



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

November 21, 2017

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. ACCIDENT: ERA17LA070; Ormond Beach, FL

On December 17, 2016, at 1510 eastern standard time, a Beech A36, N410BC, was substantially damaged during a forced landing at Ormond Beach, Florida. The private pilot was seriously injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Day, visual meteorological conditions prevailed at the time, and no flight plan was filed. The flight originated at DeLand Municipal Airport (DED), DeLand, Florida, about 1430 and was destined for Eustis, Florida (X55).

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

2. Methods

The post accident personal medical records, and the investigator's reports were reviewed.

FAA Medical File

According to the FAA medical file, the 60 year old male pilot was first medically certified to fly in 1978. In 2004, he reported a diagnosis of hypertension and treatment with medication. In February 2008, he was admitted to hospital for several weeks with multiple complex complications of chronic alcoholism, then was admitted for alcohol rehabilitation, and he reported that to the FAA. After obtaining more

information including a neurology evaluation following an alcohol withdrawal seizure, and a psychiatric evaluation, the FAA eventually granted him a special issuance third class medical certificate in 2009, which was dependent on him being evaluated and undergoing periodic testing for alcohol.

At the time of his last aviation medical examination, dated 8/30/2011, the pilot reported 1650 total flight hours, the medical history reported above as well as having had a hip replacement in 2010, and gave the FAA a list of medication. In September 2011, he tested positive for alcohol and the FAA withdrew his medical certificate in November 2011.

Postaccident Emergency Treatment Records

The pilot was taken emergently to the hospital by helicopter following the accident. Blood drawn at 1709, 50 minutes after the accident, tested positive for 0.177 gm/dl of alcohol. No other toxicology testing was performed.

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses it can cause coma and death. The effects of ethanol on aviators are generally well understood; it significantly impairs pilots' performance, even at very low levels.¹ Federal Aviation Regulations, Section 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood.²

Unlike many other substances, ethanol is eliminated from the body at a fairly constant rate. The rate varies with the regularity of drinking and whether or not the individual has recently eaten but ranges from 0.010 gm/dl/hr in infrequent drinkers with an empty stomach to as high as 0.035 gm/dl/hr in heavy drinkers who have eaten. As a result, the minimum and maximum levels of ethanol can be back-calculated with some assurance of accuracy.³ Thus, at the time of the accident, the pilot's alcohol level was likely at or above 0.185 gm/dl.

D. SUMMARY OF MEDICAL FINDINGS

The 60 year old male pilot had a long history of complex medical problems resulting from alcoholism. In 2009, he received a special issuance medical certificate after completing rehabilitation. However, his medical certificate had been revoked in 2011 as a

¹ Cook, C.C., Alcohol and aviation. *Addiction* (Abingdon, England), 1997. 92(5): p. 539-555.

² US Government Printing Office .eCFR- Code of Federal Regulations. 91.17. Accessed 6/16/2017. Available from: <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div8&node=14:2.0.1.3.10.1.4.9>.

³ Jones AW. Evidence-based survey of the elimination rates of ethanol from blood with applications in forensic casework. *Forensic Sci Int.* 2010;200(1-3):1-20.

result of not maintaining his sobriety. He had not reapplied for a medical certificate. According to a test performed in the hospital, the pilot's blood alcohol level 50 minutes following the accident was 0.177 gm/dl, well over the regulatory limit for pilots of 0.040 gm/dl. Unlike many other substances, ethanol is eliminated from the body at a fairly constant rate. The rate varies with the regularity of drinking and whether or not the individual has recently eaten but ranges from 0.010 gm/dl/hr in infrequent drinkers with an empty stomach to as high as 0.035 gm/dl/hr in heavy drinkers who have eaten. As a result, the minimum and maximum levels of ethanol can be back-calculated with some assurance of accuracy. Thus, at the time of the accident, the pilot's alcohol level was likely at or above 0.185 gm/dl.