



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

December 23, 2019

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Chief Medical Officer

A. ACCIDENT: WPR19LA058; Colusa, CA

On January 7, 2019, about 1050 Pacific standard time, a Beech A36 airplane, N100JB, collided with terrain about 2 miles south of the Colusa County Airport (O08), Colusa, California. The private pilot and passenger were fatally injured. The airplane was destroyed. The airplane was registered to Chalk Hill Consulting Group LLC and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations Part 91* as a personal flight. Instrument and visual meteorological conditions prevailed in the area and an instrument flight plan was filed for the cross-country flight. The flight was originating at the time of the accident and was destined for Palo Alto, California.

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 pilot for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

The FAA medical case review, autopsy report, toxicology findings, and the investigator's reports were reviewed. Relevant regulation and medical literature were reviewed as appropriate. Personal medical records were not identified.

FAA Medical Case Review

According to the FAA medical case review, the 66 year old pilot in this accident had reported 1500 flight hours as of his last application for a medical certificate, dated 1/18/2005. At that time, he was 72 inches tall

and weighed 232 pounds. He had reported hayfever and knee pain to the FAA and reported intermittent use of chlorpheniramine (a sedating antihistamine available over the counter and often marketed with the name ChlorTriMeton). No significant disease was identified and the pilot was issued a third class medical certificate limited by a requirement he wear corrective lenses for near and distant vision.

Correspondence was received by the FAA on 5/17/2006; the complaint stated that the airman had a diagnosis of Bipolar Affective Disorder, Type II, a history of attempted suicide, and had been prescribed Effexor (generic: venlafaxine), Wellbutrin (generic: bupropion), and Lamictal (generic: lamotrigine). On 6/02/2006, the FAA sent a medical re-exam letter to the airman requesting additional information. Through his attorney, he surrendered the 1/18/2005 medical certificate and refused to provide the requested information. The medical certificate was denied on 7/20/2006, for “failure to provide.” The pilot did not re-apply.

Bipolar Disorder, Type II

Type II bipolar disorder is characterized by recurring episode(s) of major depression and at least one episode of hypomania lasting at least 4 days. It is commonly associated with periods of increased impulsivity.¹ Diagnosis with this disorder is associated with an increased risk of injury due to a road traffic accident as well as intentional injury (suicide attempt).²

According to the FAA’s Guide for Medical Examiners, pilot applying for medical certificates who report this disorder may not have a certificate issued directly by the aviation medical examiner; all applicants “must be denied or deferred.”³

Medication Descriptions

Venlafaxine is an antidepressant often marketed with the name Effexor. It can cause a variety of psychoactive effects but has not been shown to effect safety while operating a vehicle.⁴ Bupropion is another antidepressant often marketed with the name Wellbutrin for depression and Chantix when used as an adjunct to quit smoking. Bupropion can

¹ American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th Edition. (DMS-5) Bipolar II Disorders, pages 132-139.

² Chen VC, Yang Y, Lee CP, Wong J, Ponton L, Lee Y, McIntyre RS, Huang KY, Wu SI. Risks of road injuries in patients with bipolar disorder and associations with drug treatments: A population-based matched cohort study. *J Affect Disord.* 2018 ;226:124-131.

³ Federal Aviation Administration. Guide for Aviation Medical Examiners. Decision Considerations - Aerospace Medical Dispositions Item 47. Psychiatric Conditions - Bipolar Disorder. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item47/amd/table/bd/ Accessed 11/5/2019.

⁴ National Institutes of Health, US National Library of Medicine. DailyMed. Venlafaxine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b23637e5-d37f-41b5-ba76-fc053e903bc2> Accessed 11/4/2019.

cause a number of psychoactive effects and increases the risk of seizure.⁵ Lamotrigine is an antiseizure medication also indicated for mood stabilization in patients with bipolar disease; it is often marketed with the name Lamictal. Lamotrigine may cause a variety of psychoactive effects; its direct effects on operating a vehicle have not been studied.⁶

Autopsy

According to the autopsy performed by Bennet Omalu Pathology, the cause of death was high velocity deceleration injury. Extensive coronary artery disease was identified with the right, left main, left anterior descending, and circumflex arteries 90-99% occluded. Microscopy demonstrated evidence of previous ischemia including myofibrillary contraction band degeneration and cytoplasmic hypereosinophilia, which was multifocal but there was no visible scar on the gross evaluation. In addition, the pilot had hypertensive cardiomyopathy and the pathologist reported a clinical history of poorly controlled diabetes with damage to his kidneys as well as bipolar disease.

Toxicology

Toxicology testing performed by NMS Labs on cavity blood at the request of the pathologist identified venlafaxine and its metabolite desmethylvenlafaxine, bupropion and its metabolite hydroxybupropion, as well as lamotrigine. The pilot's vitreous was also tested for glucose with a level of 42 mg/dl (normal postmortem glucose levels are at least this low).

Toxicology testing performed by the FAA's Forensic Science Laboratory identified zolpidem, venlafaxine and its metabolite desmethylvenlafaxine, bupropion and its metabolite hydroxybupropion, as well as lamotrigine in liver and muscle tissue.

Zolpidem is a Schedule IV controlled substance available by prescription for the short term treatment of insomnia; it is often marketed with the name Ambien.⁷ It is quickly sedating; users are instructed to take it only immediately before going to bed. Particularly during the initial period after taking the drug, a variety of psychoactive effects have been described, including "sleep driving" and other potentially dangerous events. The zolpidem level in this pilot was too low for the lab to quantify.

⁵ National Institutes of Health, US National Library of Medicine. DailyMed. Bupropion. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=39b2d509-1281-4464-9cf1-a94bbc18b84b> Accessed 11/4/2019.

⁶ National Institutes of Health, US National Library of Medicine. DailyMed. Lamotrigine. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=0b0f0209-edbd-46f3-9bed-762cbea0d737> Accessed 11/4/2019.

⁷ National Institutes of Health, US National Library of Medicine. DailyMed. Zolpidem. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=313ccc9f-7b3e-4e42-b5d8-0e27c3c72d8e> Accessed 11/4/2019

D. SUMMARY OF MEDICAL FINDINGS

The 66 year old male pilot in this accident had reported hay fever and knee pain to the FAA. However, a complaint was made to the FAA that the pilot had bipolar disease and was treating it with venlafaxine, bupropion, and lamotrigine; medications he had not reported. Rather than supply the requested medical information, the pilot surrendered his medical certificate in 2006.

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