedating antihistamine for treatment of anxiety and itching.⁹

D. SUMMARY OF MEDICAL FINDINGS

The 59-year-old male pilot had reported a history of treated colon cancer with no evidence of recurrence to the FAA but had reported no other medical or psychiatric conditions or the use of any medications. He was issued a third class medical certificate dated September 26, 2016 with a limitation requiring him to wear corrective lenses for near and distant vision.

According to the Imperial County California Coroner's autopsy report, the pilot died as a result of multiple traumatic injuries. He had an enlarged heart with left ventricular hypertrophy and coronary artery disease with 75% narrowing of the right coronary, 90% narrowing of the left anterior descending, and 25% narrowing of the left circumflex coronary arteries. However, there was no evidence of ischemic heart muscle damage or other significant natural disease.

Toxicology detected the pain and fever medication acetaminophen at 28.86 ug/ml in urine. Additionally, the antidepressant sertraline was detected in urine and at 0.063 ug/ml in cavity blood

⁷National Institutes of Health. National Library of Medicine (U.S.). 2018. *DailyMed*. Bethesda, MD. Trazodone. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a699724b-7412-479e-9894-4cf6ec454d8b> Accessed 4/23/2018.

⁸ The Beck Depression Inventory (BDI) is a 21-item, self-report rating inventory that measures characteristic attitudes and symptoms of depression. A score of 0-10 is generally considered normal, 11-16 is mild mood disorder while 17-20 is borderline clinical depression, 21-30 is moderate depression, 31-40 is severe depression and over 40 is extreme depression.

⁹ National Institutes of Health. National Library of Medicine (U.S.). 2018. *DailyMed*. Bethesda, MD. Vistaril-hydroxyzine pamoate. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c271f97f-040e-492b-9194-2c8b74675a95> Accessed 04/23/2018.

and its metabolite desmethylsertraline was detected in urine and cavity blood. Acetaminophen and sertraline are generally not considered to be impairing. Finally, the sedating antidepressant / sleep aid trazodone was detected in urine and at 0.101 ug/ml in cavity blood.

According to personal medical records the pilot had a history of colon cancer treated in 2008, a five-year history of major depression and anxiety treated with sertraline for the past two years, and a sleep disorder treated with trazodone. About three weeks prior to the accident, the pilot's psychiatrist documented his depression was not well controlled with persistent symptoms of frustration and racing thoughts and his antidepressant medications were increased.